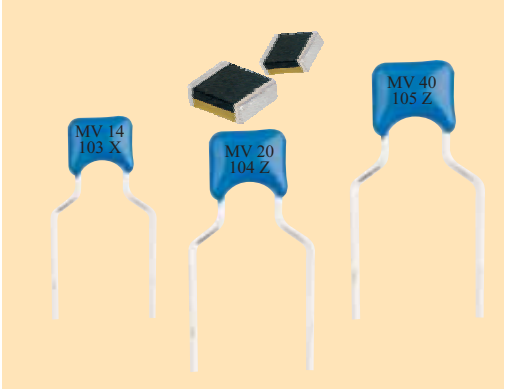
VARICON

LOW VOLTAGE DUAL FUNCTION VARICON®
MV SERIES

Description

VARICON MV Series is series of dual function protective devices that protect against voltage surges in low voltage region and against high frequency noise, replacing two components a low voltage varistor and a capacitor.

MV Series varicons incorporate varistor function in the DC voltage range from 3 to 125 V (up to 170 V upon request) and function of high frequency by-pass capacitor operating in the capacitance range from 10 nF to 1 µF. Lower capacitance values are also available. They are intended for protection of all sensitive electronic devices experiencing both voltage transients and high frequency noise produced by electromechanical devices, such as buzzers, relays, etc.



MV Varicons are square shaped components with in-line leads, which require very little mounting space, at least 30 % less than the two components they replace. Dual function VARICONs are also available in SMD versions upon request - compliant with Pb-free soldering.

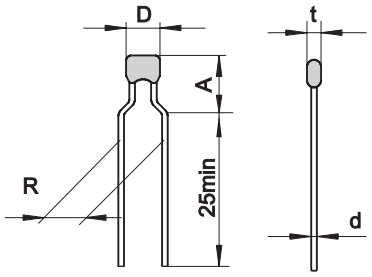
Features

- *Operating voltage range V_{dc}.....3 to 125 V (up to 170 V upon request).*
- *Operating voltage range V_{rms}.....2 to 95 V (up to 130 V upon request).*
- *Capacitance range C (@1 kHz) .....10 nF to 1 µF (lower capacitance values are also available upon request).*
- *Capacitor temperature characteristics ..... X7R or Z5U .*
- *Protects against voltage transients and suppresses high frequency interference.*
- *Dimensional and weight saves on board.*
- *One standard model size available ..... 6 x 9 mm.*
- *THT and SMT components.*
- *Available in tape and reel for automatic pick and place.*
- *Lead free components.*
- *AEC-Q200 qualified Grade 1.*

Absolute Maximum Ratings

Continuous :	Units	Value
Steady State Applied Voltage :		
DC Voltage Range (V_{dc})	V	3 to 170
AC Voltage Range (V_{rms})	V	2 to 130
Transient :		
Non-Repetitive Surge Current, 8/20 µs Waveform, (I_{max})	A	150
Non-Repetitive Surge Energy, 10/1000 µs Waveform (W_{max})	J	0.1 to 2,5
Capacitance Range	nF	10 to 1000
Capacitor Temperature Characteristics		X7R or Z5U
Operating Ambient Temperature	°C	-40 to +85
Storage Temperature Range	°C	-40 to +125
Threshold Voltage Temperature Coefficient	%/°C	< +0.05
Insulation Resistance	GΩ	> 1
Isolation Voltage Capability	kV	> 1.25
Response Time	ns	< 25
Climatic Category		40/85/56

Device Ratings and Characteristics



MV 2 M 103 MZ° .... MV 40 K 105 MZ°

Type	V_{rms} V	V_{dc} V	V_n @ 1 mA V	V_c @ 1 A V	W_{max} 10/1000 µs J	P max W	I_{max} 8/20 µs A	C @1 kHz nF	D max mm	A max mm	R mm	d mm	t max mm
MV 2 M 103 MZ	2	3	4	10	0,1	0.01	150	10	6	9	5	0,6	5,5
MV 2 M 104 MZ	2	3	4	10	0,1	0.01	150	100	6	9	5	0,6	5,5
MV 2 M 105 MZ	2	3	4	10	0,1	0.01	150	1000	6	9	5	0,6	5,5
MV 4 M 103 MZ	4	5,5	8	14	0,2	0.01	150	10	6	9	5	0,6	5,5
MV 4 M 104 MZ	4	5,5	8	14	0,2	0.01	150	100	6	9	5	0,6	5,5
MV 4 M 105 MZ	4	5,5	8	14	0,2	0.01	150	1000	6	9	5	0,6	5,5
MV 6 M 103 MZ	6	8	11	21	0,2	0.01	150	10	6	9	5	0,6	5,5
MV 6 M 104 MZ	6	8	11	21	0,2	0.01	150	100	6	9	5	0,6	5,5
MV 6 M 105 MZ	6	8	11	21	0,2	0.01	150	1000	6	9	5	0,6	5,5
MV 8 L 103 MZ	8	11	15	25	0,3	0.01	150	10	6	9	5	0,6	5,5
MV 8 L 104 MZ	8	11	15	25	0,3	0.01	150	100	6	9	5	0,6	5,5
MV 8 L 105 MZ	8	11	15	25	0,3	0.01	150	1000	6	9	5	0,6	5,5
MV 11 K 103 MZ	11	14	18	35	0,8	0.01	150	10	6	9	5	0,6	5,5
MV 11 K 104 MZ	11	14	18	35	0,8	0.01	150	100	6	9	5	0,6	5,5
MV 11 K 105 MZ	11	14	18	35	0,8	0.01	150	1000	6	9	5	0,6	5,5
MV 14 K 103 MZ	14	18	22	38	0,9	0.01	150	10	6	9	5	0,6	5,5
MV 14 K 104 MZ	14	18	22	38	0,9	0.01	150	100	6	9	5	0,6	5,5
MV 14 K 105 MZ	14	18	22	38	0,9	0.01	150	1000	6	9	5	0,6	5,5
MV 17 K 103 MZ	17	22	27	49	1,1	0.01	150	10	6	9	5	0,6	5,5
MV 17 K 104 MZ	17	22	27	49	1,1	0.01	150	100	6	9	5	0,6	5,5
MV 17 K 105 MZ	17	22	27	49	1,1	0.01	150	1000	6	9	5	0,6	5,5
MV 20 K 103 MZ	20	26	33	54	1,3	0.01	150	10	6	9	5	0,6	5,5
MV 20 K 104 MZ	20	26	33	54	1,3	0.01	150	100	6	9	5	0,6	5,5
MV 20 K 105 MZ	20	26	33	54	1,3	0.01	150	1000	6	9	5	0,6	5,5
MV 25 K 103 MZ	25	31	39	65	1,7	0.01	150	10	6	9	5	0,6	5,5
MV 25 K 104 MZ	25	31	39	65	1,7	0.01	150	100	6	9	5	0,6	5,5
MV 25 K 105 MZ	25	31	39	65	1,7	0.01	150	1000	6	9	5	0,6	5,5
MV 30 K 103 MZ	30	38	47	77	2,0	0.01	150	10	6	9	5	0,6	5,5
MV 30 K 104 MZ	30	38	47	77	2,0	0.01	150	100	6	9	5	0,6	5,5
MV 30 K 105 MZ	30	38	47	77	2,0	0.01	150	1000	6	9	5	0,6	5,5
MV 35 K 103 MZ	35	45	56	90	2,2	0.01	150	10	6	9	5	0,6	5,5
MV 35 K 104 MZ	35	45	56	90	2,2	0.01	150	100	6	9	5	0,6	5,5
MV 35 K 105 MZ	35	45	56	90	2,2	0.01	150	1000	6	9	5	0,6	5,5
MV 40 K 103 MZ	40	56	68	110	2,3	0.01	150	10	6	9	5	0,6	5,5
MV 40 K 104 MZ	40	56	68	110	2,3	0.01	150	100	6	9	5	0,6	5,5
MV 40 K 105 MZ	40	56	68	110	2,3	0.01	150	1000	6	9	5	0,6	5,5
MV 50 K 103 MZ	50	65	82	135	2,3	0.01	150	10	6	9	5	0,6	5,5
MV 50 K 104 MZ	50	65	82	135	2,3	0.01	150	100	6	9	5	0,6	5,5
MV 50 K 105 MZ	50	65	82	135	2,3	0.01	150	1000	6	9	5	0,6	5,5
MV 60 K 103 MZ	60	85	100	165	2,3	0.01	150	10	6	9	5	0,6	5,5
MV 60 K 104 MZ	60	85	100	165	2,3	0.01	150	100	6	9	5	0,6	5,5
MV 60 K 105 MZ	60	85	100	165	2,3	0.01	150	1000	6	9	5	0,6	5,5
MV 95 K 103 MZ	95	125	150	250	2,5	0.01	150	10	6	9	5	0,6	5,5
MV 95 K 104 MZ	95	125	150	250	2,5	0.01	150	100	6	9	5	0,6	5,5
MV 95 K 105 MZ	95	125	150	250	2,5	0.01	150	1000	6	9	5	0,6	5,5

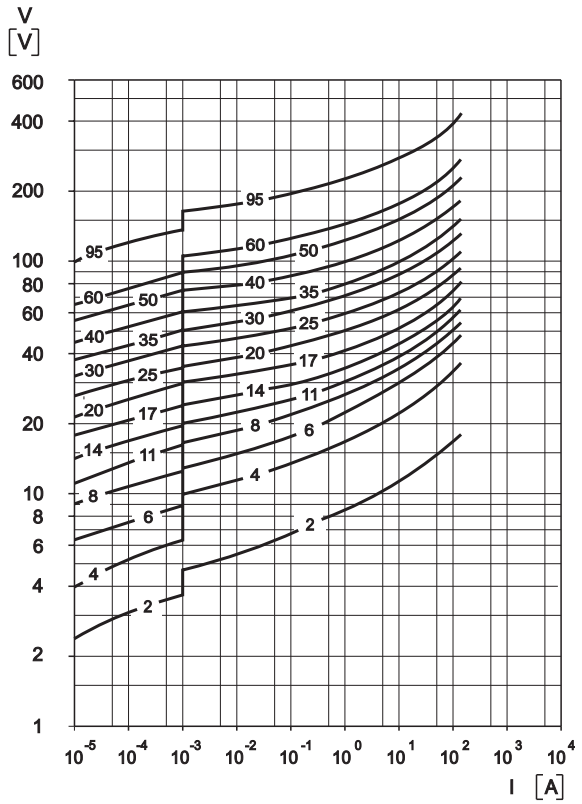
° - Z stands for Z5U temperature characteristics; X = X7R temperature characteristics is also available.
Other capacitance values and voltages are also available upon request.

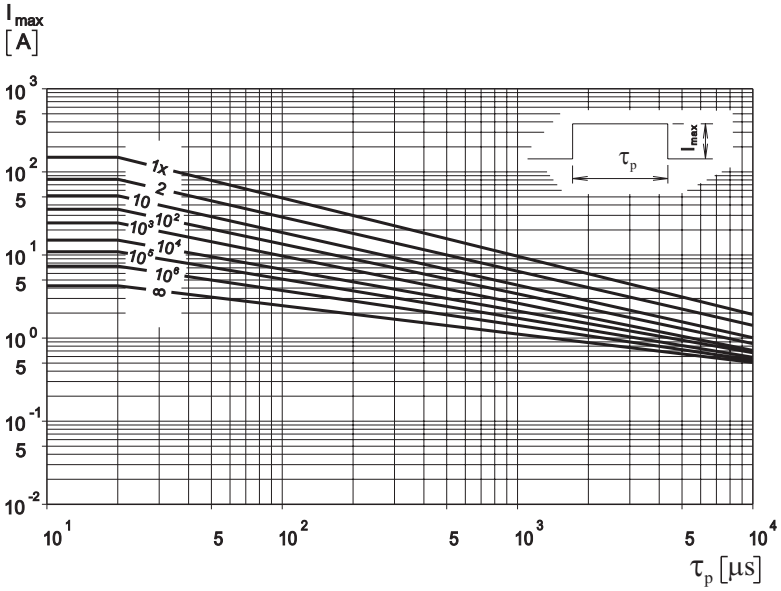
Protection Level

with the worst-case condition in the tolerance region

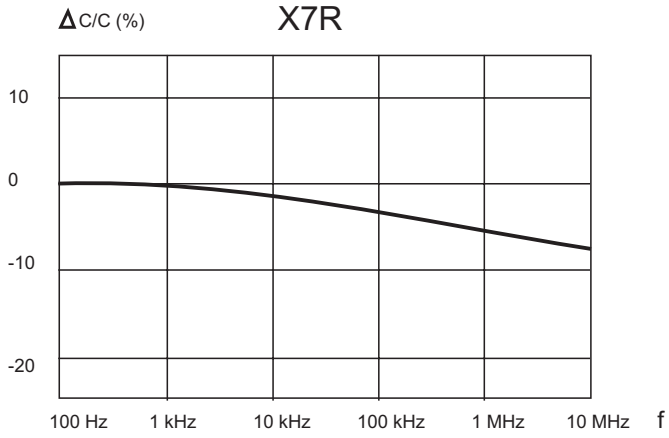
Pulse Rating Curves

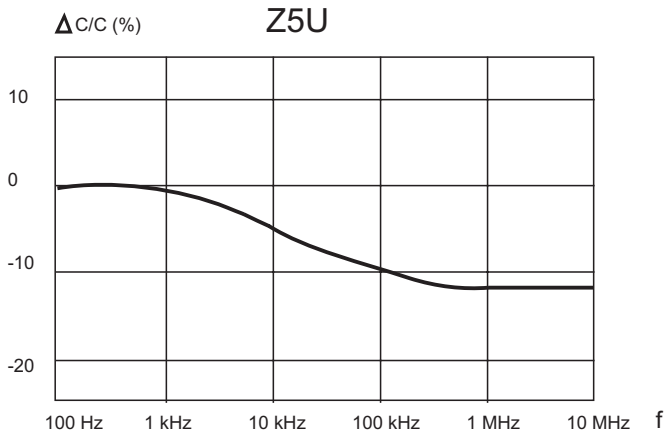
MV 2 M ... 95 K



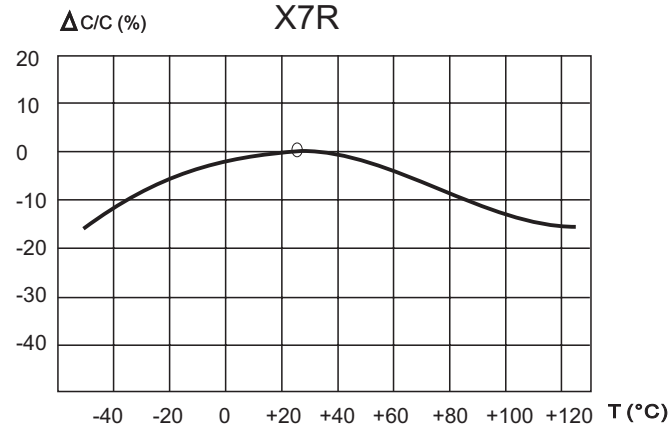


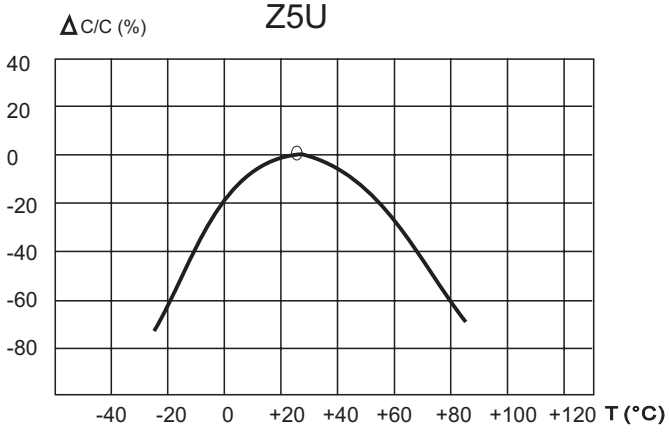
Capacitance - Frequency Characteristics





Capacitance - Temperature Characteristics



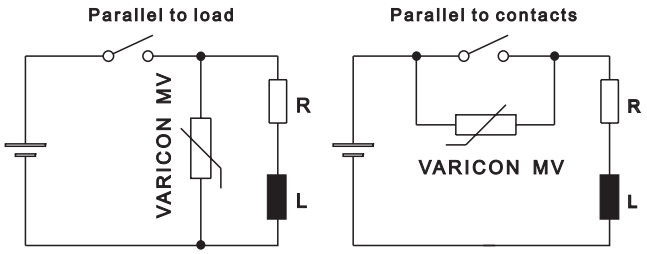


Application

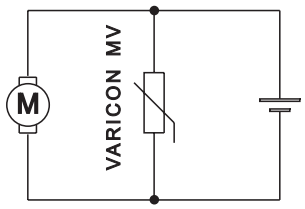
* Electrostatic Surge Absorption
* Relay Surge Suppression Effect and Relay reset Time
* Piezzoelectric Buzzer Shock Noise Absorption

Application Circuits

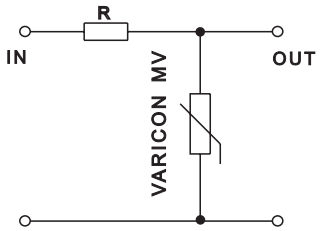
(a) Eliminating sparks from relay circuits
(there is no delay in operating time)



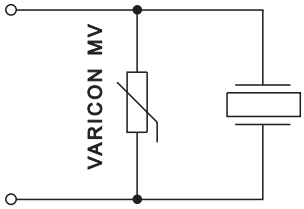
(b) Eliminating noise from micromotors



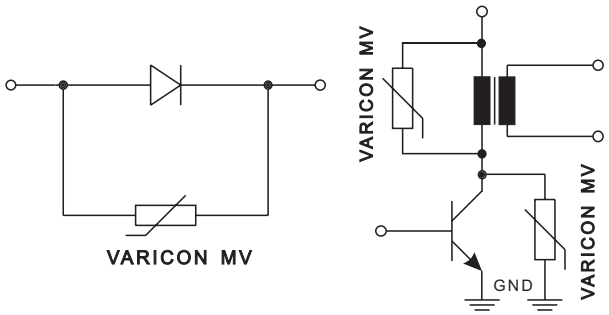
(c) Stabilizing voltages and absorbing line surges



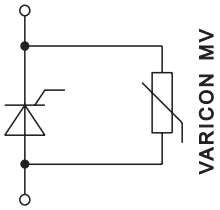
(d) Absorbing shock noise of piezoelectric alarms



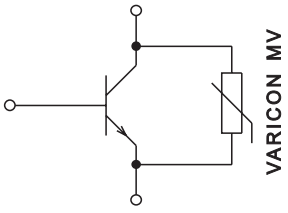
(e) Protecting semiconductive components including transistors and diodes



(f) Improved thyristor configuration
Eliminating vibration better then conventional circuits



(g) Elimination of over-shooting from transistors



(h) Elimination of static electricity from circuits