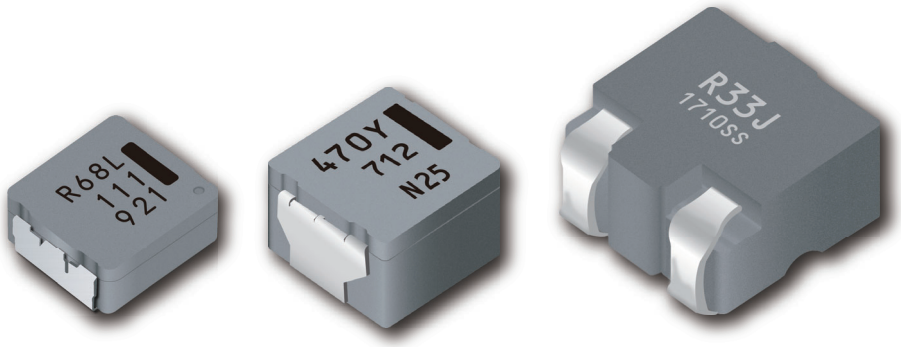
Panasonic
INDUSTRY

Your Committed Enabler

Products Catalog

Inductors

- For automotive
- For consumer



IN Your Future

2022.11

Inductors INDEX

NRFND Not recommended for new design

Guidelines and precautions regarding the technical information and use of our products described in this online catalog.

■ If you want to use our products described in this online catalog for applications requiring special qualities or reliability, or for applications where the failure or malfunction of the products may directly jeopardize human life or potentially cause personal injury (e.g. aircraft and aerospace equipment, traffic and transportation equipment, combustion equipment, medical equipment, accident prevention, anti-crime equipment, and/or safety equipment), it is necessary to verify whether the specifications of our products fit to such applications. Please ensure that you will ask and check with our inquiry desk as to whether the specifications of our products fit to such applications use before you use our products.

■ The quality and performance of our products as described in this online catalog only apply to our products when used in isolation. Therefore, please ensure you evaluate and verify our products under the specific circumstances in which our products are assembled in your own products and in which our products will actually be used.

■ Please ensure the safety by means of protection circuit, redundant circuit etc. in your system design in order to prevent the occurrence of life crisis and other serious damages due to the failure of our products.

■ The products and product specifications described in this online catalog are subject to change for improvement without prior notice. Therefore, please be sure to request and confirm the latest product specifications which explain the specifications of our products in detail, before you finalize the design of your applications, purchase, or use our products.

■ The technical information in this online catalog provides examples of our products' typical operations and application circuits. We do not guarantee the non-infringement of third party's intellectual property rights and we do not grant any license, right, or interest in our intellectual property.

■ If any of our products, product specifications and/or technical information in this online catalog is to be exported or provided to non-residents, the laws and regulations of the exporting country, especially with regard to security and export control, shall be observed.

<Regarding the Certificate of Compliance with the EU RoHS Directive/REACH Regulations>

■ The switchover date for compliance with the RoHS Directive/REACH Regulations varies depending on the part number or series of our products.

■ When you use the inventory of our products for which it is unclear whether those products are compliant with the RoHS Directive/REACH Regulation, please select "Sales Inquiry" in the website inquiry form and contact us.

Please note that we do not owe any liability and responsibility if our products are used beyond the description of this catalog or without complying with precautions in this catalog.

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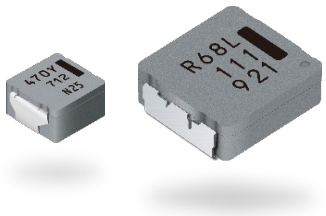
INDUSTRY

UPDATE



Power Inductors

Power Choke Coil (Automotive Grade)

PCC-M0530M, M0540M, M0630M, M0645M series

PCC-M0754M, M0750M, M0854M, M0850M series

PCC-M1054M, M1050M, M1040ML, M1050ML, M1060ML series

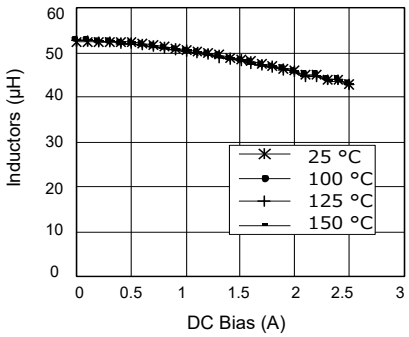
High heat resistance and high reliability using metal composite core (MC)

Industrial property : Patents 21 (Registered 2 / Pending 19)

Features

- High heat resistance
  : Operation up to 150 °C including self-heating. (180 °C short time*)
  * Please contact for possible to use over 150 ℃ condition. Temperature up to 180 ℃ may possibly be used.
- High-reliability :
  : High vibration resistance as result of newly developed integral construction; under severe reliability conditions of automotive and other strenuous applications
- High bias current
  : Excellent inductance stability using ferrous alloy magnetic material (Fig.1)
- Temp. stability
  : Excellent inductance stability over broad temp. range (Fig.1)
- Low audible (buzz) noise
  : A gapless structure achieved with metal composite core
- High efficiency
  : Low DC resistance of winding and low eddy-current loss of the core
- Shielded construction
- AEC-Q200 compliant
- RoHS compliant

(Fig.1)
Inductance v.s. DC current, Temp.
ETQP5M470YFM (reference)



Recommended applications

- Noise filter for various drive circuitry requiring high temp. operation and peak current handling capability
- Boost-Converter, Buck-Converter DC/DC

Standard packing quantity (Minimum quantity/Packing unit)

- 1,000 pcs/box (2 reel) : PCC - M0645M, M0754M, M0750M, M0854M, M0850M, M1054M, M1050M, M1040ML, M1050ML, M1060ML
- 2,000 pcs/box (2 reel) : PCC - M0530M, M0540M, M0630M

Explanation of part numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	T	Q	P		M						
Product code			Classification	Height	Winding	Inductance			Core	Suffix	Size

(Example)

Code	Inductance
4R7	4.7 μH
220	22 μH
101	100 μH

Code	Size
P	□ 5 mm
N	□ 6 mm
M	□ 7 mm
K	□ 8 mm
C	□ 10 mm

Temperature rating

Operating temperature range		Tc : -40 ℃ to +150 ℃ (Including self-temperature rise)
Storage condition	After PWB mounting	
	Before PWB mounting	Ta : -5 ℃ to +35 ℃ 85%RH max.

1. PCC-M0530M / PCC-M0540M series (ETQP3M□□□YFP / ETQP4M□□□YFP)

Standard parts

Part No.	Inductance*1		DCR (at 20 ℃) (mΩ)		Rated current (A) Typ.		Vibration resistance (G)	MSL level	Series [Size (mm)]
	L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T= 40 K*2 ( )*3	△L= –30 %*4	*5	*6	
ETQP3M2R2YFP	2.2	±20	22.6 (24.8)	±10	5.8 (4.8)	10.9	10	1	PCC-M0530M [5.5×5.0×3.0]
ETQP3M3R3YFP	3.3		31.3 (34.4)		5.0 (4.1)	8.6			
ETQP4M4R7YFP	4.6		36.0 (39.6)		4.8 (4.0)	7.7			PCC-M0540M [5.5×5.0×4.0]
ETQP4M220YFP	22.0		163.0 (179.0)		2.3 (1.9)	3.1			

*1: Measured at 100 kHz

*2: The proved current value for making the overall temperature rise of 40K, when mounted on a multi-layer board with high-heat dissipation (heat dissipation constant 5.5x5.0x3.0 mm : approx. 52 K/W, 5.5x5.0x4.0 mm : approx. 48 K/W).

*3: The proved current value for making the overall temperature rise of 40K, when mounted on a 4-layer circuit board of FR4 t=1.6 mm and DC current is applied.

*4: Saturation rated current : DC current which causes L(0) drop –30 %.

*5: Vibration resistance conditions : Amplitude: 5 mm or less, sweep speed: 1 oct / min, frequency 5-2000 Hz, 3 directions/2 hours each, total 6 hours

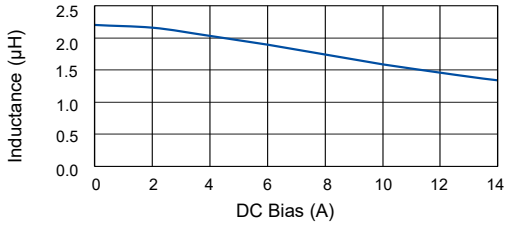
*6: The solderability is guaranteed for 1 year only. The product out of expiration date shall not be used.

◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +150°C should not be exceeded. Please contact for possible to use over 150 °C condition. Temperature up to 180 °C may possibly be used.

Performance characteristics (Reference①)

● Inductance vs DC Current

[ETQP3M2R2YFP]



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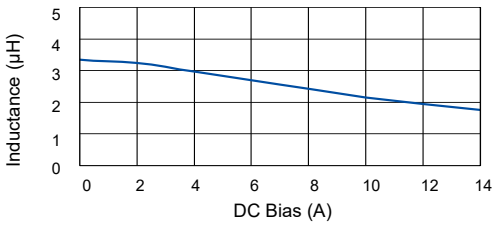

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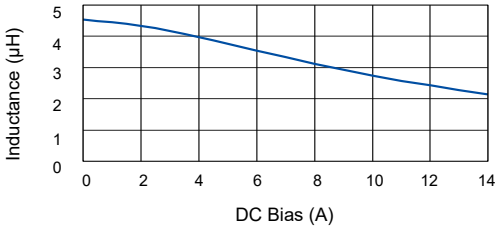

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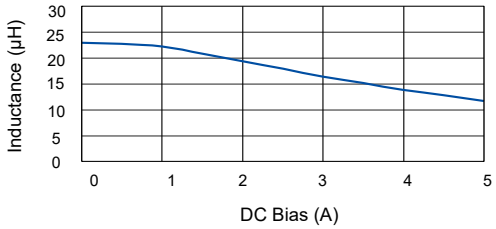


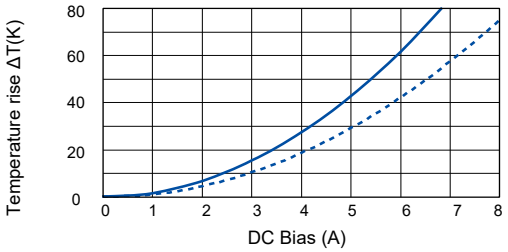
Performance characteristics (Reference②)

● Case Temperature vs DC Current

PWB condition A : Four-layer PWB (1.6 mm FR4).*3

PWB condition B : Multilayer PWB with high heat dissipation performance.*2

[ETQP3M2R2YFP]



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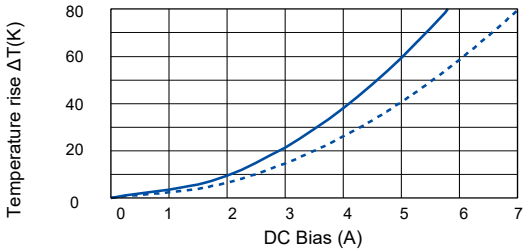

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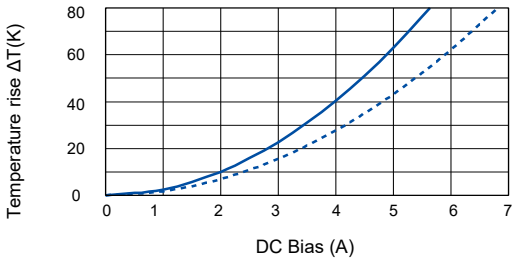

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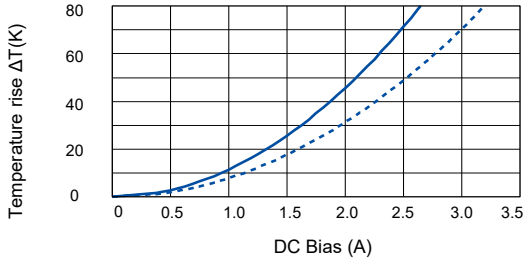


2. PCC-M0630M / PCC-M0645M series (ETQP3M□□□YFN / ETQP4M□□□YFN)

Standard parts

Part No.	Inductance*1		DCR (at 20 ℃) (mΩ)		Rated current (A) Typ.		Vibration resistance (G)	MSL level	Series [Size (mm)]
	L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T= 40 K*2 ( )*3	△L= –30 %*4	*5	*6	
ETQP3MR68YFN	0.68	±20	6.3 (6.90)	±10	12.0 (9.8)	24.0	10.0	1	PCC-M0630M [6.5×6.0×3.0]
ETQP3M1R0YFN	1.0		7.9 (8.70)		10.7 (8.8)	20.0			
NEW ETQP3M1R5YFN	1.5		11.0 (12.10)		9.1 (7.4)	16.0			
ETQP4M2R2YFN	2.2		10.4 (11.44)		10.2 (8.0)	14.4			PCC-M0645M [6.5×6.0×4.5]
ETQP4M3R3YFN	3.3		16.1 (17.71)		8.2 (6.4)	13.3			
ETQP4M6R8YFN	6.8		39.3 (43.20)		5.2 (4.1)	10.0			
ETQP4M100YFN	10.0		54.2 (59.60)		4.5 (3.5)	8.3			
ETQP4M220YFN	22.0		126.0 (138.60)		2.9 (2.3)	6.0			
ETQP4M330YFN	33.0		172.0 (189.20)		2.5 (2.0)	4.1		3	
ETQP4M470YFN	47.0		210.0 (231.00)		2.2 (1.8)	3.8		1	

*1: Measured at 100 kHz

*2: The proved current value for making the overall temperature rise of 40K, when mounted on a multi-layer board with high-heat dissipation (heat dissipation constant 6.5x6.0x3.0 mm : approx. 44 K/W, 6.5x6.0x4.5 mm : approx. 37 K/W).

*3: The proved current value for making the overall temperature rise of 40K, when mounted on a 4-layer circuit board of FR4 t=1.6 mm and DC current is applied.

*4: Saturation rated current : DC current which causes L(0) drop –30 %.

*5: Vibration resistance conditions : Amplitude: 5 mm or less, sweep speed: 1 oct / min, frequency 5-2000 Hz, 3 directions/2 hours each, total 6 hours

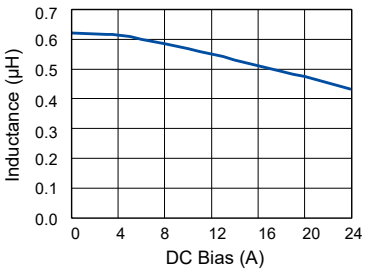
*6: The solderability is guaranteed for 1 year only. The product out of expiration date shall not be used.

◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +150°C should not be exceeded. Please contact for possible to use over 150 °C condition. Temperature up to 180 °C may possibly be used.

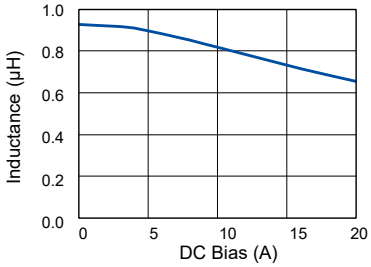
Performance characteristics (Reference①)

● Inductance vs DC Current

[ETQP3MR68YFN]



[ETQP3M1R0YFN]



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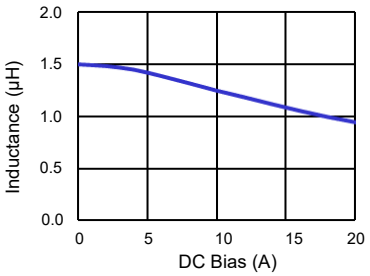

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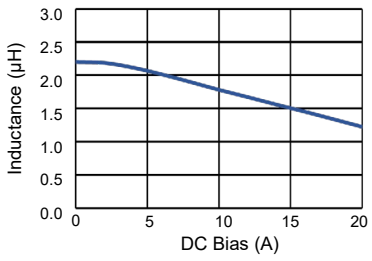

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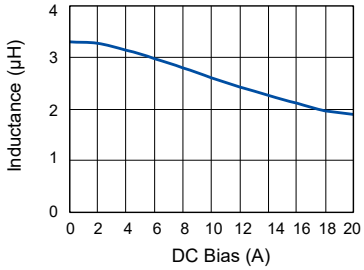

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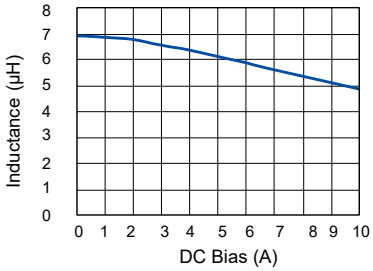

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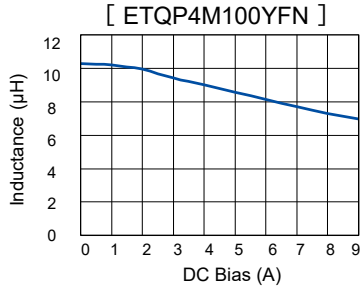

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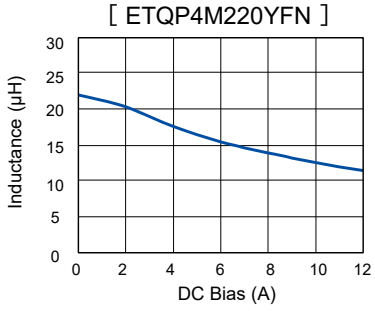
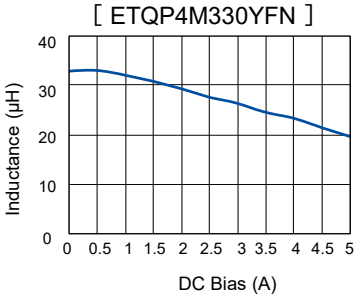
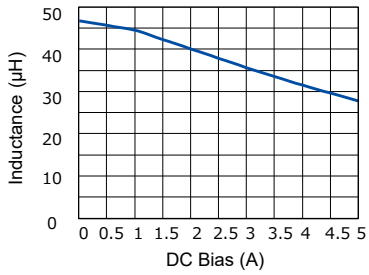


[ETQP4M330YFN]



Performance characteristics (Reference①)

[ETQP4M470YFN]



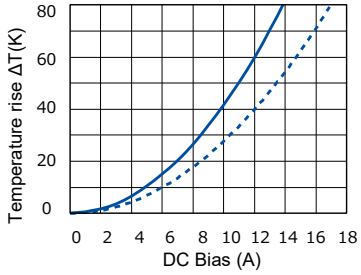
Performance characteristics (Reference②)

● Case Temperature vs DC Current

PWB condition A : Four-layer PWB (1.6 mm FR4).*3

PWB condition B : Multilayer PWB with high heat dissipation performance.*2

[ETQP3MR68YFN]



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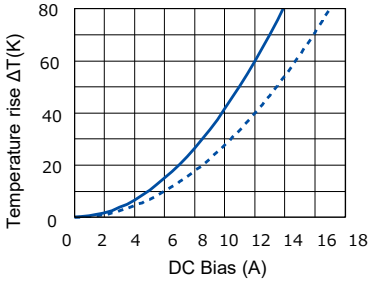

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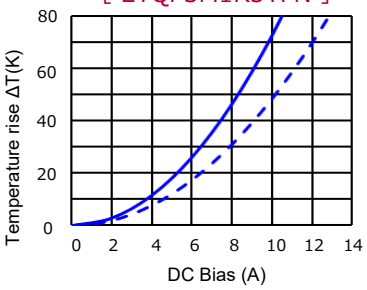

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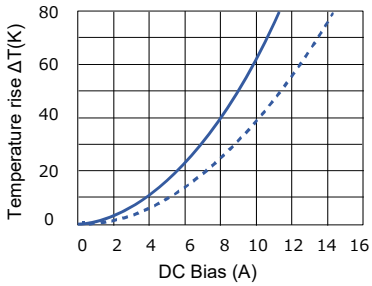

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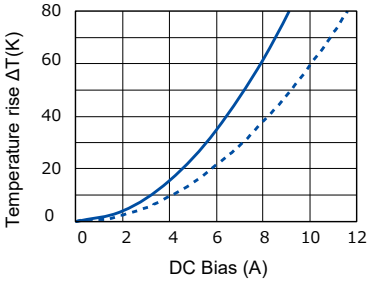
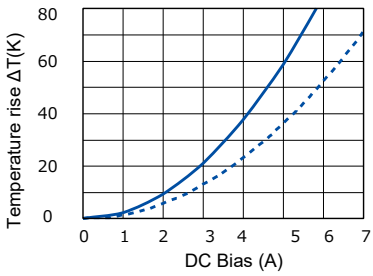


[ETQP4M6R8YFN]



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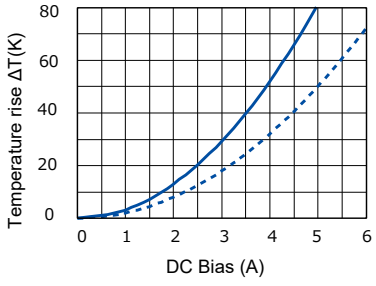

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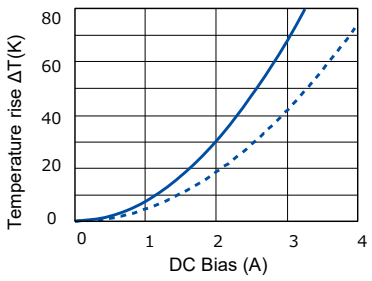

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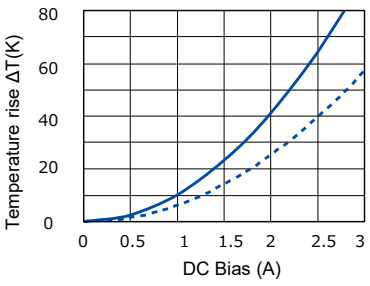

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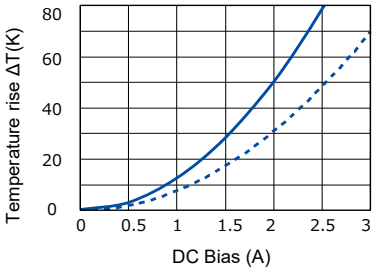


3. PCC-M0754M / PCC-M750M series (ETQP5M□□□YFM / YGM)

Standard parts

Part No.	Inductance*1		DCR (at 20 ℃) (mΩ)		Rated current (A) Typ.		Vibration resistance (G)	MSL level	Series [Size (mm)]
	L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T= 40 K*2 ( )*3	△L= –30 %*4	*5	*6	
ETQP5M3R3YFM	3.3	±20	11.9 (13.09)	±10	10.4 (8.3)	14.4	10.0	1	PCC-M0754M [7.5×7.0×5.4]
ETQP5M4R7YFM	4.7		20.4 (22.50)		8.0 (6.3)	13.1			
ETQP5M6R8YFM	6.8		26.7 (29.40)		6.9 (5.5)	12.1			
ETQP5M100YFM	10.0		37.6 (41.30)		5.7 (4.7)	10.6			
ETQP5M220YFM	22.0		92.0 (102.00)		3.7 (3.0)	5.8			
ETQP5M330YFM	33.0		120.0 (132.00)		3.3 (2.6)	4.8			
ETQP5M470YFM	48.0		156.0 (172.00)		2.9 (2.3)	4.1			
ETQP5M680YFM	68.0		251.0 (276.10)		2.3 (1.9)	3.9			
ETQP5M101YGM	95.0		348.0 (382.80)		1.9 (1.4)	3.1		3	PCC-M0750M [7.5×7.0×5.0]

*1: Measured at 100 kHz

*2: The proved current value for making the overall temperature rise of 40K, when mounted on a multi-layer board with high-heat dissipation (heat dissipation constant 7.5x7.0x5.4 mm : approx. 31 K/W, 7.5x7.0x5.0 mm : approx. 29 K/W).

*3: The proved current value for making the overall temperature rise of 40K, when mounted on a 4-layer circuit board of FR4 t=1.6 mm and DC current is applied.

*4: Saturation rated current : DC current which causes L(0) drop –30 %.

*5: Vibration resistance conditions : Amplitude: 5 mm or less, sweep speed: 1 oct / min, frequency 5-2000 Hz, 3 directions/2 hours each, total 6 hours

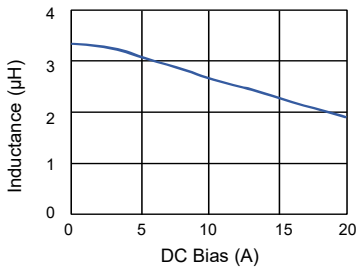
*6: The solderability is guaranteed for 1 year only. The product out of expiration date shall not be used.

◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +150°C should not be exceeded. Please contact for possible to use over 150 °C condition. Temperature up to 180 °C may possibly be used.

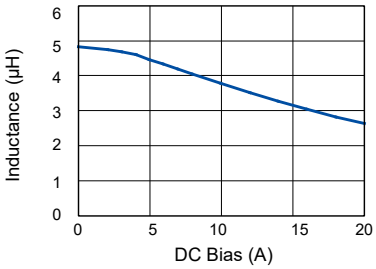
Performance characteristics (Reference①)

● Inductance vs DC Current

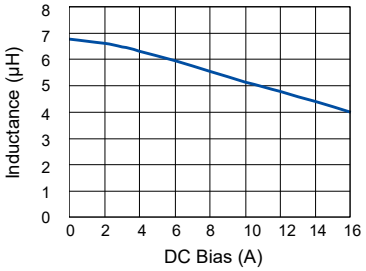
[ETQP5M3R3YFM]



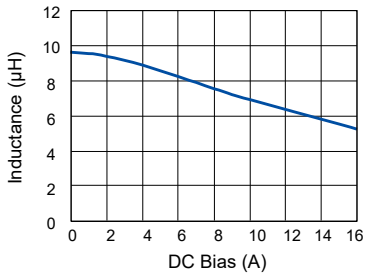
[ETQP5M4R7YFM]



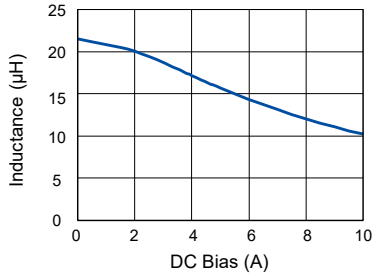
[ETQP5M6R8YFM]



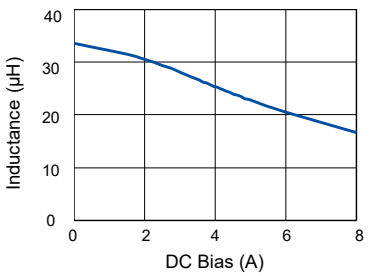
[ETQP5M100YFM]



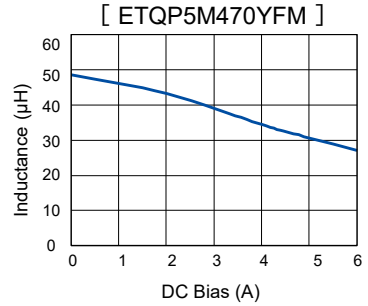
[ETQP5M220YFM]



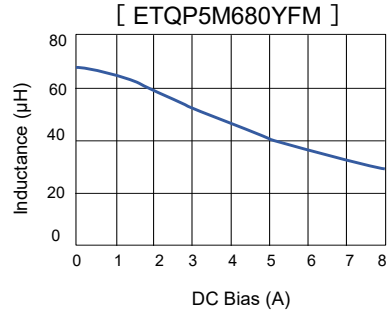
[ETQP5M330YFM]



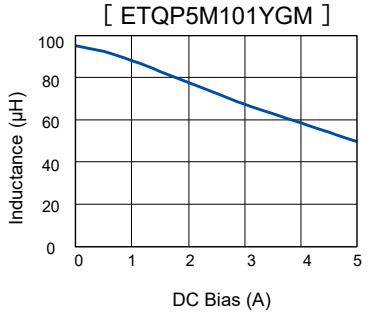
[ETQP5M470YFM]



[ETQP5M680YFM]



[ETQP5M101YGM]



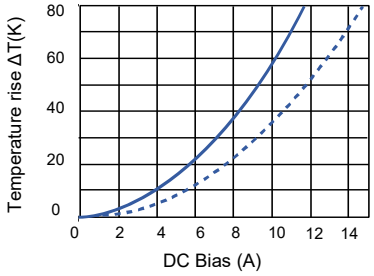
Performance characteristics (Reference②)

● Case Temperature vs DC Current

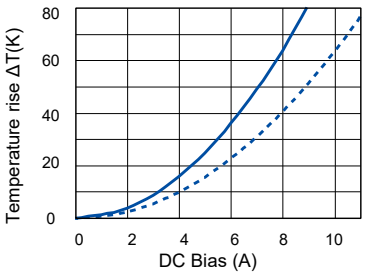
PWB condition A : Four-layer PWB (1.6 mm FR4).*3

PWB condition B : Multilayer PWB with high heat dissipation performance.*2

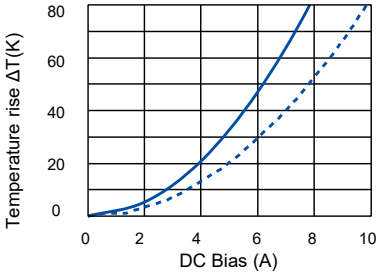
[ETQP5M3R3YFM]



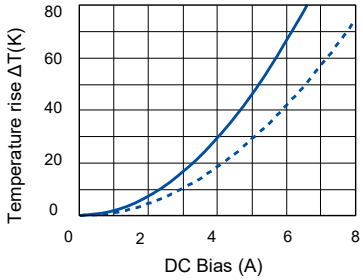
[ETQP5M4R7YFM]



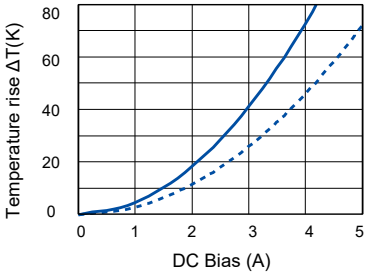
[ETQP5M6R8YFM]



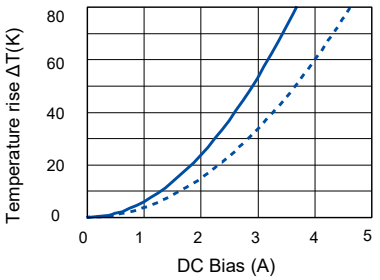
[ETQP5M100YFM]



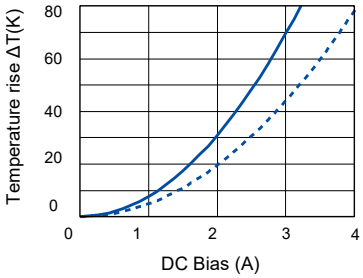
[ETQP5M220YFM]



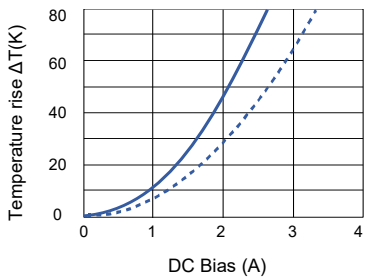
[ETQP5M330YFM]



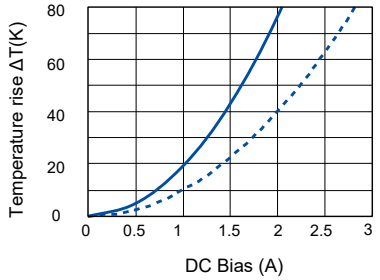
[ETQP5M470YFM]



[ETQP5M680YFM]



[ETQP5M101YGM]



4. PCC-M0854M / PCC-M0850M series (ETQP5M□□□YFK / GAK / YGK)

Standard parts

Part No.	Inductance*1		DCR (at 20 ℃) (mΩ)		Rated current (A) Typ.		Vibration resistance (G)	MSL level	Series [Size (mm)]
	L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T= 40 K*2 ( )*3	△L= –30 %*4	*5	*6	
ETQP5M2R5YFK	2.5	±20	7.6 (8.40)	±10	14.0 (11.9)	20.1	10.0	1	PCC-M0854M [8.5×8.0×5.4]
ETQP5M3R3YFK	3.3		9.5 (10.45)		12.5 (10.7)	17.9			
ETQP5M100YFK	10.0		33.4 (36.80)		6.7 (5.7)	13.0			
ETQP5M150YFK	15.0		48.2 (53.10)		5.5 (4.7)	7.2			
ETQP5M220YFK	22.0		63.0 (70.00)		4.8 (4.1)	6.9			
ETQP5M470YFK	48.0		125.0 (138.00)		3.4 (2.9)	5.4			
NEW ETQP5M100GAK	10.0		31.5 (34.65)		6.9 (5.9)	11.1			
ETQP5M101YGK	100.0		302.0 (333.00)		2.1 (1.7)	3.0		3	PCC-M0850M [8.5×8.0×5.0]

*1: Measured at 100 kHz

*2: The proved current value for making the overall temperature rise of 40K, when mounted on a multi-layer board with high-heat dissipation (heat dissipation constant 8.5x8.0x5.4 mm : approx. 27 K/W, 8.5x8.0x5.0 mm : approx. 29 K/W).

*3: The proved current value for making the overall temperature rise of 40K, when mounted on a 4-layer circuit board of FR4 t=1.6 mm and DC current is applied.

*4: Saturation rated current : DC current which causes L(0) drop –30 %.

*5: Vibration resistance conditions : Amplitude: 5 mm or less, sweep speed: 1 oct / min, frequency 5-2000 Hz, 3 directions/2 hours each, total 6 hours

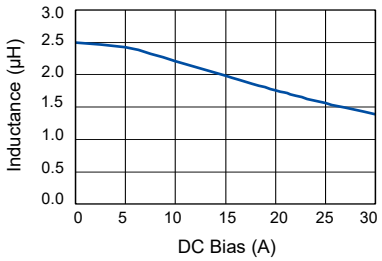
*6: The solderability is guaranteed for 1 year only. The product out of expiration date shall not be used.

◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +150°C should not be exceeded. Please contact for possible to use over 150 °C condition. Temperature up to 180 °C may possibly be used.

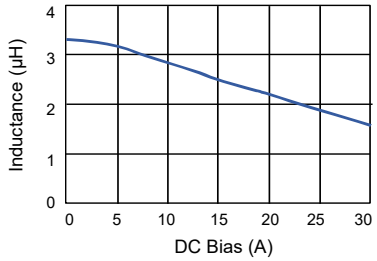
Performance characteristics (Reference①)

● Inductance vs DC Current

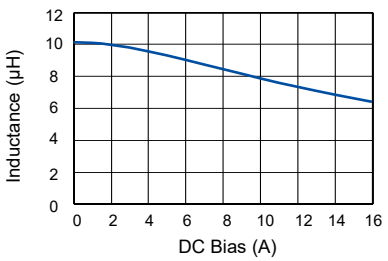
[ETQP5M2R5YFK]



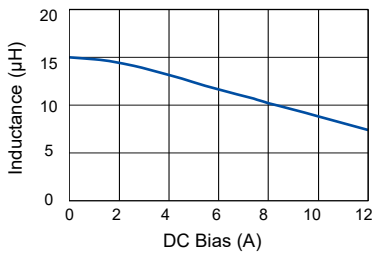
[ETQP5M3R3YFK]



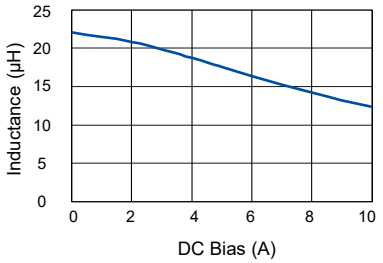
[ETQP5M100YFK]



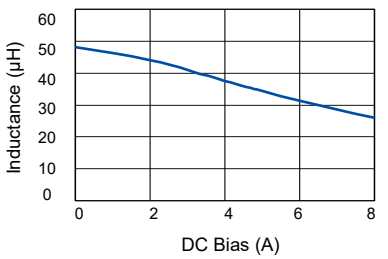
[ETQP5M150YFK]



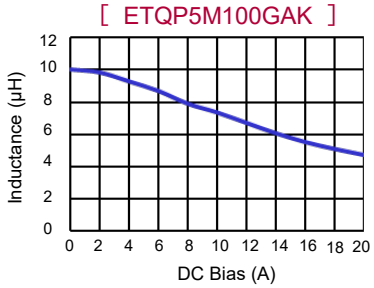
[ETQP5M220YFK]



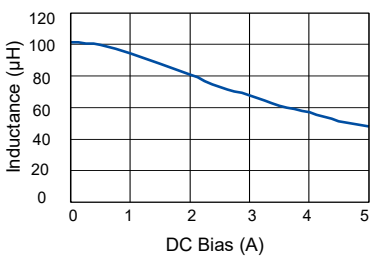
[ETQ5M470YFK]



[ETQP5M100GAK]



[ETQP5M101YGK]



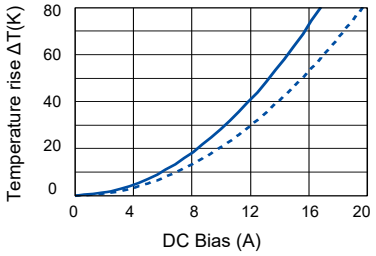
Performance characteristics (Reference②)

● Case Temperature vs DC Current

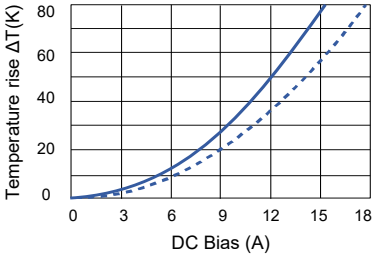
PWB condition A : Four-layer PWB (1.6 mm FR4).*3

PWB condition B : Multilayer PWB with high heat dissipation performance.*2

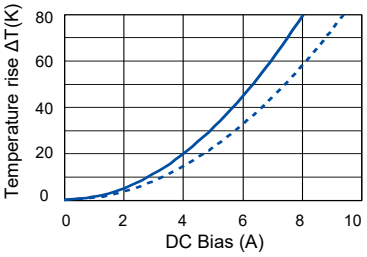
[ETQP5M2R5YFK]



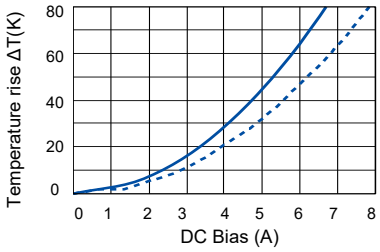
[ETQP5M3R3YFK]



[ETQP5M100YFK]



[ETQP5M150YFK]



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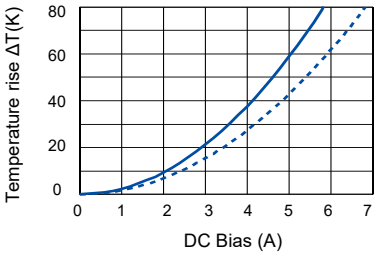

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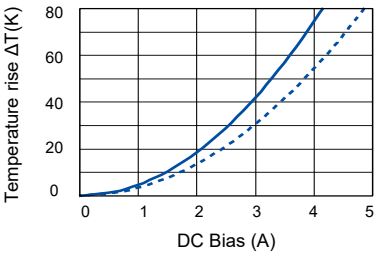
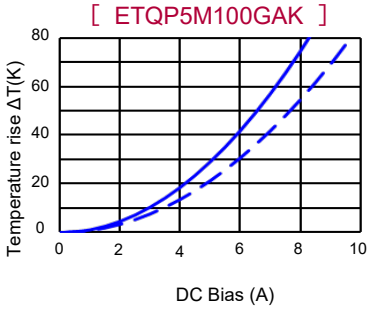
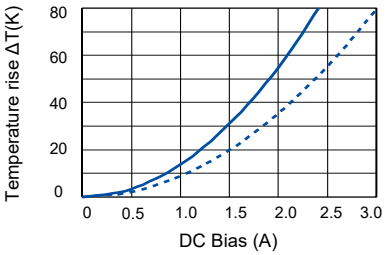


[ETQP5M100GAK]



[ETQP5M101YGK]



5. PCC-M1054M / PCC-M1050M series (ETQP5M□□□YFC / YGC)

Standard parts

Part No.	Inductance*1		DCR (at 20 ℃) (mΩ)		Rated current (A) Typ.		Vibration resistance (G)	MSL level	Series [Size (mm)]
	L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T= 40 K*2 ( )*3	△L= –30 %*4	*5	*6	
ETQP5M1R5YFC	1.5	±20	3.8 (4.20)	±10	21.4 (17.9)	35.1	10.0	1	PCC-M1054M [10.7×10.0×5.4]
ETQP5M2R5YFC	2.5		5.3 (5.90)		18.1 (15.1)	27.2			
ETQP5M3R3YFC	3.3		7.1 (7.90)		15.7 (13.1)	22.7			
ETQP5M4R7YFC	4.7		10.2 (11.30)		13.1 (10.9)	20.0			
ETQP5M100YFC	10.0		23.8 (26.20)		8.5 (7.1)	10.7			
ETQP5M150YFC	15.0		35.6 (39.16)		7.0 (5.8)	12.0			
ETQP5M220YFC	22.0		45.0 (50.00)		6.2 (5.2)	8.8			
ETQP5M330YFC	33.0		68.5 (75.40)		5.0 (4.2)	7.6			
ETQP5M470YFC	47.0		99.0 (108.90)		4.2 (3.5)	6.8			
ETQP5M680YFC	66.0		136.0 (149.60)		3.6 (3.0)	4.9			
ETQP5M3R3YGC	3.3		7.1 (7.81)		14.7 (11.8)	23.4			PCC-M1050M [10.7×10.0×5.0]
NEW ETQP5M820YGC	82.0		194.0 (213.4)		2.8 (2.2)	4.3		3	
ETQP5M101YGC	97.0		208.0 (229.00)		2.7 (2.2)	3.0			

*1: Measured at 100 kHz

*2: The proved current value for making the overall temperature rise of 40K, when mounted on a multi-layer board with high-heat dissipation (heat dissipation constant 10.7x10.0x5.4 mm : approx. 23 K/W, 10.7x10.0x5.0 mm : approx. 26 K/W).

*3: The proved current value for making the overall temperature rise of 40K, when mounted on a 4-layer circuit board of FR4 t=1.6 mm and DC current is applied.

*4: Saturation rated current : DC current which causes L(0) drop –30 %.

*5: Vibration resistance conditions : Amplitude: 5 mm or less, sweep speed: 1 oct / min, frequency 5-2000 Hz, 3 directions/2 hours each, total 6 hours

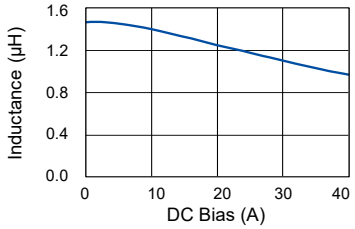
*6: The solderability is guaranteed for 1 year only. The product out of expiration date shall not be used.

◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +150°C should not be exceeded. Please contact for possible to use over 150 °C condition. Temperature up to 180 °C may possibly be used.

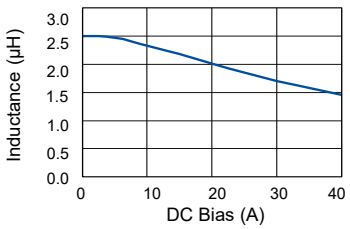
Performance characteristics (Reference①)

● Inductance vs DC Current

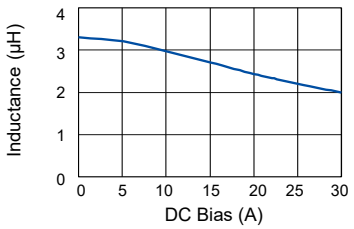
[ETQP5M1R5YFC]



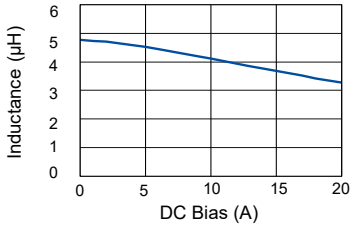
[ETQP5M2R5YFC]



[ETQP5M3R3YFC]



[ETQP5M4R7YFC]



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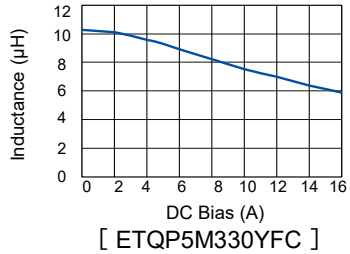

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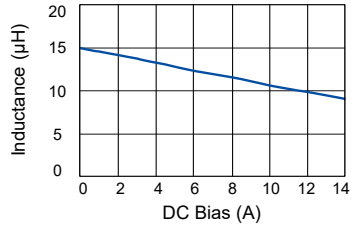
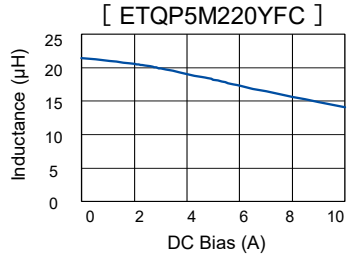
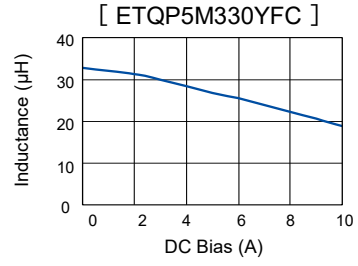


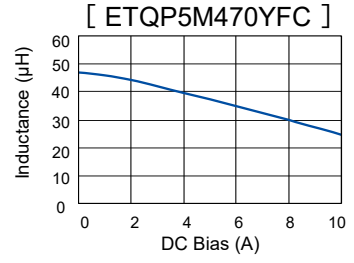
[ETQP5M220YFC]



[ETQP5M330YFC]

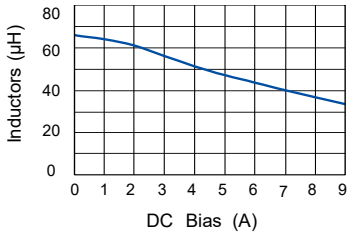


[ETQP5M470YFC]

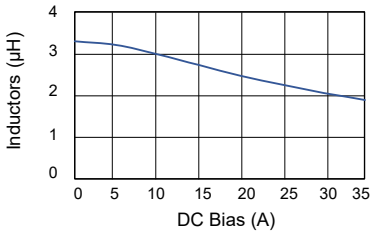


Performance characteristics (Reference①)

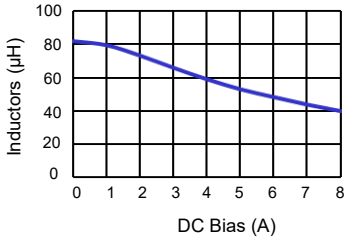
[ETQP5M680YFC]



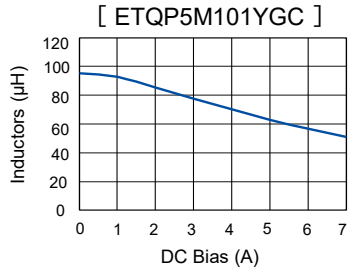
[ETQP5M3R3YGC]



[ETQP5M820YGC]



[ETQP5M101YGC]



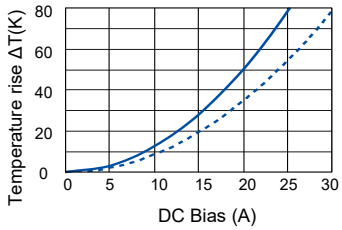
Performance characteristics (Reference②)

● Case Temperature vs DC Current

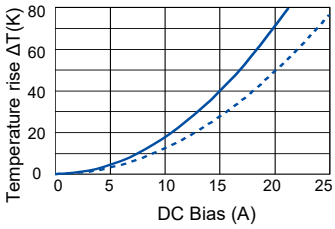
PWB condition A : Four-layer PWB (1.6 mm FR4).*3

PWB condition B : Multilayer PWB with high heat dissipation performance.*2

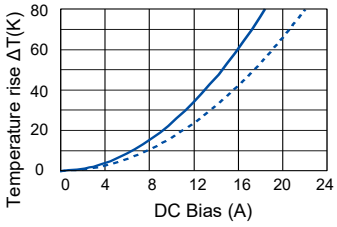
[ETQP5M1R5YFC]



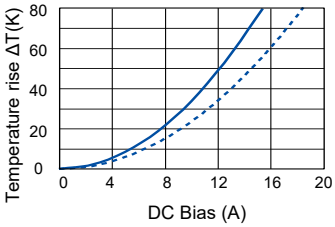
[ETQP5M2R5YFC]



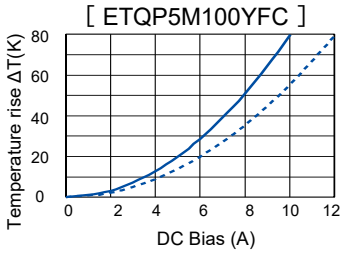
[ETQP5M3R3YFC]



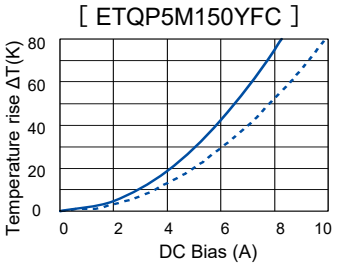
[ETQP5M4R7YFC]



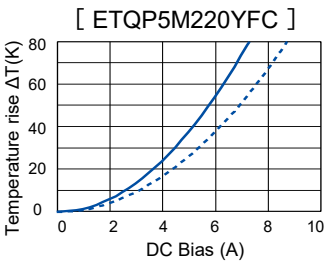
[ETQP5M100YFC]



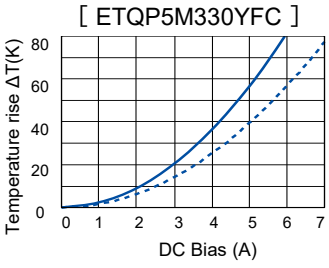
[ETQP5M150YFC]



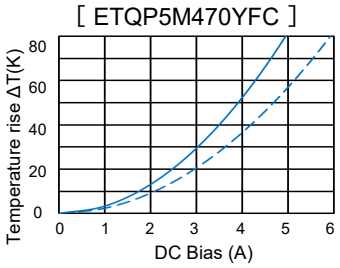
[ETQP5M220YFC]



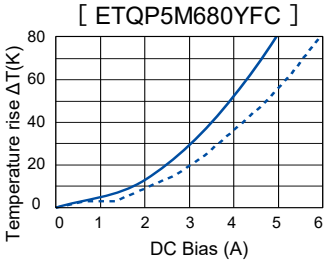
[ETQP5M330YFC]



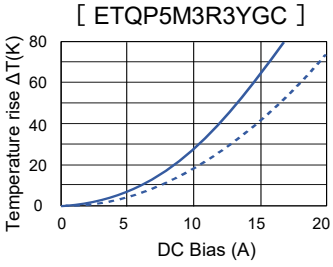
[ETQP5M470YFC]



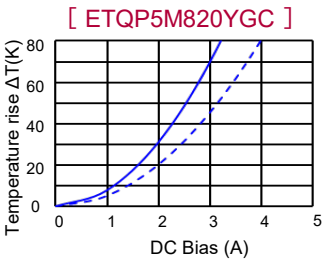
[ETQP5M680YFC]



[ETQP5M3R3YGC]



[ETQP5M820YGC]



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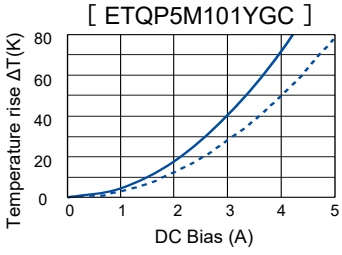


6. PCC-M1040ML / PCC-M1050ML / PCC-M1060ML series (ETQP4M□□□KLC / ETQP5M□□□YLC / ETQP6M□□□YLC / KLC)

Standard parts

Part No.	Inductance*1		DCR (at 20 ℃) (mΩ)		Rated current (A) Typ.		Vibration resistance (G)	MSL level	Series [Size (mm)]
	L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T= 40 K*2 ( )*3	△L= –30 %*4	*5	*6	
ETQP4MR47KLC	0.47	±20	1.53 (1.68)	±10	31.1 (24.9)	47.3	10.0	1	PCC-M1040ML [10.9×10.0×4.0]
ETQP5MR33YLC	0.33		1.1 (1.21)		39.7 (33.2)	56.7			PCC-M1050ML [10.9×10.0×5.0]
ETQP5MR68YLC	0.68		1.75 (1.93)		31.5 (26.3)	40.0			
ETQP5M1R0YLC	1.0		2.3 (2.53)		27.5 (23.0)	37.8			
ETQP5M2R0YLC	2.0		4.6 (5.06)		19.4 (16.2)	31.3			
ETQP6M1R5YLC	1.5		3.2 (3.52)		23.3 (19.5)	32.0			PCC-M1060ML [10.9×10.0×6.0]
ETQP6M2R5YLC	2.5		4.55 (5.00)		19.6 (16.3)	25.8			
ETQP6M3R3YLC	3.3		6.0 (6.60)		17.0 (14.2)	26.3			
ETQP6M4R7YLC	4.7		8.7 (9.57)		14.1 (11.8)	22.5			
ETQP6M150KLC	14.0		28.0 (30.80)		7.9(6.5)	11.2			

*1: Measured at 100 kHz

*2: The proved current value for making the overall temperature rise of 40K, when mounted on a multi-layer board with high-heat dissipation (heat dissipation constant 10.9x10.0x5.0 mm : approx. 23 K/W, 10.9x10.0x6.0 mm : approx. 23 K/W).

*3: The proved current value for making the overall temperature rise of 40K, when mounted on a 4-layer circuit board of FR4 t=1.6 mm and DC current is applied.

*4: Saturation rated current : DC current which causes L(0) drop –30 %.

*5: Vibration resistance conditions : Amplitude: 5 mm or less, sweep speed: 1 oct / min, frequency 5-2000 Hz, 3 directions/2 hours each, total 6 hours

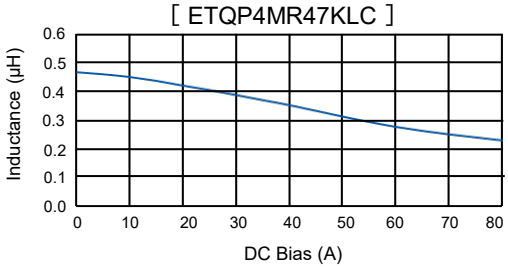
*6: The solderability is guaranteed for 1 year only. The product out of expiration date shall not be used.

◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +150°C should not be exceeded. Please contact for possible to use over 150 °C condition. Temperature up to 180 °C may possibly be used.

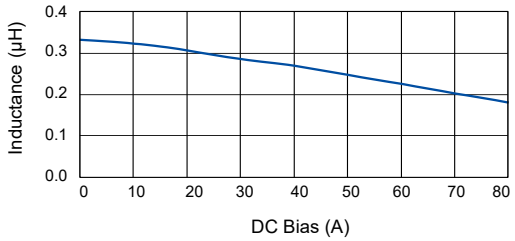
Performance characteristics (Reference①)

● Inductance vs DC Current

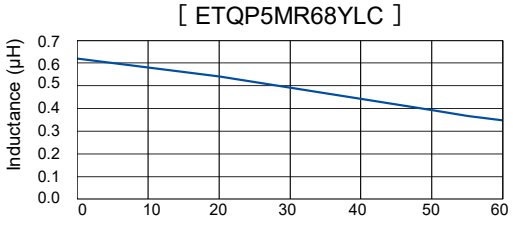
[ETQP4MR47KLC]



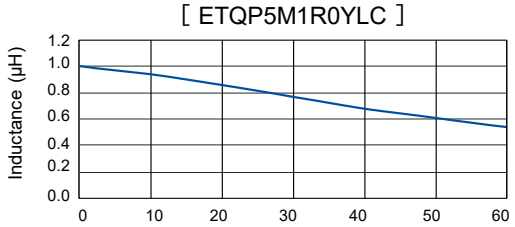
[ETQP5MR33YLC]



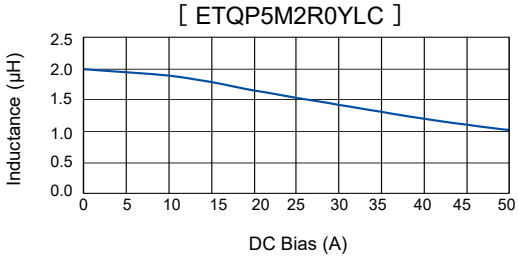
[ETQP5MR68YLC]



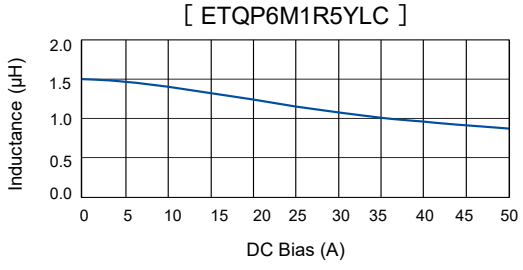
[ETQP5M1R0YLC]



[ETQP5M2R0YLC]

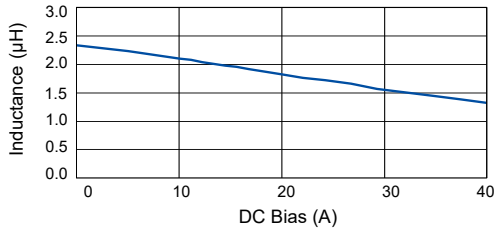


[ETQP6M1R5YLC]

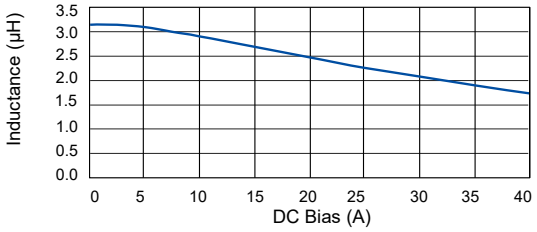


Performance characteristics (Reference①)

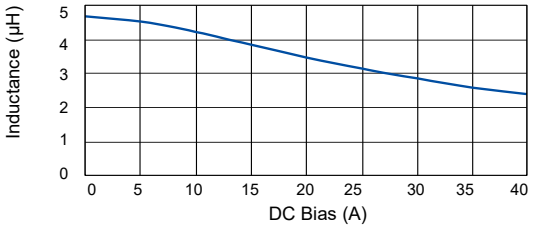
[ETQP6M2R5YLC]



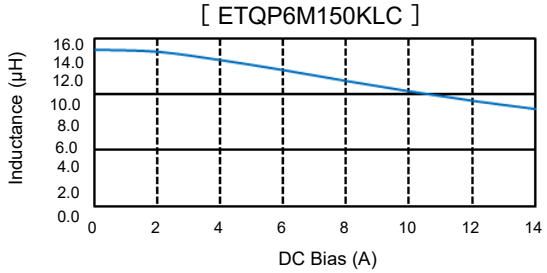
[ETQP6M3R3YLC]



[ETQP6M4R7YLC]



[ETQP6M150KLC]



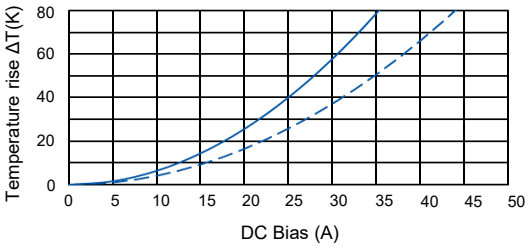
Performance characteristics (Reference②)

● Case Temperature vs DC Current

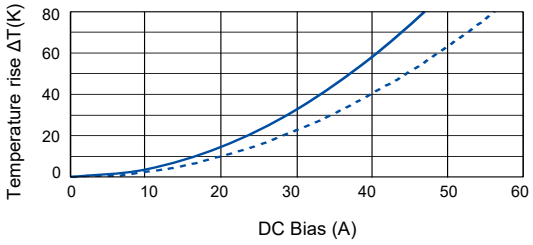
PWB condition A : Four-layer PWB (1.6 mm FR4).*3

PWB condition B : Multilayer PWB with high heat dissipation performance.*2

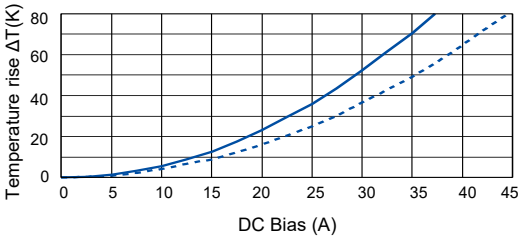
[ETQP4MR47KLC]



[ETQP5MR33YLC]



[ETQP5MR68YLC]



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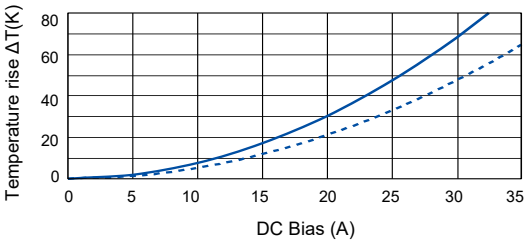
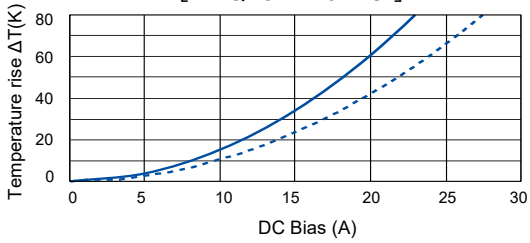
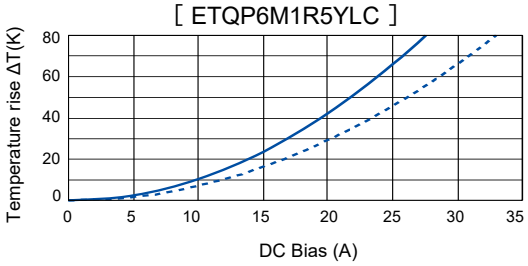


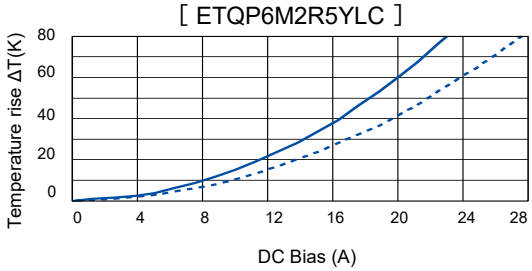
[ETQP5M2R0YLC]



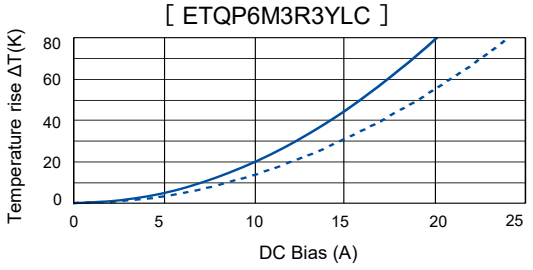
[ETQP6M1R5YLC]



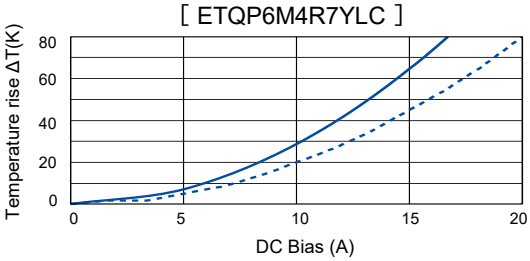
[ETQP6M2R5YLC]



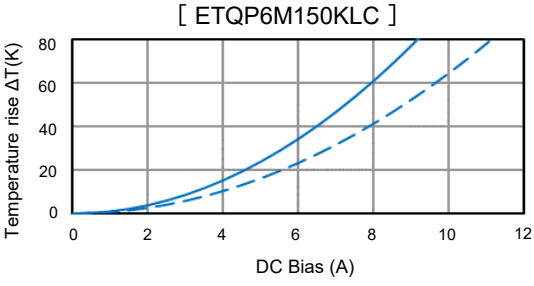
[ETQP6M3R3YLC]



[ETQP6M4R7YLC]



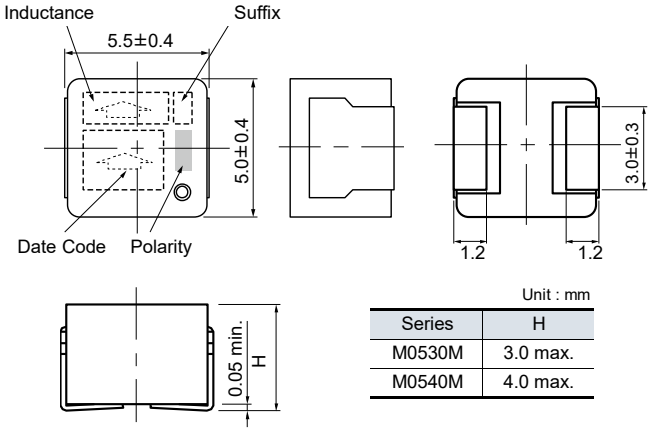
[ETQP6M150KLC]



Dimensions in mm (not to scale)

Dimensional tolerance unless noted : ±0.5

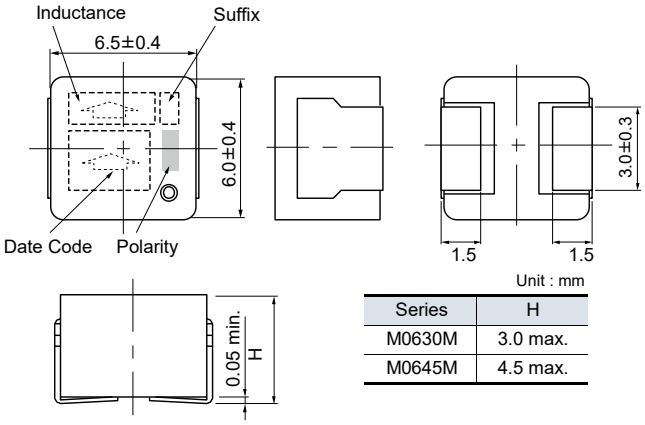
Series PCC-M0530M
Series PCC-M0540M
(ETQP3M□□□YFP/ETQP4M□□□YFP)



Unit : mm

Series	H
M0530M	3.0 max.
M0540M	4.0 max.

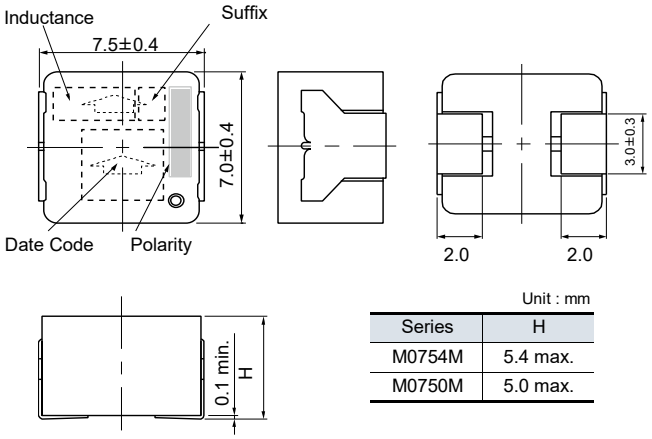
Series PCC-M0630M
Series PCC-M0645M
(ETQP3M□□□YFN/ETQP4M□□□YFN)



Unit : mm

Series	H
M0630M	3.0 max.
M0645M	4.5 max.

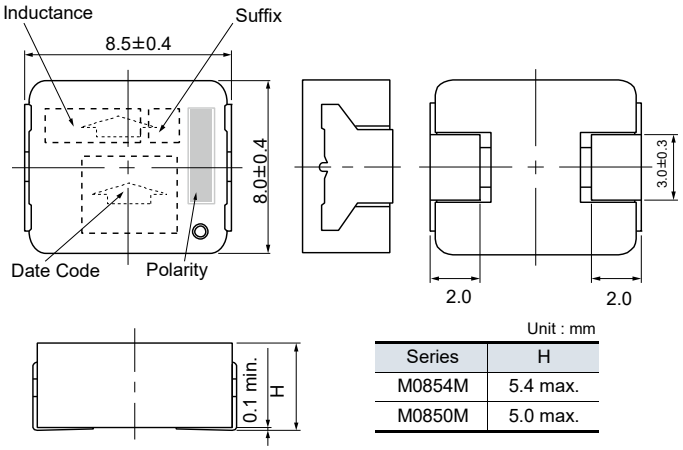
Series PCC-M0754M
Series PCC-M0750M
(ETQP5M□□□YFM/YGM)



Unit : mm

Series	H
M0754M	5.4 max.
M0750M	5.0 max.

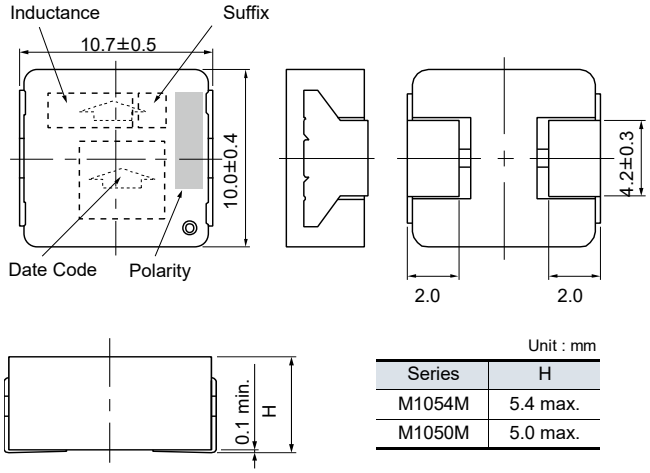
Series PCC-M0854M
Series PCC-M0850M
(ETQP5M□□□YFK/GAK/YGK)



Unit : mm

Series	H
M0854M	5.4 max.
M0850M	5.0 max.

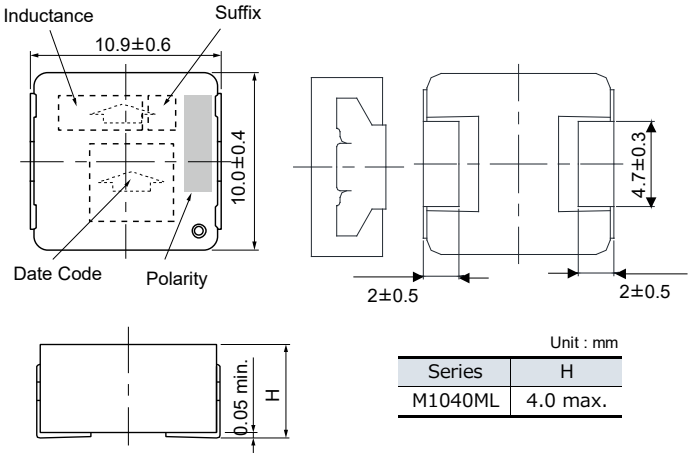
Series PCC-M1054M
Series PCC-M1050M
(ETQP5M□□□YFC/YGC)



Unit : mm

Series	H
M1054M	5.4 max.
M1050M	5.0 max.

Series PCC-M1040ML
(ETQP4M□□□KLC)



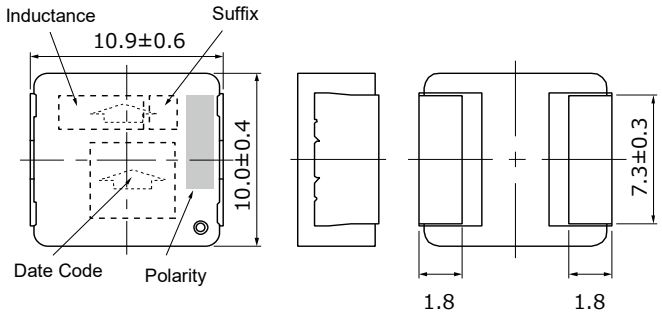
Unit : mm

Series	H
M1040ML	4.0 max.

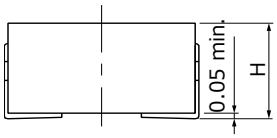
Dimensions in mm (not to scale)

Dimensional tolerance unless noted : ±0.5

Series PCC-M1050ML
Series PCC-M1060ML
(ETQP5M□□□YLC/ETQP6M□□□YLC/KLC)



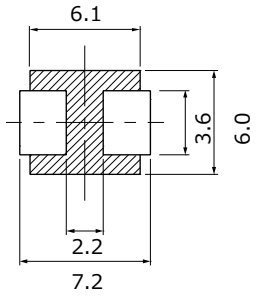
Series	H
M1050ML	5.0 max.
M1060ML	6.0 max.



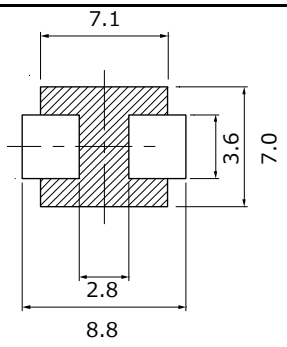
Recommended land pattern in mm (not to scale)

Dimensional tolerance unless noted : ±0.5

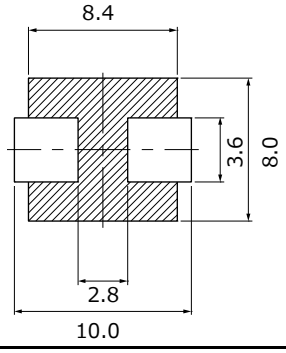
Series PCC-M0530M
Series PCC-M0540M
(ETQP3M□□□YFP/ETQP4M□□□YFP)



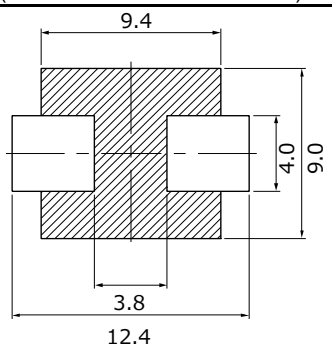
Series PCC-M0630M
Series PCC-M0645M
(ETQP3M□□□YFN/ETQP4M□□□YFN)



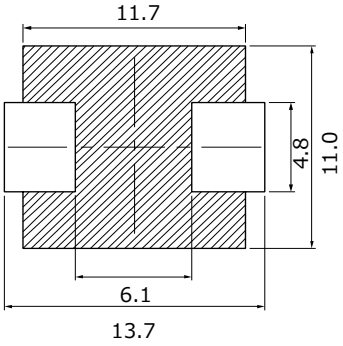
Series PCC-M0754M
Series PCC-M0750M
(ETQP5M□□□YFM/YGM)



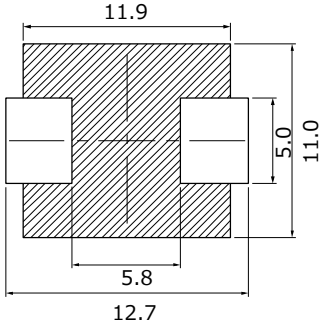
Series PCC-M0854M
Series PCC-M0850M
(ETQP5M□□□YFK/GAK/YGK)



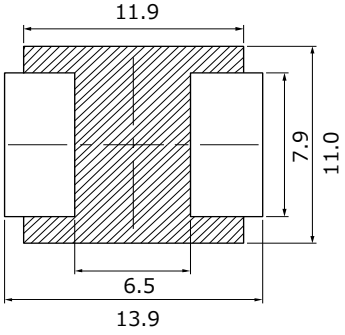
Series PCC-M1054M
Series PCC-M1050M
(ETQP5M□□□YFC/YGC)



Series PCC-M1040ML
(ETQP4M□□□KLC)



Series PCC-M1050ML
Series PCC-M1060ML
(ETQP5M□□□YLC/ETQP6M□□□YLC/KLC)



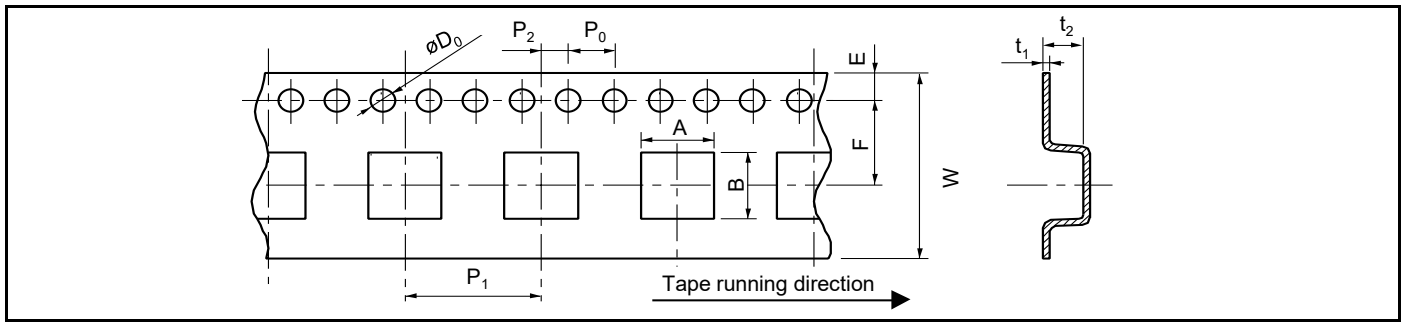
※Don't wire on the pattern on shaded portion the PWB.

Unit : mm

■ **As for soldering conditions and safety precautions (Power choke coils (Automotive grade)), please see data files**

Packaging methods (Taping)

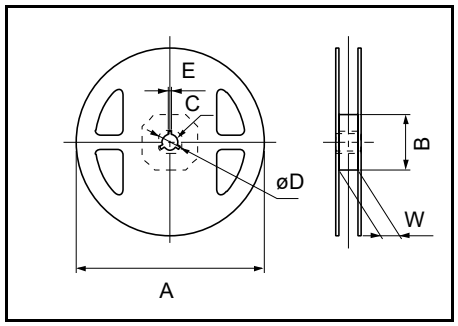
● Embossed carrier tape



Unit : mm

Series	A	B	W	E	F	P_1	P_2	P_0	$øD_0$	t_1	t_2
PCC-M0530M	5.6	6.1	16.0	1.75	7.5	12.0	2.0	4.0	1.5	0.4	3.3
PCC-M0540M											4.3
PCC-M0630M	7.1	6.6									3.3
PCC-M0645M											5.0
PCC-M0754M/M0750M	8.1	7.6									6.0
PCC-M0854M/M0850M	9.1	8.6									
PCC-M1054M/M1050M	10.65	11.75	24.0		11.5	16.0				0.5	6.35
PCC-M1040ML/M1050ML/M1060ML											

● Taping reel

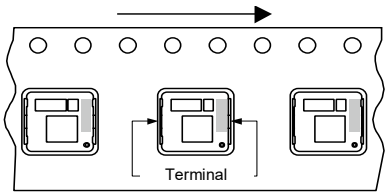


Unit : mm

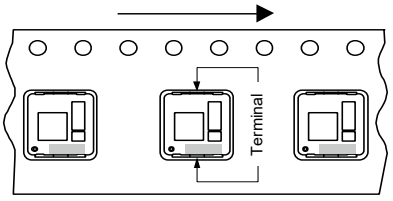
Serise	A	B	C	øD	E	W
PCC-M0530M/M0540M	330	100	13	21	2	17.5
PCC-M0630M/M0645M						
PCC-M0754M/M0750M						
PCC-M0854M/M0850M						
PCC-M1054M/M1050M						25.5
PCC-M1040ML/M1050ML/M1060ML						

Parts mounting (Taping)

Serise
M0630M/M0645M
M0754M/M0750M
M0854M/M0850M



Serise
M0530M/M0540M
M1054M/M1050M
M1040ML/M1050ML
M1060ML



Standard packing quantity / Reel

Serise	Part No.	Minimum quantity / Packing unit	Quantity per reel
PCC-M0530M	ETQP3M□□□YFP	2,000 pcs / box (2 reel)	1,000 pcs
PCC-M0540M	ETQP4M□□□YFP		
PCC-M0630M	ETQP3M□□□YFN		
PCC-M0645M	ETQP4M□□□YFN	1,000 pcs / box (2 reel)	500 pcs
PCC-M0754M	ETQP5M□□□YFM		
PCC-M0750M	ETQP5M□□□YGM		
PCC-M0854M	ETQP5M□□□YFK/GAK		
PCC-M0850M	ETQP5M□□□YGK		
PCC-M1054M	ETQP5M□□□YFC		
PCC-M1050M	ETQP5M□□□YGC		
PCC-M1040ML	ETQP4M□□□KLC		
PCC-M1050ML	ETQP5M□□□YLC		
PCC-M1060ML	ETQP6M□□□YLC/KLC		

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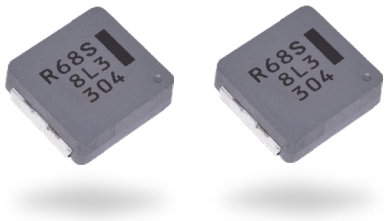
Power Inductors

Power Choke Coil (Automotive Grade)

PCC-M0854MS series

PCC-M1050MS series



High heat resistance and high reliability using metal composite core (MC)

Industrial property : Patents 18 (Registered 10 / Pending 8)

Features

- The vibration-resistant structure achieves a vibration acceleration-resistance of 50 G or higher in 150 ℃ environments
- Reduce core loss in high frequency band (More than 2 MHz)
- High heat resistance : Operation up to 150 °C including self-heating. (180 °C short time*)
  * Please contact for possible to use over 150 °C condition. Temperature up to 180 °C may possibly be used.
- SMD type
- High-reliability : High vibration resistance as result of newly developed integral construction; under severe reliability conditions of automotive and other strenuous applications
- High bias current : Excellent inductance stability using ferrous alloy magnetic material
- Temp. stability : Excellent inductance stability over broad temp. range
- Low audible (buzz) noise : A gapless structure achieved with metal composite core
- High efficiency : Low DC resistance of winding and low eddy-current loss of the core
- Shielded construction
- AEC-Q200 compliant
- RoHS compliant

Recommended applications

- ECU placed in the engine itself, mechanical-electrical-integrated ECU
- Noise filter for various drive circuitry requiring high temp. operation and peak current handling capability
- Boost-Converter, Buck-Converter DC/DC

Standard packing quantity (Minimum quantity/Packing unit)

- 1,000 pcs/box (2 reel)

Temperature rating

1	2	3	4	5	6	7	8	9	10	11	12
E	T	Q	P		M				Y	S	
Product code			Classification	Height	Winding	Inductance			Core	Suffix	Size

Code	Inductance
R68	0.68 μH

Code	Size
K	□ 8 mm
C	□ 10 mm

Temperature rating

Operating temperature range		Tc : -40 ℃ to +150 ℃ (Including self-temperature rise)
Storage condition	After PWB mounting	
	Before PWB mounting	Ta : -5 ℃ to +35 ℃ 85%RH max.

Standard parts

Part No.	Inductance*1		DCR (at 20 ℃) (mΩ)		Rated current (A) Typ.		Vibration resistance (G)	MSL level	Series [Size (mm)]
	L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T= 40 K*2 ( )*3	△L= –30 %*4	*5	*6	
ETQP5M2R5YSK	2.45	±20	7.4 (8.14)	±10	14.1 (12.0)	21.7	50.0	1	PCC-M0854MS [8.5×8.0×5.4]
ETQP5MR68YSC	0.68		1.66 (1.83)		32.3 (27.0)	40.0			PCC-M1050MS [10.9×10.0×5.0]
ETQP5M2R0YSC	1.90		4.45 (4.90)		19.8 (16.5)	29.8			
▲ETQP5M220YSC	20.00		45.50 (50.05)		6.2 (5.2)	7.9			PCC-M1056MS [10.9×10.0×5.6]
▲ETQP5M470YSC	44.00		102.00 (112.20)		4.1 (3.4)	5.6	30.0		PCC-M1054MS [10.9×10.0×5.4]
▲ETQP6M2R5YSC	2.50		4.48 (4.93)		19.7 (16.4)	23.7	50.0		PCC-M1060MS [10.9×10.0×6.0]

*1: Measured at 100 kHz

▲ Under development

*2: The proved current value for making the overall temperature rise of 40K, when mounted on a multi-layer board with high-heat dissipation (heat dissipation constant 8.5x8.0x5.4 mm : approx. 30 K/W, 10.9x10.0x5.0 mm : approx. 20 K/W).

*3: The proved current value for making the overall temperature rise of 40K, when mounted on a 4-layer circuit board of FR4 t=1.6 mm and DC current is applied.

*4: Saturation rated current : DC current which causes L(0) drop –30 %.

*5: Vibration resistance conditions : Amplitude: 5 mm or less, sweep speed: 1 oct / min, frequency 5-2000 Hz, 3 directions/2 hours each, total 6 hours

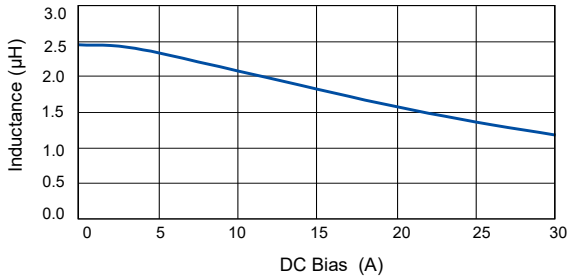
*6: The solderability is guaranteed for 1 year only. The product out of expiration date shall not be used.

◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +150°C should not be exceeded. Please contact for possible to use over 150 °C condition. Temperature up to 180 °C may possibly be used.

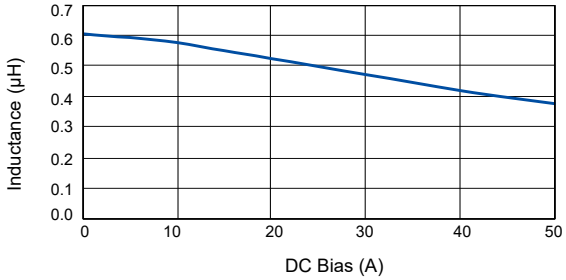
Performance characteristics (Reference①)

● Inductance vs DC Current

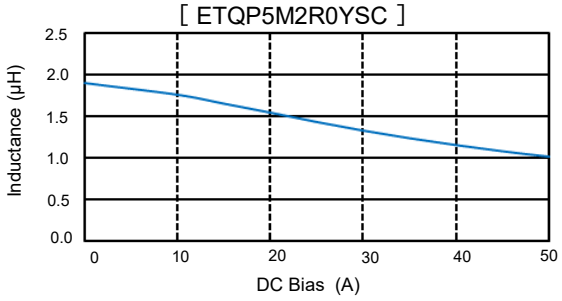
[ETQP5M2R5YSK]



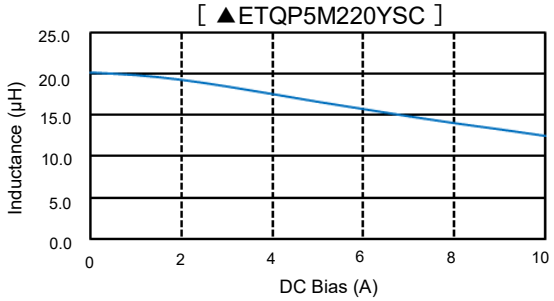
[ETQP5MR68YSC]



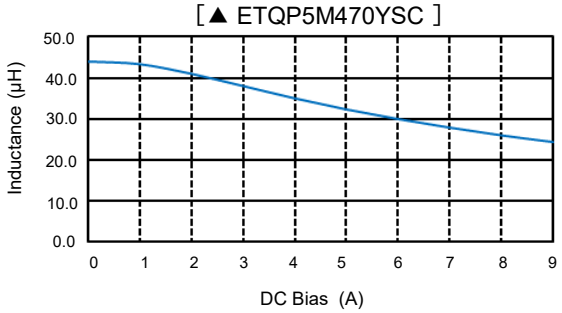
[ETQP5M2R0YSC]



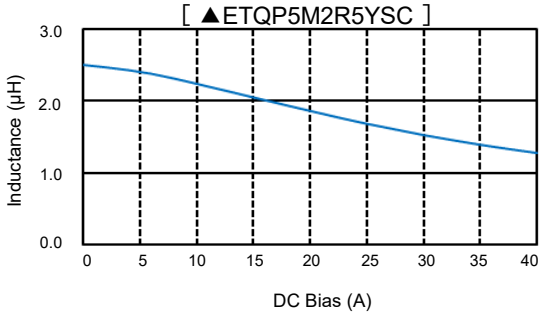
[▲ETQP5M220YSC]



[▲ ETQP5M470YSC]



[▲ETQP5M2R5YSC]



▲ Under development

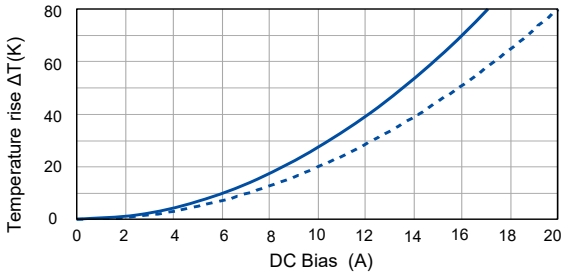
Performance characteristics (Reference②)

● Case Temperature vs DC Current

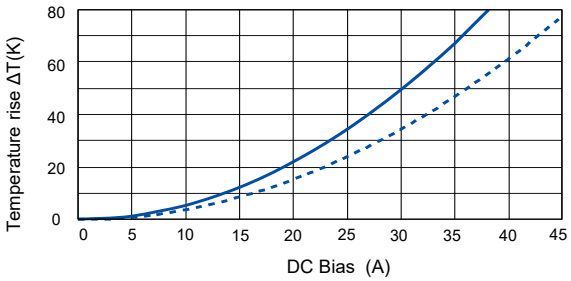
PWB condition A : Four-layer PWB (1.6 mm FR4), See also ✻2

PWB condition B : Multilayer PWB with high heat dissipation performance. See also ✻3

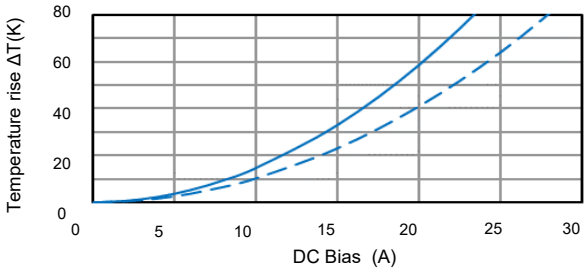
[ETQP5M2R5YSK]



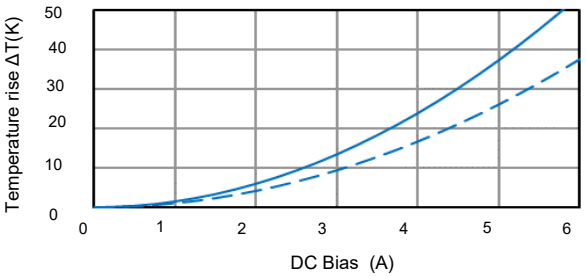
[ETQP5MR68YSC]



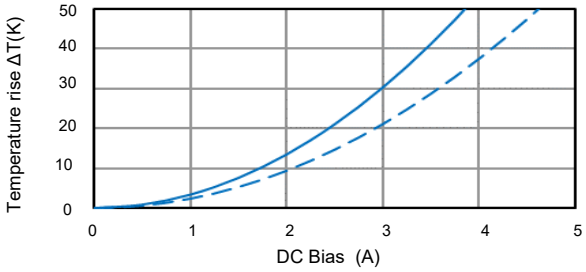
[ETQP5M2R0YSC]



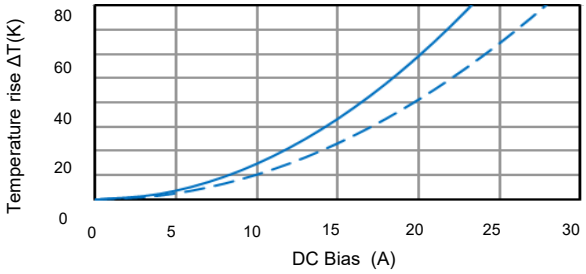
[▲ETQP5M220YSC]



[▲ETQP5M470YSC]



[▲ETQP6M2R5YSC]

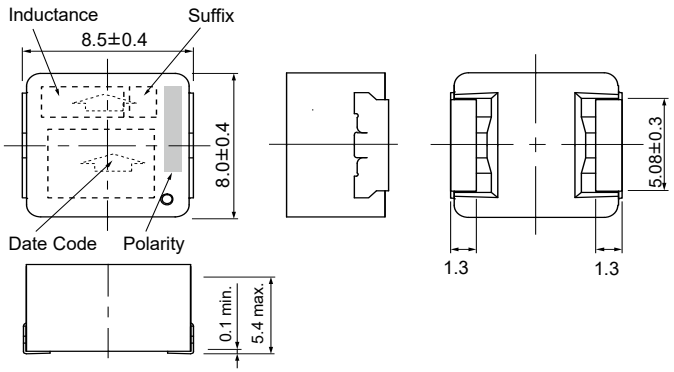


▲ Under development

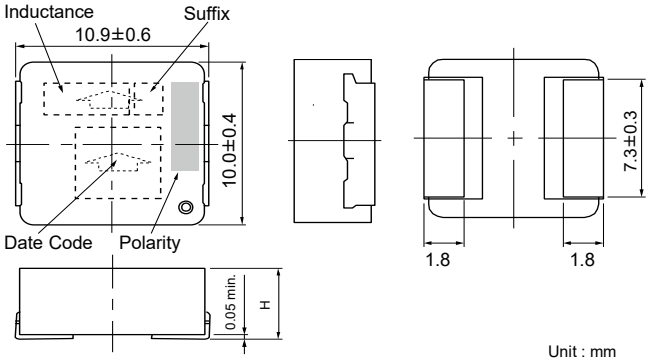
Dimensions in mm (not to scale)

Dimensional tolerance unless noted : ±0.5

Series PCC-M0854MS
(ETQP5M□□□YSK)



Series PCC-M1050MS/54MS/56MS
Series PCC-M1060MS
(ETQP5M□□□YSC/ETQP6M□□□YSC)



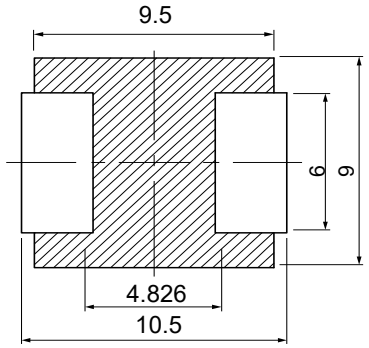
Unit : mm

Series	H
M105□MS	5.0/5.4/5.6 max.
M1060MS	6.0 max.

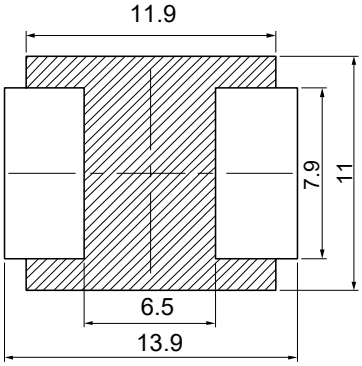
Recommended land pattern in mm (not to scale)

Dimensional tolerance unless noted : ±0.5

Series PCC-M0854MS
(ETQP5M□□□YSK)



Series PCC-M1050MS/54MS/56MS
Series PCC-M1060MS
(ETQP5M□□□YSC/ETQP6M□□□YSC)



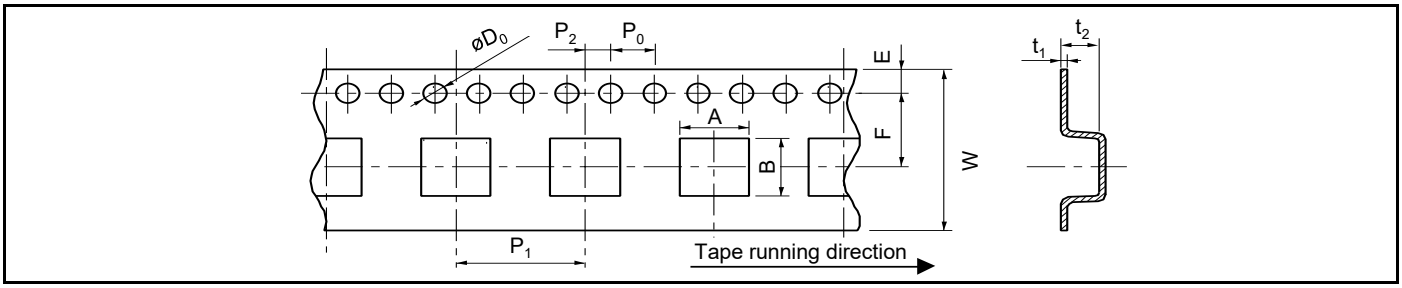
※Don't wire on the pattern on shaded portion the PWB.

Unit : mm

■ **As for soldering conditions and safety precautions (Power choke coils (Automotive grade)), please see data files**

Packaging methods (Taping)

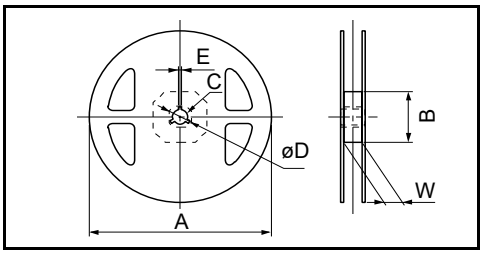
● Embossed Carrier Tape Dimensions in mm (not to scale)



Unit : mm

Series	A	B	W	E	F	P_1	P_2	P_0	$øD_0$	t_1	t_2
PCC-M0854MS	9.1	8.6	16.0	1.75	7.5	12.0	2.0	4.0	1.5	0.4	6.0
PCC-M105□MS/M1060MS	10.65	11.75	24.0		11.5	16.0				0.5	6.35

● Taping Reel Dimensions in mm (not to scale)

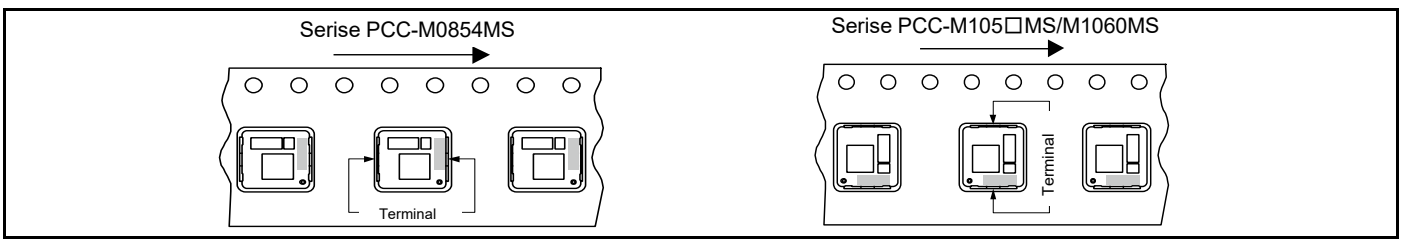


Standard Reel Dimensions

Unit : mm

Series	A	B	C	øD	E	W
PCC-M0854MS	330	100	13	21	2	17.5
PCC-M105□MS/M1060MS						25.5

Component placement (Taping)



Standard packing quantity / Reel

Serise	Part No.		Minimum quantity / Packing unit	Quantity per reel
PCC-M0854MS	ETQP5M	YSK	1,000 pcs / box (2 reel)	500 pcs
PCC-M105□MS	ETQP5M	YSC		
PCC-M1060MS	ETQP6M	YSC		

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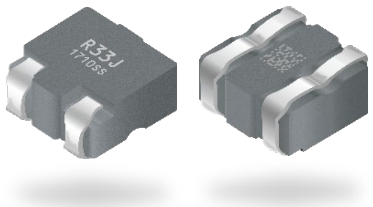
INDUSTRY

Power Inductors

Power Choke Coil (Automotive Grade)

PCC-M1280MF series

PCC-M15A0MF series



High heat resistance and high reliability using metal composite core (MC)

Industrial property : Patents 3

Features

- High heat resistance : Operation up to 160 °C including self-heating. (180 °C short time*)
  * Please contact for possible to use over 160 °C condition. Temperature up to 180 °C may possibly be used.
- Large current power : 53 A (M1280MF R33 type), 87 A (M15A0MF R33 type)
- High vibration resistance : 30 G
- SMD type
- High-reliability : High vibration resistance as result of newly developed integral construction ; under severe reliability conditions of automotive and other strenuous applications
- High bias current : Excellent inductance stability using ferrous alloy magnetic material
- Temp. stability : Excellent inductance stability over broad temp. range
- Low audible (buzz) noise : A gapless structure achieved with metal composite core
- High efficiency : Low DC resistance of winding and low eddy-current loss of the core
- Shielded construction
- AEC-Q200 compliant
- RoHS compliant

Recommended applications

- Noise filter for various drive circuitry requiring high temp. operation and peak current handling capability
- Boost-Converter, Buck-Converter DC/DC

Standard packing quantity (Minimum quantity/Packing unit)

- 500 pcs/box (2 reels): PCC-M1280MF series (ETQP8M☐☐☐JFA)
- 200 pcs/box (2 reels): PCC-M15A0MF series (ETQPAM☐☐☐JFW)

Explanation of part numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	T	Q	P		M				J	F	
Product Code			Classification	Height	Winding	Inductance			Core	Suffix	Size

Code	Height
8	8 mm
A	10.5 mm

(Example)

Code	Inductance
R33	0.33 µH
R68	0.68 µH
4R7	4.7 µH

Code	Size
A	☐ 12 mm
W	☐ 15 mm

Temperature rating

Operating temperature range		Tc : -40 ℃ to +160 ℃ (Including self-temperature rise)
Storage condition	After PWB mounting	
	Before PWB mounting	Ta : -5 ℃ to +35 ℃ 85%RH max.

1. PCC-M1280MF series

Standard parts

Part No.	Inductance*1		DCR (at 20 ℃) (mΩ)		Rated current (A) Typ.		Vibration resistance (G)	MSL level	Series [Size (mm)]
	L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T= 40 K*2 ( )*3	△L= –30 %*4	*5	*6	
▲ETQP8MR33JFA	0.33	±20	0.7 (0.77)	±10	53.5 (44.4)	84.5	30.0	1	PCC-M1280MF [12.6×13.2×8.0]
ETQP8MR68JFA	0.68		1.1 (1.21)		42.6 (35.4)	56.9			
ETQP8M1R0JFA	1.0		1.36 (1.50)		38.3 (31.8)	44.4			
ETQP8M1R5JFA	1.5		1.8 (1.98)		33.3 (27.7)	29.9			
ETQP8M2R5JFA	2.5		2.6 (2.86)		27.7 (23.0)	32.1			
ETQP8M3R3JFA	3.3		3.6 (3.96)		23.6 (19.6)	27.6			PCC-M1280MF [12.6×13.1×8.0]
ETQP8M4R7JFA	4.7		4.9 (5.39)		20.2 (16.8)	24.7			

*1: Measured at 100 kHz

▲ This spec may change because these are under development

*2: The proved current value for making the overall temperature rise of 40K, when mounted on a multi-layer board with high-heat dissipation (heat dissipation constant : approx. 20 K/W).

*3: The proved current value for making the overall temperature rise of 40K, when mounted on a 4-layer circuit board of FR4 t=1.6 mm and DC current is applied.

*4: Saturation rated current : DC current which causes L(0) drop –30 %.

*5: Vibration resistance conditions : Amplitude: 5 mm or less, sweep speed: 1 oct / min, frequency 5-2000 Hz, 3 directions/2 hours each, total 6 hours

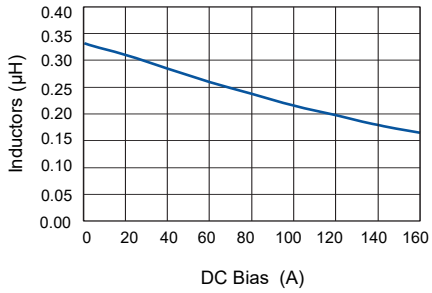
*6: The solderability is guaranteed for 1 year only. The product out of expiration date shall not be used.

◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +160°C should not be exceeded. Please contact for possible to use over 160 °C condition. Temperature up to 180 °C may possibly be used.

Performance characteristics (Reference①)

● Inductance vs DC Current

[▲ ETQP8MR33JFA]



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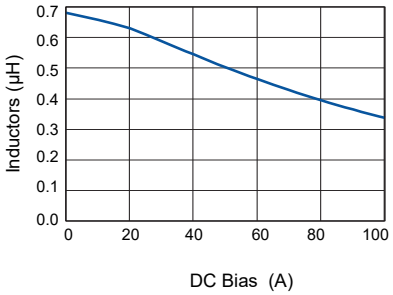

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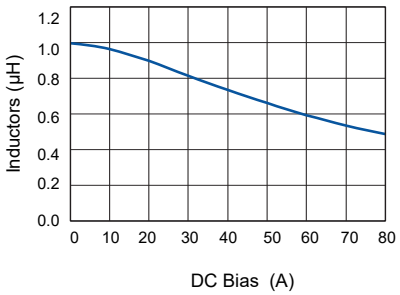

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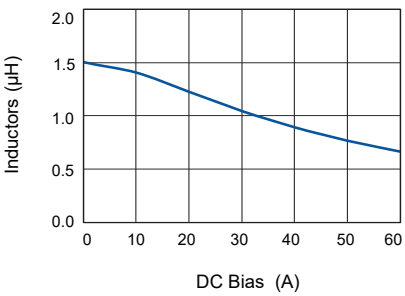

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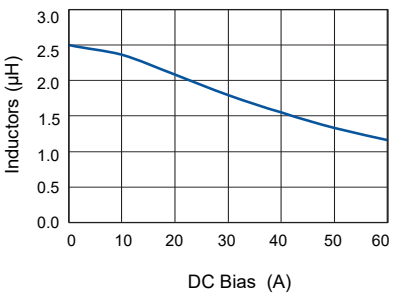

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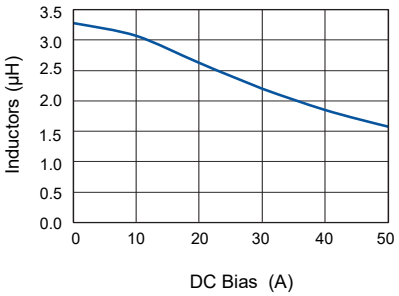

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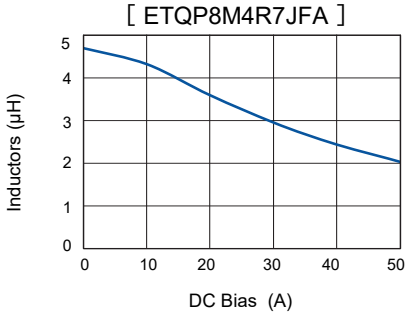


▲ Under development

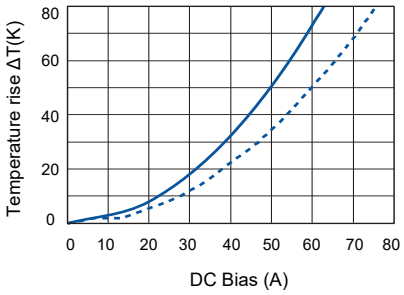
Performance characteristics (Reference②)

● Case Temperature vs DC Current

PWB condition A : Four-layer PWB (1.6 mm FR4).*3

PWB condition B : Multilayer PWB with high heat dissipation performance.*2

[▲ ETQP8MR33JFA]



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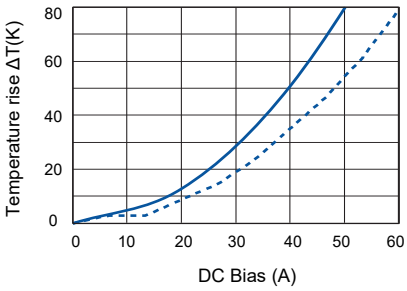

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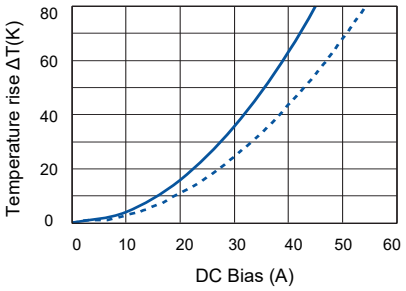

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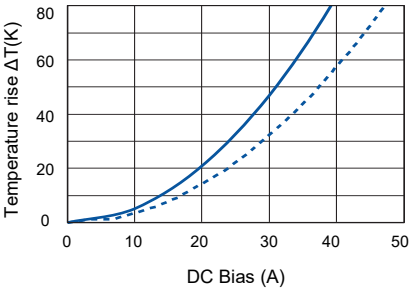

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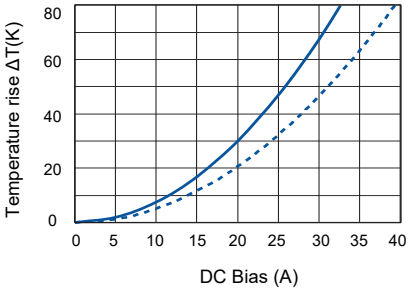

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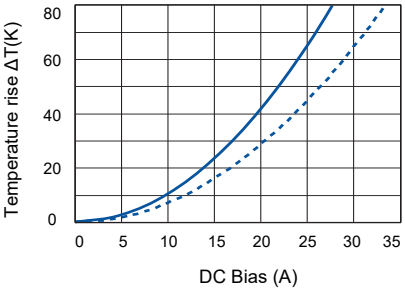

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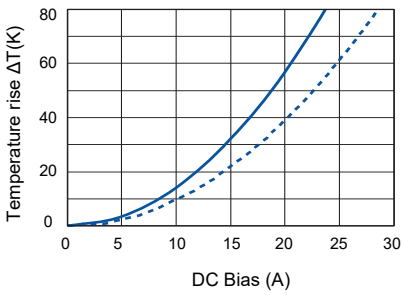


▲ Under development

2. PCC-M15A0MF series

Standard parts

Part No.	Inductance*1		DCR (at 20 ℃) (mΩ)		Rated current (A) Typ.		Vibration resistance (G)	MSL level	Series [Size (mm)]
	L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T= 40 K*2 ( )*3	△L= –30 %*4	*5	*6	
ETQPAMR33JFW	0.33	±20	0.42 [0.48]	±15	83 [69]	103	30	1	PCC-M15A0MF [15.6×17.2×10.5]
▲ETQPAMR68JFW	0.68		(0.72 [0.83])	(±15)	(64 [53])	(71)			
▲ETQPAM1R0JFW	1.0		(0.92 [1.06])		(56 [46])	(52)			
▲ETQPAM1R5JFW	1.5		(1.10 [1.21])	(±10)	(51 [42])	(43)			
▲ETQPAM2R5JFW	2.5		(1.70 [1.87])		(41 [34])	(41)			
▲ETQPAM3R3JFW	3.3		(2.00 [2.20])		(38 [32])	(37)			
▲ETQPAM4R7JFW	4.7		(3.00 [3.30])		(31 [26])	(30)			

*1: Measured at 100 kHz

▲ This spec may change because these are under development

*2: The proved current value for making the overall temperature rise of 40K, when mounted on a multi-layer board with high-heat dissipation (heat dissipation constant : approx. 13.8 K/W).

*3: The proved current value for making the overall temperature rise of 40K, when mounted on a 4-layer circuit board of FR4 t=1.6 mm and DC current is applied.

*4: Saturation rated current : DC current which causes L(0) drop –30 %.

*5: Vibration resistance conditions : Amplitude: 5 mm or less, sweep speed: 1 oct / min, frequency 5-2000 Hz, 3 directions/2 hours each, total 6 hours

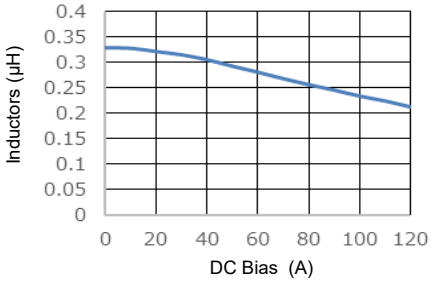
*6: The solderability is guaranteed for 1 year only. The product out of expiration date shall not be used.

◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +160°C should not be exceeded. Please contact for possible to use over 160 °C condition. Temperature up to 180 °C may possibly be used.

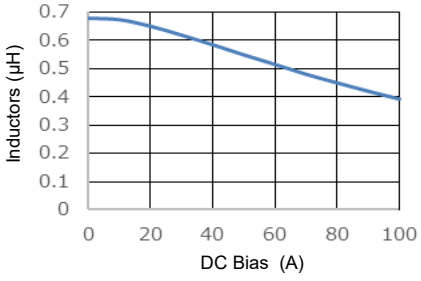
Performance characteristics (Reference①)

● Inductance vs DC Current

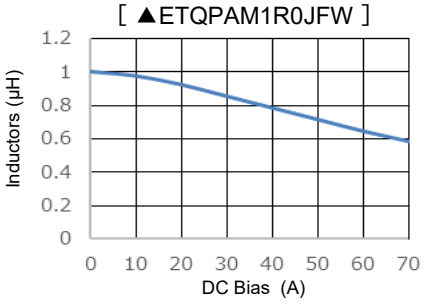
[ETQPAMR33JFW]



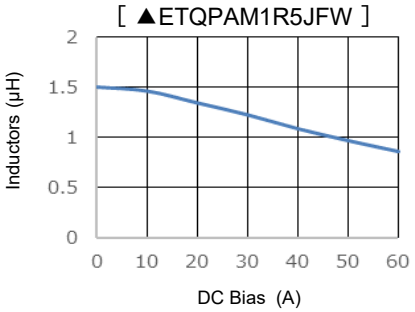
[▲ETQPAMR68JFW]



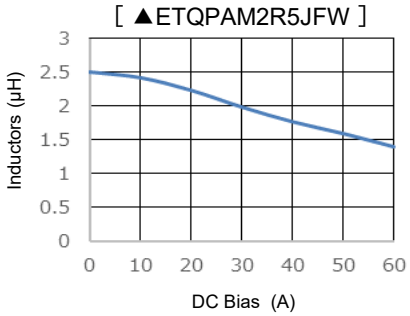
[▲ETQPAM1R0JFW]



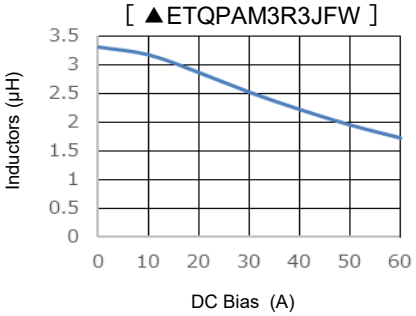
[▲ETQPAM1R5JFW]



[▲ETQPAM2R5JFW]



[▲ETQPAM3R3JFW]



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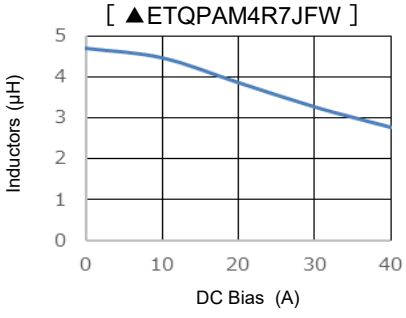


▲ This spec may change because these are under development

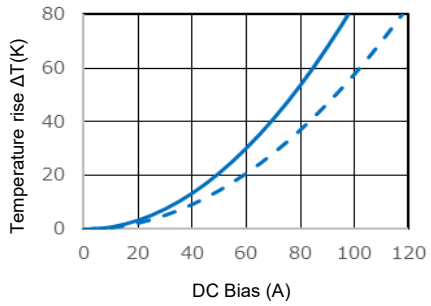
Performance characteristics (Reference②)

● Case Temperature vs DC Current

PWB condition A : Four-layer PWB (1.6 mm FR4).*3

PWB condition B : Multilayer PWB with high heat dissipation performance.*2

[ETQPAMR33JFW]



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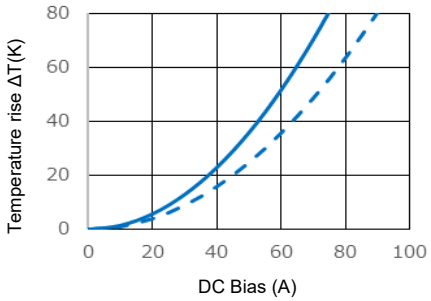

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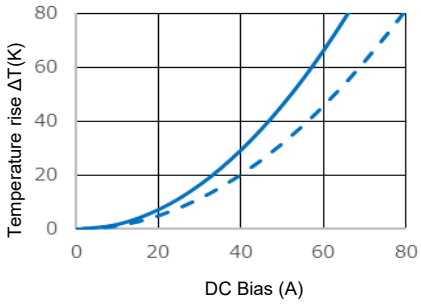
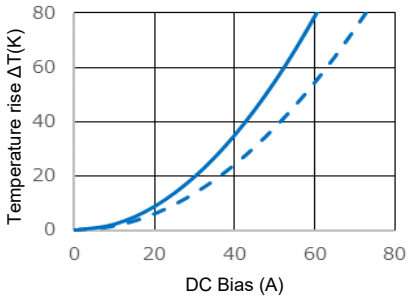


[▲ETQPAM1R5JFW]



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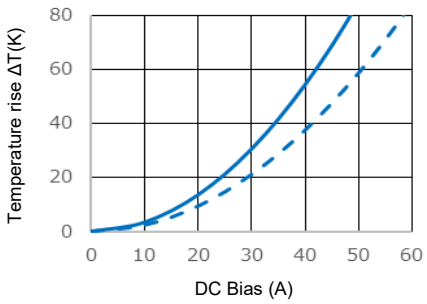

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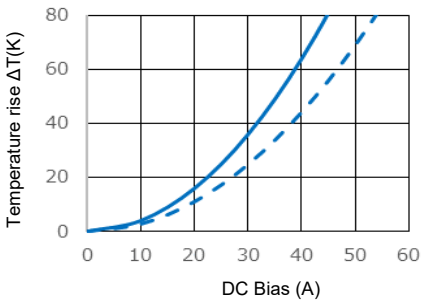
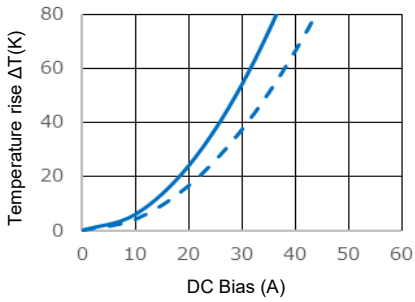


[▲ETQPAM4R7JFW]



▲ This spec may change because these are under development

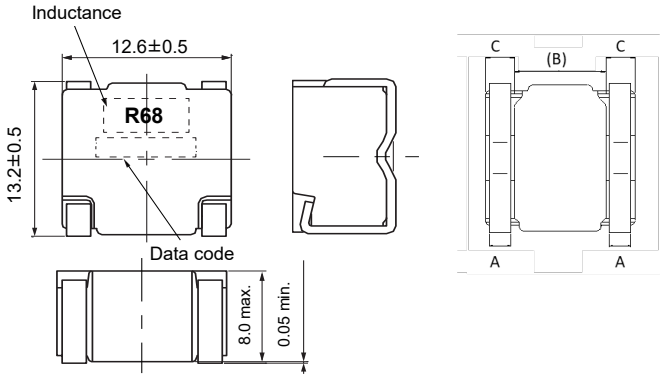
Dimensions in mm (not to scale)

Dimensional tolerance unless noted : ±0.5

・ETQP8MR33JFA
・ETQP8MR68JFA
・ETQP8M1R0JFA
・ETQP8M1R5JFA

・ETQPAMR33JFW
・▲ETQPAMR68JFW
・▲ETQPAM1R0JFW
・▲ETQPAM1R5JFW

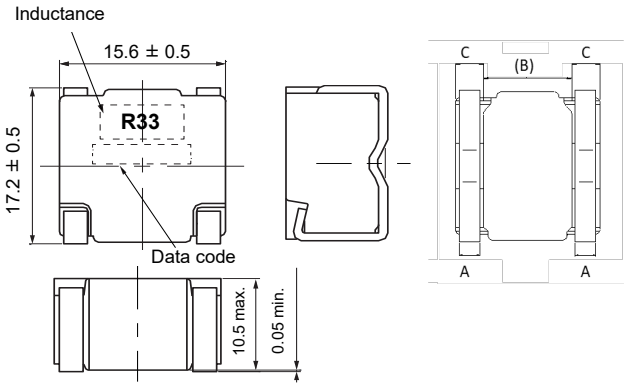
・▲ETQPAM2R5JFW
・▲ETQPAM3R3JFW
・▲ETQPAM4R7JFW



※ The mounting terminal should not protrude from C

Unit : mm

Part No.	A	B	C
ETQP8MR33JFA	2.2±0.4	(6.4)	3.10±0.15
ETQP8MR68JFA	2.0±0.4	(7.1)	2.75±0.16
ETQP8M1R0JFA	2.0±0.4	(7.1)	2.75±0.16
ETQP8M1R5JFA	2.0±0.4	(7.1)	2.75±0.16



※ The mounting terminal should not protrude from C

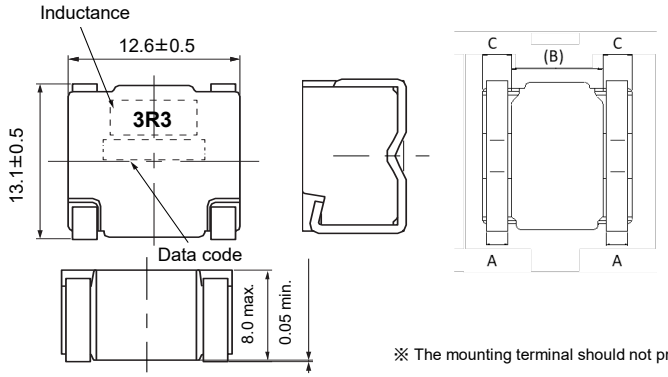
Unit : mm

Part No.	A	B	C
ETQPAMR33JFW	3.1±0.8	(5.6)	5.0±0.16
▲ETQPAMR68JFW	(2.8)	(5.6)	(5.0)
▲ETQPAM1R0JFW	(2.8)	(5.6)	(5.0)
▲ETQPAM1R5JFW	(2.8)	(5.6)	(5.0)
▲ETQPAM2R5JFW	(2.2)	(9.2)	(3.2)
▲ETQPAM3R3JFW	(2.2)	(9.2)	(3.2)
▲ETQPAM4R7JFW	(1.5)	(9.2)	(3.2)

▲ This spec may change because these are under development

A : Terminal width
B : Convex part on the bottom of the product
C : Terminal storage portion

・ETQP8M2R5JFA
・ETQP8M3R4JFA
・ETQP8M4R7JFA



※ The mounting terminal should not protrude from C

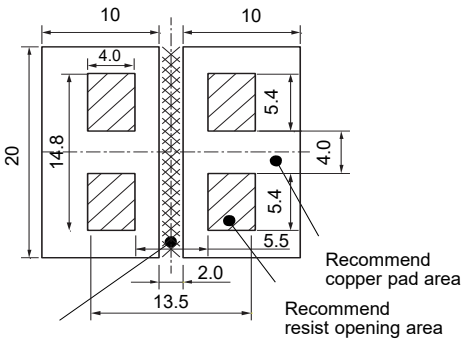
Unit : mm

Part No.	A	B	C
ETQP8M2R5JFA	1.8±0.4	(7.7)	2.45±0.10
ETQP8M3R3JFA	1.5±0.4	(8.1)	2.25±0.14
ETQP8M4R7JFA	1.25±0.4	(8.1)	2.25±0.14

Recommended land pattern in mm (not to scale)

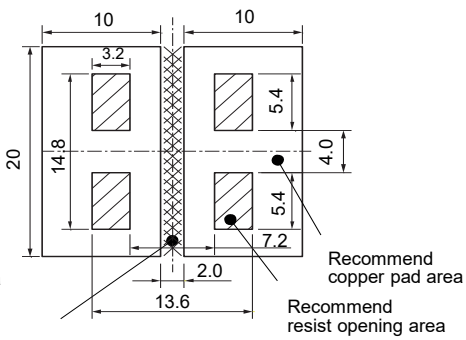
Dimensional tolerance unless not

・ETQP8MR33JFA



Don't wire this portion with PWB.

・ETQP8M4R7JFA



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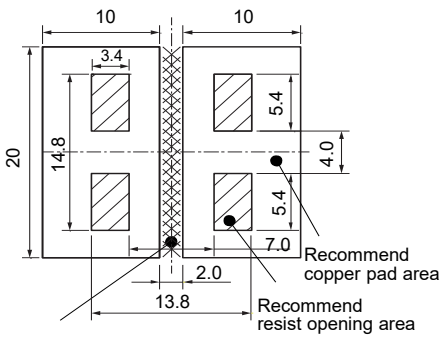
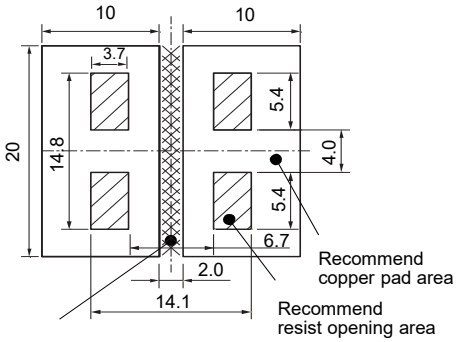
・ETQP8M3R3JFA



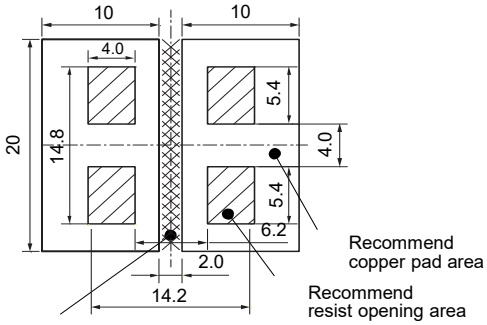
Don't wire this portion with PWB.

・ETQP8M2R5JFA



Don't wire this portion with PWB.

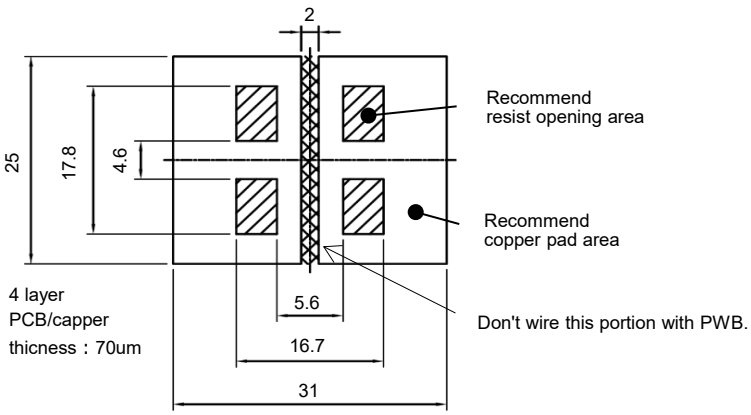
・ETQP8MR68JFA
・ETQP8M1R0JFA
・ETQP8M1R5JFA



Don't wire this portion with PWB.

・ETQPAMR33JFW
・▲ETQPAMR68JFW
・▲ETQPAM1R0JFW
・▲ETQPAM1R5JFW
・▲ETQPAM2R5JFW
・▲ETQPAM3R3JFW
・▲ETQPAM4R7JFW

▲ This spec may change because these are under development

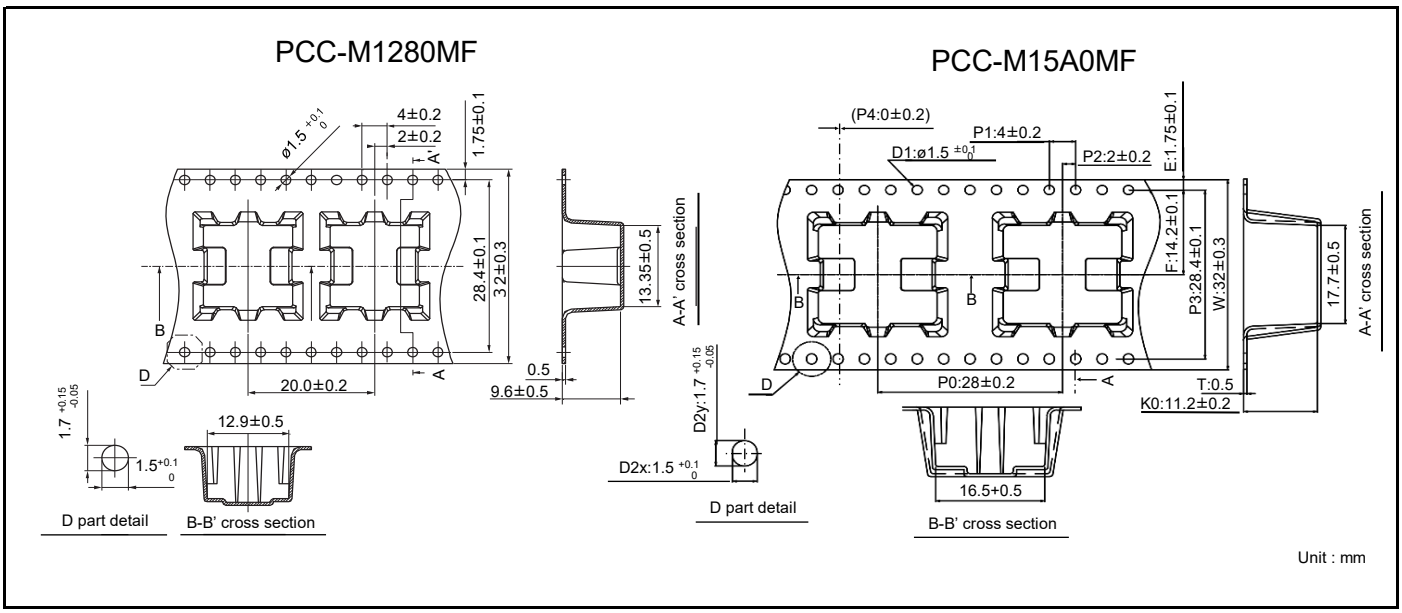


UNit : mm

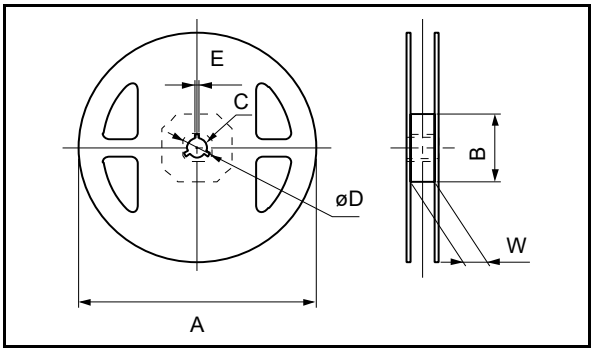
■ **As for soldering conditions and safety precautions (Power choke coils (Automotive grade)), please see data files**

Packaging methods (Taping)

● Embossed carrier tape dimensions in mm (not to scale)



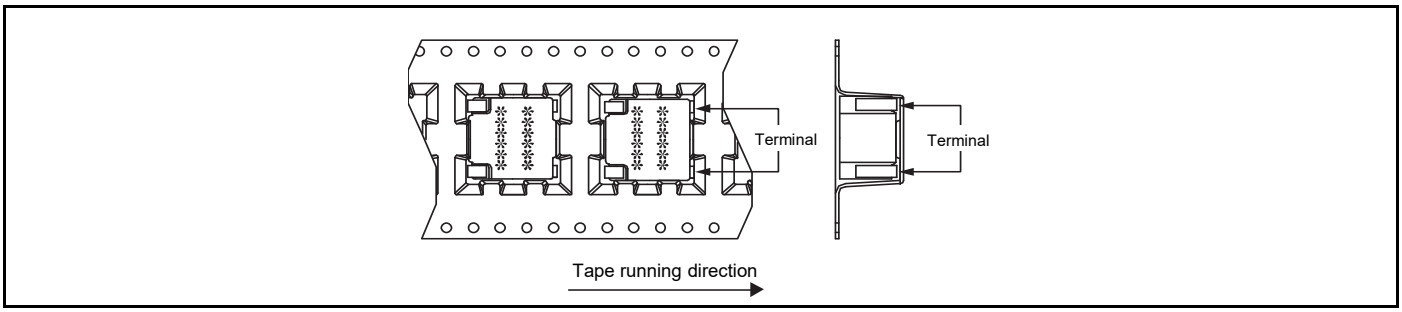
● **Taping reel dimensions in mm (not to scale)**



Standard reel dimensions Unit : mm

Series	A	B	C	øD	E	W
PCC-M1280MF	330	(100)	13	21	2	33.5
PCC-M15A0MF	330	(100)	13	21	2	33.5

Parts mounting (Taping)



Standard packing quantity / Reel

Serise	Part No.	Minimum quantity / Packing unit	Quantity per reel
PCC-M1280MF	ETQP8M□□□JFA	500 pcs / box (2 reels)	250 pcs
PCC-M15A0MF	ETQPAM□□□JFW	200 pcs / box (2 reels)	100 pcs

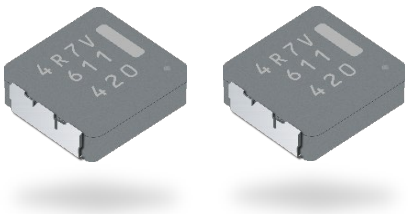
Panasonic
INDUSTRY

Power Inductors

Power Choke Coil (Automotive Grade)

PCC-M0530M-LP, PCC-M0630M-LP series

PCC-M0840M-LP, PCC-M1040M-LP series



High heat resistance and high reliability using metal composite core (MC)

Industrial property : Patents 3 (Registered 2 / Pending 1)

Features

- High heat resistance : Operation up to 155 °C including self-heating. (180 °C short time*)
  * Please contact for possible to use over 155 °C condition. Temperature up to 180 °C may possibly be used.
- Low profile : 3 mm max. height (PCC-M0530M-LP, PCC-M0630M-LP)
  4 mm max. height (PCC-M0840M-LP, PCC-M1040M-LP)
- SMD type
- High-reliability : High vibration resistance as result of newly developed integral construction ; under severe reliability conditions of automotive and other strenuous applications
- High bias current : Excellent inductance stability using ferrous alloy magnetic material
- Temp. stability : Excellent inductance stability over broad temp. range
- Low audible (buzz) noise : A gapless structure achieved with metal composite core
- High efficiency : Low DC resistance of winding and low eddy-current loss of the core
- Shielded construction
- AEC-Q200 compliant
- RoHS compliant

Recommended applications

- Noise filter for various drive circuitry requiring high temp. operation and peak current handling capability
- Boost-Converter, Buck-Converter DC/DC

Standard packing quantity (Minimum quantity/Packing unit)

- 4,000 pcs/box (2 reel) : PCC-M0530M-LP, M0630M-LP
- 1,000 pcs/box (2 reel) : PCC-M0840M-LP, M1040M-LP

Explanation of part numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	T	Q	P		M				K	V	
Product code			Classification	Height	Winding	Inductance			Core	Suffix	Size

(Example)

Code	Inductance
4R7	4.7 µH
220	22 µH
R68	0.68 µH

Code	Size
P	□ 5 mm
N	□ 6 mm
K	□ 8 mm
C	□ 10 mm

Temperature rating

Operating temperature range		Tc : -55 ℃ to +155 ℃ (Including self-temperature rise)
Storage condition	After PWB mounting	
	Before PWB mounting	Ta : -5 ℃ to +35 ℃ 85%RH max.

1. PCC-M0530M-LP series (ETQP3M□□□KVP)

Standard parts

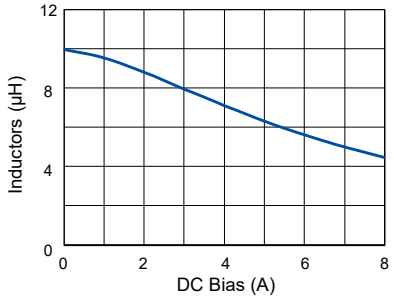
Part No.	Inductance*1		DCR (at 20 ℃) (mΩ)		Rated current (A) Typ.		Vibration resistance (G)	MSL level	Series [Size (mm)]
	L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T= 40 K*2 ( )*3	△L= –30 %*4	*5	*6	
ETQP3M100KVP	10.0	±20	96.0 (105.60)	±10	2.9 (2.4)	4.2	10.0	1	PCC-M0530M-LP [5.5×5.0×3.0]
ETQP3M6R8KVP	6.8		65.7 (72.27)		3.5 (2.9)	6.1			
ETQP3M4R7KVP	4.7		45.6 (50.16)		4.1(3.4)	6.7			
ETQP3M3R3KVP	3.3		27.3 (30.03)		5.4 (4.4)	8.0			
ETQP3M2R2KVP	2.2		20.0 (22.00)		6.3 (5.2)	10.1			
ETQP3M1R5KVP	1.5		12.0 (13.20)		8.1 (6.7)	12.0			
ETQP3M1R0KVP	1.0		9.6 (10.56)		9.0 (7.5)	14.1			
ETQP3MR68KVP	0.68		7.6 (8.36)		10.2 (8.4)	15.9			
ETQP3MR47KVP	0.47		5.8 (6.38)		11.6 (9.6)	17.9			
ETQP3MR33KVP	0.33		4.85 (5.34)		12.7 (10.6)	21.8			

*1: Measured at 100 kHz
*2: The proved current value for making the overall temperature rise of 40K, when mounted on a multi-layer board with high-heat dissipation (heat dissipation constant 5.5 x 5.0 x 3.0 mm : approx. 51 K/W).
*3: The proved current value for making the overall temperature rise of 40K, when mounted on a 4-layer circuit board of FR4 t=1.6 mm and DC current is applied.
*4: Saturation rated current : DC current which causes L(0) drop –30 %.
*5: Vibration resistance conditions : Amplitude: 5 mm or less, sweep speed: 1 oct / min, frequency 5-2000 Hz, 3 directions / 4 hours each, total 12 hours
*6: The solderability is guaranteed for 1 year only. The product out of expiration date shall not be used.
◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +155°C should not be exceeded. Please contact for possible to use over 155 °C condition. Temperature up to 180 °C may possibly be used.

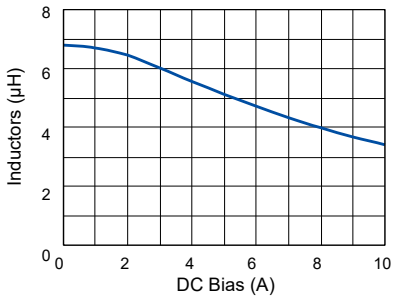
Performance characteristics (Reference①-1)

● Inductance vs DC Current

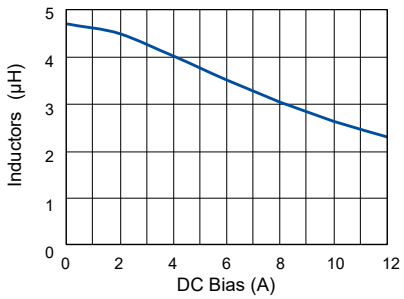
[ETQP3M100KVP]



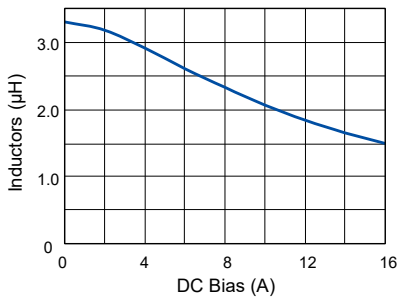
[ETQP3M6R8KVP]



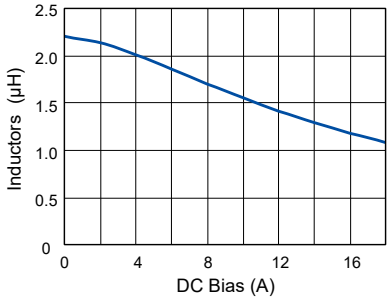
[ETQP3M4R7KVP]



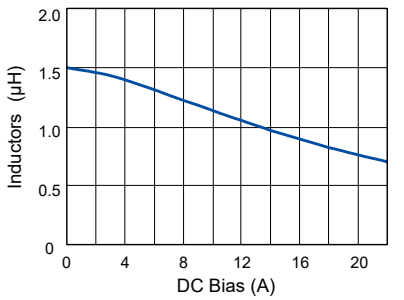
[ETQP3M3R3KVP]



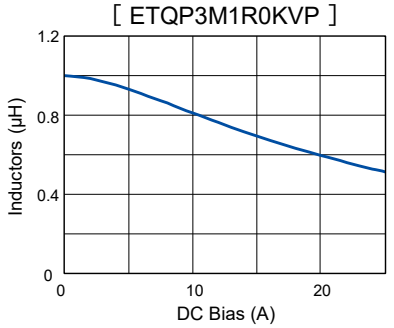
[ETQP3M2R2KVP]



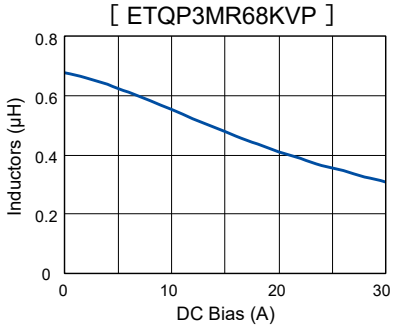
[ETQP3M1R5KVP]



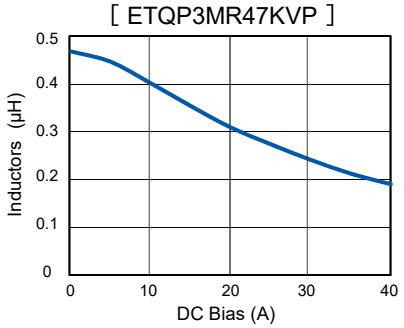
[ETQP3M1R0KVP]



[ETQP3MR68KVP]



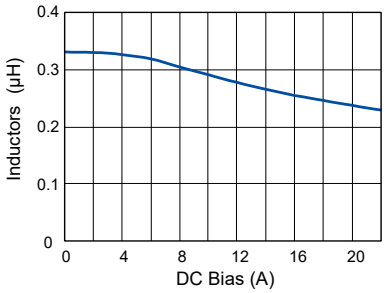
[ETQP3MR47KVP]



Performance characteristics (Reference①-2)

● Inductance vs DC Current

[ETQP3MR33KVP]



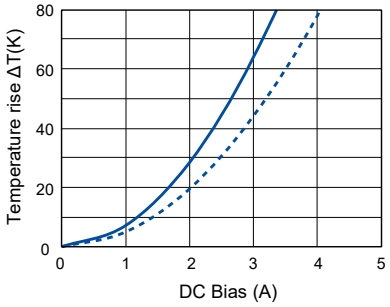
Performance characteristics (Reference②)

● Case Temperature vs DC Current

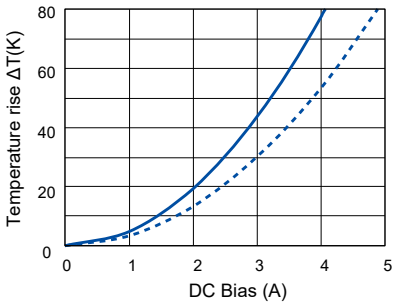
PWB condition A : Four-layer PWB (1.6 mm FR4).*3

PWB condition B : Multilayer PWB with high heat dissipation performance.*2

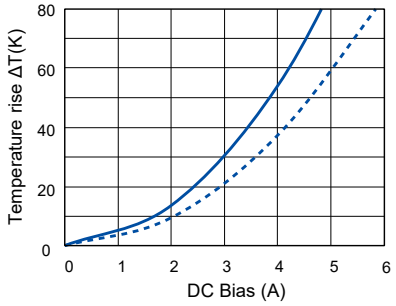
[ETQP3M100KVP]



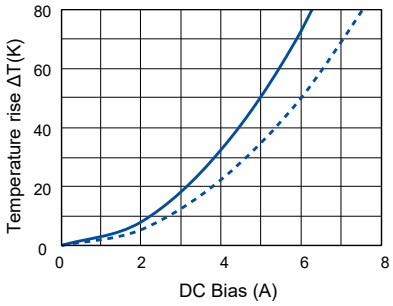
[ETQP3M6R8KVP]



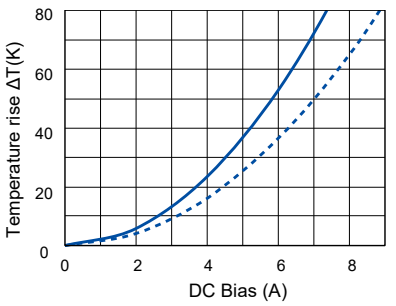
[ETQP3M4R7KVP]



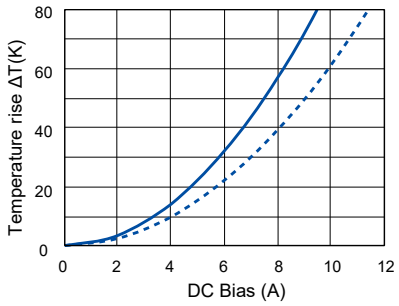
[ETQP3M3R3KVP]



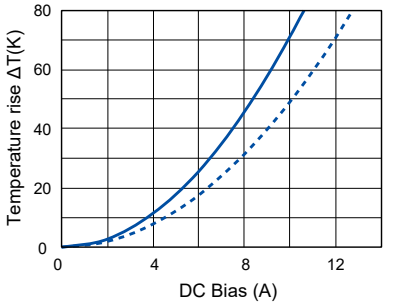
[ETQP3M2R2KVP]



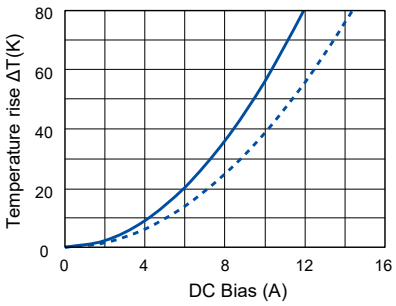
[ETQP3M1R5KVP]



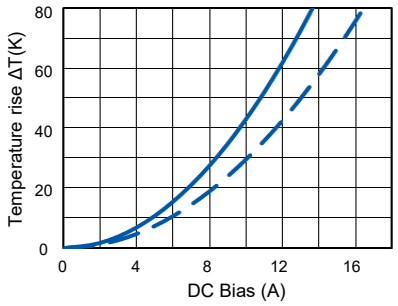
[ETQP3M1R0KVP]



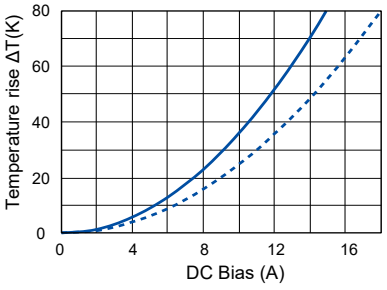
[ETQP3MR68KVP]



[ETQP3MR47KVP]



[ETQP3MR33KVP]



2. PCC-M0630M-LP series (ETQP3M□□□KVN)

Standard parts

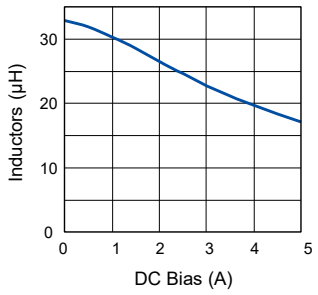
Part No.	Inductance*1		DCR (at 20 ℃) (mΩ)		Rated current (A) Typ.		Vibration resistance (G)	MSL level	Series [Size (mm)]
	L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T= 40 K*2 ( )*3	△L= –30 %*4	*5	*6	
ETQP3M330KVN	33.0	±20	206.0 (226.60)	±10	2.1 (1.7)	3.0	10.0	1	PCC-M0630M-LP [6.4×6.0×3.0]
ETQP3M220KVN	22.0		128.0 (140.80)		2.7 (2.2)	4.3			
ETQP3M150KVN	15.0		99.2 (109.12)		3.0 (2.5)	5.1			
ETQP3M100KVN	10.0		71.0 (78.10)		3.6 (2.9)	5.8			
ETQP3M6R8KVN	6.8		45.6 (50.16)		4.5 (3.6)	8.1			
ETQP3M4R7KVN	4.7		29.0 (31.90)		5.6 (4.6)	9.8			
ETQP3M3R3KVN	3.3		24.1 (26.51)		6.1 (5.0)	11.5			
ETQP3M2R2KVN	2.2		14.5 (15.95)		7.9 (6.5)	12.8			
ETQP3M1R5KVN	1.5		11.0 (12.10)		9.1 (7.4)	14.2			
ETQP3M1R0KVN	1.0		6.2 (6.82)		12.1 (9.9)	16.0			
ETQP3MR68KVN	0.68		5.2 (5.72)		13.2 (10.8)	20.2			

*1: Measured at 100 kHz
*2: The proved current value for making the overall temperature rise of 40K, when mounted on a multi-layer board with high-heat dissipation (heat dissipation constant 6.5 x 6.0 x 3.0 mm : approx. 44 K/W).
*3: The proved current value for making the overall temperature rise of 40K, when mounted on a 4-layer circuit board of FR4 t=1.6 mm and DC current is applied.
*4: Saturation rated current : DC current which causes L(0) drop –30 %.
*5: Vibration resistance conditions : Amplitude: 5 mm or less, sweep speed: 1 oct / min, frequency 5-2000 Hz, 3 directions / 4 hours each, total 12 hours
*6: The solderability is guaranteed for 1 year only. The product out of expiration date shall not be used.
◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +155°C should not be exceeded. Please contact for possible to use over 155 °C condition. Temperature up to 180 °C may possibly be used.

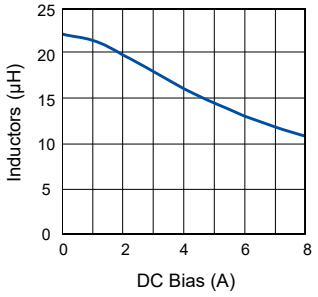
Performance characteristics (Reference①)

● Inductance vs DC Current

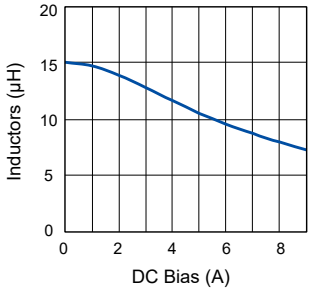
[ETQP3M330KVN]



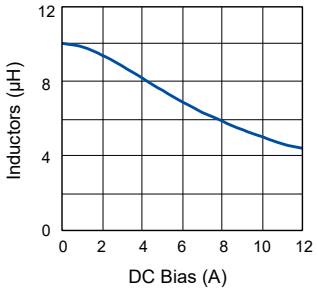
[ETQP3M220KVN]



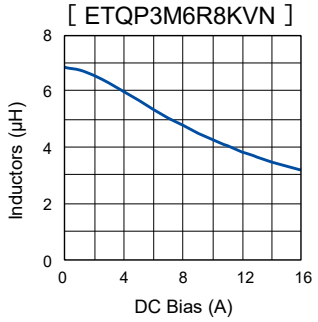
[ETQP3M150KVN]



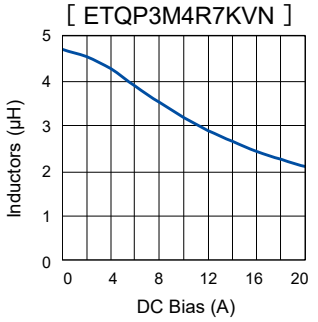
[ETQP3M100KVN]



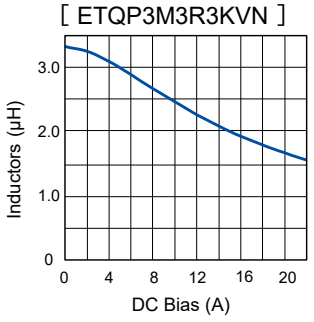
[ETQP3M6R8KVN]



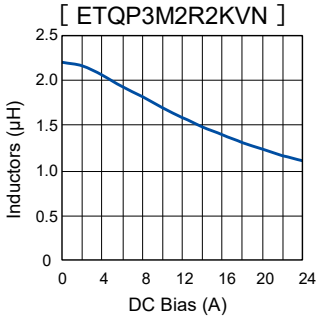
[ETQP3M4R7KVN]



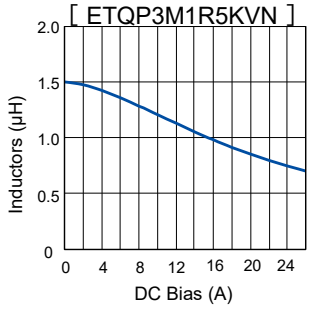
[ETQP3M3R3KVN]



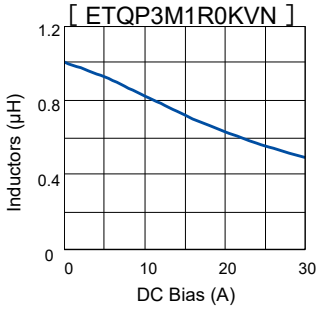
[ETQP3M2R2KVN]



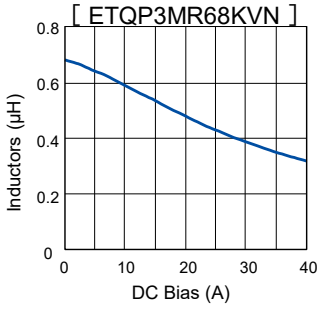
[ETQP3M1R5KVN]



[ETQP3M1R0KVN]



[ETQP3MR68KVN]



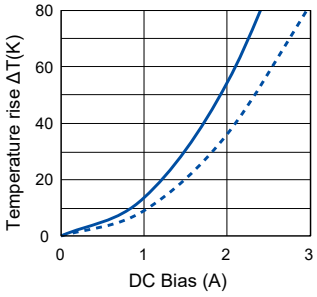
Performance characteristics (Reference②)

● Case Temperature vs DC Current

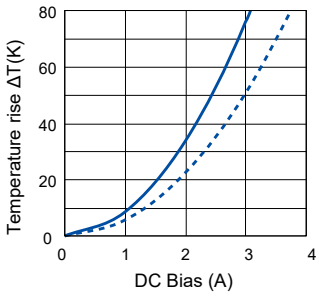
PWB condition A : Four-layer PWB (1.6 mm FR4).*3

PWB condition B : Multilayer PWB with high heat dissipation performance.*2

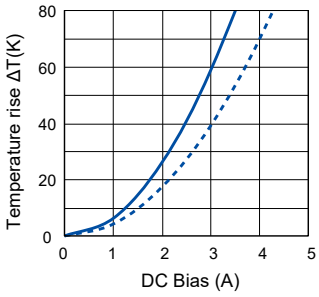
[ETQP3M330KVN]



[ETQP3M220KVN]



[ETQP3M150KVN]



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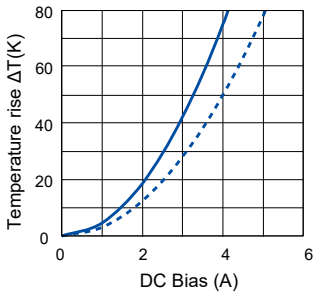
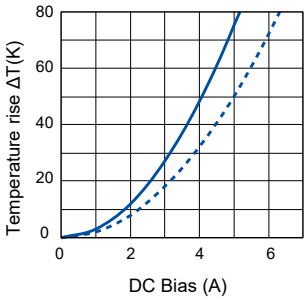


[ETQP3M6R8KVN]



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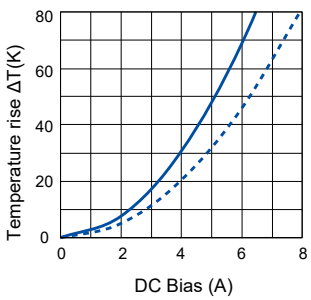

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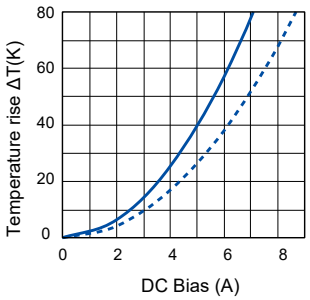
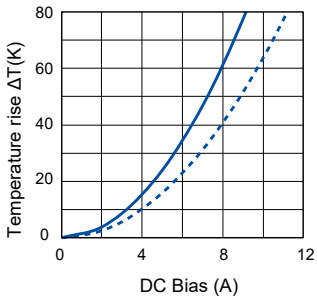
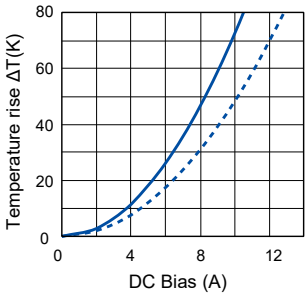


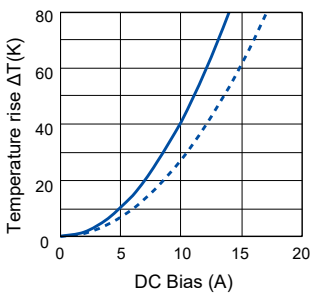
[ETQP3M2R2KVN]



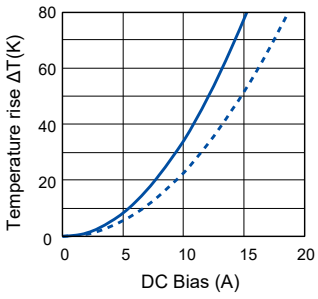
[ETQP3M1R5KVN]



[ETQP3M1R0KVN]



[ETQP3MR68KVN]



3. PCC-M0840M-LP series (ETQP4M□□□KVK)

Standard parts

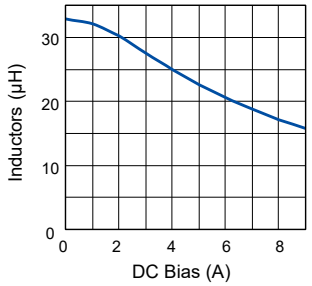
Part No.	Inductance*1		DCR (at 20 ℃) (mΩ)		Rated current (A) Typ.		Vibration resistance (G)	MSL level	Series [Size (mm)]
	L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T= 40 K*2 ( )*3	△L= –30 %*4	*5	*6	
ETQP4M330KVK	33.0	±20	118.0 (129.80)	±10	3.1 (2.6)	4.7	5.0	1	PCC-M0840M-LP [8.5×8.0×4.0]
ETQP4M220KVK	22.0		78.4 (86.24)		3.8 (3.2)	6.0			
ETQP4M150KVK	15.0		55.0 (60.50)		4.5 (3.8)	7.6			
ETQP4M100KVK	10.0		41.6 (45.76)		5.2 (4.4)	9.1			
ETQP4M6R8KVK	6.8		23.5 (25.85)		6.9 (5.9)	11.0			
ETQP4M4R7KVK	4.7		16.1 (17.71)		8.3 (7.1)	15.1			
ETQP4M3R3KVK	3.3		14.1 (15.51)		8.9 (7.6)	17.4			
ETQP4M2R2KVK	2.2		8.5 (9.35)		11.4 (9.8)	20.4			
ETQP4M1R5KVK	1.5		4.9 (5.39)		15.1 (12.8)	22.5			
ETQP4M1R0KVK	1.0		3.7 (4.07)		17.3 (14.8)	24.4			
ETQP4MR68KVK	0.68		2.92 (3.21)		19.5 (16.6)	29.0			

*1: Measured at 100 kHz
*2: The proved current value for making the overall temperature rise of 40K, when mounted on a multi-layer board with high-heat dissipation (heat dissipation constant 8.5×8.0×4.0 mm : approx. 36 K/W).
*3: The proved current value for making the overall temperature rise of 40K, when mounted on a 4-layer circuit board of FR4 t=1.6 mm and DC current is applied.
*4: Saturation rated current : DC current which causes L(0) drop –30 %.
*5: Vibration resistance conditions : Amplitude: 5 mm or less, sweep speed: 1 oct / min, frequency 5-2000 Hz, 3 directions / 4 hours each, total 12 hours
*6: The solderability is guaranteed for 1 year only. The product out of expiration date shall not be used.
◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +155°C should not be exceeded. Please contact for possible to use over 155 °C condition. Temperature up to 180 °C may possibly be used.

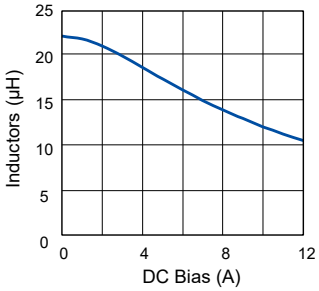
Performance characteristics (Reference①)

● Inductance vs DC Current

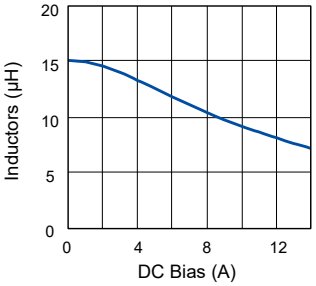
[ETQP4M330KVK]



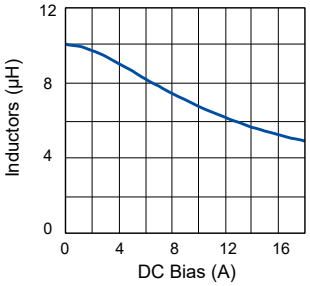
[ETQP4M220KVK]



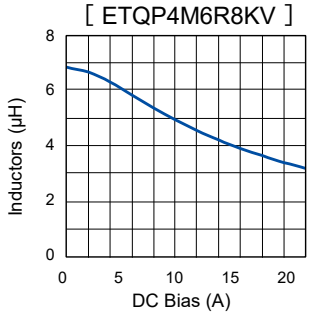
[ETQP4M150KVK]



[ETQP4M100KVK]



[ETQP4M6R8KV]



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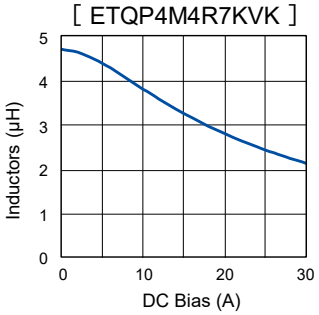

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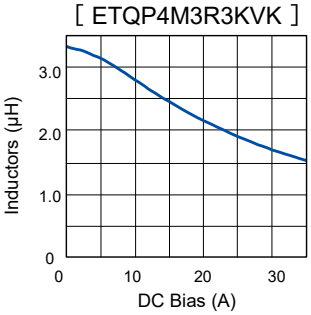
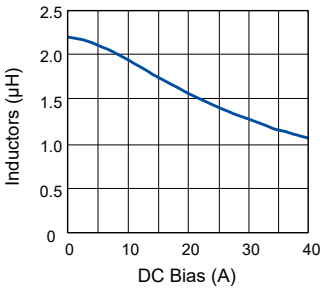
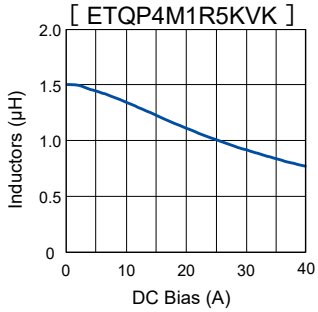


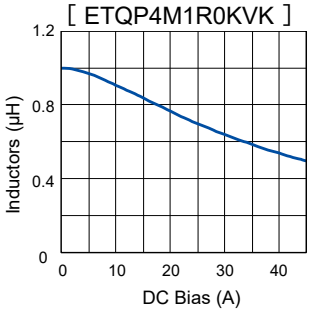
[ETQP4M2R2KVK]



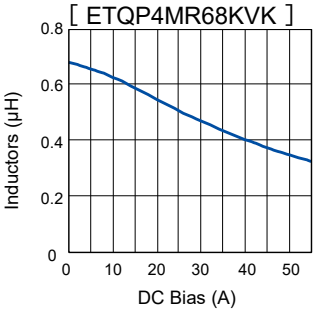
[ETQP4M1R5KVK]



[ETQP4M1R0KVK]



[ETQP4MR68KVK]



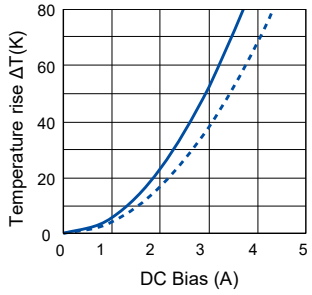
Performance characteristics (Reference②)

● Case Temperature vs DC Current

PWB condition A : Four-layer PWB (1.6 mm FR4).*3

PWB condition B : Multilayer PWB with high heat dissipation performance.*2

[ETQP4M330KVK]



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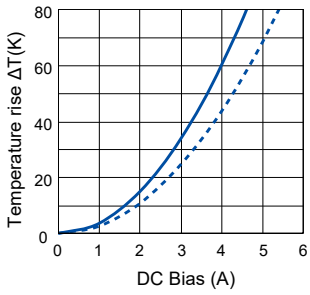
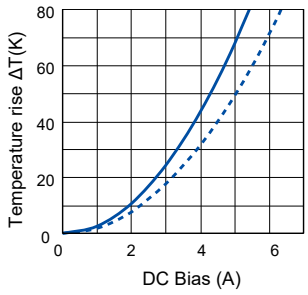
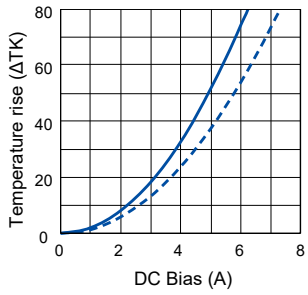


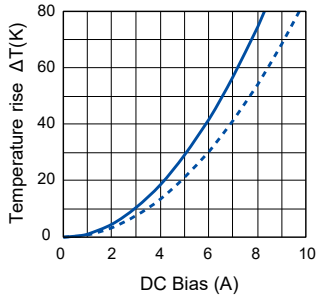
[ETQP4M150KVK]



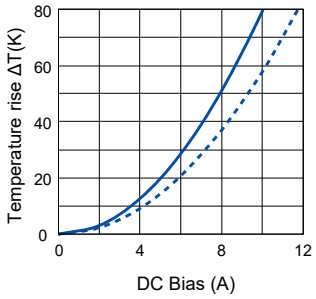
[ETQP4M100KVK]



[ETQP4M6R8KVK]



[ETQP4M4R7KVK]



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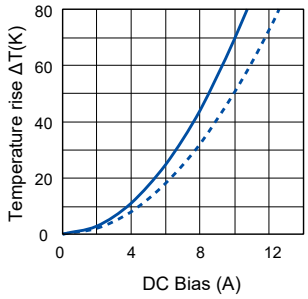
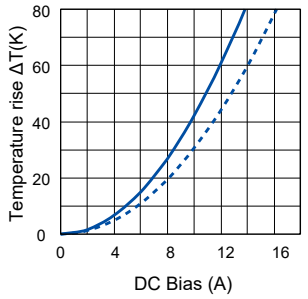
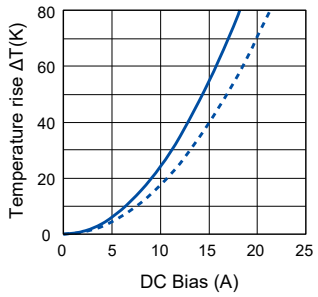


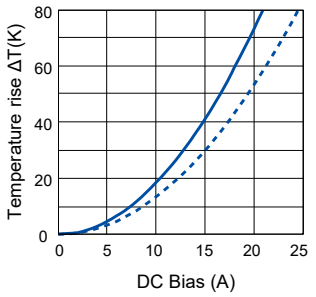
[ETQP4M2R2KVK]



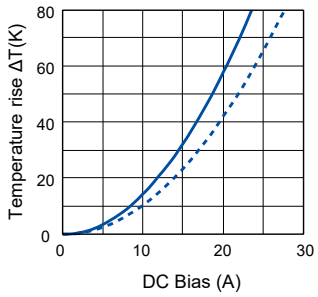
[ETQP4M1R5KVK]



[ETQP4M1R0KVK]



[ETQP4MR68KVK]



4. PCC-M1040M-LP series (ETQP4M□□□KVC)

Standard parts

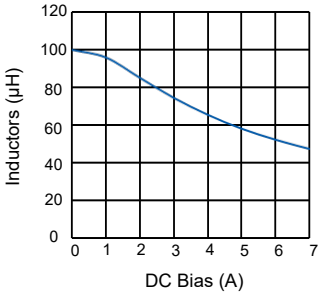
Part No.	Inductance*1		DCR (at 20 ℃) (mΩ)		Rated current (A) Typ.		Vibration resistance (G)	MSL level	Series [Size (mm)]
	L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T= 40 K*2 ( )*3	△L= –30 %*4	*5	*6	
ETQP4M101KVC	100.0	±20	242.0 (266.20)	±10	2.5 (2.0)	3.5	5.0	1	PCC-M1040M-LP [10.7×10.0×4.0]
ETQP4M680KVC	68.0		178.4 (196.24)		2.9 (2.4)	4.7			
ETQP4M470KVC	47.0		132.0 (145.20)		3.4 (2.8)	4.7			
ETQP4M330KVC	33.0		84.6 (93.06)		4.2 (3.4)	5.6			
ETQP4M220KVC	22.0		60.0 (66.00)		5.0 (4.1)	7.4			
ETQP4M150KVC	15.0		37.0 (40.70)		6.3 (5.2)	9.2			
ETQP4M100KVC	10.0		25.4 (27.94)		7.6 (6.3)	10.8			
ETQP4M6R8KVC	6.8		18.5 (20.35)		8.9 (7.4)	12.1			
ETQP4M4R7KVC	4.7		12.3 (13.53)		11.2 (9.2)	13.9			
ETQP4M3R3KVC	3.3		9.4 (10.34)		12.6 (10.3)	17.1			
ETQP4M2R2KVC	2.2		6.8 (7.48)		14.8 (12.1)	21.0			
ETQP4M1R5KVC	1.5		4.9 (5.39)		17.4 (14.3)	25.0			
ETQP4M1R0KVC	1.0		2.6 (2.86)		23.9 (19.6)	34.6			

*1: Measured at 100 kHz
*2: The proved current value for making the overall temperature rise of 40K, when mounted on a multi-layer board with high-heat dissipation (heat dissipation constant 10.7×10.0×4.0 mm : approx. 27 K/W).
*3: The proved current value for making the overall temperature rise of 40K, when mounted on a 4-layer circuit board of FR4 t=1.6 mm and DC current is applied.
*4: Saturation rated current : DC current which causes L(0) drop –30 %.
*5: Vibration resistance conditions : Amplitude: 5 mm or less, sweep speed: 1 oct / min, frequency 5-2000 Hz, 3 directions / 4 hours each, total 12 hours
*6: The solderability is guaranteed for 1 year only. The product out of expiration date shall not be used.
◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +155°C should not be exceeded. Please contact for possible to use over 155 °C condition. Temperature up to 180 °C may possibly be used.

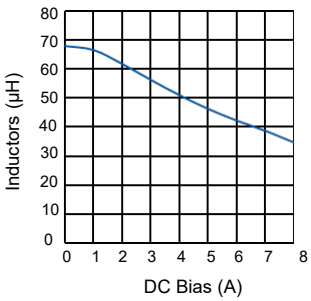
Performance characteristics (Reference①)

● Inductance vs DC Current

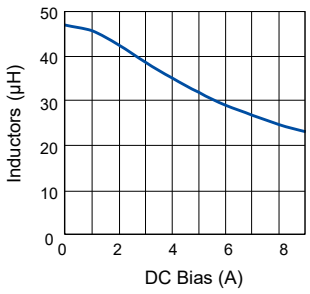
[ETQP4M101KVC]



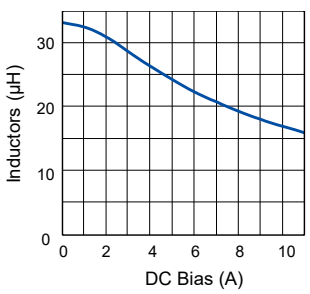
[ETQP4M680KVC]



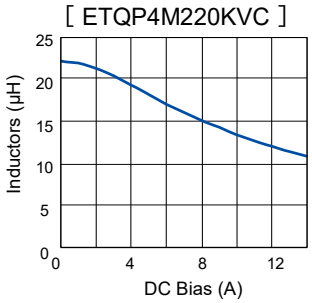
[ETQP4M470KVC]



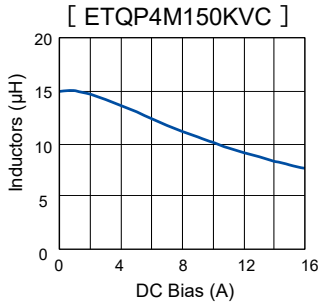
[ETQP4M330KVC]



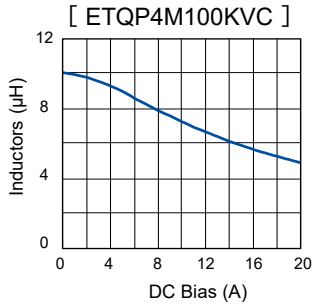
[ETQP4M220KVC]



[ETQP4M150KVC]



[ETQP4M100KVC]



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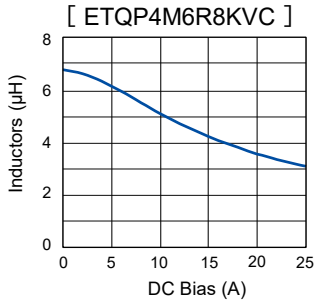

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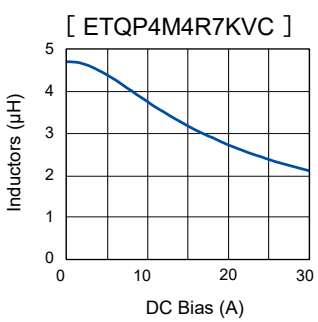

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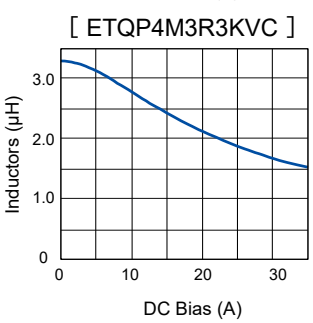
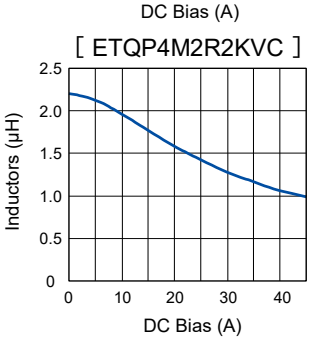


[ETQP4M2R2KVC]



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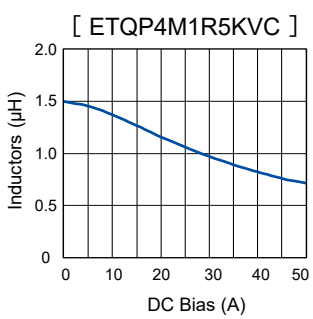
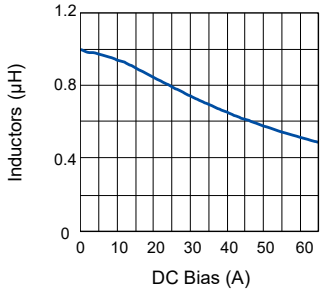


Performance characteristics (Reference①)

● Inductance vs DC Current

[ETQP4M1R0KVC]



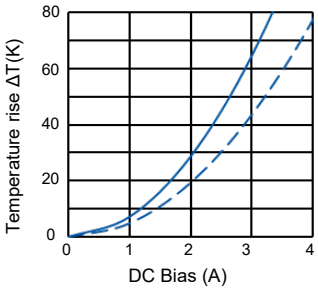
Performance characteristics (Reference②)

● Case Temperature vs DC Current

PWB condition A : Four-layer PWB (1.6 mm FR4).*3

PWB condition B : Multilayer PWB with high heat dissipation performance.*2

[ETQP4M101KVC]



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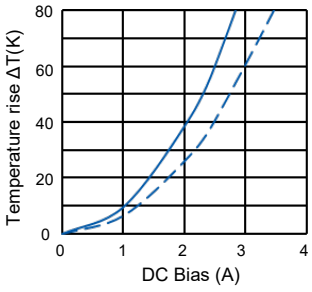

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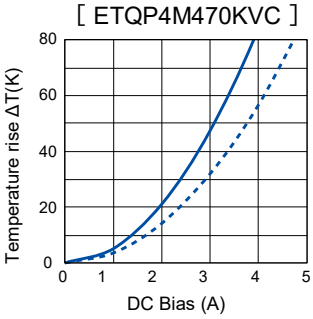

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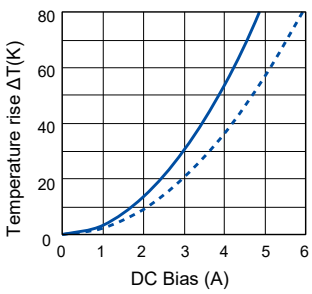

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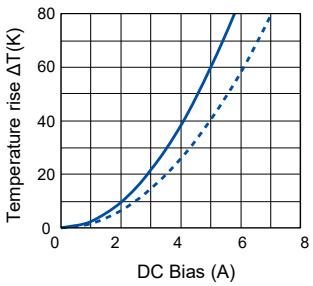

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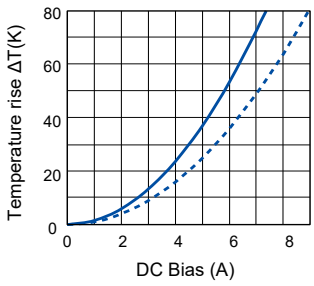

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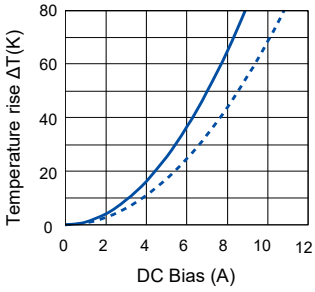
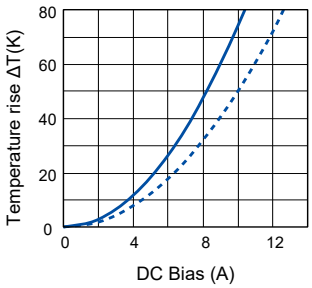
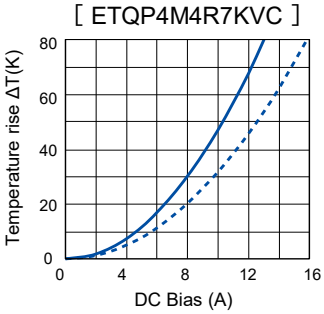


[ETQP4M6R8KVC]



[ETQP4M4R7KVC]



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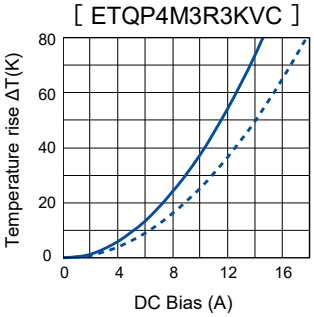
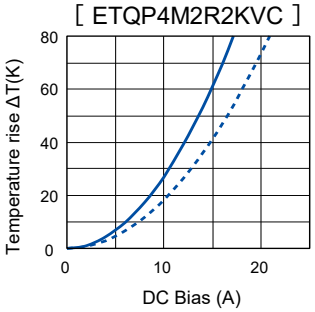
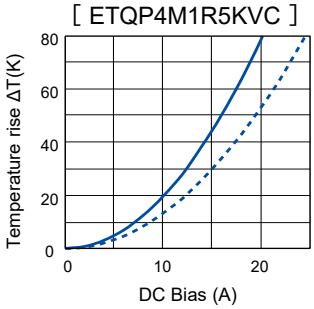


[ETQP4M2R2KVC]



[ETQP4M1R5KVC]



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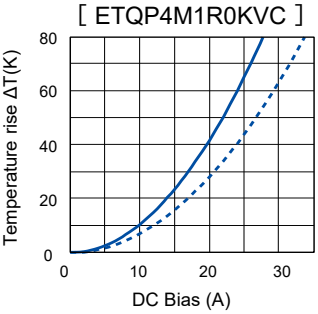
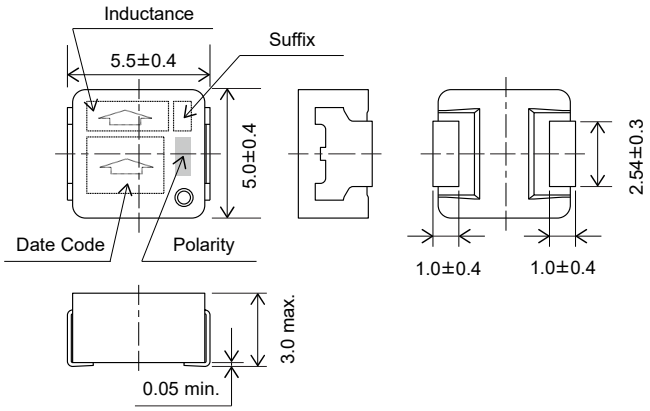


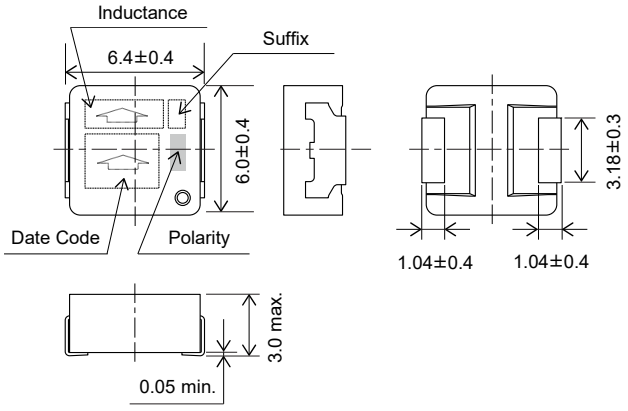
Dimensions in mm (not to scale)

Dimensional tolerance unless noted : ±0.5

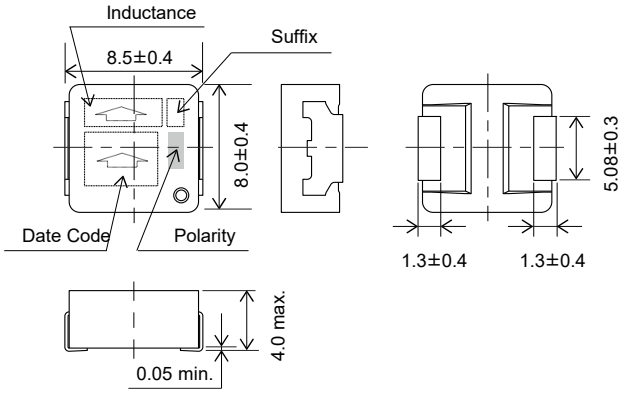
Series PCC-M0530M-LP
(ETQP3M□□□KVP)



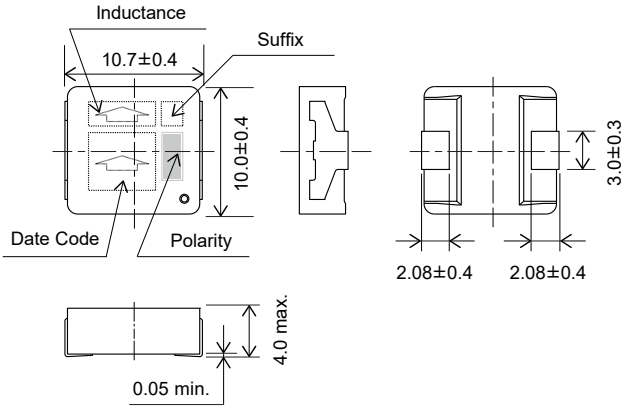
Series PCC-M0630M-LP
(ETQP3M□□□KVN)



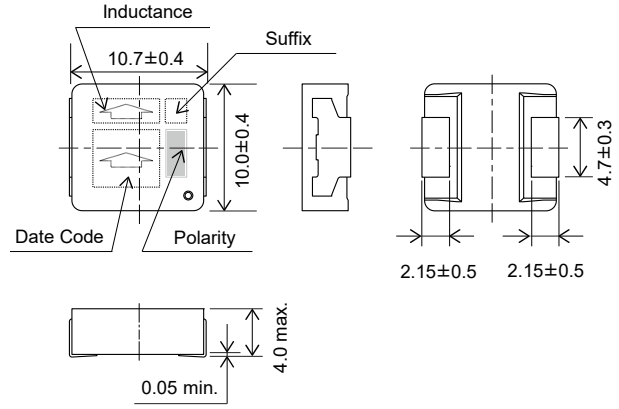
Series PCC-M0840M-LP
(ETQP4M□□□KVK)



Series PCC-M1040M-LP
(ETQP4M□□□✻KVC) ✻Exemption 1R0



Series PCC-M1040M-LP
(ETQP4M1R0KVC)

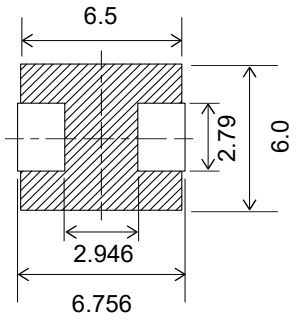


Unit : mm

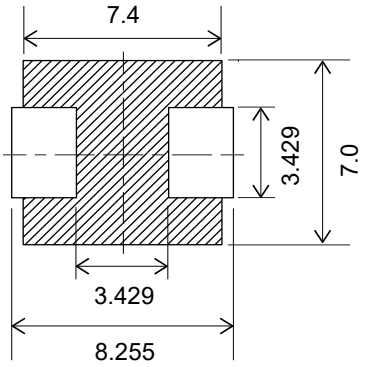
Recommended land pattern in mm (not to scale)

Dimensional tolerance unless noted : ±0.5

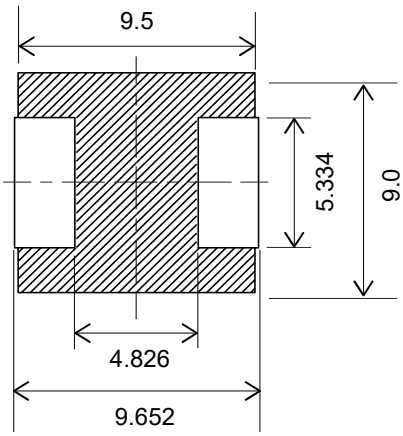
Series PCC-M0530M-LP
(ETQP3M□□□KVP)



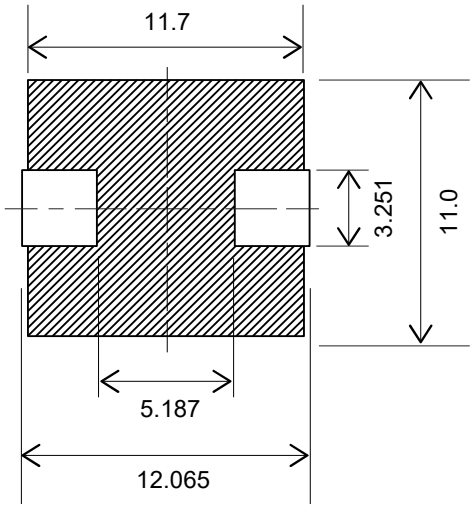
Series PCC-M0630M-LP
(ETQP3M□□□KVN)



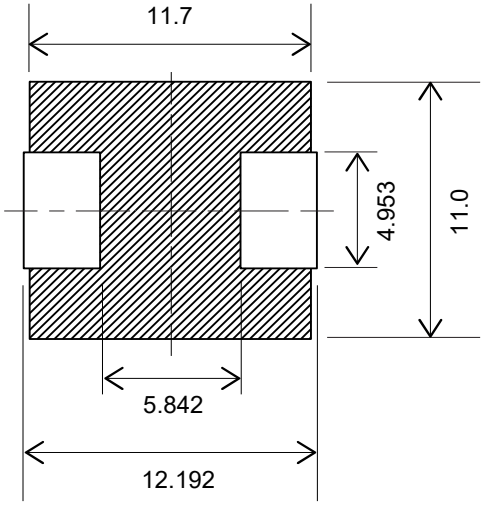
Series PCC-M0840M-LP
(ETQP4M□□□KVK)



Series PCC-M1040M-LP
(ETQP4M□□□✻KVC)✻Exemption 1R0



Series PCC-M1040M-LP
(ETQP4M1R0KVC)



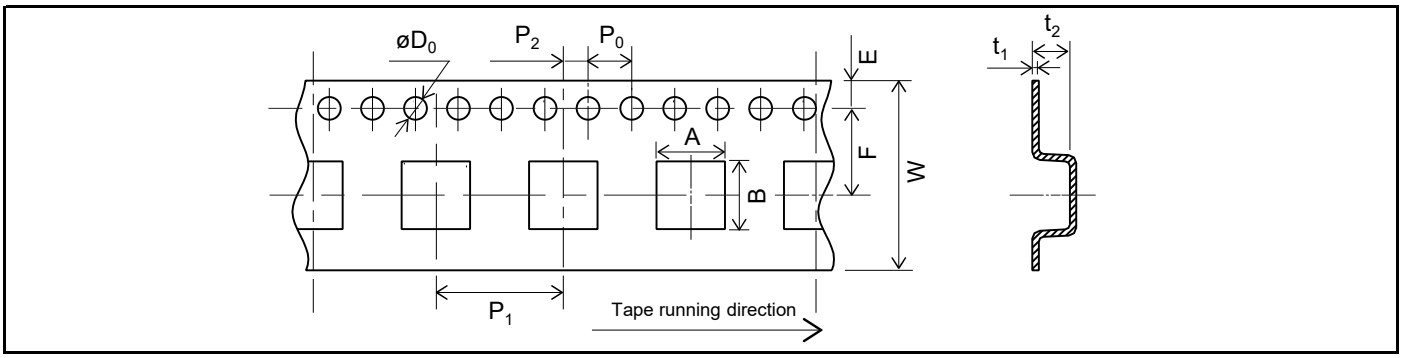
※Don't wire on the pattern on shaded portion the PWB.

Unit : mm

■ **As for soldering conditions and safety precautions (Power choke coils (Automotive grade)), please see data files**

Packaging methods (Taping)

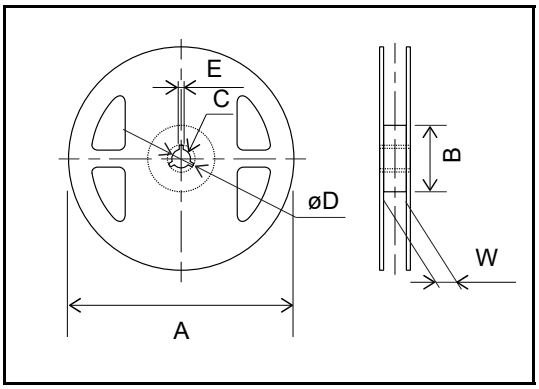
● Embossed carrier tape dimensions in mm (not to scale)



Unit : mm

Series	A	B	W	E	F	P_1	P_2	P_0	$øD_0$	t_1	t_2
PCC-M0530M-LP	5.6	6.1	12	1.75	5.5	8	2	4	1.5	0.3	3.3
PCC-M0630M-LP	6.5	7.1	16	1.75	7.5	8	2	4	1.5	0.3	3.3
PCC-M0840M-LP	8.63	9.1	16	1.75	7.5	12	2	4	1.5	0.4	6.0
PCC-M1040M-LP	10.65	11.75	24	1.75	11.5	16	2	4	1.5	0.5	6.35

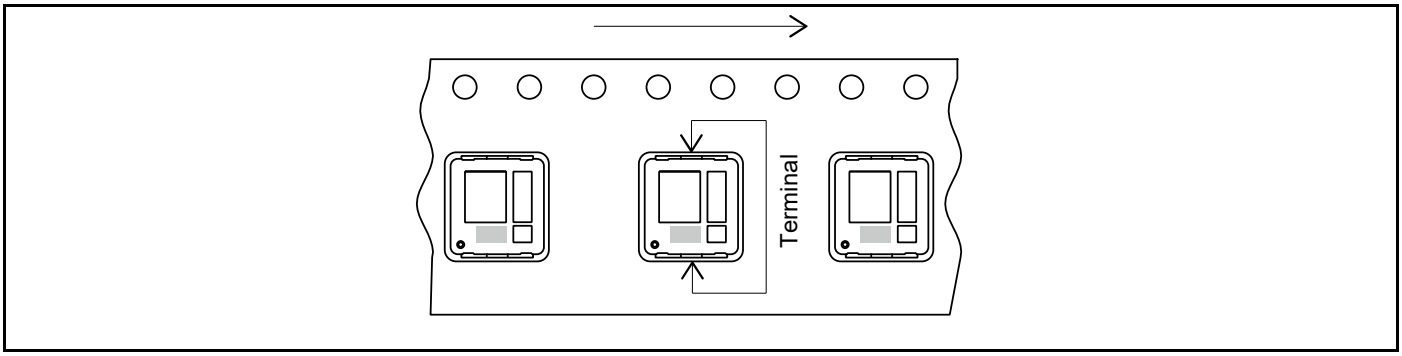
● Taping reel dimensions in mm (not to scale)



Unit : mm

Series	A	B	C	øD	E	W
PCC-M0530M-LP	330	(100)	13	21	2	13.5
PCC-M0630M-LP						17.5
PCC-M0840M-LP						
PCC-M1040M-LP						25.5

Parts mounting (Taping)



Standard packing quantity / Reel

Serise	Part No.	Minimum quantity / Packing unit	Quantity per reel
PCC-M0530M-LP	ETQP3M□□□KVP	4,000 pcs / box (2 reel)	2,000 pcs
PCC-M0630M-LP	ETQP3M□□□KVN		
PCC-M0840M-LP	ETQP4M□□□KVK	1,000 pcs / box (2 reel)	500 pcs
PCC-M1040M-LP	ETQP4M□□□KVC		

Panasonic INDUSTRY

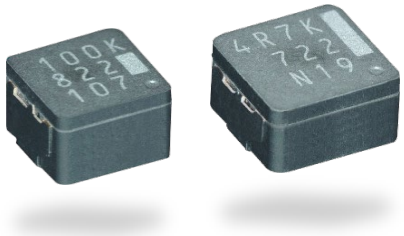
UPDATE

Power Inductors

Power Choke Coil (Automotive Grade)

PCC-M0648M-LE series

PCC-M0748M-LE series



High heat resistance and high reliability using metal composite core (MC)

Industrial property : Patents 3 (Registered 2 / Pending 1)

Features

- Low loss (Low DC resistance)
- High heat resistance : Operation up to 150 °C including self-heating. (180 °C short time*)
  * Please contact for possible to use over 150 °C condition. Temperature up to 180 °C may possibly be used.
- SMD type
- High-reliability : High vibration resistance as result of newly developed integral construction ; under severe reliability conditions of automotive and other strenuous applications
- High bias current : Excellent inductance stability using ferrous alloy magnetic material
- Temp. stability : Excellent inductance stability over broad temp. range
- Low audible (buzz) noise : A gapless structure achieved with metal composite core
- High efficiency : Low DC resistance of winding and low eddy-current loss of the core
- Shielded construction
- AEC-Q200 compliant
- RoHS compliant

Recommended applications

- Noise filter for various drive circuitry requiring high temp. operation and peak current handling capability
- Boost-Converter, Buck-Converter DC/DC

Standard packing quantity (Minimum quantity/Packing unit)

- 1,000 pcs/box (2 reel)

Explanation of part numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	T	Q	P		M				K	F	
Product code			Classification	Height	Winding	Inductance			Core	Suffix	Size

(Example)

Code	Inductance
4R7	4.7 µH
220	22 µH

Code	Size
N	□ 6 mm
M	□ 7 mm

Temperature rating

Operating temperature range		Tc : -40 ℃ to +150 ℃ (Including self-temperature rise)
Storage condition	After PWB mounting	
	Before PWB mounting	Ta : -5 ℃ to +35 ℃ 85%RH max.

1. PCC-M0648M-LE series (ETQP4M□□□KFN)

Standard parts

Part No.	Inductance*1		DCR (at 20 ℃) (mΩ)		Rated current (A) Typ.		Vibration resistance (G)	MSL level	Series [Size (mm)]
	L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T= 40 K*2 ( )*3	△L= –30 %*4	*5	*6	
ETQP4M3R3KFN	3.3	±20	13.1 (14.41)	±10	9.2 (7.2)	12.0	4.4	1	PCC-M0648M-LE [6.4×6.0×4.8]
ETQP4M4R7KFN	4.7		20.7 (22.77)		7.3 (5.7)	9.3			
ETQP4M6R8KFN	6.8		32.1 (35.31)		5.9 (4.6)	9.9			
ETQP4M100KFN	10.0		40.4 (44.44)		5.2 (4.1)	8.1			
ETQP4M150KFN	15.0		63.8 (70.18)		4.2 (3.3)	6.7			
NEW ETQP4M220KFN	22.0		113.0 (124.3)		3.1 (2.4)	4.1			

*1: Measured at 100 kHz

*2: The proved current value for making the overall temperature rise of 40K, when mounted on a multi-layer board with high-heat dissipation (heat dissipation constant 6.4 x 6.0 x 4.8 mm : approx. 30 K/W).

*3: The proved current value for making the overall temperature rise of 40K, when mounted on a 4-layer circuit board of FR4 t=1.6 mm and DC current is applied.

*4: Saturation rated current : DC current which causes L(0) drop –30 %.

*5: Vibration resistance conditions : Amplitude: 5 mm or less, sweep speed: 1 oct / min, frequency 5-2000 Hz, 3 directions/2 hours each, total 6 hours

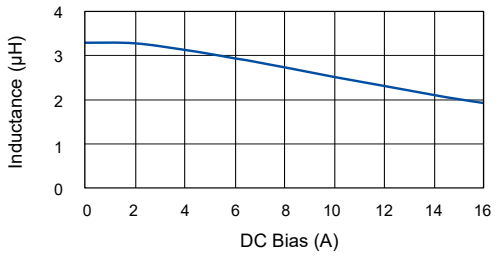
*6: The solderability is guaranteed for 1 year only. The product out of expiration date shall not be used.

◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +150°C should not be exceeded. Please contact for possible to use over 150 °C condition. Temperature up to 180 °C may possibly be used.

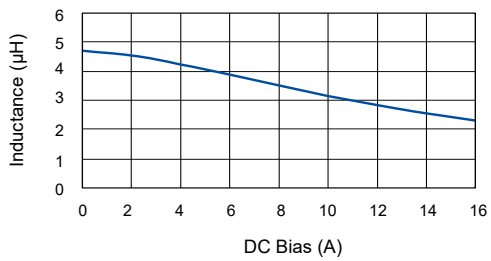
Performance characteristics (Reference①)

● Inductance vs DC Current

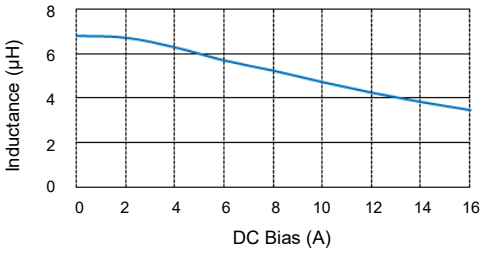
[ETQP4M3R3KFN]



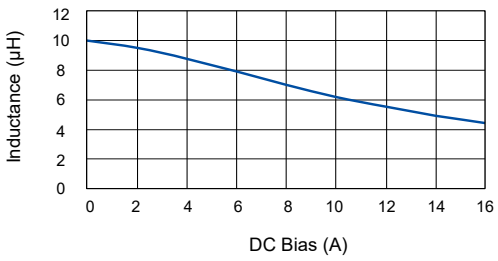
[ETQP4M4R7KFN]



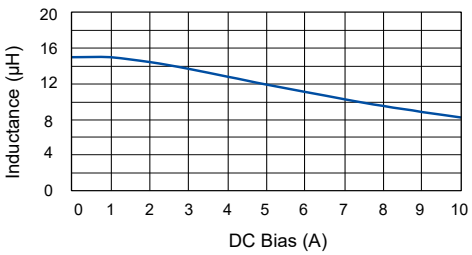
[ETQP4M6R8KFN]



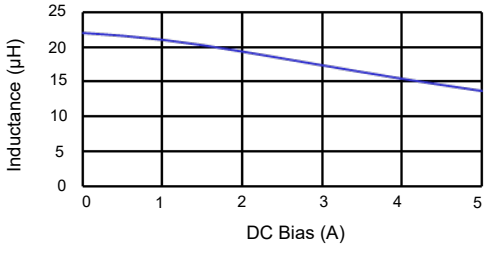
[ETQP4M100KFN]



[ETQP4M150KFN]



[ETQP4M220KFN]



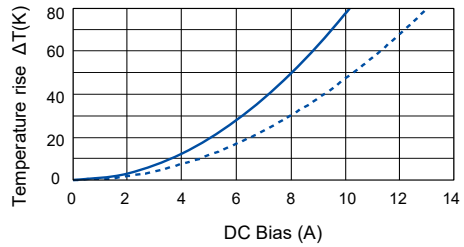
Performance characteristics (Reference②)

● Case Temperature vs DC Current

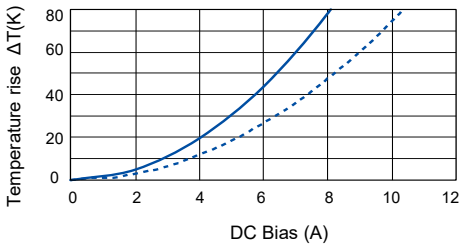
PWB condition A : Four-layer PWB (1.6 mm FR4).*3

PWB condition B : Multilayer PWB with high heat dissipation performance.*2

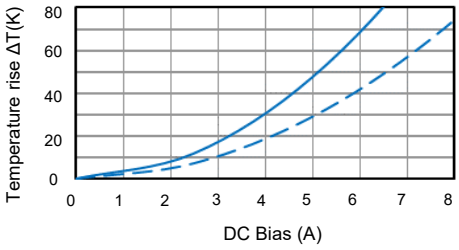
[ETQP4M3R3KFN]



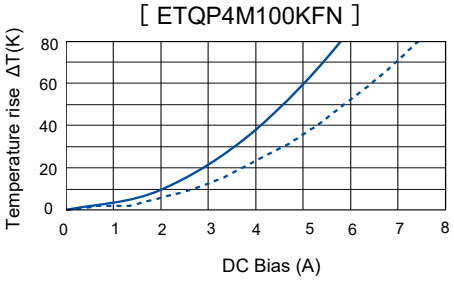
[ETQP4M4R7KFN]



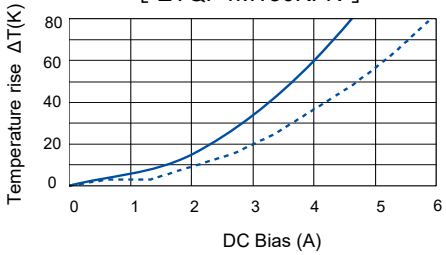
[ETQP4M6R8KFN]



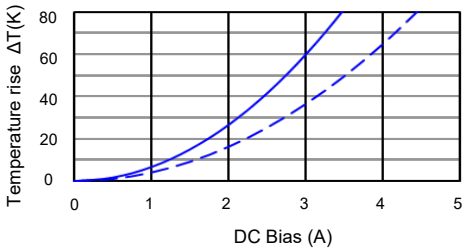
[ETQP4M100KFN]



[ETQP4M150KFN]



[ETQP4M220KFN]



2. PCC-M0748M-LE series (ETQP4M□□□KFM)

Standard parts

Part No.	Inductance*1		DCR (at 20 ℃) (mΩ)		Rated current (A) Typ.		Vibration resistance (G)	MSL level	Series [Size (mm)]
	L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T= 40 K*2 ( )*3	△L= –30 %*4	*5	*6	
ETQP4M4R7KFM	4.7	±20	16.8 (18.48)	±10	8.8 (6.5)	10.7	4.4	1	PCC-M0748M-LE [7.4×7.0×4.8]
ETQP4M100KFM	10.0		36.0 (39.60)		6.0 (4.5)	9.6			
NEW ETQP4M150KFM	15.0		60.7 (66.77)		4.6 (3.4)	7.2			
ETQP4M220KFM	22.0		84.1 (92.51)		3.9 (2.9)	4.6			
ETQP4M330KFM	33.0		115.0 (126.5)		3.4 (2.5)	4.2			
ETQP4M470KFM	47.0		148.6 (163.46)		2.9 (2.2)	3.7			

*1: Measured at 100 kHz

*2: The proved current value for making the overall temperature rise of 40K, when mounted on a multi-layer board with high-heat dissipation (heat dissipation constant 7.4 x 7.0 x 4.8 mm : approx. 30 K/W).

*3: The proved current value for making the overall temperature rise of 40K, when mounted on a 4-layer circuit board of FR4 t=1.6 mm and DC current is applied.

*4: Saturation rated current : DC current which causes L(0) drop –30 %.

*5: Vibration resistance conditions : Amplitude: 5 mm or less, sweep speed: 1 oct / min, frequency 5-2000 Hz, 3 directions/2 hours each, total 6 hours

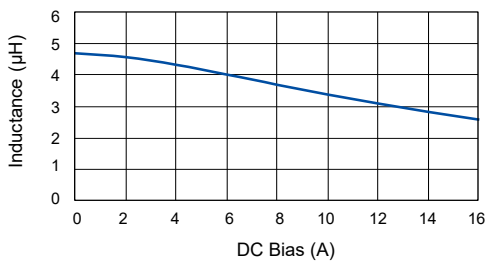
*6: The solderability is guaranteed for 1 year only. The product out of expiration date shall not be used.

◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +150°C should not be exceeded. Please contact for possible to use over 150 °C condition. Temperature up to 180 °C may possibly be used.

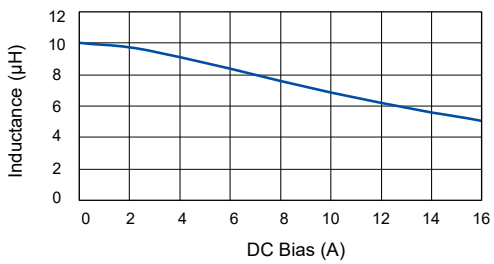
Performance characteristics (Reference①)

● Inductance vs DC Current

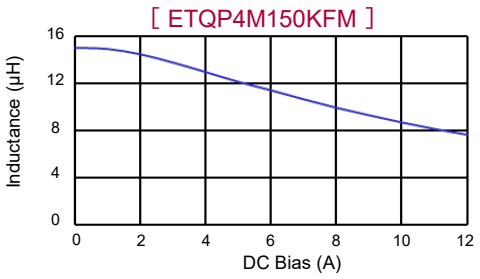
[ETQP4M4R7KFM]



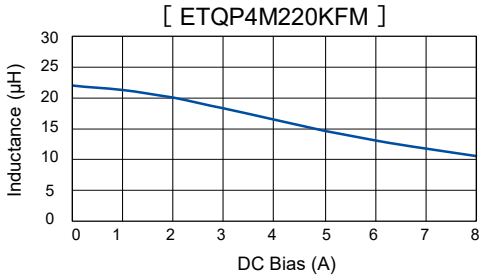
[ETQP4M100KFM]



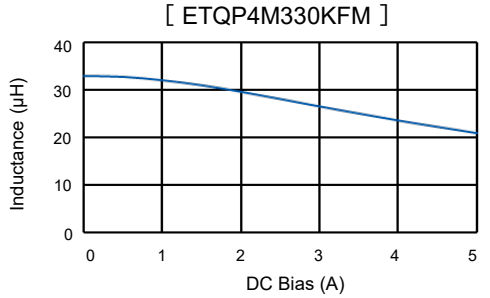
[ETQP4M150KFM]



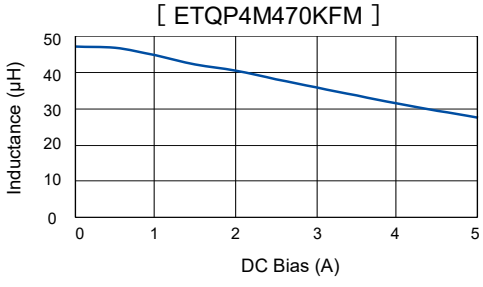
[ETQP4M220KFM]



[ETQP4M330KFM]



[ETQP4M470KFM]



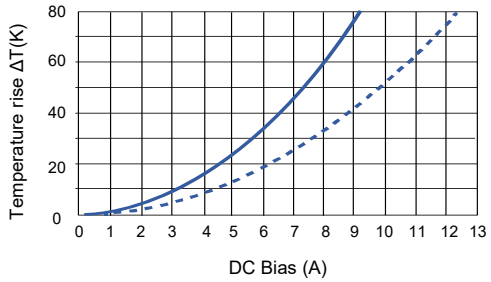
Performance characteristics (Reference②)

● Case Temperature vs DC Current

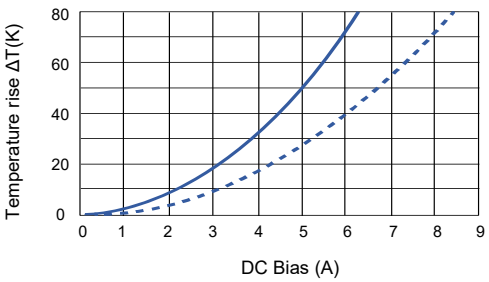
PWB condition A : Four-layer PWB (1.6 mm FR4).*3

PWB condition B : Multilayer PWB with high heat dissipation performance.*2

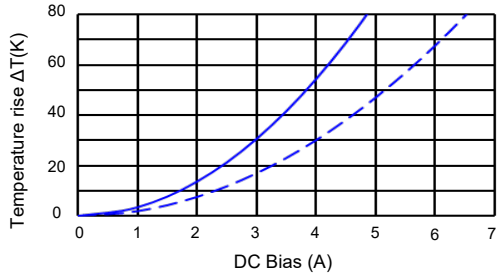
[ETQP4M4R7KFM]



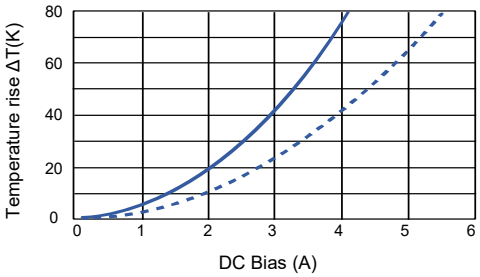
[ETQP4M100KFM]



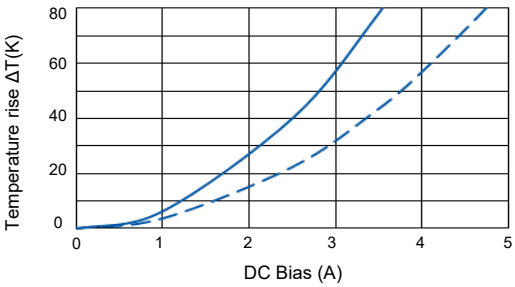
[ETQP4M150KFM]



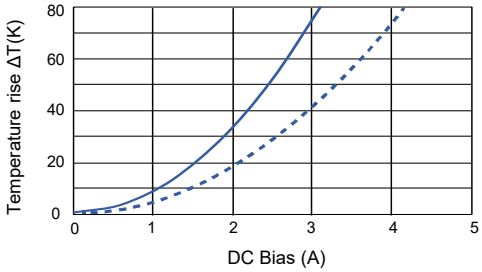
[ETQP4M220KFM]



[ETQP4M330KFM]



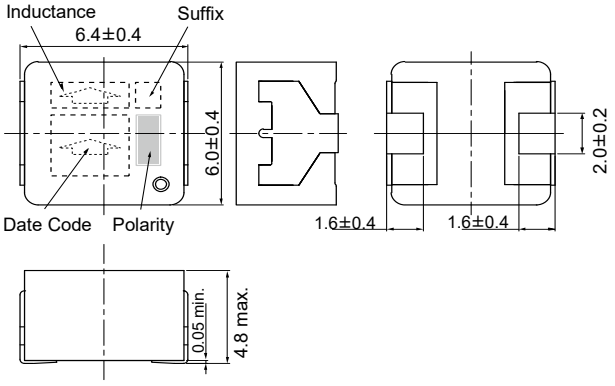
[ETQP4M470KFM]



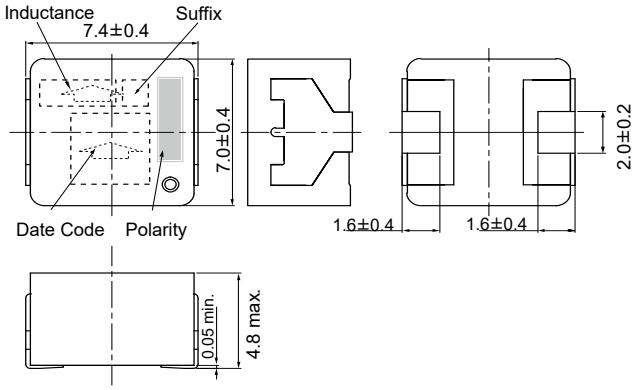
Dimensions in mm (not to scale)

Dimensional tolerance unless noted : ±0.5

Series PCC-M0648M-LE
(ETQP4M□□□KFN)



Series PCC-M0748M-LE
(ETQP4M□□□KFM)

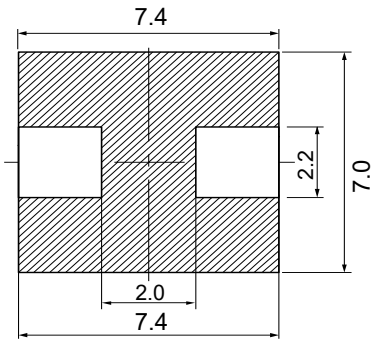


Unit : mm

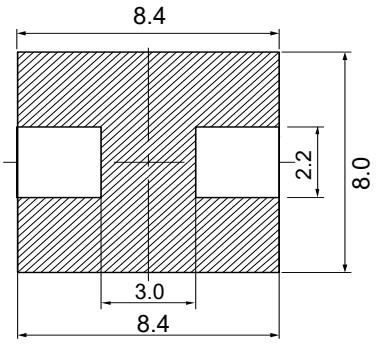
Recommended land pattern in mm (not to scale)

Dimensional tolerance unless noted : ±0.5

Series PCC-M0648M-LE
(ETQP4M□□□KFN)



Series PCC-M0748M-LE
(ETQP4M□□□KFM)



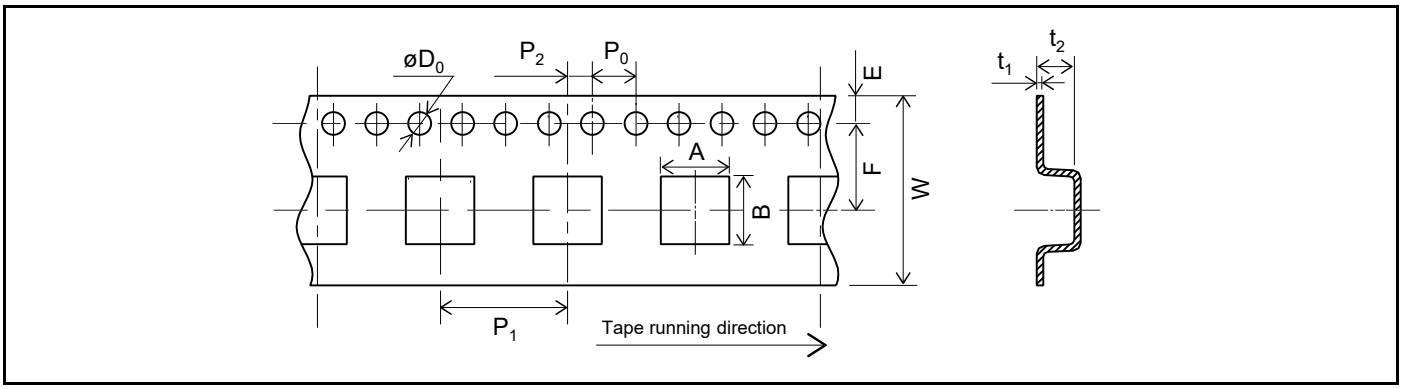
※Don't wire on the pattern on shaded portion the PWB.

Unit : mm

■ **As for soldering conditions and safety precautions (Power choke coils (Automotive grade)), please see data files**

Packaging methods (Taping)

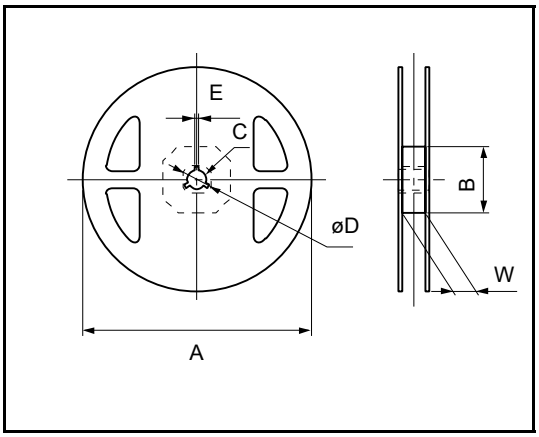
● Embossed Carrier Tape Dimensions in mm (not to scale)



Unit : mm

Series	A	B	W	E	F	P_1	P_2	P_0	$øD_0$	t_1	t_2
PCC-M0648M-LE	6.6	7.1	16	1.75	7.5	12	2	4	1.5	0.4	5.0
PCC-M0748M-LE	7.6	8.1	16	1.75	7.5	12	2	4	1.5	0.4	6.0

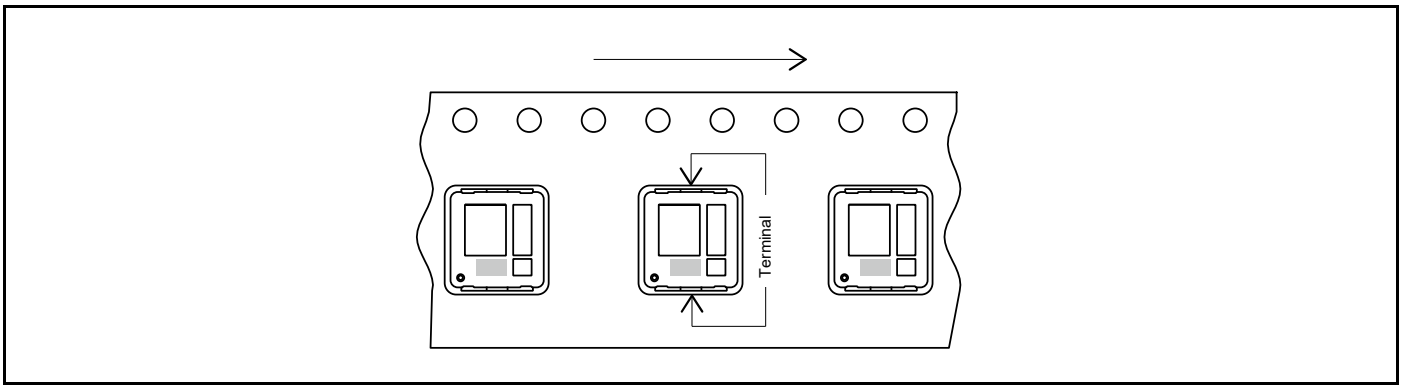
● Taping Reel Dimensions in mm (not to scale)



Unit : mm

Series	A	B	C	øD	E	W
PCC-M0648M-LE	330	(100)	13	21	2	17.5
PCC-M0748M-LE						

Parts mounting (Taping)



Standard packing quantity / Reel

Serise	Part No.	Minimum quantity / Packing unit	Quantity per reel
PCC-M0648M-LE	ETQP4M□□□KFN	1,000 pcs / box (2 reel)	500 pcs
PCC-M0748M-LE	ETQP4M□□□KFM		

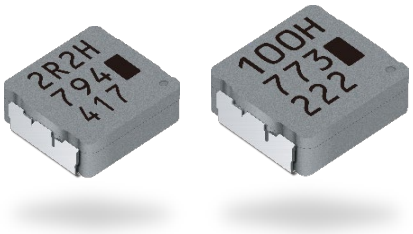
Panasonic
INDUSTRY

Power Inductors

Power Choke Coil (Automotive Grade)

PCC-M0530M-H series

PCC-M0630M-H series



High heat resistance and high reliability using metal composite core (MC)

Features

- Reduce core loss in high frequency band (More than 2 MHz)
- High heat resistance : Operation up to 150 ℃ including self-heating
- Low profile : 3 mm max. height
- SMD type
- High-reliability : High vibration resistance as result of newly developed integral construction ; under severe reliability conditions of automotive and other strenuous applications
- High bias current : Excellent inductance stability using ferrous alloy magnetic material
- Temp. stability : Excellent inductance stability over broad temp. range
- Low audible (buzz) noise : A gapless structure achieved with metal composite core
- High efficiency : Low DC resistance of winding and low eddy-current loss of the core
- Shielded construction
- AEC-Q200 compliant
- RoHS compliant

Recommended applications

- Noise filter for various drive circuitry requiring high temp. operation and peak current handling capability
- Boost-Converter, Buck-Converter DC/DC

Standard packing quantity (Minimum quantity/Packing unit)

- 2,000 pcs/box (2 reel)

Explanation of part numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	T	Q	P		M				H	F	
Product code			Classification	Height	Winding	Inductance			Core	Suffix	Size

(Example)

Code	Inductance
2R2	2.2 μH
100	10 μH

Code	Size
P	□ 5 mm
N	□ 6 mm

Temperature rating

Operating temperature range		Tc : -40 ℃ to +150 ℃ (Including self-temperature rise)
Storage condition	After PWB mounting	
	Before PWB mounting	Ta : -5 ℃ to +35 ℃ 85%RH max.

PCC-M0530M-H / PCC-M0630M-H series (ETQP3M□□□HFP/ETQP3M□□□HFN)

Standard parts

Part No.	Inductance*1		DCR (at 20 ℃) (mΩ)		Rated current (A) Typ.		MSL level	Series [Size (mm)]
	L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T= 40 K*2 ( )*3	△L= –30 %*4	*5	
ETQP3M2R2HFP	2.2	±20	19.5 (21.45)	±20	6.3 (5.2)	9.0	1	PCC-M0530M-H [5.5×5.0×3.0]
ETQP3M100HFN	10.0		68.0 (74.8)		3.7 (3.0)	5.5	1	PCC-M0630M-H [6.5×6.0×3.0]
ETQP3M220HFN	22.0		144.0 (158.4)		2.5 (2.1)	4.0	1	

*1: Measured at 100 kHz

*2: The proved current value for making the overall temperature rise of 40K, when mounted on a multi-layer board with high-heat dissipation (heat dissipation constant : approx. 20 K/W).

*3: The proved current value for making the overall temperature rise of 40K, when mounted on a 4-layer circuit board of FR4 t=1.6 mm and DC current is applied.

*4: Saturation rated current : DC current which causes L(0) drop –30 %.

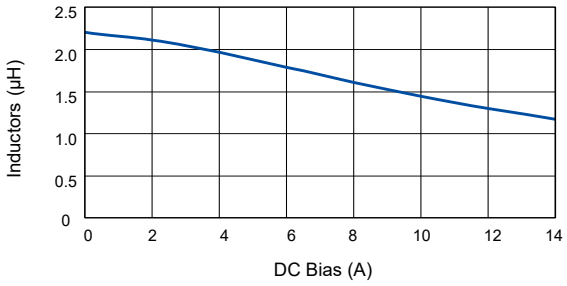
*5: The solderability is guaranteed for 1 year only. The product out of expiration date shall not be used.

◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +150°C should not be exceeded. For higher operating temperature conditions, please contact Panasonic representative in your area.

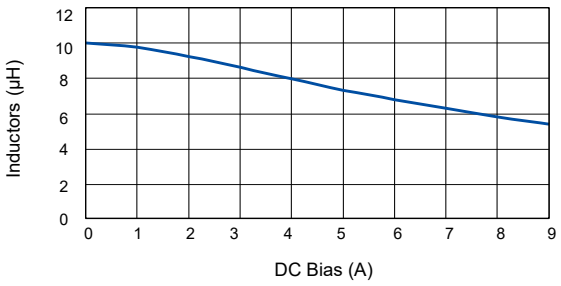
Performance characteristics (Reference①)

● Inductance vs DC Current

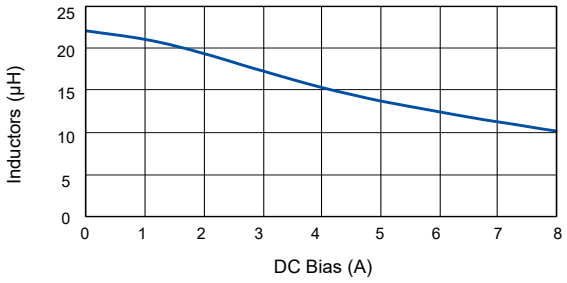
[ETQP3M2R2HFP]



[ETQP3M100HFN]



[ETQP3M220HFN]



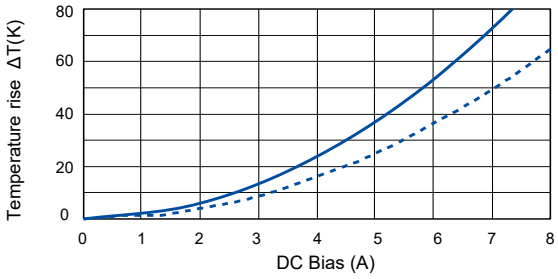
Performance characteristics (Reference②)

● Case Temperature vs DC Current

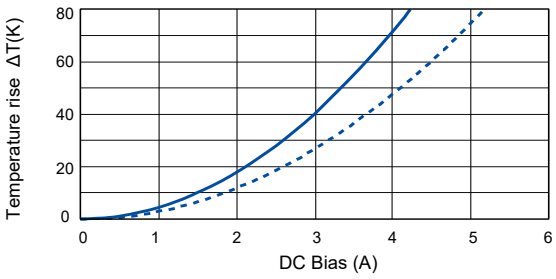
PWB condition A : Four-layer PWB (1.6 mm FR4).*3

PWB condition B : Multilayer PWB with high heat dissipation performance.*2

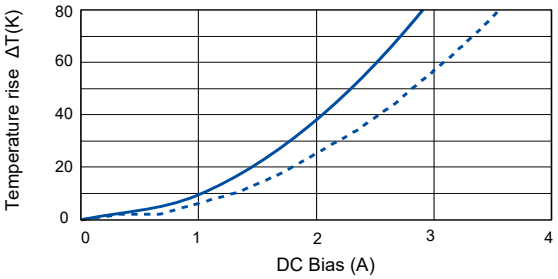
[ETQP3M2R2HFP]



[ETQP3M100HFN]



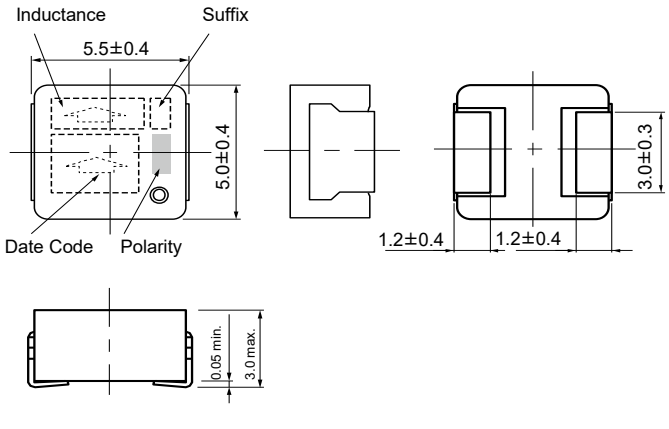
:TQP3M2208/208/208/20HFI



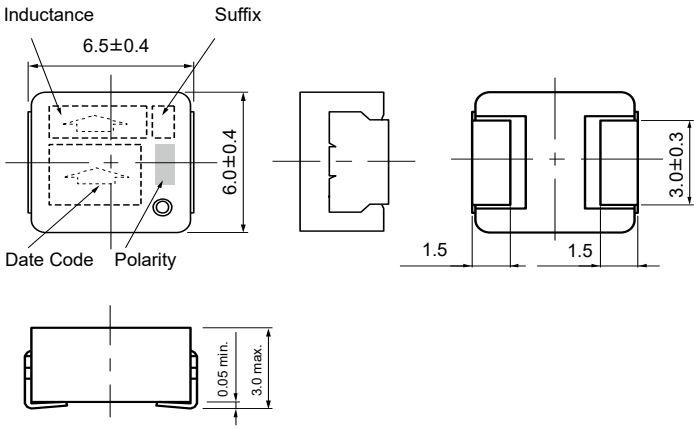
Dimensions in mm (not to scale)

Dimensional tolerance unless noted : ±0.5

Series PCC-M0530M-H
(ETQP3M□□□HFP)



Series PCC-M0630M-H
(ETQP3M□□□HFN)

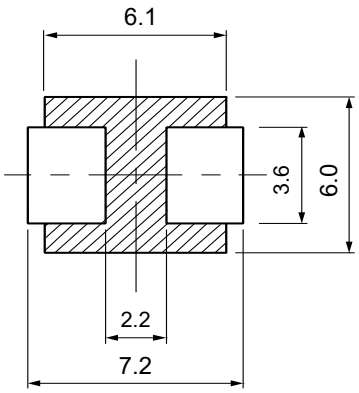


Unit : mm

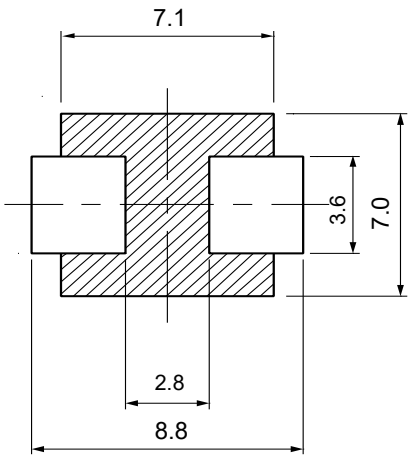
Recommended land pattern in mm (not to scale)

Dimensional tolerance unless noted : ±0.5

Series PCC-M0530M-H
(ETQP3M□□□HFP)



Series PCC-M0630M-H
(ETQP3M□□□HFN)



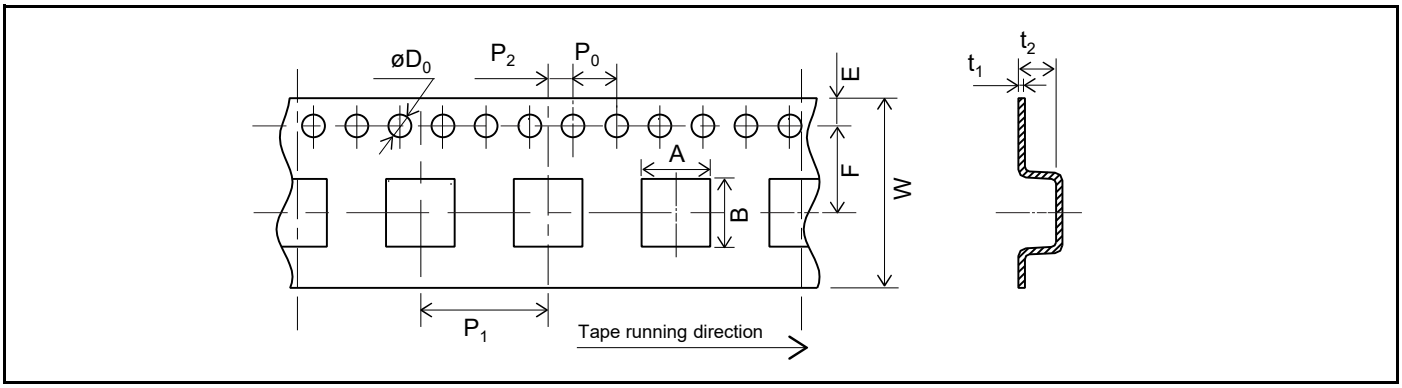
※Don't wire on the pattern on shaded portion the PWB.

Unit : mm

■ **As for soldering conditions and safety precautions (Power choke coils (Automotive grade)), please see data files**

Packaging methods (Taping)

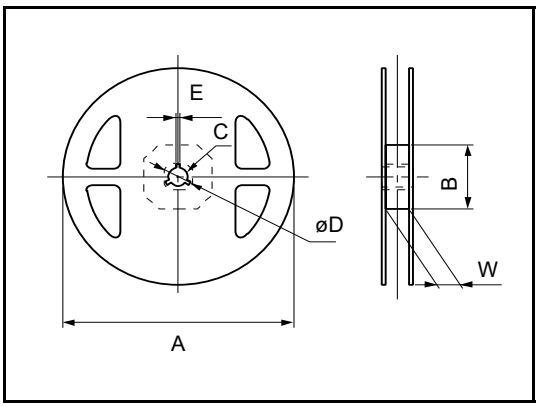
● Embossed carrier tape dimensions in mm (not to scale)



Unit : mm

Series	A	B	W	E	F	P_1	P_2	P_0	$øD_0$	t_1	t_2
PCC-M0530M-H	5.6	6.1	16	1.75	7.5	12	2	4	1.5	0.4	3.3
PCC-M0630M-H	7.1	6.6	16	1.75	7.5	12	2	4	1.5	0.4	3.3

● Taping reel dimensions in mm (not to scale)

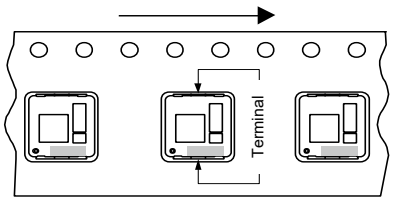


Unit : mm

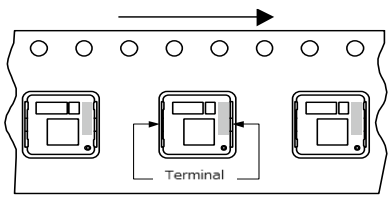
Series	A	B	C	øD	E	W
PCC-M0530M-H	330	(100)	13	21	2	17.5
PCC-M0630M-H						

Parts mounting (Taping)

Series PCC-M0530M-H



SeriesPCC-M0630M-H



Standard packing quantity / Reel

Serise	Part No.	Minimum quantity / Packing unit	Quantity per reel
PCC-M0530M-H	ETQP3M□□□HFP	2,000 pcs / box（2 reel）	1,000 pcs
PCC-M0630M-H	ETQP3M□□□HFN		

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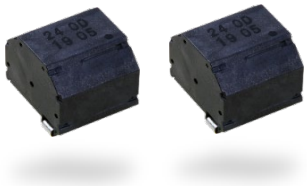
Power Inductors

Power Choke Coil (Automotive Grade)

PCC-D1413H (DUST) series



Realize high heat resistance, low loss and high reliability with dust core (DUST)

Industrial property : patents 5 (Pending)

Features

- ●High heat resistance : Operation up to 150 ℃ including self-heating
- ●SMD and small package : L 14.7×W 13.2×H 13.1 mm
- ●High-reliability : High vibration resistance as result of newly developed integral construction ; under severe reliability conditions of automotive and other strenuous applications
- ●High bias current : Excellent inductance stability using ferrous alloy magnetic material
- ●High Vibration proof : 5 Hz to 2 kHz/30 G
- ●High efficiency : Achieve by Low loss Dust core and Edgewise coil with rectangular wire
- ●Shielded construction
- ●AEC-Q200 compliant
- ●RoHS compliant

Recommended applications

● Driver circuits of fuel injection systems in automotive, driver circuits of diesel common rail injection, step-up power supplies for motor driver-circuits

Standard packing quantity (Minimum quantity/Packing unit)

● 600 pcs /10 tray

Explanation of part numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	T	Q	P		H				D		
Product Code			Classification	Height	Winding	Inductance			Core	Suffix	Size

Temperature rating

Operating temperature range		Tc : -40 ℃ to +150 ℃ (Including self-temperature rise)
Storage condition	After PWB mounting	
	Before PWB mounting	Ta : -5 ℃ to +35 ℃ 85%RH max.

Standard parts

Part No.	Inductance[*1]		DCR	ACR	Rated current[*3]
	L0 at 0A (μH)	L1 at 10A (μH)	at 20 ℃ (mΩ)	at 20 kHz (mΩ)	△T=40K (A)
ETQPDH240DTV	36.0±30 %	(24.0)[*2]	25.8 typ.	50.0 typ.	6.9

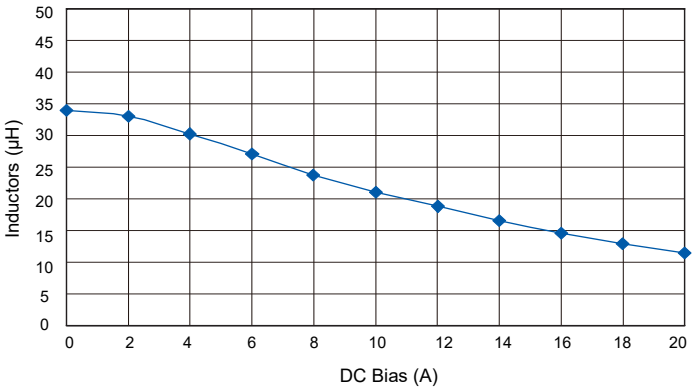
*1: Measured at 100 kHz.
*2: Reference Only.
*3: DC current which causes temperature rise of 40K. Parts are soldered by reflow on four-layer PWB(1.6 mm FR4) and measured at room temperature.

◆ Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +150℃ should not be exceeded. For higher operating temperature conditions, please contact Panasonic representative in your area.

Performance characteristics (Reference)

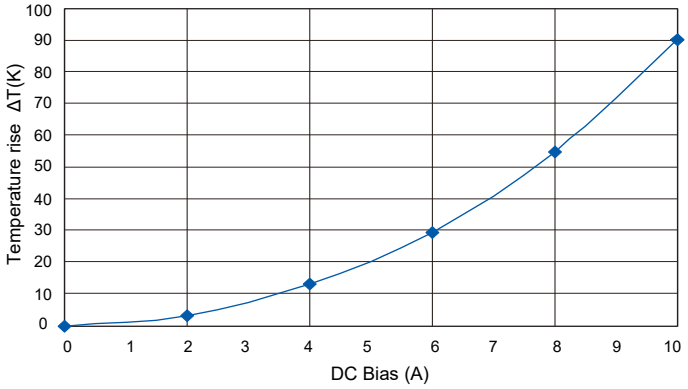
● Inductance vs DC Current

[ETQPDH240DTV]



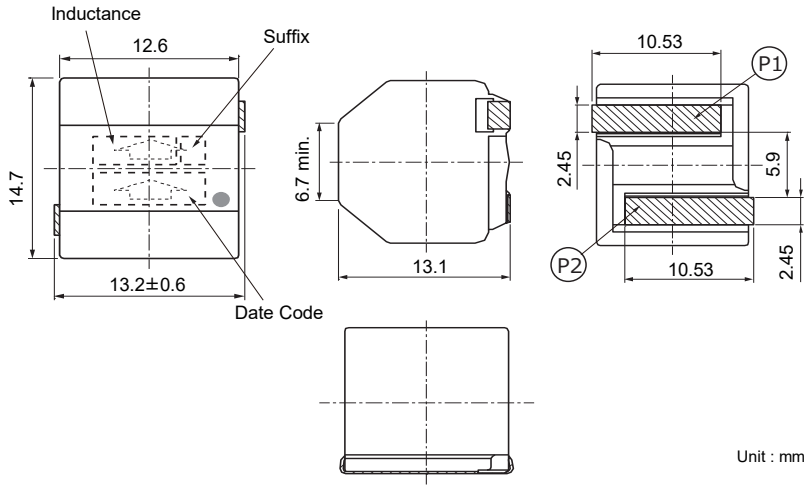
● Case Temperature vs DC Current

[ETQPDH240DTV]



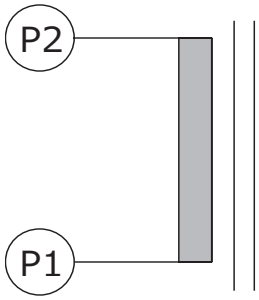
Dimensions in mm (not to scale)

Dimensional tolerance unless noted : ±0.5



Unit : mm

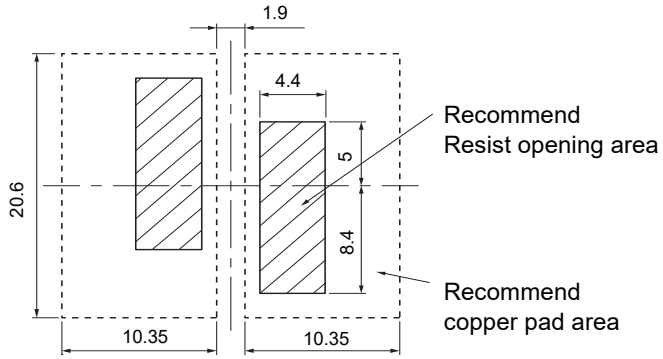
Connection



✻None polar character

Recommended land pattern in mm (not to scale)

Dimensional tolerance unless noted : ±0.5



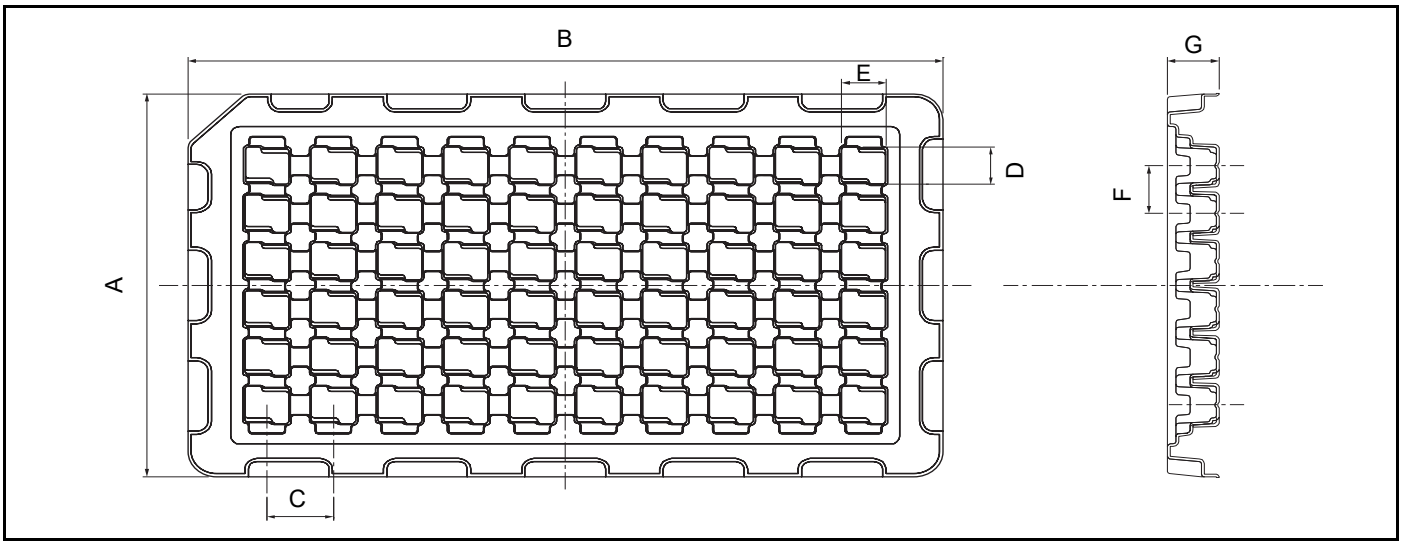
✻ Due to bigger part, Thermal Capacity is large and may occure PWB temperature differences during reflow process.
Recommended land pattern (Heat absorb) should be designed with reflow mountablity.

Unit : mm

■ **As for soldering conditions and safety precautions (Power choke coils (Automotive grade)), please see data files**

Packaging methods (Tray)

● Blister tray (mm) 60 pcs

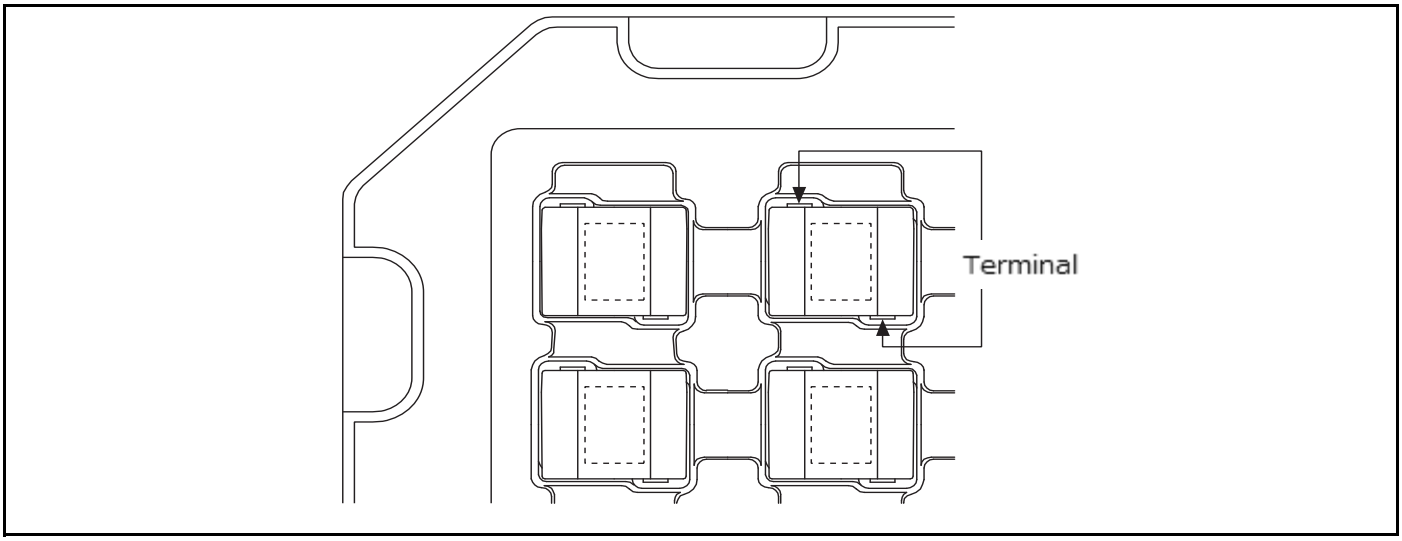


● Blister tray dimention

Unit : mm

Part No.	A	B	C	D	E	F	G
ETQPDH240DTV	152	262	23	14.8	15.1	19	18

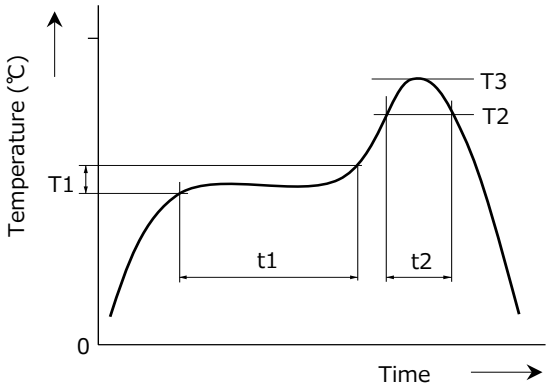
Parts mounting (Tray)



Standard packing quantity / Tray

Part No.	Quantity
ETQPDH240DTV	600 pcs / 10 Tray (60 pcs / 1 Tray)

Reflow soldering conditions



● Pb free solder recommended temperature profile

Power Choke Coils (Automotive Grade)

Series	Preheat		Soldering		Peak temperature		Time of reflow
	T1 [℃]	t1 [s]	T2 [℃]	t2 [s]	T3	T3 limit	
ETQP3M□□□YFP	150 to 170	60 to 120	230℃	30 to 40	250℃, 5 s	260℃, 10 s	2 times max.
ETQP4M□□□YFP							
ETQP3M□□□YFN							
ETQP4M□□□YFN							
ETQP5M□□□YFM							
ETQP5M□□□YGM							
ETQP5M□□□YFK							
ETQP5M□□□YGK							
ETQP5M□□□YFC							
ETQP5M□□□YGC							
ETQP5M□□□YLC							
ETQP6M□□□YLC							
ETQP5M□□□YSK							
ETQP5M□□□YSC							
ETQP8M□□□JFA							
ETQP3M□□□KVP							
ETQP3M□□□KVN							
ETQP4M□□□KVK							
ETQP4M□□□KVC							
ETQP4M□□□KFN							
ETQP4M□□□KFM							
ETQP3M□□□HFP							
ETQP3M□□□HFN							
ETQPDH□□□DTV							

⚠ Application Guidelines (Automotive grade)

Safety precautions

- When using our products, no matter what sort of equipment they might be used for, be sure to make a written agreement on the specifications with us in advance. The design and specifications in this catalog are subject to change without prior notice.
- Do not use the products beyond the specifications described in this catalog.
- This catalog explains the quality and performance of the products as individual components. Before use, check and evaluate their operations when installed in your products.
- Install the following systems for a failsafe design to ensure safety if these products are to be used in equipment where a defect in these products may cause the loss of human life or other significant damage, such as damage to vehicles (automobile, train, vessel), traffic lights, medical equipment, aerospace equipment, electric heating appliances, combustion/gas equipment, rotating equipment, and disaster/crime prevention equipment.
  ✻ Systems equipped with a protection circuit and a protection device.
  ✻ Systems equipped with a redundant circuit or other system to prevent an unsafe status in the event of a single fault.

Precautions for use

1. Provision to abnormal condition

This power choke coil itself does not have any protective function in abnormal condition such as overload, short-circuit and open-circuit conditions, etc.
Therefore, it shall be confirmed as the end product that there is no risk of smoking, fire, dielectric withstand voltage, insulation resistance, etc. in abnormal conditions to provide protective devices and/or protection circuit in the end product.

2. Temperature rise

Temperature rise of power choke coil depends on the installation condition in end products. It shall be confirmed in the actual end product that temperature rise of power choke coil is in the limit of specified temperature class.

3. Dielectric strength

Dielectric withstanding test with higher voltage than specific value will damage Insulating material and shorten its life.

4. Water

This Power choke coil must not be used in wet condition by water, coffee or any liquid because insulation strength becomes very low in such condition.

5. Potting

If this power choke coil is potted in some compound, coating material of magnet wire might be occasionally damaged. Please ask us if you intend to pot this power choke coil.

6. Model

When this power choke coil is used in a similar or new product to the original one, it might be unable to satisfy he specifications due to difference of condition of usage.
Please ask us if you use this power choke coil in the manner such as above.

7. Drop

If the power choke coil receives mechanical stress such as drop, characteristics may become poor (due to damage on coil bobbin, etc.). Never use such stressed power choke coil.

8. Buzz Noise

When this coil is used in the frequency band of the audible range (≒ 20 Hz to 20 kHz), or, when using in burst mode, depending on the operating conditions (conditions of the energized waveform) sounds (buzz noise) may occur. Depending on the circuit / board installation environment it may be heard as abnormal sounds, so please check in advance.

9. Solvent (Series MC)

If this power choke coil is dipped in the cleaning agent, and the coating agent of the toluene and the xylene system, there is a possibility that the performance decreases greatly. Please ask us if you intend to pot this power choke coil.

10. Static electricity measures (Series MC)

①Circuit design
Please set up the ESD measures parts such as capacitors in the former steps of this power choke coil for static electricity when there is a possibility that static electricity is impressed to the choke coil on the circuit.
Moreover, please consult our company about such a case once.

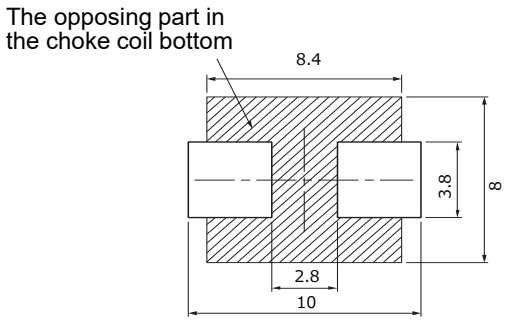
②Treatment with single

Take countermeasures against static electricity when using single power choke coil. (process and equipment)
There is a possibility that the characteristic changes when the voltage of 200 V or more is impressed to this power choke coil. Please handle 200 V or less.

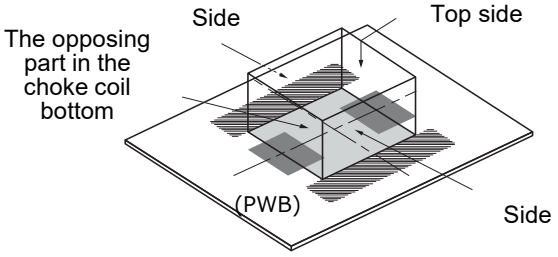
11. Printed circuit board design

①Land pattern and Via which exceed Operating Voltage, should not be placed top layer PWB under the products for keeping isolation between inside coil and surface of PWB. (Series DUST)

②To the opposing part in this power choke coil bottom please install neither pattern nor the beer, etc. (Series MC)



③Parts arranged around this power choke coil do not touch the surface of this power choke coil (Top side and side). (Series MC)



④This power choke coil is different from the ferrite core-type that installs general concentration GAP.
It has the leakage magnetic bunch distribution of the choke coil to the vertical direction. Please be cautious when using parts and circuit compositions which are easily affected by the leakage flux.

12. Other using emviroment

This power choke coil is not designed for the use in the following, special environment.
Therefore, please do not use it in the following special environment.

・Use in place where a lot of causticity gases such as sea breeze, Cl_2, H_2S, NH_3, SO_2, and NOx exist.
・Use in place where out-of-door exposure and direct sunshine strike.

13. Core Chipping and Core Crack

This choke coil has a possibility to make partial chipping or crack in the core due to excessive mechanical stress from outside, and might have initially a partial chipping and/or cracks that do not affect the quality.

14. Keeping environment

If this power choke coil is kept under following environment and condition, there is a possibility that the performance and soldering decreases greatly.

・Keep in place where a lot of causticity gases such as sea breeze, Cl_2, H_2S, NH_3, SO_2, and NOx exist.
・Keep in place where out-of-door exposure and direct sunshine strike.

＜Package markings＞

Package markings include the product number, quantity, and country of origin.
In principle, the country of origin should be indicated in English.

AEC-Q200 Compliant

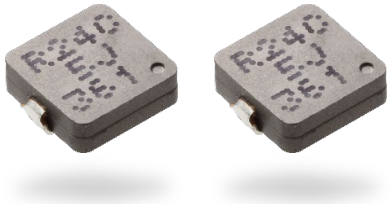
The products are tested based on all or part of the test conditions and methods defined in AEC-Q200.
Please consult with Panasonic for the details of the product specification and specific evaluation test results, etc., and please review and approve Panasonic's product specification before ordering.

Panasonic
INDUSTRY

Power Inductors

Power Choke Coil

PCC-M0730L (MC) series



Small mounting size for multi-phase DC/DC converter circuits

Industrial property : Patents 18 (Registered 15 / Pending 3)

Features

- Small type (8.7×7.0×H3.0 mm)
- High power (22 A)
- Low loss (DCR : 1.12 mΩ)
- Tighter DCR tolerance (±7 %)
- Suitable for high frequency circuit (up to 1 MHz)
- Low buzz noise due to its gap-less structure
- Shielded construction
- RoHS compliant

Recommended applications

- Notebook and Desktop PC power supply modules
- Servers, Routers, DC/DC converters for driving CPUs

Standard packing quantity (Minimum quantity/Packing unit)

- 3,000 pcs/box（2 reel）

Explanation of part numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	T	Q	P	3	L						
Product code			Classification	Size	Winding	Inductance			Core	Packaging	Suffix

Standard parts

Part No.	Inductance (at 20℃)[*1]			Rated current (A)[*2]	Rated current (reference) (A)[*3]	DC resistance (at 20℃) (mΩ) max.
	L0 at 0A	L1[*4]				
	(μH)	(μH)	Measurement current (A)			
ETQP3LR15CFM	0.15±20 %	(0.12)	29	29	43	0.66±7 %
ETQP3LR24CFM	0.24±20 %	(0.19)	22	22	35	1.12±7 %

*1: Inductance is measured at 1.0 MHz.

*2: Rated current defines actual value of DC current, when temperature rise of coil becomes 40 K. (Method A)

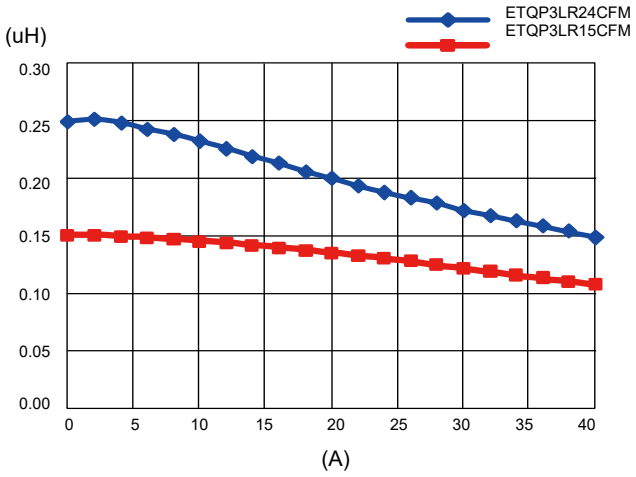
*3: Rated current (reference) defines actual value of DC current, when temperature rise of coil becomes 40 K. (Method B)

*4: Reference only

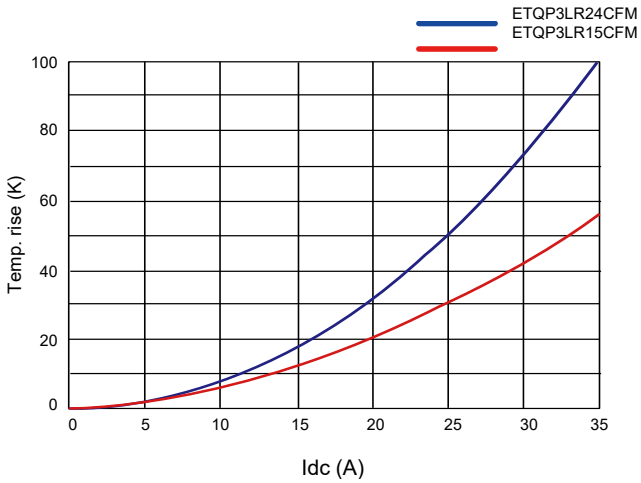
◆ Method A (PANASONIC's standard measurement conditions), Method B (high heat dissipation measurement) is different from Method A by the measurement methods. In normal application condition, the part's temperature depends on circuit design and heat dissipation condition. This condition shall be verified by the worst operational condition.

Performance characteristics (Reference)

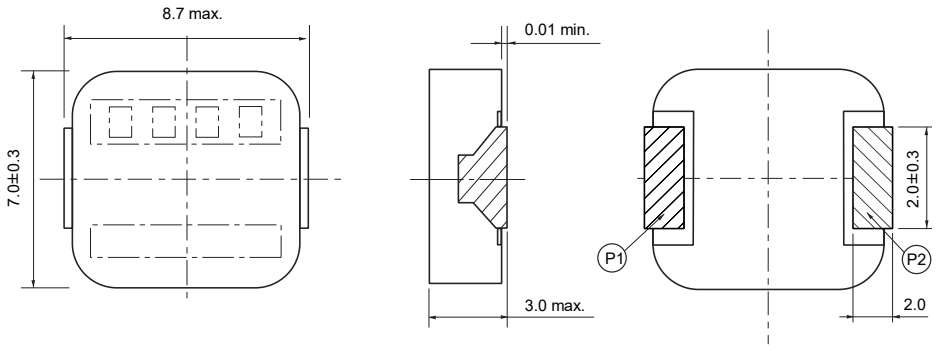
Inductance vs DC Current



Case Temperature vs DC Current (Method A)

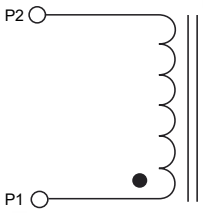


Dimensions in mm (not to scale)

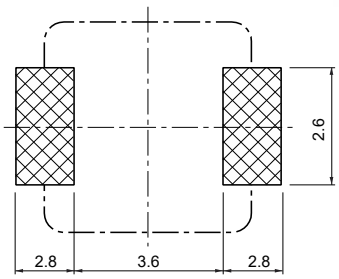


Unit : mm

Connection



Recommended land patterns in mm (not to scale)



Unit : mm

■ **As for soldering conditions and safety precautions (Power choke coils for consumer use), please see data files.**

Panasonic
INDUSTRY

Power Inductors

Power Choke Coil (Low DCR type)

PCC-M0740L (MC) series

Small mounting size for multi-phase DC/DC converter circuits

Industrial property : Patents 2 (Pending)

Features

- Small type (8.7×7.0×H4.0 mm)
- High power (17 A to 24 A)
- Low loss (DCR : 1.0 to 1.5 mΩ)
- Tighter DCR tolerance (±7 %)
- Suitable for high frequency circuit (up to 1 MHz)
- Low buzz noise due to its gap-less structure
- Shielded construction
- RoHS compliant

Recommended applications

- Notebook and Desktop PC power supply modules
- Servers, Routers, DC/DC converters for driving CPUs

Standard packing quantity (Minimum quantity/Packing unit)

- 3,000 pcs/box (2 reel)

Explanation of part numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	T	Q	P	4	L						
Product code			Classification	Size	Winding	Inductance			Core	Packaging	Suffix

Standard parts

Part No.	Inductance (at 20℃)[*1]			Rated current (A)[*2]	Rated current (reference) (A)[*3]	DC resistance (at 20℃) (mΩ) max.
	L0 at 0A	L1[*4]				
	(μH)	(μH)	Measurement current (A)			
ETQP4LR15AFM	0.15±20 %	(0.13)	29	29	43.0	0.66±7 %
ETQP4LR24AFM	0.24±20 %	(0.20)	24	24	35.5	1.00±7 %
ETQP4LR36AFM	0.36±20 %	(0.30)	20	20	31.0	1.35±7 %
ETQP4LR42AFM	0.42±20 %	(0.35)	17	17	28.5	1.50±7 %

*1: Inductance is measured at 1.0 MHz.

*2: Rated current defines actual value of DC current, when temperature rise of coil becomes 40 K. (Method A)

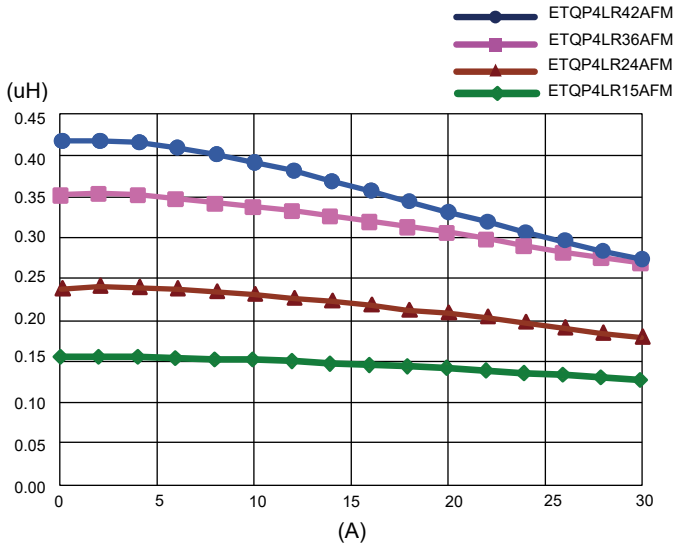
*3: Rated current (reference) defines actual value of DC current, when temperature rise of coil becomes 40 K. (Method B)

*4: Reference only

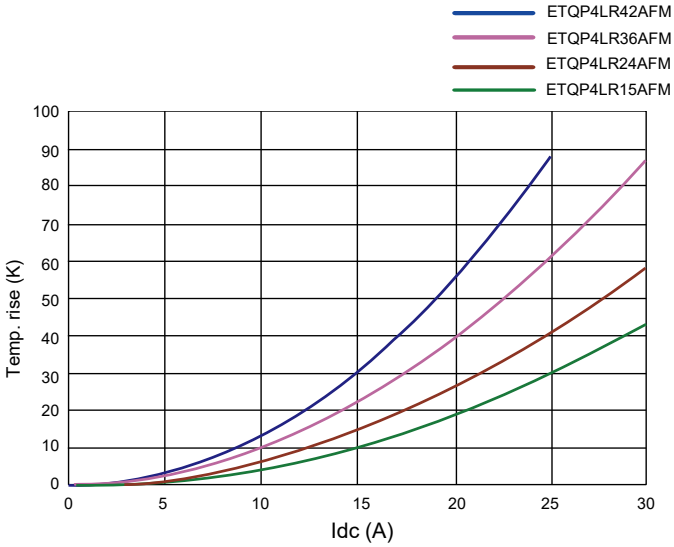
◆ Method A (PANASONIC's standard measurement conditions), Method B (high heat dissipation measurement) is different from Method A by the measurement methods. In normal application condition, the part's temperature depends on circuit design and heat dissipation condition. This condition shall be verified by the worst operational condition.

Performance characteristics (Reference)

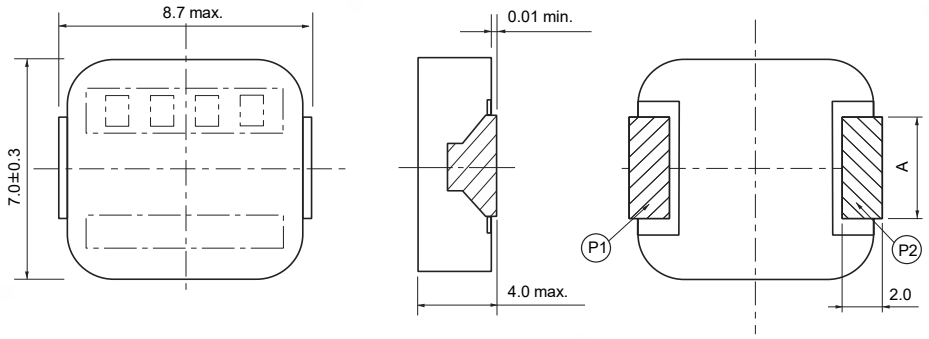
Inductance vs DC Current



Case Temperature vs DC Current（Method A）



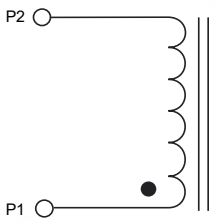
Dimensions in mm (not to scale)



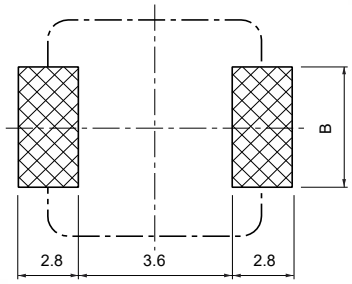
Unit : mm

Part No.	A
ETQP4LR15AFM	3.0±0.3
ETQP4LR24AFM	
ETQP4LR36AFM	2.0±0.3
ETQP4LR42AFM	

Connection



Recommended land patterns in mm (not to scale)



Unit : mm

Part No.	B
ETQP4LR15AFM	3.6
ETQP4LR24AFM	
ETQP4LR36AFM	2.6
ETQP4LR42AFM	

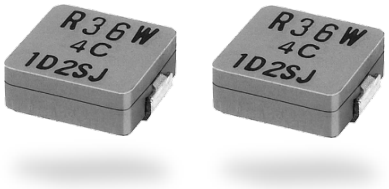
■ **As for soldering conditions and safety precautions (Power choke coils for consumer use), please see data files.**

Panasonic
INDUSTRY

Power Inductors

Power Choke Coil

PCC-M1040L (MC) series



Small mounting size for multi-phase DC/DC converter circuits

Industrial property : Patents 4 (Pending)

Features

- Small type (11.5×10.0×H4.0 mm)
- High power (21 A to 28 A)
- Low loss (DCR : 0.7 to 1.56 mΩ)
- Tighter DCR tolerance (±5 % to ±10 %)
- Suitable for high frequency circuit (up to 1 MHz)
- Low buzz noise due to its gap-less structure
- Shielded construction
- RoHS compliant

Recommended applications

- Notebook and Desktop PC power supply modules
- Servers, Routers, DC/DC converters for driving CPUs

Standard packing quantity (Minimum quantity/Packing unit)

- 2,000 pcs/box(2 reel): ETQP4LR36WFC, ETQP4LR56WFC, ETQP4LR45XFC
- 1,000 pcs/box(2 reel): ETQP4LR19WFC

Explanation of part numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	T	Q	P	4	L						
Product code			Classification	Size	Winding	Inductance			Core	Packaging	Suffix

Standard parts

Part No.	Inductance (at 20℃)*1					Rated current (A)*2	Rated current (reference) (A)*3	DC resistance (at 20℃) (mΩ)
	L0 at 0A	L1		L2*4				
	(μH)	(μH)	Measurement current (A)	(μH)	Measurement current (A)			
ETQP4LR19WFC	(0.2)	0.19±20 %	21	(0.17)	30	28	38	0.70±10 %
ETQP4LR36WFC	(0.37)	0.36±20 %	17	(0.34)	24	24	33	1.10± 5 %
ETQP4LR56WFC	(0.6)	0.56±20 %	15	(0.53)	21	21	28	1.56± 5 %
ETQP4LR45XFC	0.45 +20 % −25 %	—	—	(0.38)	25	25	33	1.10± 5 %

*1: Inductance is measured at 1.0 MHz.

*2: Rated current defines actual value of DC current, when temperature rise of coil becomes 40 K. (Method A)

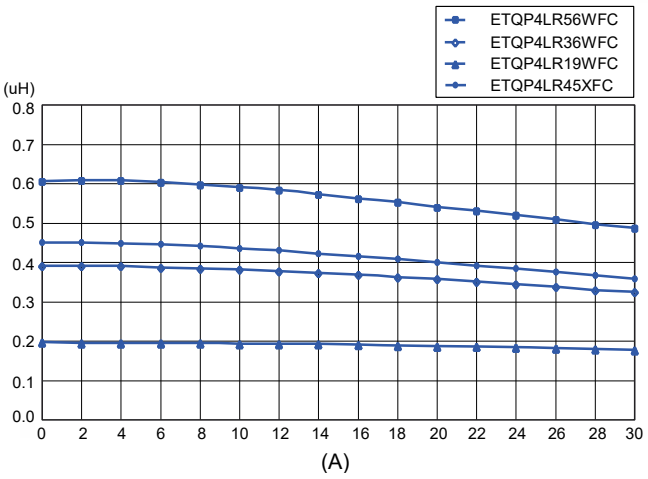
*3: Rated current (reference) defines actual value of DC current, when temperature rise of coil becomes 40 K. (Method B)

*4: Reference only

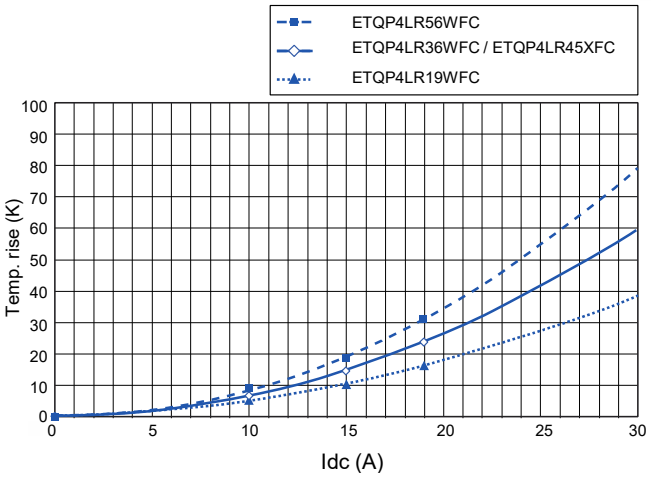
◆ Method A (PANASONIC's standard measurement conditions), Method B (high heat dissipation measurement) is different from Method A by the measurement methods. In normal application condition, the part's temperature depends on circuit design and heat dissipation condition. This condition shall be verified by the worst operational condition.

Performance characteristics (Reference)

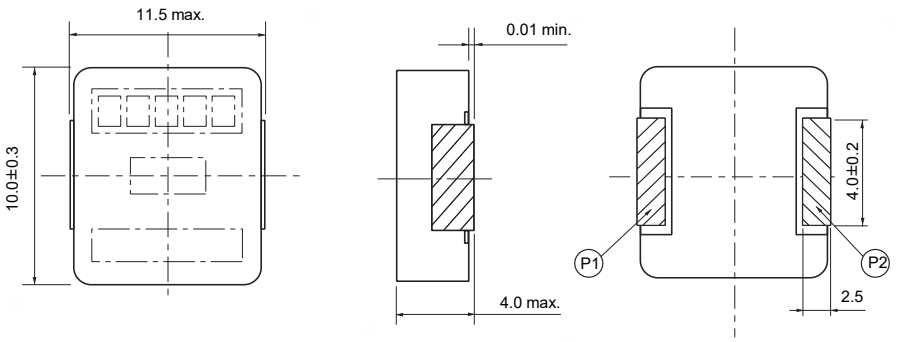
Inductance vs DC Current



Case Temperature vs DC Current（Method A）

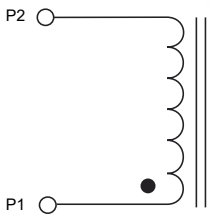


Dimensions in mm (not to scale)

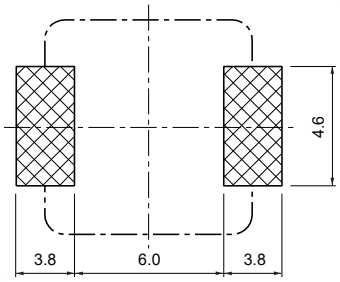


Unit : mm

Connection



Recommended land patterns in mm (not to scale)



Unit : mm

■ **As for soldering conditions and safety precautions (Power choke coils for consumer use), please see data files.**

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Power Inductors

Power Choke Coil (Low DCR type)

PCC-M1040L (MC) series

Small mounting size for multi-phase DC/DC converter circuits

Industrial property : Patents 2 (Pending)

Features

- Small type (11.7×10.0×H4.0 mm)
- High power (21 A to 30 A)
- Low loss (DCR : 0.76 to 1.58 mΩ)
- Tighter DCR tolerance (±5 %, ±7 %)
- Suitable for high frequency circuit (up to 1 MHz)
- Low buzz noise due to its gap-less structure
- Shielded construction
- RoHS compliant

Recommended applications

- Notebook and Desktop PC power supply modules
- Servers, Routers, DC/DC converters for driving CPUs

Standard packing quantity (Minimum quantity/Packing unit)

- 2,000 pcs/box（2 reel）

Explanation of part numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	T	Q	P	4	L						
Product code			Classification	Size	Winding	Inductance			Core	Packaging	Suffix

Standard parts

Part No.	Inductance (at 20℃)*1			Rated current (A)*2	Rated current (reference) (A)*3	DC resistance (at 20℃) (mΩ) max.
	L0 at 0A	L1*4				
	(μH)	(μH)	Measurement current (A)			
ETQP4LR15AFC	0.15±20 %	(0.13)	42	42	51	0.45±7 %
ETQP4LR36AFC	0.36±20 %	(0.29)	30	30	40	0.76±5 %
ETQP4LR68XFC	0.68±20 %	(0.59)	21	21	28	1.58±5 %

*1: Inductance is measured at 1.0 MHz.

*2: Rated current defines actual value of DC current, when temperature rise of coil becomes 40 K. (Method A)

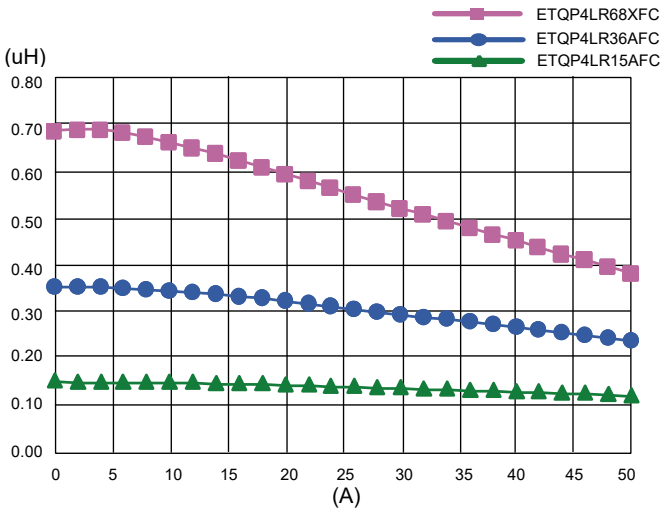
*3: Rated current (reference) defines actual value of DC current, when temperature rise of coil becomes 40 K. (Method B)

*4: Reference only

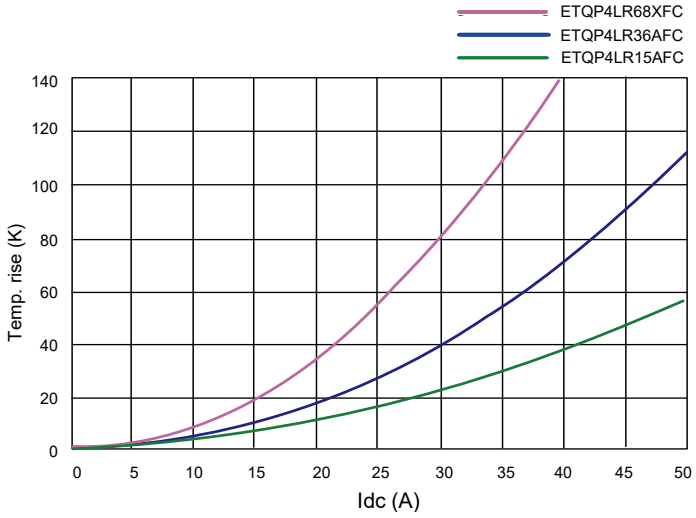
◆ Method A (PANASONIC's standard measurement conditions), Method B (high heat dissipation measurement) is different from Method A by the measurement methods. In normal application condition, the part's temperature depends on circuit design and heat dissipation condition. This condition shall be verified by the worst operational condition.

Performance characteristics (Reference)

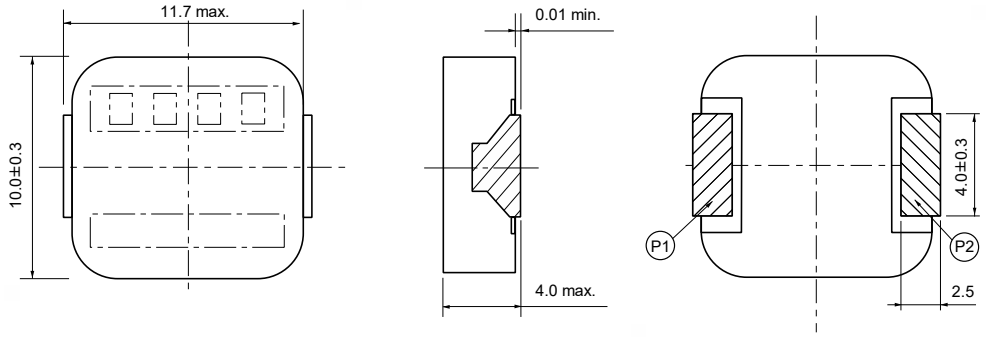
Inductance vs DC Current



Case Temperature vs DC Current（Method A）

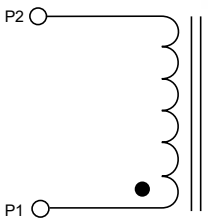


Dimensions in mm (not to scale)

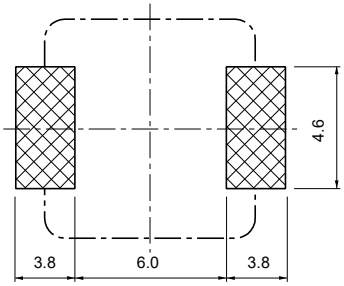


Unit : mm

Connection



Recommended land patterns in mm (not to scale)



Unit : mm

■ **As for soldering conditions and safety precautions (Power choke coils for consumer use), please see data files.**

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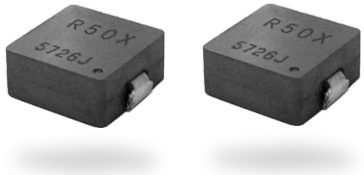


Power Inductors

Power Choke Coil

PCC-M1250L (MC) series

High power, Low loss, Low-profile

Industrial property : Patents 2 (Pending)

Features

- High power (25 A to 30 A)
- Low loss (DCR : 0.8 to 1.1 mΩ)
- Tighter DCR tolerance (±5 % to ±7 %)
- Low profile (14.5×12.5×H5.0 mm)
- Suitable for high frequency circuit (up to 1 MHz)
- Low buzz noise due to its gap-less structure
- Shielded construction
- RoHS compliant

Recommended applications

- Notebook and Desktop PC power supply modules
- Servers, Routers, DC/DC converters for driving CPUs

Standard packing quantity (Minimum quantity/Packing unit)

- 1,000 pcs/box (2 reel)

Explanation of part numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	T	Q	P	5	L						
Product code			Classification	Size	Winding	Inductance			Core	Packaging	Suffix

Standard parts

Part No.	Inductance (at 20℃)*1				Rated current (A)*2	DC resistance (at 20℃) (mΩ)
	L1		L2*3			
	(μH)	Measurement current (A)	(μH)	Measurement current (A)		
ETQP5LR50XFA	0.50±20 %	30	(0.46)	42	30	0.80±7 %
ETQP5LR60XFA	0.60±20 %	30	(0.54)	42	27	1.10±5 %

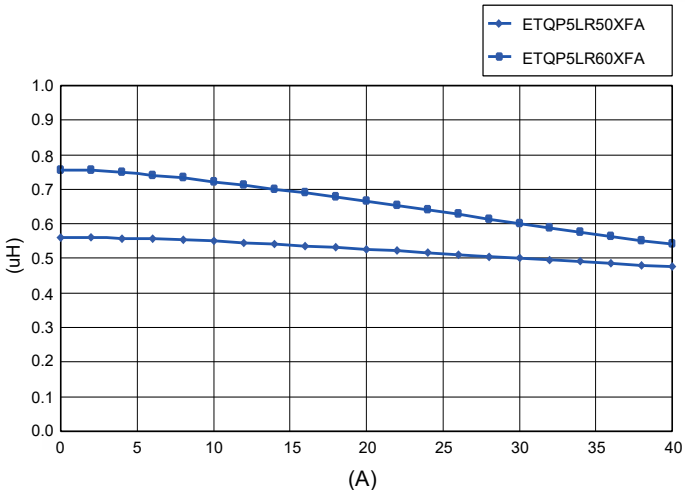
*1: Inductance is measured at 1.0 MHz.

*2: Rated current defines actual value of DC current, when temperature rise of coil becomes 40 K.

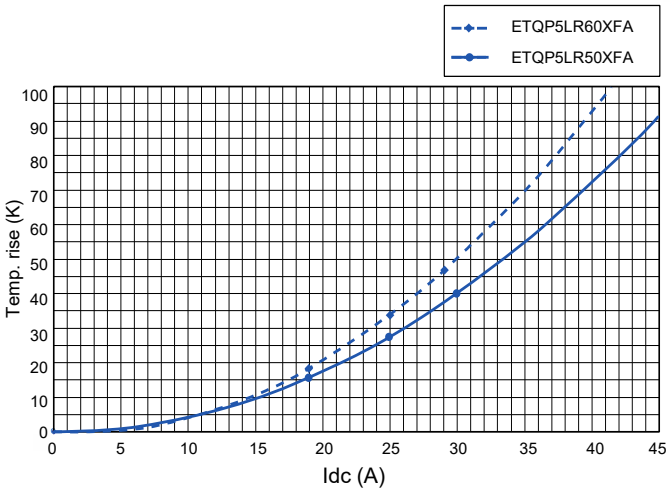
*3: Reference only

Performance characteristics (Reference)

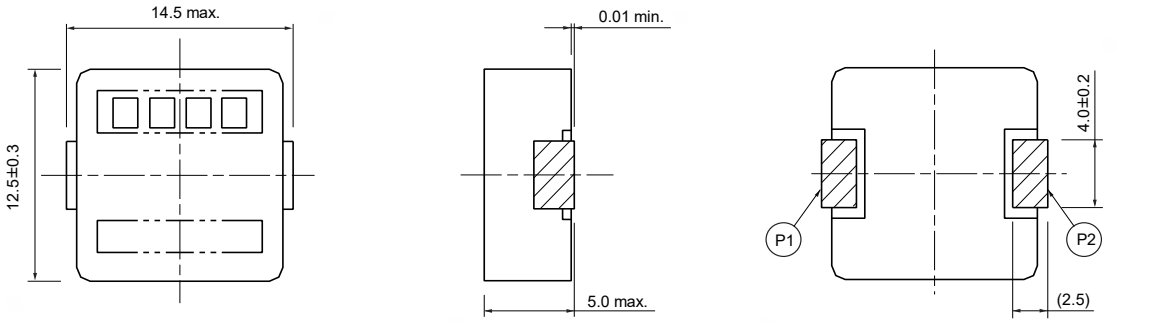
Inductance vs DC Current



Case Temperature vs DC Current

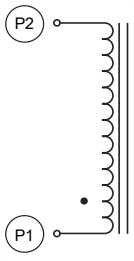


Dimensions in mm (not to scale)

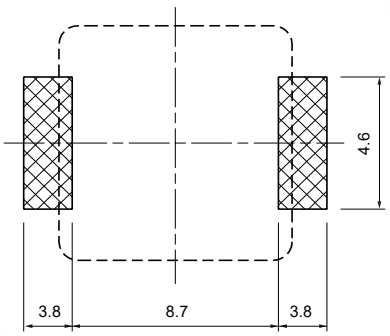


Unit : mm

Connection



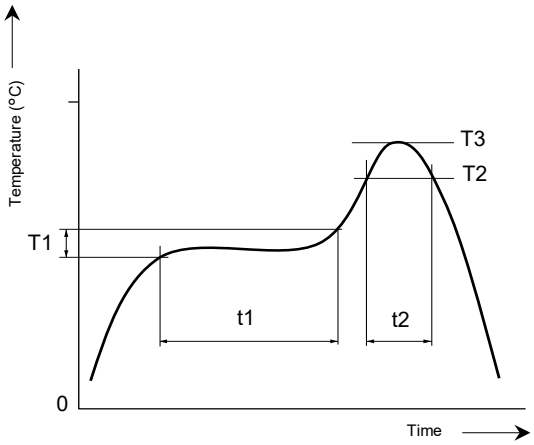
Recommended land patterns in mm (not to scale)



Unit : mm

■ **As for soldering conditions and safety precautions (Power choke coils for consumer use), please see data files.**

Reflow soldering conditions



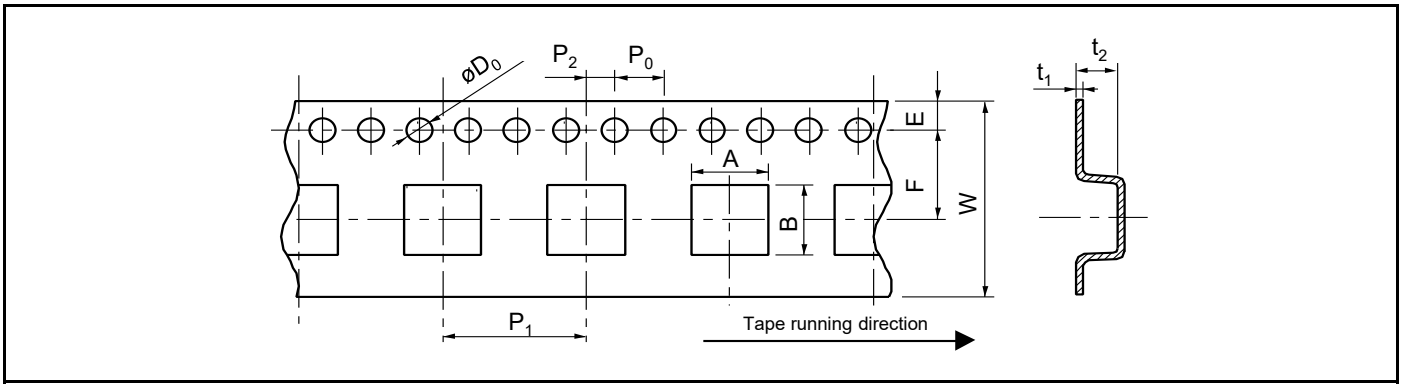
● Pb free solder recommended temperature profile

Power Choke Coils for Consumer use

Series	Preheat		Soldering		Peak temperature		Time of reflow
	T1 [℃]	t1 [s]	T2 [℃]	t2 [s]	T3	T3 Limit	
PCC-M0730L PCC-M0740L PCC-M1040L PCC-M1250L	150 to 170	60 to 120	230 °C	30 to 40	250 °C, 5 s	260 °C, 10 s	2 times max.

Packaging methods (Taping)

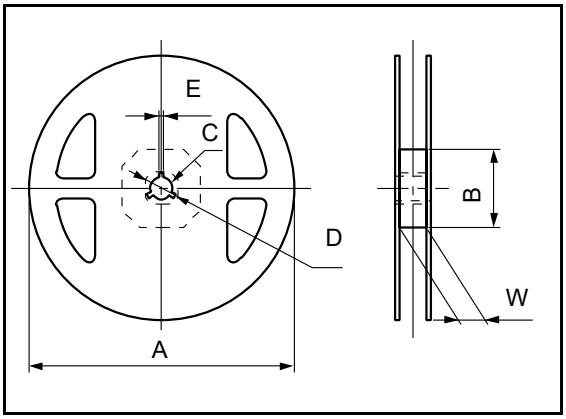
● Embossed carrier tape dimensions in mm (not to scale)



Unit : mm

Series	A	B	W	E	F	P_1	P_2	P_0	$øD_0$	t_1	t_2
PCC-M0730L	7.6	8.9	16	1.75	7.5	12	2	4	1.5	0.4	4.2
PCC-M0740L	7.6	8.9	16	1.75	7.5	12	2	4	1.5	0.4	4.3
PCC-M1040L	10.6	11.8	24	1.75	11.5	16	2	4	1.5	0.4	5.2
PCC-M1250L	13.1	14.8	24	1.75	11.5	16	2	4	1.5	0.4	5.3

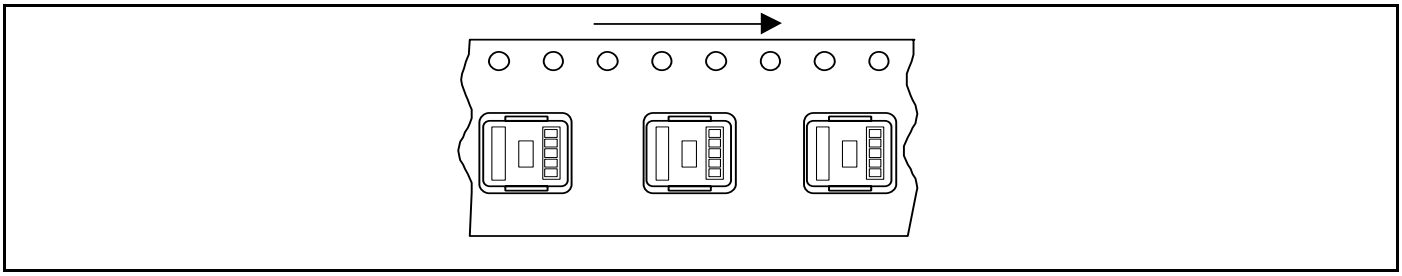
● Taping reel dimensions in mm (not to scale)



Unit : mm

Series	A	B	C	D	E	W
PCC-M0730L	380	80	13	21	2	17.5
PCC-M0740L						
PCC-M1040L						25.4
PCC-M1250L						

Component placement (Taping)



Standard packing quantity/Reel

Serise	Part No.	Minimum quantity / Packing unit	Quantity per reel
PCC-M0730L	ETQP3L□□□CFM	3,000 pcs / box (2 reel)	1,500 pcs
PCC-M0740L	ETQP4L□□□AFM		
PCC-M1040L	ETQP4L□□□WFC	2,000 pcs / box (2 reel)	1,000 pcs
	ETQP4L□□□XFC		
	ETQP4L□□□AFC		
PCC-M1040L	ETQP4LR19WFC	1,000 pcs / box (2 reel)	500 pcs
PCC-M1250L	ETQP5L□□□XFA		

⚠ Application Guidelines (For consumer)

Safety precautions

- When using our products, no matter what sort of equipment they might be used for, be sure to make a written agreement on the specifications with us in advance. The design and specifications in this catalog are subject to change without prior notice.
- Do not use the products beyond the specifications described in this catalog.
- This catalog explains the quality and performance of the products as individual components. Before use, check and evaluate their operations when installed in your products.
- Install the following systems for a failsafe design to ensure safety if these products are to be used in equipment where a defect in these products may cause the loss of human life or other significant damage, such as damage to vehicles (automobile, train, vessel), traffic lights, medical equipment, aerospace equipment, elec tric heating appliances, combustion/gas equipment, rotating equipment, and disaster/crime prevention equipment.
  ✻ Systems equipped with a protection circuit and a protection device.
  ✻ Systems equipped with a redundant circuit or other system to prevent an unsafe status in the event of a single fault.

Precautions for use

1. Provision to abnormal condition

This power choke coil itself does not have any protective function in abnormal condition such as overload, short-circuit and open-circuit conditions, etc.
Therefore, it shall be confirmed as the end product that there is no risk of smoking, fire, dielectric withstand voltage, insulation resistance, etc. in abnormal conditions to provide protective devices and/or protection circuit in the end product.

2. Temperature rise

Temperature rise of power choke coil depends on the installation condition in end products. It shall be confirmed in the actual end product that temperature rise of power choke coil is in the limit of specified temperature class.

3. Dielectric strength

Dielectric withstanding test with higher voltage than specific value will damage Insulating material and shorten its life.

4. Water

This Power choke coil must not be used in wet condition by water, coffee or any liquid because insulation strength becomes very low in such condition.

5. Potting

If this power choke coil is potted in some compound, coating material of magnet wire might be occasionally damaged. Please ask us if you intend to pot this power choke coil.

6. Solvent

If this power choke coil is dipped in the cleaning agent, and the coating agent of the toluene and the xylene system, there is a possibility that the performance decreases greatly. Please ask us if you intend to pot this power choke coil.

7. Static electricity measures

① Circuit design
Please set up the ESD measures parts such as capacitors in the former steps of this power choke coil for static electricity when there is a possibility that static electricity is impressed to the choke coil on the circuit.
Moreover, please consult our company about such a case once.

② Treatment with single
Take countermeasures against static electricity when using single power choke coil. (process and equipment)
There is a possibility that the characteristic changes when the voltage of 200 V or more is impressed to this power choke coil. Please handle 200 V or less.

8. Core Chipping and Core Crack

This choke coil has a possibility to make partial chipping or crack in the core due to excessive mechanical stress from outside, and might have initially a partial chipping and/or cracks that do not affect the quality.

9. Storage temperature

−5 ℃ to +35 ℃

10. Operating temperature

Minimum temperature : −40 ℃ (Ambient temperature of the power choke coil)

Maximum temperature : 130 ℃ (Ambient temperature of the power choke coil plus the temperature rise)
100 ℃ (Only series : PCC-F126F(N6))

11. Model

When this power choke coil is used in a similar or new product to the original one, it might be unable to satisfy he specifications due to difference of condition of usage.

Please ask us if you use this power choke coil in the manner such as above.

12. Drop

If the power choke coil receives mechanical stress such as drop, characteristics may become poor (due to damage on coil bobbin, etc.). Never use such stressed power choke coil.

＜Package markings＞

Package markings include the product number, quantity, and country of origin.

In principle, the country of origin should be indicated in English.

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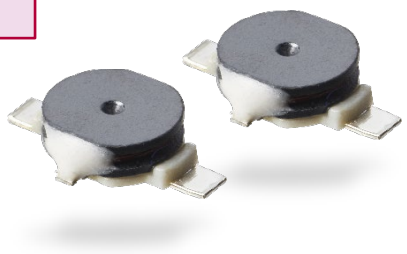
⚠ This series is not a recommended product.
Not recommended for new design.

Voltage Step-up Coils

Chip type

ELT3KN series



High inductance Voltage Step-up coil chip series for piezoelectric buzzers and DC/DC circuitry of EL panels

Features

- Small and thin
- High inductance
- RoHS compliant

Recommended applications

- Piezoelectric buzzer, Booster circuit for EL backlight (Watch, Electric thermometer, Portable device)

Standard packing quantity (Minimum quantity/Packing unit)

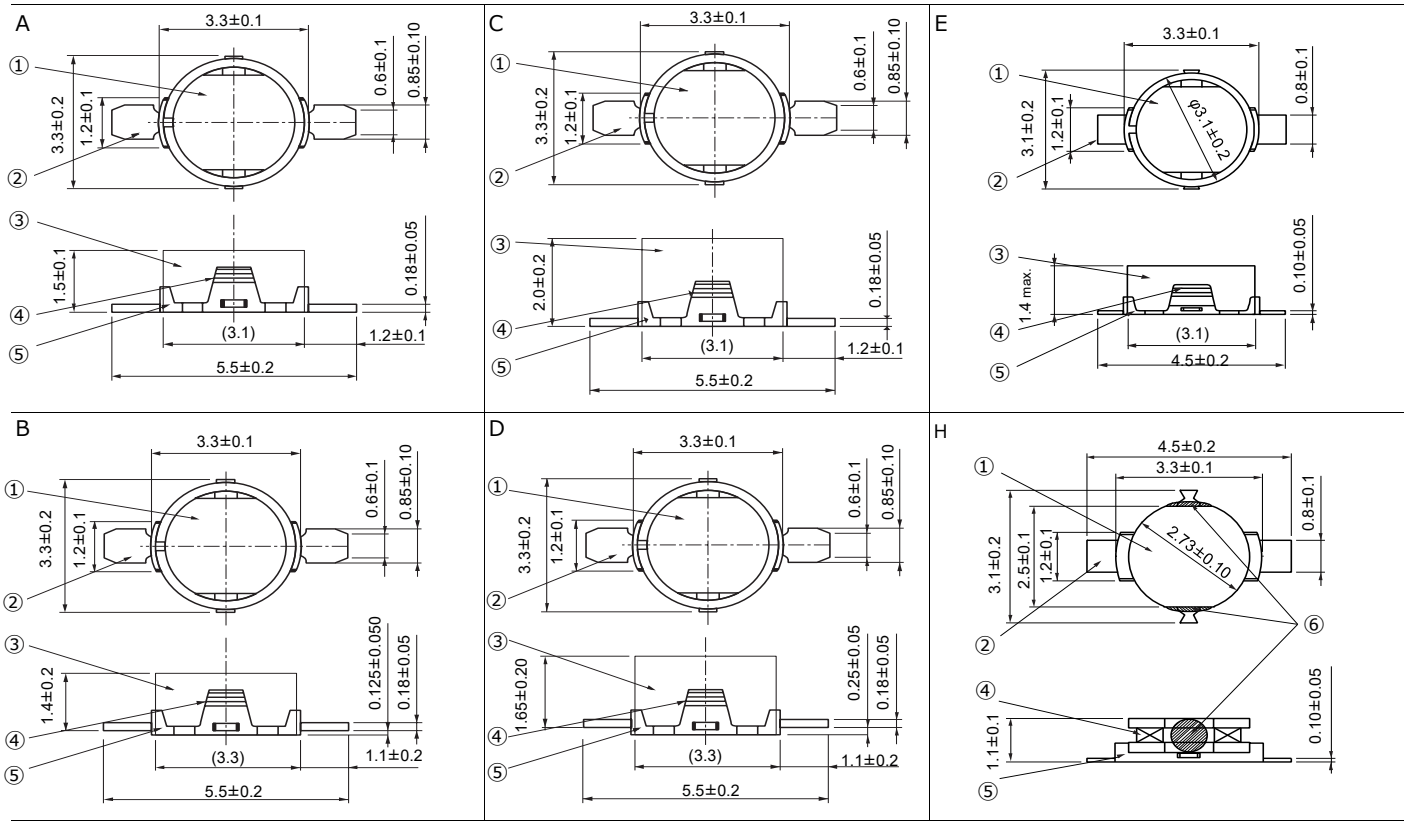
- 1,000 pcs or 5,000 pcs / reel

Explanation of part numbers

1	2	3	4	5	6	7	8	9	10
E	L	T	3	K	N	0	0	4	C
Product code			Outer size	Construction		Design No.			Packaging

Code	Packaging
B	ø180 Reel
C	ø370 Reel

Dimensions in mm (not to scale)



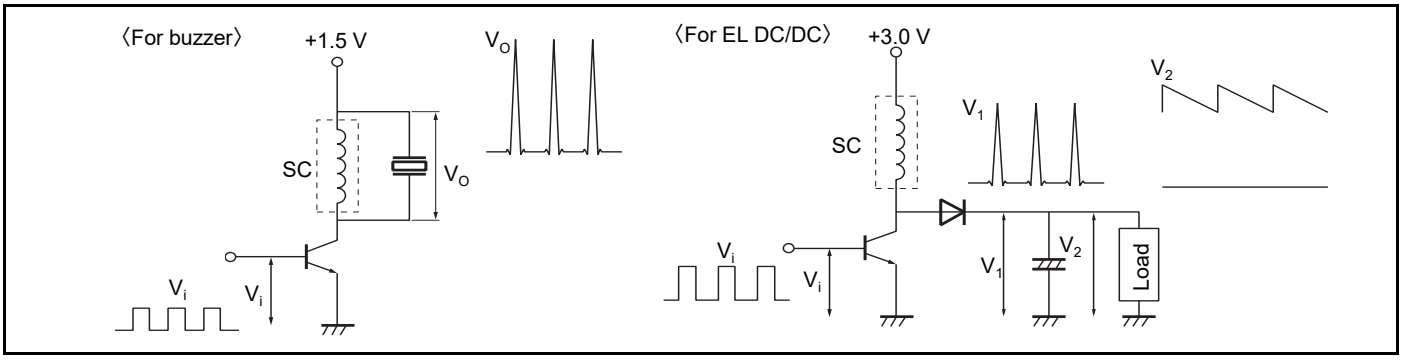
Part Name: ①Core ②Terminal ③Ring ④Coil ⑤Terminal board ⑥Adhesive

Standard parts

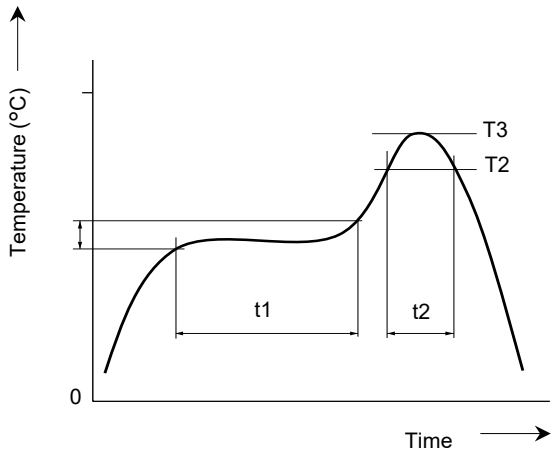
Part No.	Inductance		DC resistance		DC current	Dimensions	Magnetic composition
	(mH)	Tolerance(%)	(Ω)	Tolerance(%)	(mA) max.		
ELT3KN004□	14.00	±40	125	±10	1.7	A	Permalloy ring
ELT3KN007□	20.00		170		1.4		
ELT3KN113□	1.00	±10	34	±15	25.0		Brass ring
ELT3KN126□	1.50		49		29.0		
ELT3KN142□	0.82		24		30.0		
ELT3KN019□	14.00	±40	125	±10	1.7	B	Permalloy ring
ELT3KN109□	3.80	±10	115	±20	15.0		Brass ring
ELT3KN114□	2.50		83	±15	15.0		
ELT3KN014□	30.00	±40	150		1.9	C	Permalloy ring
ELT3KN018□	35.00		235	±10	1.9		
ELT3KN028□	50.00	±35	250	±15	1.4		
ELT3KN032□	25.00	±40	185		10.0		
ELT3KN101□	10.00	±10	285	±10	1.4		Brass ring
ELT3KN104□	1.00		35	±15	30.0		
ELT3KN118□	2.50		64		20.0		
ELT3KN121□	1.00		22.5		40.0		
ELT3KN122□	2.00		44		20.0		
ELT3KN123□	1.00		25		30.0		
ELT3KN124□	4.00		85		15.0		
ELT3KN127□	0.47		14		50.0		
ELT3KN128□	0.56		15		45.0		
ELT3KN129□	0.68		17		34.0		
ELT3KN130□	2.30		51		23.0		
ELT3KN131□	2.00		44		20.0		
ELT3KN020□	30.00	±30	150		2.5	D	Permalloy ring
ELT3KN111□	7.50	±10	177		10.0		Brass ring
ELT3KN125□	4.00		85		15.0		
ELT3KN041□	14.00	±40	125	±10	1.7	E	Permalloy ring
ELT3KN042□	20.00		175		1.4		
ELT3KN043□	12.00		117		1.7		
ELT3KN139□	0.68	±10	19	±15	40.0		Brass ring
ELT3KN140□	0.82		22		30.0		
ELT3KN135□	1.10		32		30.0		
ELT3KN136□	2.00		55		20.0		
ELT3KN137□	4.00		117	±10	15.0		
ELT3KN149□	0.33		11	±15	60.0		
ELT3KN151□	0.56		17		50.0		
ELT3KN152□	0.47		14		50.0		
ELT3KN155□	1.10		38		25.0	H	Ring less
ELT3KN162□	4.00		117	±10	15.0	E	Brass ring
ELT3KN163□	1.10		32	±15	30.0		

"□" shows the packaging specifications.

Applied diagram examples



Reflow soldering conditions



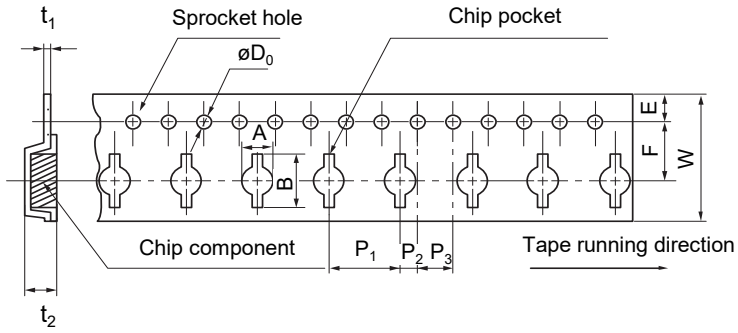
● Pb free solder recommended temperature profile

Voltage Step-up Coils

Part No.	Preheat		Soldering		Peak temperature		Time of reflow
	T1 [℃]	t1 [s]	T2 [℃]	t2 [s]	T3	T3 Limit	
ELT3KN	150 to 170	60 to 120	230 ℃	30 max.	245 ℃, 10 s	260 ℃, 10 s	2 times max.

Packaging methods (Taping)

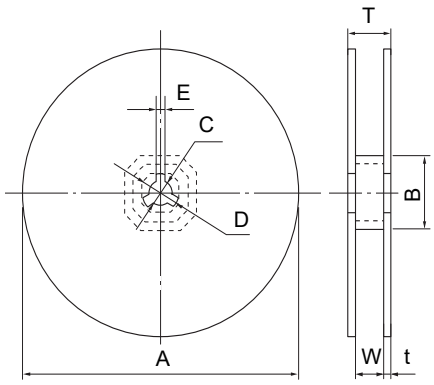
● Embossed carrier tape dimensions in mm (not to scale)



Unit : mm

Part No.	A	B	W	E	F	P_1	P_2	P_0	$øD_0$	t_1	t_2
ELT3KN	3.7	6.4	12.0	1.75	5.5	8.0	2.0	4.0	1.5	0.3	2.6

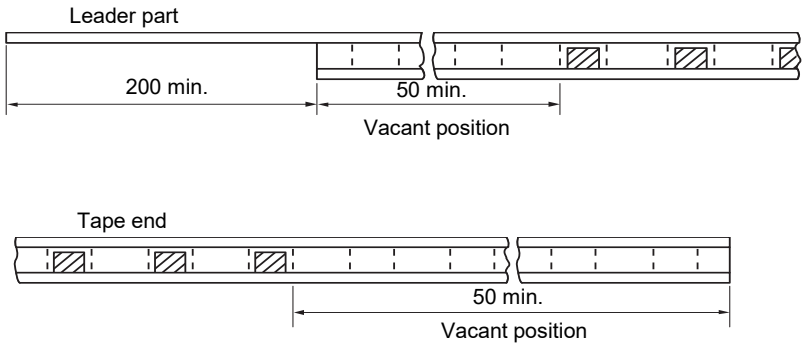
● Reel dimensions in mm (not to scale)



Unit : mm

Packaging	A	B	C	D	E	W	t	T
B	180	60	13	21	2	13	1.1	15.2
C	370	60	13	21	2	14	2.0	18.0

● Leader Part, Vacant Position



Standard packing quantity

Packaging	Quantity per reel	Kind of taping B 1,000 pcs. Embossed carrier
B	1,000 pcs	Embossed carrier taping
C	5,000 pcs	

⚠ Application Guidelines

Safety precautions

- When using our products, no matter what sort of equipment they might be used for, be sure to make a written agreement on the specifications with us in advance. The design and specifications in this catalog are subject to change without prior notice.
- Do not use the products beyond the specifications described in this catalog.
- This catalog explains the quality and performance of the products as individual components. Before use, check and evaluate their operations when installed in your products.
- Install the following systems for a failsafe design to ensure safety if these products are to be used in equipment where a defect in these products may cause the loss of human life or other significant damage, such as damage to vehicles (automobile, train, vessel), traffic lights, medical equipment, aerospace equipment, electric heating appliances, combustion/gas equipment, rotating equipment, and disaster/crime prevention equipment.

  ✻ Systems equipped with a protection circuit and a protection device.

  ✻ Systems equipped with a redundant circuit or other system to prevent an unsafe status in the event of a single fault.

Precautions for use

1. Operation range and environments

① These products are designed and manufactured for general and standard use in general electronic equipment (e.g. AV equipment, home electric appliances, office equipment, information and communication equipment)

② These products are not designed for the use in the following special conditions. Before using the products, carefully check the effects on their quality and performance, and determine whether or not they can be used.

- In liquid, such as water, oil, chemicals, or organic solvent
- In direct sunlight, outdoors, or in dust
- In salty air or air with a high concentration of corrosive gas, such as Cl_2, H_2S, NH_3, SO_2, or NOx
- In an environment where these products cause dew condensation

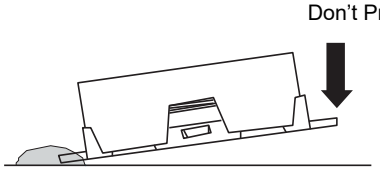
2. Handling

① Do not bring magnets or magnetized materials close to the product. The influence of their magnetic field can change the inductance value.

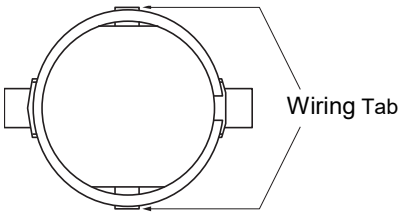
② Do not apply strong mechanical shocks by either dropping or collision with other parts.
Excessive schock can damage the part.

3. Resoldering with a soldering iron

① Resoldering should be done within 3 seconds by soldering iron, the temperature with 350 °C or less and should be cooling down after ward. Both side of terminals shall be fixed closely to PWB. And terminals shall not be pressed in heating.



② The wiring tab shall not be held by sharp-edged tool.



③ Iron shall not be put to the component itself.

4. Mounting side

① External force must be less than 4.9N while mounting.

② The wiring tab is expose the terminal, so please be careful when you design PWB pattern of coil circumference.

5. Cleaning

If you clean the inductor, please use own your ultrasonic cleaning to check specified conditions.

6. Storage conditions

Normal temperature (-5 to 35 ℃), normal humidity (85 %RH max.), shall not be exposed to direct sunlight and harmful gases and care should be taken so as not to cause dew.

＜Package markings＞

Package markings include the product number, quantity, and country of origin.

In principle, the country of origin should be indicated in English.

Safty Precautions

When using our products, no matter what sort of equipment they might be used for,
be sure to confirm the applications and environmental conditions with our specifications in advance.

Panasonic INDUSTRY

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2022.6