

- 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	0.033 - 6.8	0.033 - 5.6	0.033 - 0.68	0.033 - 0.33	0.033 - 0.10
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Capacitance tolerance $\pm 10\%$, $\pm 5\%$, other tolerances on request

Category temperature range -55 to $+125^\circ C$

Rated temperature $+85^\circ C$

Voltage derating The rated voltage is decreased with $1.25\%/^\circ C$ from $+85^\circ C$

Climatic category 55/125/56

Test voltage $1.6 \times U_R$, 60s

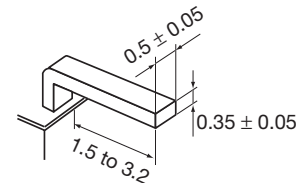
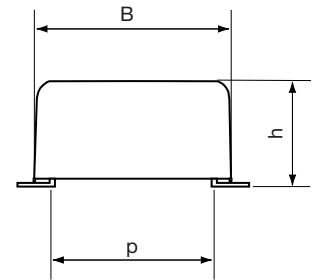
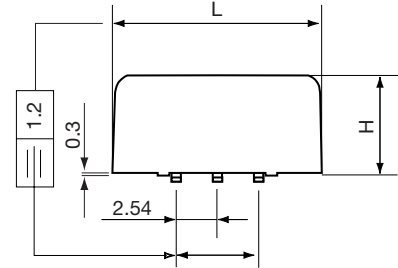
Insulation resistance Minimum value between terminals
Measured at $+20^\circ C$ according to IEC 60384-2

	$C \leq 0.33 \mu F$	$C > 0.33 \mu F$
$U_R \leq 100 V$	15 000 M Ω	5 000 s
$U_R > 100 V$	30 000 M Ω	10 000 s

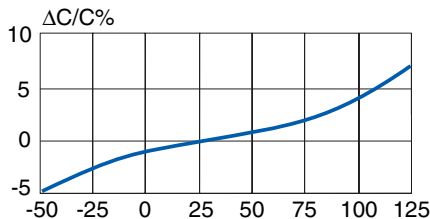
Dissipation factor Maximum values at $+23^\circ C$

	$C \leq 0.1 \mu F$	$0.1 < C \leq 3.3 \mu F$	$3.3 < C < 10 \mu F$	$C \geq 10 \mu F$
1 kHz	0.8 %	0.8 %	0.8 %	0.8 %
10 kHz	1.5 %	1.5 %	1.5 %	2.0 %
100 kHz	2.5 %	5.0 %	—	—

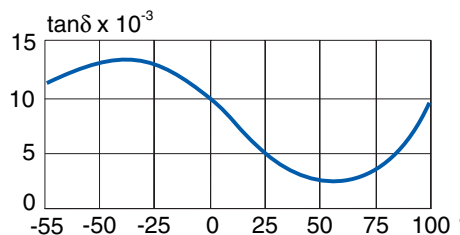
Self inductance Approximately 4 nH



Detail of a lead



Typical capacitance vs temperature at 1 kHz

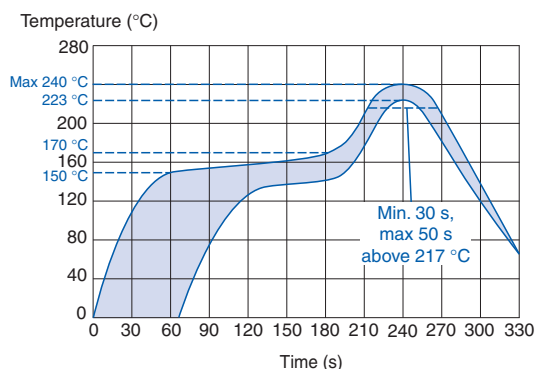


Typical dissipation factor vs temperature at 1 kHz

RECOMMENDED SOLDERING CONDITIONS

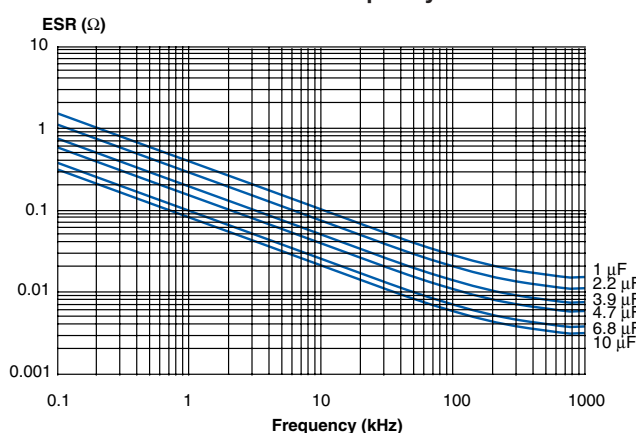
Reflow soldering temperature measured on the top body surface of the component

Preheating temperature should be less than 170°C. The time above 217°C should be less than 50 s. The peak temperature must not exceed 240°C. This series for Lead Free soldering process is partly under development. Please consult manufacturer.

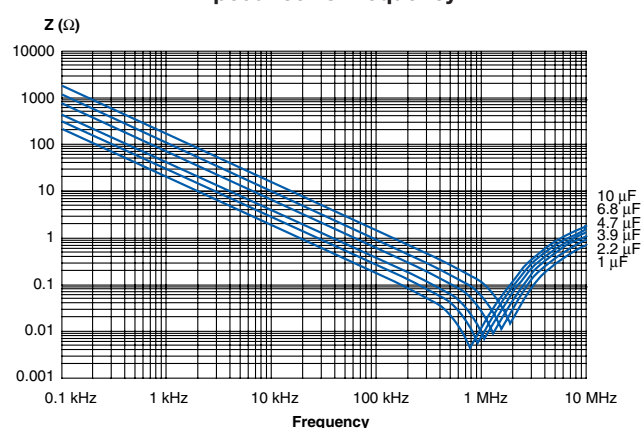


TYPICAL DATA

ESR vs. frequency



Impedance vs. frequency



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

Value	Rated voltage	Case size	1 kHz	10 kHz	100 kHz	500 kHz	1 MHz
1.0 μ F	250 V	A57	150.0	36.0	9.2	2.9	1.3
2.2 μ F	100 V	A52	50.0	25.0	5.0	1.2	0.6
3.9 μ F	100 V	A52	50.0	18.0	4.0	1.0	0.3
4.7 μ F	100 V	A54	50.0	16.0	3.5	0.7	0.2
6.8 μ F	100 V	A57	50.0	15.5	2.2	0.5	0.2
10 μ F	100 V	A58	50.0	15.0	2.0	0.4	0.2

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 μ F	250 V	A57	1.0	2.2	5.5	9.0	10.0
2.2 μ F	100 V	A52	1.5	2.3	6.0	7.5	10.0
3.9 μ F	100 V	A52	2.0	4.0	10.0	11.0	11.5
4.7 μ F	100 V	A54	2.0	4.5	10.0	12.5	12.5
6.8 μ F	100 V	A57	3.0	6.0	11.0	13.0	13.5
10 μ F	100 V	A58	4.0	9.0	13.0	14.0	14.5

ORDERING INFORMATION

See article table and page 10 for options and article code construction.

MARKING

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

ARTICLE TABLE

Capacitance Dimensions in mm ESR Article code
 μF B H L h1 500kHz
 ±0.2 ±0.2 ±0.2 mΩ

50 VDC/30 VAC

LEAD SPACING 10 MM

0.033	12.2	6.05	11.0	6.6	390	MDS10 333K50A52P3 TUBE
0.039	12.2	6.05	11.0	6.6	330	MDS10 393K50A52P3 TUBE
0.047	12.2	6.05	11.0	6.6	270	MDS10 473K50A52P3 TUBE
0.056	12.2	6.05	11.0	6.6	230	MDS10 563K50A52P3 TUBE
0.068	12.2	6.05	11.0	6.6	190	MDS10 683K50A52P3 TUBE
0.082	12.2	6.05	11.0	6.6	160	MDS10 823K50A52P3 TUBE
0.10	12.2	6.05	11.0	6.6	130	MDS10 104K50A52P3 TUBE
0.12	12.2	6.05	11.0	6.6	110	MDS10 124K50A52P3 TUBE
0.15	12.2	6.05	11.0	6.6	85	MDS10 154K50A52P3 TUBE
0.18	12.2	6.05	11.0	6.6	70	MDS10 184K50A52P3 TUBE
0.22	12.2	6.05	11.0	6.6	58	MDS10 224K50A52P3 TUBE
0.27	12.2	6.05	11.0	6.6	47	MDS10 274K50A52P3 TUBE
0.33	12.2	6.05	11.0	6.6	39	MDS10 334K50A52P3 TUBE
0.39	12.2	6.05	11.0	6.6	33	MDS10 394K50A52P3 TUBE
0.47	12.2	6.05	11.0	6.6	30	MDS10 474K50A52P3 TUBE
0.56	12.2	6.05	11.0	6.6	26	MDS10 564K50A52P3 TUBE
0.68	12.2	6.05	11.0	6.6	21	MDS10 684K50A52P3 TUBE
0.82	12.2	6.05	11.0	6.6	18	MDS10 824K50A52P3 TUBE
1.0	12.2	6.05	11.0	6.6	15	MDS10 105K50A52P3 TUBE
1.2	12.2	6.05	11.0	6.6	14	MDS10 125K50A52P3 TUBE
1.5	12.2	6.05	11.0	6.6	13	MDS10 155K50A52P3 TUBE
1.8	12.2	6.05	11.0	6.6	12	MDS10 185K50A52P3 TUBE
2.2	12.2	6.05	11.0	6.6	11	MDS10 225K50A52P3 TUBE
2.7	12.2	6.05	11.0	6.6	10	MDS10 275K50A52P3 TUBE
3.3	12.2	6.05	11.0	6.6	8	MDS10 335K50A52P3 TUBE
3.9	12.2	6.05	11.0	6.6	7	MDS10 395K50A52P3 TUBE
4.7	12.2	6.05	11.0	6.6	6	MDS10 475K50A52P3 TUBE
5.6	12.2	6.05	13.5	6.6	5	MDS10 565K50A54Px TUBE
6.8	12.2	6.05	16.5	6.6	5	MDS10 685K50A55Pz TUBE

LEAD SPACING 15 MM

0.033	16.5	6.05	11.0	6.6	390	MDS15 333K50B53P3 TUBE
0.039	16.5	6.05	11.0	6.6	330	MDS15 393K50B53P3 TUBE
0.047	16.5	6.05	11.0	6.6	270	MDS15 473K50B53P3 TUBE
0.056	16.5	6.05	11.0	6.6	230	MDS15 563K50B53P3 TUBE
0.068	16.5	6.05	11.0	6.6	190	MDS15 683K50B53P3 TUBE
0.082	16.5	6.05	11.0	6.6	160	MDS15 823K50B53P3 TUBE
0.10	16.5	6.05	11.0	6.6	130	MDS15 104K50B53P3 TUBE
0.12	16.5	6.05	11.0	6.6	110	MDS15 124K50B53P3 TUBE
0.15	16.5	6.05	11.0	6.6	85	MDS15 154K50B53P3 TUBE
0.18	16.5	6.05	11.0	6.6	70	MDS15 184K50B53P3 TUBE
0.22	16.5	6.05	11.0	6.6	58	MDS15 224K50B53P3 TUBE
0.27	16.5	6.05	11.0	6.6	47	MDS15 274K50B53P3 TUBE
0.33	16.5	6.05	11.0	6.6	39	MDS15 334K50B53P3 TUBE
0.39	16.5	6.05	11.0	6.6	39	MDS15 394K50B53P3 TUBE
0.47	16.5	6.05	11.0	6.6	30	MDS15 474K50B53P3 TUBE
0.56	16.5	6.05	11.0	6.6	26	MDS15 564K50B53P3 TUBE
0.68	16.5	6.05	11.0	6.6	21	MDS15 684K50B53P3 TUBE
0.82	16.5	6.05	11.0	6.6	18	MDS15 824K50B53P3 TUBE
1.0	16.5	6.05	11.0	6.6	15	MDS15 105K50B53P3 TUBE
1.2	16.5	6.05	11.0	6.6	13	MDS15 125K50B53P3 TUBE
1.5	16.5	6.05	11.0	6.6	13	MDS15 155K50B53P3 TUBE
1.8	16.5	6.05	11.0	6.6	13	MDS15 185K50B53P3 TUBE
2.2	16.5	6.05	11.0	6.6	11	MDS15 225K50B53P3 TUBE
2.7	16.5	6.05	11.0	6.6	13	MDS15 275K50B53P3 TUBE
3.3	16.5	6.05	11.0	6.6	8	MDS15 335K50B53P3 TUBE
3.9	16.5	6.05	11.0	6.6	13	MDS15 395K50B53P3 TUBE
4.7	16.5	6.05	11.0	6.6	6	MDS15 475K50B53P3 TUBE
5.6	16.5	6.05	11.0	6.6	5	MDS15 565K50B53P3 TUBE
6.8	16.5	6.05	11.0	6.6	5	MDS15 685K50B53P3 TUBE

Capacitance Dimensions in mm ESR Article code
 μF B H L h1 500kHz
 ±0.2 ±0.2 ±0.2 mΩ

100 VDC/63 VAC

LEAD SPACING 10 MM

0.033	12.2	6.05	11.0	6.6	390	MDS10 333K100A52P3 TUBE
0.039	12.2	6.05	11.0	6.6	330	MDS10 393K100A52P3 TUBE
0.047	12.2	6.05	11.0	6.6	270	MDS10 473K100A52P3 TUBE
0.056	12.2	6.05	11.0	6.6	230	MDS10 563K100A52P3 TUBE
0.068	12.2	6.05	11.0	6.6	190	MDS10 683K100A52P3 TUBE
0.082	12.2	6.05	11.0	6.6	160	MDS10 823K100A52P3 TUBE
0.10	12.2	6.05	11.0	6.6	130	MDS10 104K100A52P3 TUBE
0.12	12.2	6.05	11.0	6.6	110	MDS10 124K100A52P3 TUBE
0.15	12.2	6.05	11.0	6.6	85	MDS10 154K100A52P3 TUBE
0.18	12.2	6.05	11.0	6.6	70	MDS10 184K100A52P3 TUBE
0.22	12.2	6.05	11.0	6.6	58	MDS10 224K100A52P3 TUBE
0.27	12.2	6.05	11.0	6.6	47	MDS10 274K100A52P3 TUBE
0.33	12.2	6.05	11.0	6.6	39	MDS10 334K100A52P3 TUBE
0.39	12.2	6.05	11.0	6.6	33	MDS10 394K100A52P3 TUBE
0.47	12.2	6.05	11.0	6.6	30	MDS10 474K100A52P3 TUBE
0.56	12.2	6.05	11.0	6.6	26	MDS10 564K100A52P3 TUBE
0.68	12.2	6.05	11.0	6.6	21	MDS10 684K100A52P3 TUBE
0.82	12.2	6.05	11.0	6.6	18	MDS10 824K100A52P3 TUBE
1.0	12.2	6.05	11.0	6.6	15	MDS10 105K100A52P3 TUBE
1.2	12.2	6.05	11.0	6.6	14	MDS10 125K100A52P3 TUBE
1.5	12.2	6.05	11.0	6.6	13	MDS10 155K100A52P3 TUBE
1.8	12.2	6.05	11.0	6.6	12	MDS10 185K100A52P3 TUBE
2.2	12.2	6.05	11.0	6.6	11	MDS10 225K100A52P3 TUBE
2.7	12.2	6.05	11.0	6.6	10	MDS10 275K100A52P3 TUBE *
3.3	12.2	6.05	11.0	6.6	8	MDS10 335K100A52P3 TUBE *
3.9	12.2	6.05	11.0	6.6	7	MDS10 395K100A52P3 TUBE *
4.7	12.2	6.05	13.5	6.6	6	MDS10 475K100A54Px TUBE *
5.6	12.2	6.05	16.5	6.6	5	MDS10 565K100A55Pz TUBE *

LEAD SPACING 15 MM

0.033	16.5	6.05	11.0	6.6	390	MDS15 333K100B53P3 TUBE
0.039	16.5	6.05	11.0	6.6	330	MDS15 393K100B53P3 TUBE
0.047	16.5	6.05	11.0	6.6	270	MDS15 473K100B53P3 TUBE
0.056	16.5	6.05	11.0	6.6	230	MDS15 563K100B53P3 TUBE
0.068	16.5	6.05	11.0	6.6	190	MDS15 683K100B53P3 TUBE
0.082	16.5	6.05	11.0	6.6	160	MDS15 823K100B53P3 TUBE
0.10	16.5	6.05	11.0	6.6	130	MDS15 104K100B53P3 TUBE
0.12	16.5	6.05	11.0	6.6	110	MDS15 124K100B53P3 TUBE
0.15	16.5	6.05	11.0	6.6	85	MDS15 154K100B53P3 TUBE
0.18	16.5	6.05	11.0	6.6	70	MDS15 184K100B53P3 TUBE
0.22	16.5	6.05	11.0	6.6	58	MDS15 224K100B53P3 TUBE
0.27	16.5	6.05	11.0	6.6	47	MDS15 274K100B53P3 TUBE
0.33	16.5	6.05	11.0	6.6	39	MDS15 334K100B53P3 TUBE
0.39	16.5	6.05	11.0	6.6	39	MDS15 394K100B53P3 TUBE
0.47	16.5	6.05	11.0	6.6	30	MDS15 474K100B53P3 TUBE
0.56	16.5	6.05	11.0	6.6	26	MDS15 564K100B53P3 TUBE
0.68	16.5	6.05	11.0	6.6	21	MDS15 684K100B53P3 TUBE
0.82	16.5	6.05	11.0	6.6	18	MDS15 824K100B53P3 TUBE
1.0	16.5	6.05	11.0	6.6	15	MDS15 105K100B53P3 TUBE
1.2	16.5	6.05	11.0	6.6	15	MDS15 125K100B53P3 TUBE
1.5	16.5	6.05	11.0	6.6	13	MDS15 155K100B53P3 TUBE
1.8	16.5	6.05	11.0	6.6	13	MDS15 185K100B53P3 TUBE
2.2	16.5	6.05	11.0	6.6	11	MDS15 225K100B53P3 TUBE
2.7	16.5	6.05	11.0	6.6	11	MDS15 275K100B53P3 TUBE
3.3	16.5	6.05	11.0	6.6	8	MDS15 335K100B53P3 TUBE
3.9	16.5	6.05	11.0	6.6	8	MDS15 395K100B53P3 TUBE *
4.7	16.5	6.05	11.0	6.6	6	MDS15 475K100B53P3 TUBE *
5.6	16.5	6.05	12.2	6.6	5	MDS15 565K100B55Px TUBE *

* 100 VDC/35 VAC

ARTICLE TABLE

Capaci- tance µF	Dimensions in mm				ESR 500kHz mΩ	Article code
	B ±0.2	H ±0.2	L ±0.2	h1		
250 VDC/160 VAC						
LEAD SPACING 10 MM						
0.033	12.2	6.05	11.0	6.6	390	MDS10 333K250A52P3 TUBE
0.039	12.2	6.05	11.0	6.6	330	MDS10 393K250A52P3 TUBE
0.047	12.2	6.05	11.0	6.6	270	MDS10 473K250A52P3 TUBE
0.056	12.2	6.05	11.0	6.6	230	MDS10 563K250A52P3 TUBE
0.068	12.2	6.05	11.0	6.6	190	MDS10 683K250A52P3 TUBE
0.082	12.2	6.05	11.0	6.6	160	MDS10 823K250A52P3 TUBE
0.10	12.2	6.05	11.0	6.6	130	MDS10 104K250A52P3 TUBE
0.12	12.2	6.05	11.0	6.6	110	MDS10 124K250A52P3 TUBE
0.15	12.2	6.05	11.0	6.6	85	MDS10 154K250A52P3 TUBE
0.18	12.2	6.05	11.0	6.6	70	MDS10 184K250A52P3 TUBE
0.22	12.2	6.05	11.0	6.6	58	MDS10 224K250A52P3 TUBE
0.27	12.2	6.05	11.0	6.6	47	MDS10 274K250A52P3 TUBE
0.33	12.2	6.05	11.0	6.6	39	MDS10 334K250A52P3 TUBE
0.39	12.2	6.05	11.0	6.6	33	MDS10 394K250A52P3 TUBE
0.47	12.2	6.05	11.0	6.6	30	MDS10 474K250A52P3 TUBE
0.56	12.2	6.05	13.5	6.6	26	MDS10 564K250A54Px TUBE
0.68	12.2	6.05	16.5	6.6	21	MDS10 684K250A55Pz TUBE
LEAD SPACING 15 MM						
0.033	16.5	6.05	11.0	6.6	390	MDS15 333K250B53P3 TUBE
0.039	16.5	6.05	11.0	6.6	330	MDS15 393K250B53P3 TUBE
0.047	16.5	6.05	11.0	6.6	270	MDS15 473K250B53P3 TUBE
0.056	16.5	6.05	11.0	6.6	230	MDS15 563K250B53P3 TUBE
0.068	16.5	6.05	11.0	6.6	190	MDS15 683K250B53P3 TUBE
0.082	16.5	6.05	11.0	6.6	160	MDS15 823K250B53P3 TUBE
0.10	16.5	6.05	11.0	6.6	130	MDS15 104K250B53P3 TUBE
0.12	16.5	6.05	11.0	6.6	110	MDS15 124K250B53P3 TUBE
0.15	16.5	6.05	11.0	6.6	85	MDS15 154K250B53P3 TUBE
0.18	16.5	6.05	11.0	6.6	70	MDS15 184K250B53P3 TUBE
0.22	16.5	6.05	11.0	6.6	58	MDS15 224K250B53P3 TUBE
0.27	16.5	6.05	11.0	6.6	47	MDS15 274K250B53P3 TUBE
0.33	16.5	6.05	11.0	6.6	39	MDS15 334K250B53P3 TUBE
0.39	16.5	6.05	11.0	6.6	39	MDS15 394K250B53P3 TUBE
0.47	16.5	6.05	11.0	6.6	30	MDS15 474K250B53P3 TUBE
0.56	16.5	6.05	11.0	6.6	26	MDS15 564K250B53P3 TUBE
0.68	16.5	6.05	11.0	6.6	21	MDS15 684K250B53P3 TUBE

Capaci- tance µF	Dimensions in mm				ESR 500kHz mΩ	Article code
	B ±0.2	H ±0.2	L ±0.2	h1		
400 VDC/200 VAC						
LEAD SPACING 15 MM						
0.033	16.5	6.05	11.0	6.6	390	MDS15 333K400B53P3 TUBE
0.039	16.5	6.05	11.0	6.6	330	MDS15 393K400B53P3 TUBE
0.047	16.5	6.05	11.0	6.6	270	MDS15 473K400B53P3 TUBE
0.056	16.5	6.05	11.0	6.6	230	MDS15 563K400B53P3 TUBE
0.068	16.5	6.05	11.0	6.6	190	MDS15 683K400B53P3 TUBE
0.082	16.5	6.05	11.0	6.6	160	MDS15 823K400B53P3 TUBE
0.10	16.5	6.05	11.0	6.6	130	MDS15 104K400B53P3 TUBE
0.12	16.5	6.05	11.0	6.6	110	MDS15 124K400B53P3 TUBE
0.15	16.5	6.05	11.0	6.6	85	MDS15 154K400B53P3 TUBE
0.18	16.5	6.05	11.0	6.6	70	MDS15 184K400B53P3 TUBE
0.22	16.5	6.05	11.0	6.6	58	MDS15 224K400B53P3 TUBE
0.27	16.5	6.05	11.0	6.6	47	MDS15 274K400B53P3 TUBE
0.33	16.5	6.05	12.2	6.6	39	MDS15 334K400B55Px TUBE
630 VDC/220 VAC						
LEAD SPACING 10 MM						
0.033	12.2	6.05	11.0	6.6	390	MDS10 333K630A52P3 TUBE
0.039	12.2	6.05	11.0	6.6	330	MDS10 393K630A52P3 TUBE
0.047	12.2	6.05	11.0	6.6	270	MDS10 473K630A52P3 TUBE
0.056	12.2	6.05	11.0	6.6	230	MDS10 563K630A52P3 TUBE
0.068	12.2	6.05	13.5	6.6	190	MDS10 683K630A54Px TUBE
LEAD SPACING 15 MM						
0.033	16.5	6.05	11.0	6.6	390	MDS15 333K630B53P3 TUBE
0.039	16.5	6.05	11.0	6.6	330	MDS15 393K630B53P3 TUBE
0.047	16.5	6.05	11.0	6.6	270	MDS15 473K630B53P3 TUBE
0.056	16.5	6.05	11.0	6.6	230	MDS15 563K630B53P3 TUBE
0.068	16.5	6.05	11.0	6.6	190	MDS15 683K630B53P3 TUBE
0.082	16.5	6.05	11.0	6.6	160	MDS15 823K630B53P3 TUBE
0.10	16.5	6.05	11.0	6.6	130	MDS15 104K630B53P3 TUBE

x = Number of leads per side, 3 or 4
z = Number of leads per side, 3, 4 or 5

400 VDC/200 VAC						
LEAD SPACING 10 MM						
0.033	12.2	6.05	11.0	6.6	390	MDS10 333K400A52P3 TUBE
0.039	12.2	6.05	11.0	6.6	330	MDS10 393K400A52P3 TUBE
0.047	12.2	6.05	11.0	6.6	270	MDS10 473K400A52P3 TUBE
0.056	12.2	6.05	11.0	6.6	230	MDS10 563K400A52P3 TUBE
0.068	12.2	6.05	11.0	6.6	190	MDS10 683K400A52P3 TUBE
0.082	12.2	6.05	11.0	6.6	160	MDS10 823K400A52P3 TUBE
0.10	12.2	6.05	11.0	6.6	130	MDS10 104K400A52P3 TUBE
0.12	12.2	6.05	11.0	6.6	110	MDS10 124K400A52P3 TUBE
0.15	12.2	6.05	11.0	6.6	85	MDS10 154K400A52P3 TUBE
0.18	12.2	6.05	11.0	6.6	70	MDS10 184K400A52P3 TUBE