Microsemi Corp.
The diode experts

SANTA ANA, CA

SCOTTSDALE, AZ
For more information call:
(602) 941-6300

MSV101A thru MSV101G and MSV201A thru MSV701A

BIDIRECTIONAL VARISTORS

Features

The MSV series consists of a matched set of silicon junctions configured for bidirectional application. They can be used in telephone equipment, replacing: copper oxide varistors, fractional voltage regulators, negative temperature coefficient resistors, signal limiters and expanders. They are ideally suited for: meter/galvanometer protection, wave shaping, threshold limiters and zener diode compensation.

The MSV varistor uses two anti-parallel, matched, silicon diodes in a two-electrode device configuration with a voltage-dependent nonlinear resistance that drops markedly as the applied voltage is increased.

MSV devices are designed for controlled protection at various current levels and are rated at various peak pulse currents.

These varistors are supplied in Microsemi's cost-effective, highly reliable, molded axial leaded package. Non-standard voltages are available. Devices in this series with V_{C2} clamping are rated to U.L.497B requirements. (See table.)

Maximum Ratings

Steady State Power: 1.0 Watt at 50°C
Operating and Storage Temperatures: -65°C to +175°C
Surge: 30 Amps, 8.4 ms @ 25°C
Pulse: 1.0 ms @ 25°C for V_{C1} clamping*
$t_{clamping}$ (0 volts to V_{BR} min.): less than $1x10^{-8}$ seconds (theoretical)

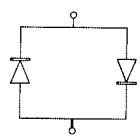
Electrical Characteristics at 25°C (Test Both Polarities)

MICROSEMI PART NUMBER	V_{BR} at I_{BR} Vdc / µA Minimum	V_{BR} at I_{BR} Vdc / mAdc Maximum	V_{CI} at I_{PP}* V / A Maximum	C_J at zero volts f = 1 MHz pF Maximum	V_{C2} ** V Maximum
MSV101A	.05 / 10 .14 / 100	- .51 / 1,000	- -	200	-
MSV101B	.05 / 10 .14 / 100	- .66 / 1,000	- -	200	-
MSV101C	.05 / 10 .14 / 100	- .50 / 1,000	- -	200	-
MSV101D	.43 / 100 .56 / 1,000	.72 / 10 -	1.5 / 50	1500	3.8
MSV101E	.43 / 100 .56 / 1,000	.90 / 100 -	1.5 / 50	1500	3.8
MSV101F	.20 / 10 .56 / 1,000	.90 / 100 -	1.5 / 50	1500	3.8
MSV101G	.20 / 10 .56 / 1,000	.90 / 100 -	1.5 / 50	1500	3.8
MSV201A	.86 / 100 1.10 / 1,000	1.48 / 10 -	3.0 / 45	750	4.4
MSV301A	1.60 / 1,000	2.40 / 50	4.5 / 40	500	5.4
MSV401A	1.72 / 100 2.20 / 1,000	2.92 / 10 -	4.5 / 35	400	6.4
MSV401B	1.30 / 10 2.20 / 1,000	2.92 / 10 -	5.5 / 35	400	6.4
MSV401C	2.20 / 1,000	3.10 / 50	5.5 / 35	400	6.4
MSV501A	1.70 / 10 2.80 / 1,000	5.00 / 100 -	6.5 / 30	300	7.4
MSV601A	3.00 / 100 3.40 / 1,000	4.60 / 100 -	8.0 / 30	250	8.4
MSV701A	3.70 / 100 3.90 / 1,000	5.00 / 5.0 -	9.0 / 30	220	9.4

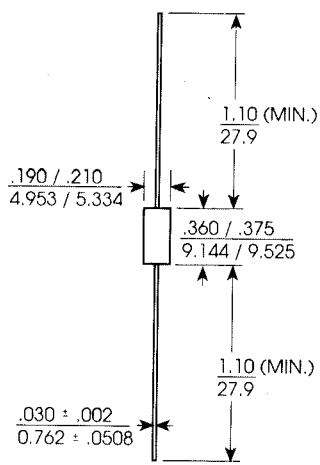
* Conditions: Pulse is 10 x 1000 µs waveshape
- 10 µs rise, 1000 µs triangle fall to 1/2 amplitude.
- Voltage limits measured at I_{PP} peak pulse current.

** Per U.L.497B with 100v / µs rise time.

SCHEMATIC



PACKAGE DIMENSIONS



Dimensions: inches / mm

Mechanical Characteristics

CASE: Void free molded thermosetting plastic.

FINISH: Plated CCFE readily solderable.

POLARITY: Bidirectional.

WEIGHT: 1.5 gram (Appx.)

MOUNTING POSITION: Any.

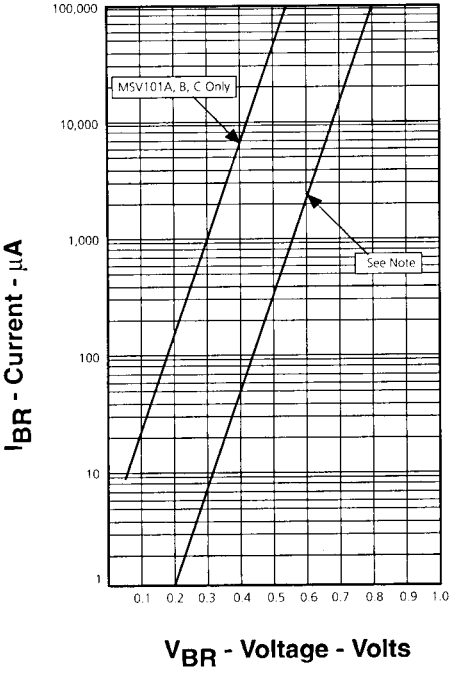


FIGURE 1

Typical Current versus Voltage †

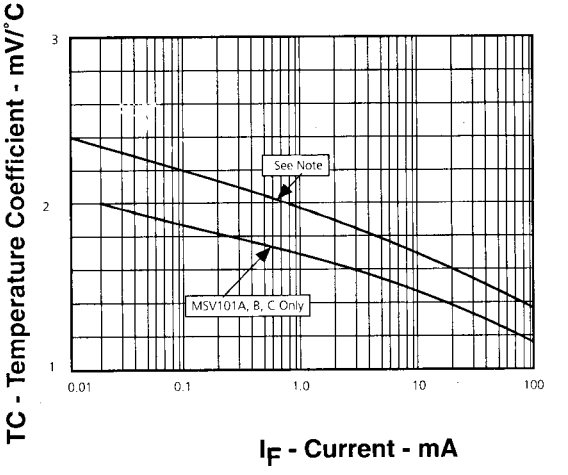


FIGURE 2

Temperature Coefficient of Voltage vs. Current †

(NOTE: TC is a negative value.)

† **NOTE:** Multiply applicable V_{BR} voltage or TC by 2 for MSV201, by 3 for MSV301, by 4 for MSV401, by 5 for MSV501, by 6 for MSV601, and by 7 for MSV701.