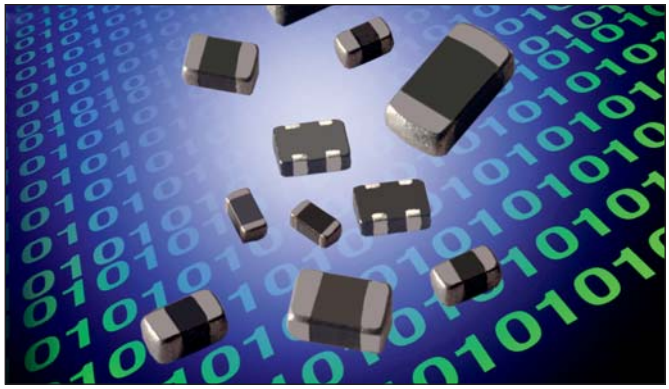
Miniature AC Varistor – MAV

Low Power AC Circuit Protection

GENERAL DESCRIPTION

AVX Miniature AC Varistors are designed for use in low power AC circuit protection. MAV series devices are an ideal solution to transient suppression in LC resonant circuits intended for signal & power transfer. The AVX part provides low loss in the resonant circuit yet is able to clamp large amounts of transients in a bi-directional manner.

The ability to handle large transients makes the MAV series useful in low power AC circuit protection and the AEC Q200 qualification allows for use in automotive applications.



FEATURES

- 110 Pk-Pk @ 125kHz capability
- AEC Q200 qualified
- ESD rated to 25kV (HBM ESD Level 6)
- EMI/RFI attenuation in off state
- Bi-Directional protection

APPLICATIONS

- LC resonant circuits
- AC sampling circuitry
- Transformer secondaries
- GFI modules

HOW TO ORDER

MAV	002	0	W	P
Series	**Size**	**Capacitance**	**Packaging**	**Termination**
	001 = 0603 002 = 0405 004 = 0402	0 = Low	D = 7" reel (1,000 pcs) R = 7" reel (4,000 pcs) T = 13" reel (10,000 pcs) W = 7" Reel (10,000 pcs 0402 and 201 only)	P = Plated Sn over Ni barrier

RoHS COMPLIANT

ANTENNAGUARD CATALOG PART NUMBERS/ELECTRICAL VALUES

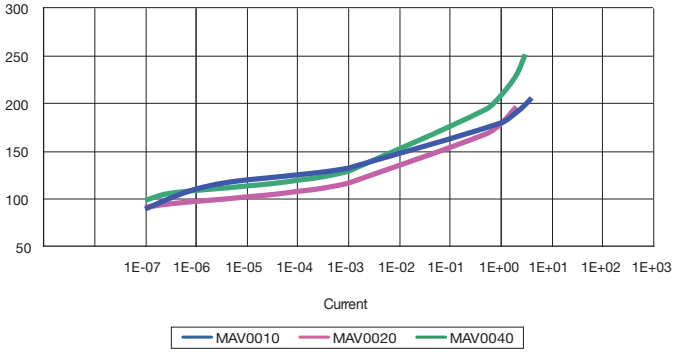
AVX Part Number	V_W (DC)	V_W (AC)	V_B	V_C	I_{VC}	E_T	I_P	I_L	Cap	Elements
MAV0010_P	70	52	120 ±15%	225	1	0.015	2	10	22pF Max	1
MAV0020_P	70	52	120 ±15%	225	1	0.020	3	10	8pF Max	2
MAV0040_P	70	52	120 ± 15%	225	1	0.020	1	10	6pF Max	1

└ Packaging Code

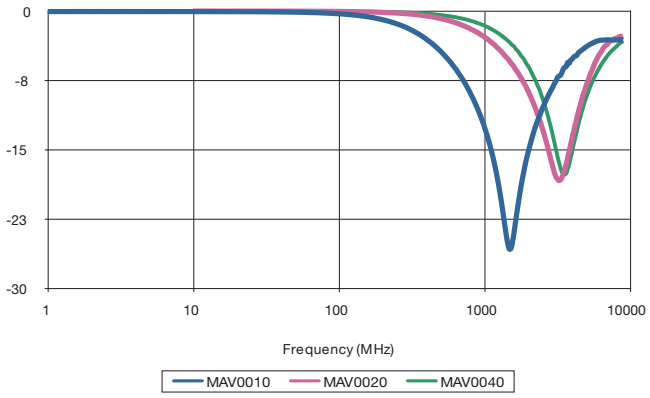
V_W (DC)	DC Working Voltage [V]	I_L	Maximum leakage current at the working voltage [µA]
V_W (AC)	AC Working Voltage [V]	E_T	Transient Energy Rating [J, 10x100µS]
V_B	Breakdown Voltage [V @ 1mA$_{DC}$]	I_P	Peak Current Rating [A, 8x10µS]
V_C	Clamping Voltage [V @ I_{VC}]	Cap	Maximum capacitance @ 1MHz and 0.5V_{RMS}

TYPICAL PERFORMANCE CURVES

Voltage/Current Characteristics

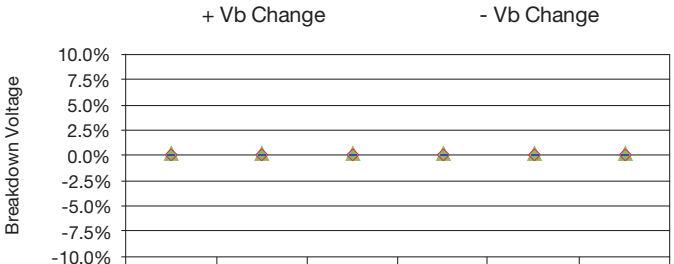


Transmission Characteristics

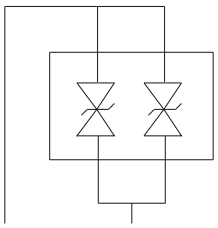


TYPICAL PERFORMANCE CURVES

Impact of AC Voltage on Breakdown Voltage
Parallel 110VPP @ 125 kHz



	10 min	60 min	120 min	10 min	60 min	120 min
– Max	0.3%	0.6%	0.4%	0.3%	0.5%	0.3%
◇ Min	0.2%	0.2%	0.2%	0.2%	0.1%	0.0%
▲ Average	0.3%	0.3%	0.3%	0.2%	0.2%	0.2%

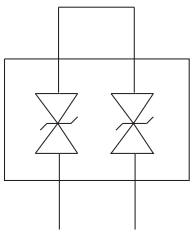


Apply 110V pp
125KHz Sine wave
(Parallel)

Impact of AC Voltage on Breakdown Voltage
Series 110VPP @ 125 kHz

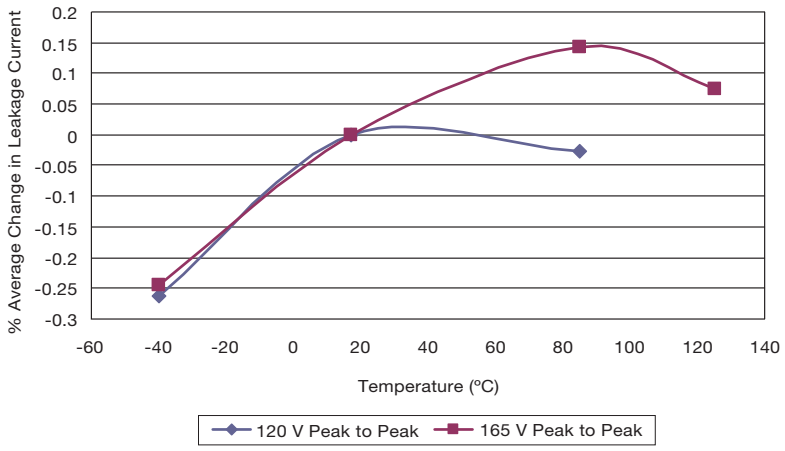


	10 min	60 min	120 min	10 min	60 min	120 min
– Max	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
◇ Min	0.2%	0.2%	0.2%	-0.2%	0.2%	0.2%
▲ Average	0.3%	0.3%	0.3%	0.2%	0.3%	0.2%

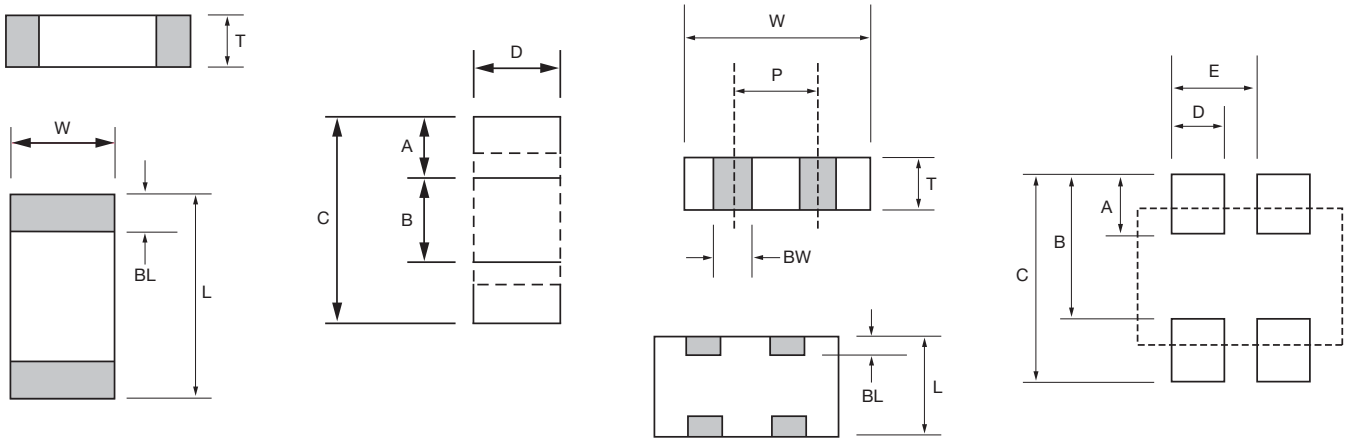


Apply 110V pp
125KHz Sine wave
(Series)

IMPACT OF AC VOLTAGE ON LEAKAGE CURRENT



PHYSICAL DIMENSIONS AND RECOMMENDED PAD LAYOUT



L	W	T	BW	BL	P	A	B	C	D	E
MAV0010										
1.60 ± 0.15 (0.063±0.006)	0.80 ± 0.15 (0.032±0.006)	0.90 Max (0.035) Max	N/A	0.35 ± 0.15 (0.014±0.006)	N/A	0.89 (0.035)	0.76 (0.030)	2.54 (0.100)	0.76 (0.030)	N/A
MAV0020										
1.00 ± 0.15 (0.039±0.006)	1.37 ± 0.15 (0.054±0.006)	0.66 Max (0.026) Max	0.36 ± 0.10 (0.014±0.004)	0.20 ± 0.10 (0.008±0.004)	0.64 REF (0.025)REF	0.46 (0.018)	0.74 (0.029)	1.20 (0.047)	0.30 (0.012)	0.64 (0.025)
MAV0040										
1.00±0.10 (0.040±0.004)	0.50±0.10 (0.020±0.004)	0.60 Max (0.024) Max	N/A	0.25±0.15 (0.010±0.006)	N/A	0.61 (0.024)	0.51 (0.020)	1.70 (0.067)	0.51 (0.020)	N/A

Mouser Electronics

Authorized Distributor

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AVX:

MAV0010RP MAV0020RP MAV0010DP MAV0020DP MAV0040WP MAV0020TP MAV0010TP