

# MTR

## Metallized polyester film capacitor MKT - General purpose - Small Size



### 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

UL 510 / CSA TIL I-26 polyester tape wrapping; UL 94 V-0 resin end fill. Flame retardant execution

### Construction

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

### 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)

1000pF to 150µF, In compliance with IEC 60063, E6 series. Refer to article table

### Capacitance tolerance (at 1kHz)

±10% (code=K), ±5% (code=J), ±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  $\leq \pm 2\%$  for  $Cr > 0,1\mu F$ ;  $\leq \pm 3\%$  for  $Cr \leq 0,1\mu F$  after a period of 2 years at standard environmental conditions

### Rated voltage (Ur)

63, 100, 250, 400, 630, 1000 Vdc  
(permissible AC voltage at 60Hz: 40, 63, 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  $T > +85^\circ$   $U_r$  must be decreased 1,25% for every °C exceeding +85°C

### Self inductance

$\leq 1nH/mm$  of capacitor and leads length used for connection

### 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±5°C

Freq.	$Cr \leq 0,1\mu F$	$0,1\mu F < Cr \leq 1\mu F$	$1\mu F < Cr \leq 68\mu F$	$Cr > 68\mu F$
1kHz	80	80	100	110
10kHz	150	150		-
100kHz	300	-		-

### Insulation resistance (IR)

Measured between terminals, at 25±5°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
$\leq 100$	$\leq 0,33\mu F$	$\geq 3750M\Omega$
$> 100$	$\leq 0,33\mu F$	$\geq 30000M\Omega$
$\leq 100$	$> 0,33\mu F$	$\geq 1250s$
$> 100$	$> 0,33\mu F$	$\geq 10000s$

### Test voltage between terminals (Ut)

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

### Damp heat test (steady state)

Test conditions:

Temperature= +40±2°C

Relative humidity=93±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= +85±2°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±5°C

Dipping time (with heat screen)= 10±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±2°C

Failure rate:

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

$\leq 5FIT$  for all the values

Failure criteria (DIN44122):

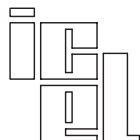
Capacitance change  $> \pm 10\%$

DF change  $> 2 \times$  initial value

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

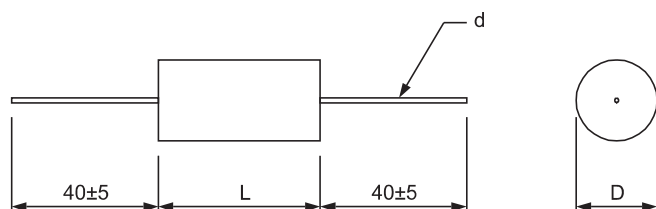
Short or open circuit

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



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Dimensional tolerances (mm)

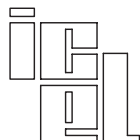
L	L±	D±
10,5	1,0	1,0
13,0	1,5	1,0
19,0	1,5	1,5
27,0	2,0	2,0
32,0	2,0	2,0
44,0	2,5	2,5

MTR article table (different values and flat execution available upon request)

Rated voltage V <sub>dc</sub>	V <sub>ac</sub>	Cap. value (µF)	Dimension in mm D	L	d	du/dt V/µs	Ko V <sup>2</sup> /µs	ICEL ordering code <sup>(1)</sup>
63	40	0,33	4,5	10,5	0,6	10	1260	MTR0633330*A
63	40	0,47	5	10,5	0,6	10	1260	MTR0633470*A
63	40	0,68	5	13	0,6	6	756	MTR0633680*B
63	40	1	6	13	0,6	6	756	MTR0634100*B
63	40	1,5	7	13	0,6	6	756	MTR0634150*B
63	40	2,2	6,5	19	0,6	3	380	MTR0634220*D
63	40	3,3	8	19	0,8	3	380	MTR0634330*D
63	40	4,7	9,5	19	0,8	3	380	MTR0634470*D
63	40	6,8	11	19	0,8	3	380	MTR0634680*D
63	40	10	10,5	27	0,8	2	252	MTR0635100*G
63	40	15	13	27	0,8	2	252	MTR0635150*G
63	40	22	15,5	27	0,8	2	252	MTR0635220*G
63	40	33	17,5	32	1	1	125	MTR0635330*J
63	40	47	20,5	32	1	1	125	MTR0635470*J
63	40	68	20,5	44	1	1	125	MTR0635680*N
63	40	100	25	44	1	1	125	MTR0636100*N
63	40	150	30,5	44	1	1	125	MTR0636150*N
100	63	0,22	4,5	10,5	0,6	15	3000	MTR1103220*A
100	63	0,33	5,5	10,5	0,6	15	3000	MTR1103330*A
100	63	0,47	6	10,5	0,6	15	3000	MTR1103470*A
100	63	0,68	6	13	0,6	9	1800	MTR1103680*B
100	63	1	7	13	0,6	9	1800	MTR1104100*B
100	63	1,5	8,5	13	0,8	9	1800	MTR1104150*B
100	63	1,5	6,5	19	0,6	5	1000	MTR1104150*D
100	63	2,2	8	19	0,8	5	1000	MTR1104220*D
100	63	3,3	9,5	19	0,8	5	1000	MTR1104330*D
100	63	4,7	11,5	19	0,8	5	1000	MTR1104470*D
100	63	6,8	11	27	0,8	3	600	MTR1104680*G
100	63	10	13,5	27	0,8	3	600	MTR1105100*G
100	63	10	12	32	0,8	2	400	MTR1105100*J
100	63	15	14,5	32	0,8	2	400	MTR1105150*J
100	63	22	17,5	32	1	2	400	MTR1105220*J
100	63	33	21	32	1	2	400	MTR1105330*J
100	63	47	25	32	1	2	400	MTR1105470*J
100	63	47	21	44	1	1	200	MTR1105470*N
100	63	68	25,5	44	1	1	200	MTR1105680*N
100	63	100	30,5	44	1	1	200	MTR1106100*N
100	63	120	33,5	44	1	1	200	MTR1106120*N
250	160	0,068	4,5	10,5	0,6	30	15000	MTR1252680*A
250	160	0,1	5,5	10,5	0,6	30	15000	MTR1253100*A
250	160	0,15	6,5	10,5	0,6	30	15000	MTR1253150*A
250	160	0,22	6	13	0,6	20	10000	MTR1253220*B
250	160	0,33	7	13	0,6	20	10000	MTR1253330*B
250	160	0,47	8,5	13	0,8	20	10000	MTR1253470*B
250	160	0,47	6,5	19	0,6	12	6000	MTR1253470*D
250	160	0,68	7,5	19	0,8	12	6000	MTR1253680*D
250	160	1	9	19	0,8	12	6000	MTR1254100*D
250	160	1,5	11	19	0,8	12	6000	MTR1254150*D
250	160	2,2	13	19	0,8	12	6000	MTR1254220*D
250	160	2,2	10,5	27	0,8	8	4000	MTR1254220*G
250	160	3,3	12,5	27	0,8	8	4000	MTR1254330*G
250	160	4,7	15	27	0,8	8	4000	MTR1254470*G
250	160	4,7	13	32	0,8	5	2500	MTR1254470*J

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

<sup>(2)</sup>Not suitable for across the line application



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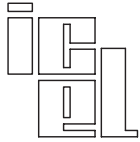
## Metallized polyester film capacitor MKT - General purpose - Small Size



Rated voltage		Cap. value (µF)	Dimension in mm			du/dt V/µs	Ko V <sup>2</sup> /µs	ICEL ordering code <sup>(1)</sup>
Vdc	Vac		D	L	d			
250	160	6,8	15,5	32	0,8	5	2500	MTR1254680*J
250	160	10	19	32	1	5	2500	MTR1255100*J
250	160	15	23	32	1	5	2500	MTR1255150*J
250	160	15	19,5	44	1	3,5	1750	MTR1255150*N
250	160	22	23	44	1	3,5	1750	MTR1255220*N
250	160	33	28,5	44	1	3,5	1750	MTR1255330*N
250	160	47	33,5	44	1	3,5	1750	MTR1255470*N
400	200	0,022	4,5	10,5	0,6	45	36000	MTR1402220*A
400	200	0,033	5	10,5	0,6	45	36000	MTR1402330*A
400	200	0,047	5,5	10,5	0,6	45	36000	MTR1402470*A
400	200	0,068	6,5	10,5	0,6	45	36000	MTR1402680*A
400	200	0,1	6	13	0,6	30	24000	MTR1403100*B
400	200	0,15	7	13	0,6	30	24000	MTR1403150*B
400	200	0,22	8,5	13	0,8	30	24000	MTR1403220*B
400	200	0,22	6,5	19	0,6	20	16000	MTR1403220*D
400	200	0,33	8	19	0,8	20	16000	MTR1403330*D
400	200	0,47	9,5	19	0,8	20	16000	MTR1403470*D
400	200	0,68	11,5	19	0,8	20	16000	MTR1403680*D
400	200	1	13	19	0,8	20	16000	MTR1404100*D
400	200	1	10,5	27	0,8	13	10400	MTR1404100*G
400	200	1,5	12,5	27	0,8	13	10400	MTR1404150*G
400	200	2,2	15	27	0,8	13	10400	MTR1404220*G
400	200	2,2	13,5	32	0,8	8,5	6800	MTR1404220*J
400	200	3,3	16	32	0,8	8,5	6800	MTR1404330*J
400	200	4,7	19,5	32	1	8,5	6800	MTR1404470*J
400	200	6,8	23,5	32	1	8,5	6800	MTR1404680*J
400	200	6,8	19,5	44	1	6	4800	MTR1404680*N
400	200	10	23,5	44	1	6	4800	MTR1405100*N
400	200	15	29	44	1	6	4800	MTR1405150*N
400	200	22	34,5	44	1	6	4800	MTR1405220*N
630	220 <sup>(2)</sup>	0,0033	4,5	10,5	0,6	60	75600	MTR1631330*A
630	220 <sup>(2)</sup>	0,0047	4,5	10,5	0,6	60	75600	MTR1631470*A
630	220 <sup>(2)</sup>	0,0068	5	10,5	0,6	60	75600	MTR1631680*A
630	220 <sup>(2)</sup>	0,01	5	10,5	0,6	60	75600	MTR1632100*A
630	220 <sup>(2)</sup>	0,015	6	10,5	0,6	60	75600	MTR1632150*A
630	220 <sup>(2)</sup>	0,022	5,5	13	0,6	40	50400	MTR1632220*B
630	220 <sup>(2)</sup>	0,033	6	13	0,6	40	50400	MTR1632330*B
630	220 <sup>(2)</sup>	0,047	7	13	0,6	40	50400	MTR1632470*B
630	220 <sup>(2)</sup>	0,068	8,5	13	0,8	40	50400	MTR1632680*B
630	220 <sup>(2)</sup>	0,068	6,5	19	0,6	25	31500	MTR1632680*D
630	220 <sup>(2)</sup>	0,1	7,5	19	0,8	25	31500	MTR1633100*D
630	220 <sup>(2)</sup>	0,15	9	19	0,8	25	31500	MTR1633150*D
630	220 <sup>(2)</sup>	0,22	11	19	0,8	25	31500	MTR1633220*D
630	220 <sup>(2)</sup>	0,33	10,5	27	0,8	15	18900	MTR1633330*G
630	220 <sup>(2)</sup>	0,47	12	27	0,8	15	18900	MTR1633470*G
630	220 <sup>(2)</sup>	0,68	14,5	27	0,8	15	18900	MTR1633680*G
630	220 <sup>(2)</sup>	0,68	13	32	0,8	10	12600	MTR1633680*J
630	220 <sup>(2)</sup>	1	15,5	32	0,8	10	12600	MTR1634100*J
630	220 <sup>(2)</sup>	1,5	19	32	1	10	12600	MTR1634150*J
630	220 <sup>(2)</sup>	2,2	23	32	1	10	12600	MTR1634220*J
630	220 <sup>(2)</sup>	2,2	19	44	1	8	10080	MTR1634220*N
630	220 <sup>(2)</sup>	3,3	23	44	1	8	10080	MTR1634330*N
630	220 <sup>(2)</sup>	4,7	27,5	44	1	8	10080	MTR1634470*N
630	220 <sup>(2)</sup>	6,8	32,5	44	1	8	10080	MTR1634680*N
1000	400 <sup>(2)</sup>	0,001	4,5	10,5	0,6	120	240000	MTR2101100*A
1000	400 <sup>(2)</sup>	0,0015	4,5	10,5	0,6	120	240000	MTR2101150*A
1000	400 <sup>(2)</sup>	0,0022	4,5	10,5	0,6	120	240000	MTR2101220*A
1000	400 <sup>(2)</sup>	0,0033	4,5	10,5	0,6	120	240000	MTR2101330*A
1000	400 <sup>(2)</sup>	0,0047	5,5	10,5	0,6	120	240000	MTR2101470*A
1000	400 <sup>(2)</sup>	0,0068	6,5	10,5	0,6	120	240000	MTR2101680*A
1000	400 <sup>(2)</sup>	0,01	5,5	13	0,6	80	160000	MTR2102100*B
1000	400 <sup>(2)</sup>	0,015	6,5	13	0,6	80	160000	MTR2102150*B
1000	400 <sup>(2)</sup>	0,022	7	13	0,6	80	160000	MTR2102220*B
1000	400 <sup>(2)</sup>	0,033	8,5	13	0,8	80	160000	MTR2102330*B
1000	400 <sup>(2)</sup>	0,033	6,5	19	0,6	40	80000	MTR2102330*D
1000	400 <sup>(2)</sup>	0,047	7,5	19	0,8	40	80000	MTR2102470*D

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

<sup>(2)</sup>Not suitable for across the line application



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Vdc	Vac		D	L	d			
1000	400 <sup>(2)</sup>	0,068	9	19	0,8	40	80000	MTR2102680*D
1000	400 <sup>(2)</sup>	0,1	11	19	0,8	40	80000	MTR2103100*D
1000	400 <sup>(2)</sup>	0,15	10	27	0,8	33	66000	MTR2103150*G
1000	400 <sup>(2)</sup>	0,22	12	27	0,8	33	66000	MTR2103220*G
1000	400 <sup>(2)</sup>	0,33	15	27	0,8	33	66000	MTR2103330*G
1000	400 <sup>(2)</sup>	0,33	13	32	0,8	20	40000	MTR2103330*J
1000	400 <sup>(2)</sup>	0,47	15	32	0,8	20	40000	MTR2103470*J
1000	400 <sup>(2)</sup>	0,68	18,5	32	1	20	40000	MTR2103680*J
1000	400 <sup>(2)</sup>	1	22	32	1	20	40000	MTR2104100*J
1000	400 <sup>(2)</sup>	1,5	22	44	1	15	30000	MTR2104150*N
1000	400 <sup>(2)</sup>	2,2	26,5	44	1	15	30000	MTR2104220*N
1000	400 <sup>(2)</sup>	3,3	32,5	44	1	15	30000	MTR2104330*N

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

<sup>(2)</sup>Not suitable for across the line application

**Permissible AC voltage versus frequency (sinusoidal waveform) for ΔT=+10°C**  
Referred to the largest length execution among available ones

