

1.3 to 3W DC-DC Converters

<https://product.tdk.com/en/power/ccg>
www.emea.lambda.tdk.com/ccg



Industrial



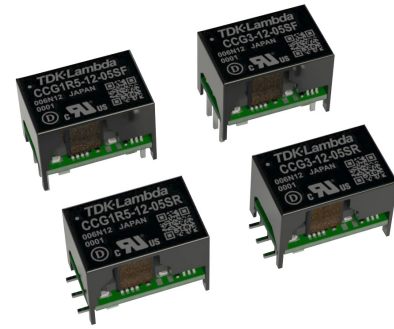
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Broadcast



The space saving CCG1R5 and CCG3 series of isolated DC-DC converters operate from wide range 4.5 to 18V, 9 to 36Vdc or 18 to 76V inputs with 1.5W and 3W power levels and output voltages from 3.3V to 30V (1). Single output models can be adjusted -5% to +10% by using the trim terminal. The CCG can operate in ambient temperatures of -40 to 100°C and have an input to output isolation of 1,500Vdc. Both through hole and surface mount packages are offered.

Features	Benefits
• Wide 4:1 Input Ranges	• Supports Dual 5/12V 12/24V or 24/48V System Voltages
• Space Saving Package Sizes	• Less Board Area Needed
• Certified to IEC 62368-1	• Easier System Compliance
• Reduced Derating at High Ambient Temperatures	• More Useable Power
• No Silicone Potting	• Reduced Quality Risk During Surface Mount Reflow Process

Part Numbering Scheme

CCG	1R5	-12	-03	S	F
Series Name CCG	Output Power 1R5 = 1.5W 3 = 3W	Input Voltage 12 = 4.5 - 18V 24 = 9 - 36V 48 = 18 - 76V	Output Voltage 03 = 3.3V 05 = 5V 12 = 12V 15 = 15V	S = Single Output D = Dual Output	Mounting Type F = Through hole R = Surface Mount

Model Selector								
Model Letter "x" indicates mounting type x=F through hole, x=R surface mount	Input Voltage (V)	Output Voltage (V)	Output Current (A)	Maximum Power (W)	Input Current at nominal input (A)	Efficiency (%) (100% load, nominal input)	Line / Load Regulation (mV)	
CCG1R5-12-03Sx	4.5 - 18	3.3	0.4	1.32	0.149	74	20 / 20	
CCG3-12-03Sx		3.3	0.8	2.64	0.286	78	20 / 20	
CCG1R5-12-05Sx		5	0.3	1.5	0.158	79	20 / 20	
CCG3-12-05Sx		5	0.6	3	0.313	81	20 / 20	
CCG1R5-12-12Sx		12	0.13	1.56	0.165	79	48 / 48	
CCG3-12-12Sx		12	0.25	3	0.301	83	48 / 48	
CCG1R5-12-15Sx		15	0.1	1.5	0.158	79	60 / 60	
CCG3-12-15Sx		15	0.2	3	0.301	85	60 / 60	
CCG1R5-12-12Dx (1)		24	0.065	1.56	0.167	78	120 / 240	
CCG3-12-12Dx (1)		24	0.13	3.12	0.317	84	120 / 240	
CCG1R5-12-15Dx (1)		30	0.05	1.5	0.16	78	150 / 300	
CCG3-12-15Dx (1)		30	0.1	3	0.305	84	150 / 300	
CCG1R5-12-12Dx		±12	±0.065	1.56	0.167	78	60 / 120	
CCG3-12-12Dx		±12	±0.13	3.12	0.317	84	60 / 120	
CCG1R5-12-15Dx		±15	±0.05	1.5	0.16	78	75 / 150	
CCG3-12-15Dx		±15	±0.1	3	0.305	84	75 / 150	
CCG1R5-24-03Sx		9 - 36	3.3	0.4	1.32	0.075	73	20 / 20
CCG3-24-03Sx			3.3	0.8	2.64	0.143	77	20 / 20
CCG1R5-24-05Sx	5		0.3	1.5	0.08	78	20 / 20	
CCG3-24-05Sx	5		0.6	3	0.158	82	20 / 20	
CCG1R5-24-12Sx	12		0.13	1.56	0.079	82	48 / 48	
CCG3-24-12Sx	12		0.25	3	0.151	83	48 / 48	
CCG1R5-24-15Sx	15		0.1	1.5	0.076	82	60 / 60	
CCG3-24-15Sx	15		0.2	3	0.151	84	60 / 60	
CCG1R5-24-12Dx (1)	24		0.065	1.56	0.081	81	120 / 240	
CCG3-24-12Dx (1)	24		0.13	3.12	0.159	83	120 / 240	
CCG1R5-24-15Dx (1)	30		0.05	1.5	0.079	80	150 / 300	
CCG3-24-15Dx (1)	30		0.1	3	0.152	82	150 / 300	
CCG1R5-24-12Dx	±12		±0.065	1.56	0.081	81	60 / 120	
CCG3-24-12Dx	±12		±0.13	3.12	0.159	83	60 / 120	
CCG1R5-24-15Dx	±15		±0.05	1.5	0.079	80	75 / 150	
CCG3-24-15Dx	±15		±0.1	3	0.152	82	75 / 150	
CCG1R5-48-03Sx	18 - 76		3.3	0.4	1.32	0.039	72	20 / 20
CCG3-48-03Sx			3.3	0.8	2.64	0.071	77	20 / 20
CCG1R5-48-05Sx		5	0.3	1.5	0.041	76	20 / 20	
CCG3-48-05Sx		5	0.6	3	0.078	80	20 / 20	
CCG1R5-48-12Sx		12	0.13	1.56	0.042	79	48 / 48	
CCG3-48-12Sx		12	0.25	3	0.076	82	48 / 48	
CCG1R5-48-15Sx		15	0.1	1.5	0.041	77	60 / 60	
CCG3-48-15Sx		15	0.2	3	0.076	83	60 / 60	
CCG1R5-48-12Dx (1)		24	0.065	1.56	0.042	81	120 / 240	
CCG3-48-12Dx (1)		24	0.13	3.12	0.08	83	120 / 240	
CCG1R5-48-15Dx (1)		30	0.05	1.5	0.041	80	150 / 300	
CCG3-48-15Dx (1)		30	0.1	3	0.077	82	150 / 300	
CCG1R5-48-12Dx		±12	±0.065	1.56	0.042	78	60 / 120	
CCG3-48-12Dx		±12	±0.13	3.12	0.08	83	60 / 120	
CCG1R5-48-15Dx		±15	±0.05	1.5	0.041	76	75 / 150	
CCG3-48-15Dx		±15	±0.1	3	0.077	83	75 / 150	

Notes
 (1) ±12V dual output models can provide a 24V single output by utilizing just the +Vout and -Vout pins, leaving the COM unconnected. Similarly ±15V dual output models can be used as a 30V single output.

Specifications		
Model		CCG1R5-10, CCG3
Input		
Input Voltage Range	Vdc	See model selector table
No Load Power Consumption (2)	W	CCG1R5, CCG3: 0.15 to 0.45. See evaluation data on website.
Efficiency	-	See model selector table
Conducted & Radiated EMI	-	EN55011/EN55032-A, FCC Class A, VCCI-A (External components are required, consult Evaluation Data on website)
Immunity	-	See Immunity table
Safety Certifications and Markings	-	IEC/UL/CSA/EN62368-1, CE Mark and UKCA Mark

Immunity				
Test	Standard	Test Level	Criteria	Notes: See IEC61000 immunity test report on website for external filtering circuitry
ESD	EN61000-4-2	3	B	Air ± 8kV
Radiated Susceptibility	EN61000-4-3	2/3	A	Lvl 2: 3V/m(1.4-6.0GHz) Lvl 3: 10V/m(80-1000MHz)
Electrical Fast Transient Burst	EN61000-4-4	4	B	± 4kV for input and output ± 2kV for signal pins
Surge	EN61000-4-5	3	B	Normal mode ± 2kV
Conducted Susceptibility	EN61000-4-6	3	A	10V(150kHz-80MHz)
Magnetic Fields	EN61000-4-8	4	A	30A/m(50Hz, 60Hz)

Specifications		
Model		CCG1R5-10, CCG3
Output		
Output Voltage Tolerance	%	±2
Output Voltage Adjustment	%	Single output only. -5, +10
Switching Frequency	kHz	CCG1R5, CCG3: 400 (fixed)
Cross Regulation	mV	Dual output only. ±12V: 480, ±15V: 600 (Asymmetrical, one output at 20%, the other at 100%)
External Load Capacitance (Maximum)	uF	CCG1R5, CCG3: 3.3-5V: 220, 12-15V: 100
Ripple & Noise	mV	200
Temperature Coefficient	%/°C	0.02
Minimum Load	-	No minimum load required
Overcurrent Protection	%	Hiccup mode. >105%
Overvoltage Protection	-	-
Overtemperature Protection	-	-
Remote Sense	-	No remote sense
Remote On/Off	-	Negative Logic ON: Short , OFF: Open
Parallel Operation	-	Not possible
Environmental		
Operating Temperature	°C	-40 to +100 (Ambient). See derating guide below and installation manual.
Maximum Transformer Temperature	°C	112 to 115 (See instruction manual on website)
Storage Temperature	°C	-55 to +125
Humidity (non condensing)	%RH	5 - 95 (Operating & storage)
Cooling	-	Convection or forced air
Altitude	m	5,000
Withstand Voltage	Vac/Vdc	Input to output 1,500Vdc or 1,000Vac for 1 minute
Vibration (Non operating)	-	10-55Hz (Sweep for 1min.) Amplitude 1.65 mm Constant (Maximum 98m/s ²) X,Y,Z 1 hour each
Shock (Non operating)	-	490.3m/s ² , 11ms, ±X, ±Y, ±Z 3 times each
Warranty	yrs	5

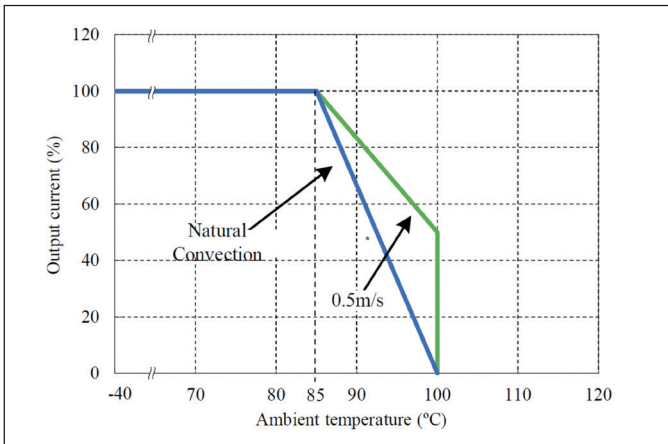
Specifications			
Model		CCG1R5-10, CCG3	
Other			
Weight (Typ)	g	CCG1R5: 3. CCG3: 3	
Size (LxWxH)	mm	CCG1R5, CCG3: 15.7 x 10.4 x 11.5	
Size (LxWxH)	Inches	CCG1R5, CCG3: 0.62 x 0.41 x 0.45	
Case Material	-	Non-conductive black plastic	
MTBF - MIL-HDBK-217F, Full Load, 40°C	Hours	CCG1R5 and CCG3: 8,349,094 to 11,883,918. See reliability data on the website	
Warranty	yrs	5	

Notes

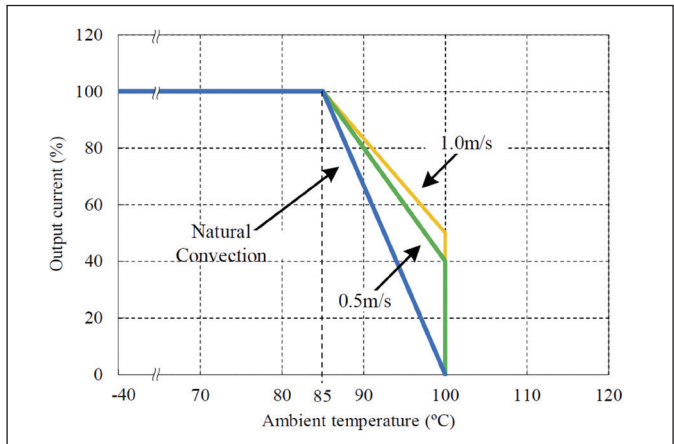
See website for detailed specifications, test methods and installation manual

(2) Off-load power consumption can be reduced using the remote on/off function - See evaluation and installation manual.

CCG1R5 Output Current vs. Ambient Temperature (*)

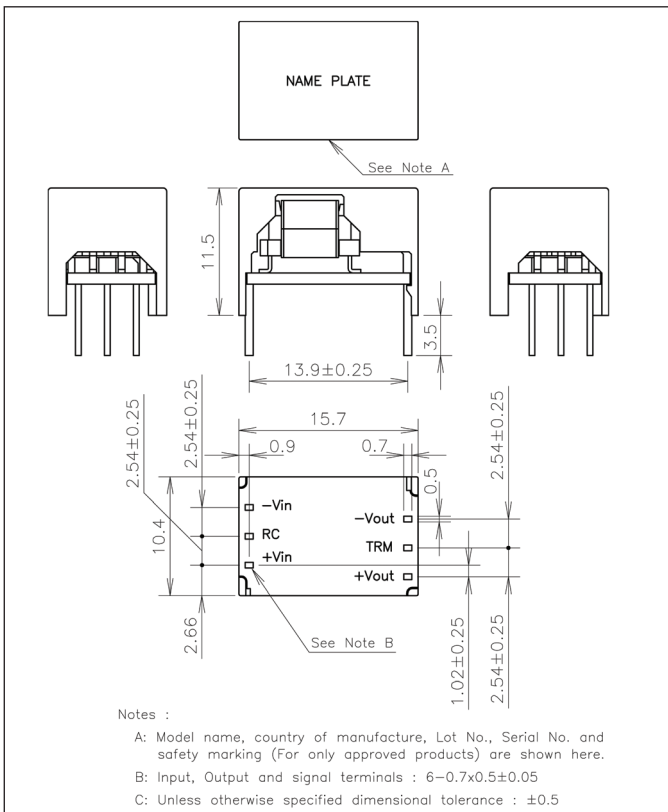


CCG3 Output Current vs. Ambient Temperature (*)

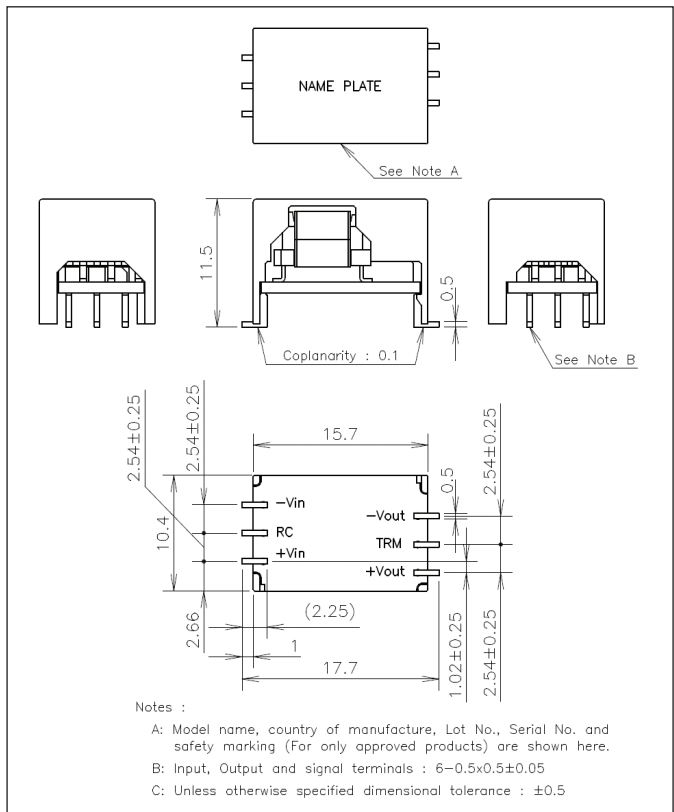


(*) Forced air derating varies by model number, see Installation Manual.

Outline Drawing Single Output CCG1R5 and CCG3 Through Hole (F suffix)



Outline Drawing Single Output CCG1R5 and CCG3 Surface Mount (R suffix)





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