MDK

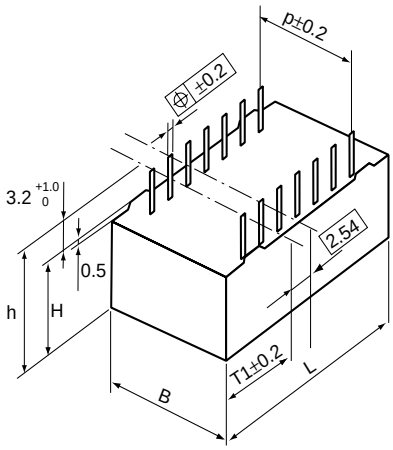
- **Metallized polyester (PET) DIL**
- **Low ESR and ESL**
- **Three and four pole connection possible**
- **Good temperature stability**
- **No voltage dependence of capacitance and dissipation factor**

TYPICAL APPLICATIONS

High frequency switched mode power supplies and DC-DC converters. Input/ output filtering.

CONSTRUCTION

DIL metallized polyester (PET) film capacitor. Encapsulation in self-extinguishing material meeting the requirements of UL 94V-0.



TECHNICAL DATA

Rated voltage U_R VDC	50	100	250	400	630
Rated voltage U_R VAC	30	63	160	200	220
Capacitance range, µF	0.047 - 15	0.047 - 10	0.047 - 1.5	0.047 - 0.47	0.047 - 0.18

Capacitance tolerance ± 10%, ± 5%, other tolerances on request

Category temperature range –55 to +125°C

Rated temperature +85 °C

Voltage derating The rated voltage is decreased with 1.25%/°C from +85 °C

Climatic category 55/125/56

Test voltage 1.6 x U_R, 60s

Insulation resistance

Minimum value between terminals
Measured at +20 °C according to IEC 60384-2

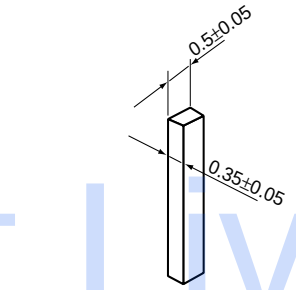
	C ≤ 0.33 µF	C > 0.33 µF
U_R ≤ 100 V	15 000 MΩ	5 000 s
U_R > 100 V	30 000 MΩ	10 000 s

Dissipation factor

Maximum values at +23°C

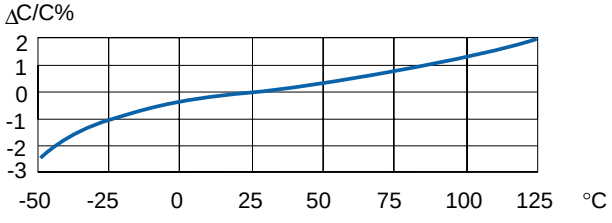
	C ≤ 0.1 µF	0.1 < C ≤ 3.3 µF	C > 3.3 µF
1 kHz	0.8 %	0.8 %	0.8 %
10 kHz	1.5 %	1.5 %	1.5 %
100 kHz	2.5 %	5.0 %	—

Self inductancy Approximately 4 nH

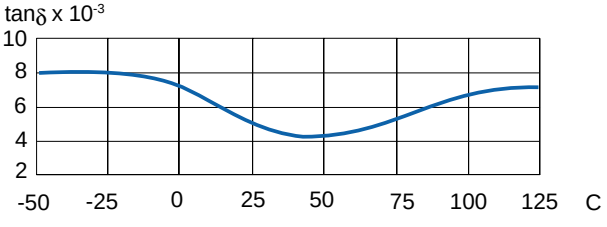


Detail of a lead

Leads per side	T1±0.2 mm
3	4.45
4	3.20
7	3.90
8	2.60



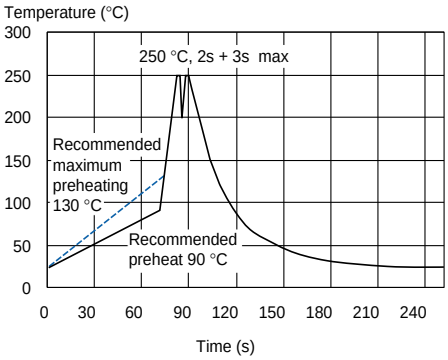
Capacitance vs temperature at 1 kHz



Dissipation factor vs temperature at 1 kHz

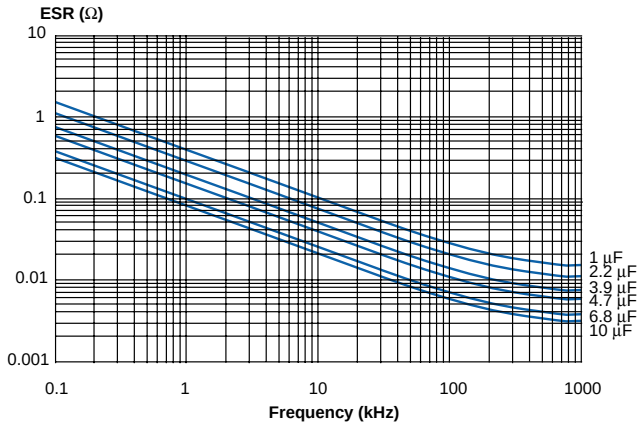
RECOMMENDED SOLDERING CONDITIONS

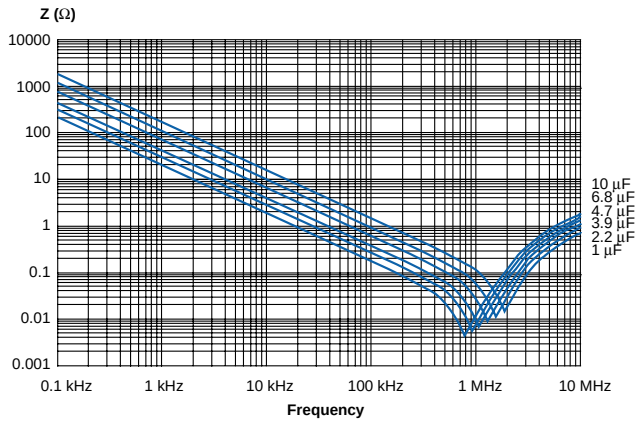
Electrode temperature, Wave soldering
Preheating temperature should be less than 130°C. The peak temperature must not exceed 250°C.



Recommended wave soldering profile

TYPICAL DATA





ESR vs. frequency

Maximum RMS voltage U_{RMS} (V) vs. frequency

Value	Rated voltage	1 kHz	10 kHz	100 kHz	500 kHz	1 MHz
1.0 µF	250 V	150.0	36.0	9.2	2.9	1.3
2.2 µF	100 V	50.0	25.0	5.0	1.2	0.6
3.9 µF	100 V	50.0	18.0	4.0	1.0	0.3
4.7 µF	100 V	50.0	16.0	3.5	0.7	0.2
6.8 µF	100 V	50.0	15.5	2.2	0.5	0.2
10 µF	100 V	50.0	15.0	2.0	0.4	0.2

Impedance vs. frequency

Maximum RMS current I_{RMS} (A) vs. frequency

Value	Rated voltage	Case size	1 kHz	10 kHz	100 kHz	500 kHz	1 MHz
1.0 µF	250 V	A57	1.0	2.2	5.5	9.0	10.0
2.2 µF	100 V	A53	1.5	2.3	6.0	7.5	10.0
3.9 µF	100 V	A53	2.0	4.0	10.0	11.0	11.5
4.7 µF	100 V	A53	2.0	4.5	10.0	12.5	12.5
6.8 µF	100 V	A57	3.0	6.0	11.0	13.0	13.5
10 µF	100 V	A58	4.0	9.0	13.0	14.0	14.5

ARTICLE TABLE

Capacitance µF	Dimensions in mm B ±0.2	H ±0.2	L ±0.2	p	h	Leads per side (Px and Py)	Quantity per package Reel	Tube	ESR 500kHz mΩ	Article code
50 VDC/30 VAC										
0.047	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	270	MDK10 473K50A53Px TR32
0.056	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	230	MDK10 563K50A53Px TR32
0.068	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	190	MDK10 683K50A53Px TR32
0.082	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	160	MDK10 823K50A53Px TR32
0.10	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	130	MDK10 104K50A53Px TR32
0.12	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	110	MDK10 124K50A53Px TR32
0.15	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	85	MDK10 154K50A53Px TR32
0.18	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	70	MDK10 184K50A53Px TR32
0.22	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	58	MDK10 224K50A53Px TR32
0.27	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	47	MDK10 274K50A53Px TR32
0.33	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	39	MDK10 334K50A53Px TR32
0.39	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	33	MDK10 394K50A53Px TR32
0.47	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	30	MDK10 474K50A53Px TR32
0.56	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	26	MDK10 564K50A53Px TR32
0.68	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	21	MDK10 684K50A53Px TR32
0.82	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	18	MDK10 824K50A53Px TR32
1.0	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	15	MDK10 105K50A53Px TR32
1.2	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	14	MDK10 125K50A53Px TR32
1.5	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	13	MDK10 155K50A53Px TR32
1.8	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	12	MDK10 185K50A53Px TR32
2.2	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	11	MDK10 225K50A53Px TR32
2.7	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	10	MDK10 275K50A53Px TR32
3.3	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	8	MDK10 335K50A53Px TR32
3.9	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	7	MDK10 395K50A53Px TR32
4.7	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	6	MDK10 475K50A53Px TR32
5.6	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	5	MDK10 565K50A53Px TR32
6.8	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	5	MDK10 685K50A53Px TR32
8.2	12.7	9.0	23.0	10.0	10.5	7 or 8		21	4	MDK10 825K50A57Py TUBE
10	12.7	9.0	23.0	10.0	10.5	7 or 8		21	3.5	MDK10 106K50A57Py TUBE
12	12.7	11.0	23.0	10.0	12.5	7 or 8		21	3.5	MDK10 126K50A58Py TUBE
15	12.7	11.0	23.0	10.0	12.5	7 or 8		21	3.5	MDK10 156K50A58Py TUBE
100 VDC/63 VAC										
0.047	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	270	MDK10 473K100A53Px TR32
0.056	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	230	MDK10 563K100A53Px TR32
0.068	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	190	MDK10 683K100A53Px TR32
0.082	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	160	MDK10 823K100A53Px TR32
0.10	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	130	MDK10 104K100A53Px TR32
0.12	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	110	MDK10 124K100A53Px TR32
0.15	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	85	MDK10 154K100A53Px TR32
0.18	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	70	MDK10 184K100A53Px TR32
0.22	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	58	MDK10 224K100A53Px TR32
0.27	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	47	MDK10 274K100A53Px TR32
0.33	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	39	MDK10 334K100A53Px TR32
0.39	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	33	MDK10 394K100A53Px TR32
0.47	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	30	MDK10 474K100A53Px TR32
0.56	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	26	MDK10 564K100A53Px TR32
0.68	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	21	MDK10 684K100A53Px TR32
0.82	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	18	MDK10 824K100A53Px TR32
1.0	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	15	MDK10 105K100A53Px TR32
1.2	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	14	MDK10 125K100A53Px TR32
1.5	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	13	MDK10 155K100A53Px TR32
1.8	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	12	MDK10 185K100A53Px TR32
2.2	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	11	MDK10 225K100A53Px TR32
2.7	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	10	MDK10 275K100A53Px TR32
3.3	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	8	MDK10 335K100A53Px TR32
3.9	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	7	MDK10 395K100A53Px TR32
4.7	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	6	MDK10 475K100A53Px TR32 *
4.7	12.7	9.0	23.0	10.0	10.5	7 or 8		21	6	MDK10 475K100A57Py TUBE
5.6	12.7	9.0	23.0	10.0	10.5	7 or 8		21	5	MDK10 565K100A57Py TUBE
6.8	12.7	9.0	23.0	10.0	10.5	7 or 8		21	5	MDK10 685K100A57Py TUBE
8.2	12.7	11.0	23.0	10.0	12.5	7 or 8		21	4	MDK10 825K100A58Py TUBE
10	12.7	11.0	23.0	10.0	12.5	7 or 8		21	3.5	MDK10 106K100A58Py TUBE

* 100 VDC/35 VAC

ARTICLE TABLE

Capacitance µF	Dimensions in mm B ±0.2	H ±0.2	L ±0.2	p	h	Leads per side (Px and Py)	Quantity per package Reel	Tube	ESR 500kHz mΩ	Article code
250 VDC/160 VAC										
0.047	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	270	MDK10 473K250A53Px TR32
0.056	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	230	MDK10 563K250A53Px TR32
0.068	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	190	MDK10 683K250A53Px TR32
0.082	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	160	MDK10 823K250A53Px TR32
0.10	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	130	MDK10 104K250A53Px TR32
0.12	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	110	MDK10 124K250A53Px TR32
0.15	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	58	MDK10 154K250A53Px TR32
0.18	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	70	MDK10 184K250A53Px TR32
0.22	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	58	MDK10 224K250A53Px TR32
0.27	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	47	MDK10 274K250A53Px TR32
0.33	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	35	MDK10 334K250A53Px TR32
0.39	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	33	MDK10 394K250A53Px TR32
0.47	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	30	MDK10 474K250A53Px TR32
0.56	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	26	MDK10 564K250A53Px TR32
0.68	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	21	MDK10 684K250A53Px TR32
0.82	12.7	9.0	23.0	10.0	10.5	7 or 8		21	18	MDK10 824K250A57Py TUBE
1.0	12.7	9.0	23.0	10.0	10.5	7 or 8		21	15	MDK10 105K250A57Py TUBE
1.2	12.7	11.0	23.0	10.0	12.5	7 or 8		21	14	MDK10 125K250A58Py TUBE
1.5	12.7	11.0	23.0	10.0	12.5	7 or 8		21	13	MDK10 155K250A58Py TUBE
400 VDC/ 200 VAC										
0.047	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	270	MDK10 473K400A53Px TR32
0.056	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	230	MDK10 563K400A53Px TR32
0.068	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	190	MDK10 683K400A53Px TR32
0.082	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	160	MDK10 823K400A53Px TR32
0.10	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	130	MDK10 104K400A53Px TR32
0.12	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	110	MDK10 124K400A53Px TR32
0.15	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	85	MDK10 154K400A53Px TR32
0.18	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	70	MDK10 184K400A53Px TR32
0.22	12.7	9.0	23.0	10.0	10.5	7 or 8		21	58	MDK10 224K400A57Py TUBE
0.27	12.7	9.0	23.0	10.0	10.5	7 or 8		21	47	MDK10 274K400A57Py TUBE
0.33	12.7	9.0	23.0	10.0	10.5	7 or 8		21	39	MDK10 334K400A57Py TUBE
0.39	12.7	11.0	23.0	10.0	12.5	7 or 8		21	33	MDK10 394K400A58Py TUBE
0.47	12.7	11.0	23.0	10.0	12.5	7 or 8		21	30	MDK10 474K400A58Py TUBE
630 VDC/ 220 VAC										
0.047	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	270	MDK10 473K630A53Px TR32
0.056	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	230	MDK10 563K630A53Px TR32
0.068	12.7	9.0	14.0	10.0	10.5	3 or 4	200	35	190	MDK10 683K630A53Px TR32
0.082	12.7	11.0	23.0	10.0	12.5	7 or 8		21	160	MDK10 823K630A58Py TUBE
0.10	12.7	11.0	23.0	10.0	12.5	7 or 8		21	130	MDK10 104K630A58Py TUBE
0.12	12.7	11.0	23.0	10.0	12.5	7 or 8		21	110	MDK10 124K630A58Py TUBE
0.15	12.7	11.0	23.0	10.0	12.5	7 or 8		21	85	MDK10 154K630A58Py TUBE
0.18	12.7	11.0	23.0	10.0	12.5	7 or 8		21	70	MDK10 184K630A58Py TUBE

x = Number of leads per side, 3 or 4
y = Number of leads per side, 7 or 8

ORDERING INFORMATION

See article table and pages 18 to 23 for options and article code construction.

MARKING

- EVOX
- Rated capacitance according to IEC 60062
- Capacitance tolerance code
- Rated voltage
- Capacitor family code MDK