

# MTB

## Metallized polyester film capacitor

### MKT - General purpose



#### Main applications

Blocking, filtering, bypassing, timing, coupling, decoupling, general applications in electronics. Low AC voltage motor running. Low pulse operation

#### Dielectric

Polyester

#### Electrodes

Vacuum deposited metal layers

#### Coating

Solvent resistant plastic case with resin sealing. Flame retardant execution (UL 94 V-0)

#### Construction

Extended metallized film (refer to general technical information). Internal series connection for  $U_r \geq 1000V_{dc}$

#### Terminals

Tinned copper wire (lead free)

#### Reference standard

IEC 60384/2, IEC 60068, RoHS compliant

#### Climatic category

55/100/56 (IEC 60068/1), FME (DIN 40040)

#### Operating temperature range

-55°...+105°C

#### Rated capacitance (Cr)

0,001 $\mu$ F to 150 $\mu$ F, in compliance with IEC 60063, E6 series. Refer to article table

#### Capacitance tolerance (at 1kHz)

$\pm 10\%$  (code=K),  $\pm 5\%$  (code=J),  $\pm 20\%$  (code=M). Other tolerances upon request

#### Capacitance temperature coefficient

Refer to graphs in general technical information

#### Long term stability (at 1 kHz)

Capacitance variation  $\leq \pm 3\%$  for  $Cr \leq 0,1\mu F$ ;  $\leq \pm 2\%$  for  $Cr > 0,1\mu F$  after a period of 2 years at standard environmental conditions

#### Rated voltage (Ur)

63, 100, 160, 250, 400, 630, 1000Vdc  
(permissible AC voltage at 60Hz: 40, 63, 90, 160, 200, 220, 400Vac)

#### Category voltage (Uc)

$U_c = U_r$  at +85°C;  $U_c = 0,8 \times U_r$  at +100°C

#### Temperature derated voltage

For  $T > +85^\circ C$ ,  $U_r$  must be decreased 1,25% for every °C exceeding +85°C

#### Self inductance

$\leq 1nH/mm$  of capacitor pitch

#### Maximum pulse rise time

Refer to article table. The pulse characteristic  $K_o$  depends on the voltage waveform. In any case the value given in the article table must not be exceeded

#### Dissipation factor (DF), max.

$tg\delta \times 10^{-4}$ , measured at  $25 \pm 5^\circ C$

Freq.	$Cr \leq 0,1\mu F$	$0,1\mu F < Cr \leq 1\mu F$	$Cr > 1\mu F$
1kHz	80	80	100
10kHz	150	150	-

#### Insulation resistance (IR)

Measured between terminals, at  $25 \pm 5^\circ C$ , after 1 minute of electrification at 100Vdc for  $U_r \geq 100V_{dc}$  and 50Vdc for  $U_r < 100V_{dc}$

$U_r$	Cr	IR
$\leq 100$	$\leq 0,33\mu F$	$\geq 3750M\Omega$
$\leq 100$	$> 0,33\mu F$	$\geq 1250s$
$> 100$	$\leq 0,33\mu F$	$\geq 30000M\Omega$
$> 100$	$> 0,33\mu F$	$\geq 10000s$

#### Test voltage between terminals (Ut)

$1,6 \times U_r$  (DC) applied for 2s at  $25 \pm 5^\circ C$  (1 minute for type test)

#### Damp heat test (steady state)

Test conditions:

Temperature=  $+40 \pm 2^\circ C$

Relative humidity=  $93 \pm 2\%$

Test duration= 56 days

Performance:

Capacitance change  $\leq \pm 5\%$

DF change  $\leq 0,0050$  at 1kHz

IR  $\geq 50\%$  of initial limit value

#### Endurance test

Test conditions:

Temperature=  $+100 \pm 2^\circ C$

Test duration= 2000h

Voltage applied=  $1,25 \times U_r$  (DC)

Performance:

Capacitance change  $\leq \pm 5\%$

DF change  $\leq 0,0050$  at 10kHz for  $Cr \leq 1\mu F$

DF change  $\leq 0,0030$  at 1kHz for  $Cr > 1\mu F$

IR  $\geq 50\%$  of initial limit value

#### Resistance to soldering heat test

Test conditions:

Solder bath temperature=  $+260 \pm 5^\circ C$

Dipping time (with heat screen)=  $10 \pm 1s$

Performance:

Capacitance change  $\leq \pm 2\%$

DF change  $\leq 0,0050$  at 10kHz for  $Cr \leq 1\mu F$

DF change  $\leq 0,0030$  at 1kHz for  $Cr > 1\mu F$

IR  $\geq 50\%$  of initial limit value

#### Reliability (MIL HDB 217)

Application conditions:

Applied voltage=  $0,5 \times U_r$  (DC)

Temperature=  $+40 \pm 2^\circ C$

Failure rate:

$(1FIT = 1 \times 10^{-9} \text{ failures/components} \times \text{hours})$

$\leq 5FIT$

Failure criteria (DIN44122):

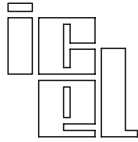
Capacitance change  $> \pm 10\%$

DF change  $> 2 \times$  initial value

IR  $< 0,005 \times$  initial limit value

Short or open circuit

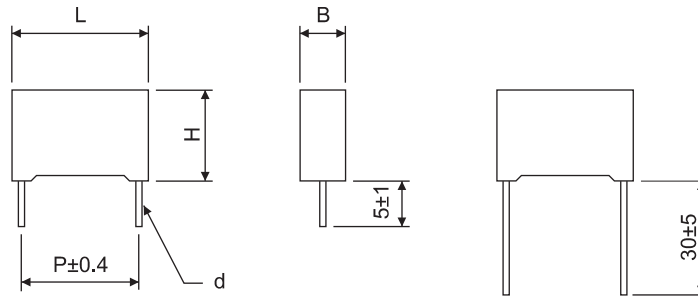
**Warning: this specification must be completed with the data given in the "General technical information" chapter**



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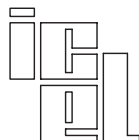
MTB article table (different values available upon request) - P=10mm units NOT FOR NEW DESIGN

Rated voltage		Cap. value (µF)	Dimension in mm					du/dt V/µs	Ko V²/µs	ICEL ordering code <sup>(1)</sup>
Vdc	Vac		B	H	L	P	d			
63	40	0,47	4	9	13	10	0,6	6	750	MTB0633470*D#
63	40	0,68	4	9	13	10	0,6	6	750	MTB0633680*D#
63	40	0,68	5	11	18	15	0,8	3	380	MTB0633680*E#
63	40	1	5	11	13	10	0,6	6	750	MTB0634100*D#
63	40	1	5	11	18	15	0,8	3	380	MTB0634100*E#
63	40	1,5	6	12	13	10	0,6	6	750	MTB0634150*D#
63	40	1,5	5	11	18	15	0,8	3	380	MTB0634150*E#
63	40	2,2	6	12	18	15	0,8	3	380	MTB0634220*E#
63	40	3,3	7,5	13,5	18	15	0,8	3	380	MTB0634330*E#
63	40	3,3	6	15	26,5	22,5	0,8	2	250	MTB0634330*G#
63	40	4,7	8,5	14,5	18	15	0,8	3	380	MTB0634470*E#
63	40	4,7	7	16	26,5	22,5	0,8	2	250	MTB0634470*G#
63	40	6,8	10	16	18	15	0,8	3	380	MTB0634680*E#
63	40	6,8	7	16	26,5	22,5	0,8	2	250	MTB0634680*G#
63	40	10	8,5	17	26,5	22,5	0,8	2	250	MTB0635100*G#
63	40	10	9	17	32	27,5	0,8	1	130	MTB0635100*H#
63	40	15	13	22	26,5	22,5	0,8	2	250	MTB0635150*G#
63	40	15	11	20	32	27,5	0,8	1	130	MTB0635150*H#
63	40	22	13	22	32	27,5	0,8	1	130	MTB0635220*H#
63	40	33	15	24,5	32	27,5	0,8	1	130	MTB0635330*H#
63	40	47	18	33	32	27,5	0,8	1	130	MTB0635470*H#
63	40	47	17	28	42,5	37,5	0,8	0,8	100	MTB0635470*J#
63	40	68	22	37	32	27,5	0,8	1	130	MTB0635680*H#
63	40	68	22	30	42,5	37,5	1	0,8	100	MTB0635680*J#
63	40	100	28	37	42,5	37,5	1	0,8	100	MTB0636100*J#
63	40	150	30	45	42,5	37,5	1,2	0,8	100	MTB0636150*J#
100	63	0,33	4	9	13	10	0,6	9	1800	MTB1103330*D#
100	63	0,33	5	11	18	15	0,8	5	1000	MTB1103330*E#
100	63	0,47	5	11	13	10	0,6	9	1800	MTB1103470*D#
100	63	0,47	5	11	18	15	0,8	5	1000	MTB1103470*E#
100	63	0,68	6	12	13	10	0,6	9	1800	MTB1103680*D#
100	63	0,68	5	11	18	15	0,8	5	1000	MTB1103680*E#
100	63	1	5	11	18	15	0,8	5	1000	MTB1104100*E#
100	63	1,5	7,5	13,5	18	15	0,8	5	1000	MTB1104150*E#
100	63	1,5	6	15	26,5	22,5	0,8	3	600	MTB1104150*G#
100	63	2,2	8,5	14,5	18	15	0,8	5	1000	MTB1104220*E#
100	63	2,2	6	15	26,5	22,5	0,8	3	600	MTB1104220*G#
100	63	3,3	10	16	18	15	0,8	5	1000	MTB1104330*E#
100	63	3,3	7	16	26,5	22,5	0,8	3	600	MTB1104330*G#
100	63	4,7	8,5	17	26,5	22,5	0,8	3	600	MTB1104470*G#
100	63	4,7	9	17	32	27,5	0,8	2	400	MTB1104470*H#
100	63	6,8	10	18,5	26,5	22,5	0,8	3	600	MTB1104680*G#
100	63	6,8	9	17	32	27,5	0,8	2	400	MTB1104680*H#
100	63	10	13	22	26,5	22,5	0,8	3	600	MTB1105100*G#
100	63	10	11	20	32	27,5	0,8	2	400	MTB1105100*H#
100	63	15	13	22	32	27,5	0,8	2	400	MTB1105150*H#
100	63	22	14	28	32	27,5	0,8	2	400	MTB1105220*H#
100	63	33	18	33	32	27,5	0,8	2	400	MTB1105330*H#
100	63	33	17	28	42,5	37,5	0,8	1,2	240	MTB1105330*J#
100	63	47	22	37	32	27,5	0,8	2	400	MTB1105470*H#
100	63	47	22	30	42,5	37,5	1	1,2	240	MTB1105470*J#
100	63	68	28	37	42,5	37,5	1	1,2	240	MTB1105680*J#
100	63	82	30	45	42,5	37,5	1,2	1,2	240	MTB1105820*J#

<sup>(1)</sup>Change the \* symbol with the needed capacitance tolerance code: J=±5%, K=±10%, M=±20%

and the # symbol with S for 5mm lead length and with L for 30 mm lead length.

<sup>(2)</sup>Not suitable for across the line application. P=10mm units NOT FOR NEW DESIGN



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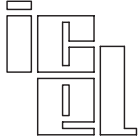
Rated voltage		Cap. value ( $\mu\text{F}$ )	Dimension in mm					du/dt $\text{V}/\mu\text{s}$	Ko $\text{V}^2/\mu\text{s}$	ICEL ordering code <sup>(1)</sup>
Vdc	Vac		B	H	L	P	d			
160	90	0,22	4	9	13	10	0,6	15	4800	MTB1163220*D#
160	90	0,33	5	11	13	10	0,6	15	4800	MTB1163330*D#
160	90	0,33	5	11	18	15	0,8	9	2900	MTB1163330*E#
160	90	0,47	6	12	13	10	0,6	15	4800	MTB1163470*D#
160	90	0,47	5	11	18	15	0,8	9	2900	MTB1163470*E#
160	90	0,68	5	11	18	15	0,8	9	2900	MTB1163680*E#
160	90	1	7,5	13,5	18	15	0,8	9	2900	MTB1164100*E#
160	90	1,5	8,5	14,5	18	15	0,8	9	2900	MTB1164150*E#
160	90	1,5	6	15	26,5	22,5	0,8	6	1900	MTB1164150*G#
160	90	2,2	10	16	18	15	0,8	9	2900	MTB1164220*E#
160	90	2,2	7	16	26,5	22,5	0,8	6	1900	MTB1164220*G#
160	90	3,3	8,5	17	26,5	22,5	0,8	6	1900	MTB1164330*G#
160	90	3,3	9	17	32	27,5	0,8	3	960	MTB1164330*H#
160	90	4,7	11	20	26,5	22,5	0,8	6	1900	MTB1164470*G#
160	90	4,7	9	17	32	27,5	0,8	3	960	MTB1164470*H#
160	90	6,8	13	22	26,5	22,5	0,8	6	1900	MTB1164680*G#
160	90	6,8	11	20	32	27,5	0,8	3	960	MTB1164680*H#
160	90	10	13	22	32	27,5	0,8	3	960	MTB1165100*H#
160	90	15	14	28	32	27,5	0,8	3	960	MTB1165150*H#
160	90	22	22	37	32	27,5	0,8	3	960	MTB1165220*H#
160	90	22	17	28	42,5	37,5	0,8	2,2	700	MTB1165220*J#
160	90	33	22	30	42,5	37,5	1	2,2	700	MTB1165330*J#
160	90	47	28	37	42,5	37,5	1	2,2	700	MTB1165470*J#
160	90	68	30	45	42,5	37,5	1,2	2,2	700	MTB1165680*J#
160	90	82	30	45	42,5	37,5	1,2	2,2	700	MTB1165820*J#
250	160	0,068	4	9	13	10	0,6	20	10000	MTB1252680*D#
250	160	0,1	4	9	13	10	0,6	20	10000	MTB1253100*D#
250	160	0,1	5	11	18	15	0,8	12	6000	MTB1253100*E#
250	160	0,15	4	9	13	10	0,6	20	10000	MTB1253150*D#
250	160	0,15	5	11	18	15	0,8	12	6000	MTB1253150*E#
250	160	0,22	5	11	13	10	0,6	20	10000	MTB1253220*D#
250	160	0,22	5	11	18	15	0,8	12	6000	MTB1253220*E#
250	160	0,33	6	12	13	10	0,6	20	10000	MTB1253330*D#
250	160	0,33	5	11	18	15	0,8	12	6000	MTB1253330*E#
250	160	0,47	6	12	18	15	0,8	12	6000	MTB1253470*E#
250	160	0,47	6	15	26,5	22,5	0,8	8	4000	MTB1253470*G#
250	160	0,68	7,5	13,5	18	15	0,8	12	6000	MTB1253680*E#
250	160	0,68	6	15	26,5	22,5	0,8	8	4000	MTB1253680*G#
250	160	1	8,5	14,5	18	15	0,8	12	6000	MTB1254100*E#
250	160	1	6	15	26,5	22,5	0,8	8	4000	MTB1254100*G#
250	160	1,5	10	16	18	15	0,8	12	6000	MTB1254150*E#
250	160	1,5	7	16	26,5	22,5	0,8	8	4000	MTB1254150*G#
250	160	1,5	9	17	32	27,5	0,8	5	2500	MTB1254150*H#
250	160	2,2	10	18,5	26,5	22,5	0,8	8	4000	MTB1254220*G#
250	160	2,2	9	17	32	27,5	0,8	5	2500	MTB1254220*H#
250	160	3,3	11	20	26,5	22,5	0,8	8	4000	MTB1254330*G#
250	160	3,3	11	20	32	27,5	0,8	5	2500	MTB1254330*H#
250	160	4,7	13	22	32	27,5	0,8	5	2500	MTB1254470*H#
250	160	6,8	14	28	32	27,5	0,8	5	2500	MTB1254680*H#
250	160	10	18	33	32	27,5	0,8	5	2500	MTB1255100*H#
250	160	10	17	28	42,5	37,5	0,8	4	2000	MTB1255100*J#
250	160	15	22	37	32	27,5	0,8	5	2500	MTB1255150*H#
250	160	15	17	28	42,5	37,5	0,8	4	2000	MTB1255150*J#
250	160	22	22	30	42,5	37,5	1	4	2000	MTB1255220*J#
250	160	33	28	37	42,5	37,5	1	4	2000	MTB1255330*J#
250	160	47	30	47	42,5	37,5	1,2	4	2000	MTB1255470*J#
400	200	0,022	4	9	13	10	0,6	30	24000	MTB1402220*D#
400	200	0,033	4	9	13	10	0,6	30	24000	MTB1402330*D#
400	200	0,047	4	9	13	10	0,6	30	24000	MTB1402470*D#
400	200	0,047	5	11	18	15	0,8	20	16000	MTB1402470*E#
400	200	0,068	5	11	13	10	0,6	30	24000	MTB1402680*D#
400	200	0,068	5	11	18	15	0,8	20	16000	MTB1402680*E#
400	200	0,1	6	12	13	10	0,6	30	24000	MTB1403100*D#
400	200	0,1	5	11	18	15	0,8	20	16000	MTB1403100*E#
400	200	0,15	5	11	18	15	0,8	20	16000	MTB1403150*E#
400	200	0,22	6	12	18	15	0,8	20	16000	MTB1403220*E#
400	200	0,22	6	15	26,5	22,5	0,8	13	10400	MTB1403220*G#
400	200	0,33	7,5	13,5	18	15	0,8	20	16000	MTB1403330*E#
400	200	0,33	6	15	26,5	22,5	0,8	13	10400	MTB1403330*G#
400	200	0,47	8,5	14,5	18	15	0,8	20	16000	MTB1403470*E#

<sup>(1)</sup>Change the \* symbol with the needed capacitance tolerance code: J= $\pm 5\%$ , K= $\pm 10\%$ , M= $\pm 20\%$

and the # symbol with S for 5mm lead length and with L for 30 mm lead length.

<sup>(2)</sup>Not suitable for across the line application. P=10mm units NOT FOR NEW DESIGN





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## Metallized polyester film capacitor

### MKT - General purpose



Permissible AC voltage versus frequency (sinusoidal waveform) for  $\Delta T = +10^\circ\text{C}$   
Referred to the largest pitch execution among available ones

