UltraGuard Series

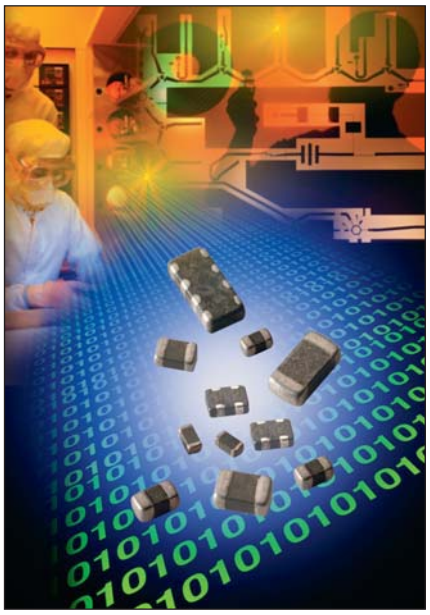
ESD Protection for Low Leakage Requirements

GENERAL DESCRIPTION

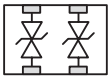
Faster semiconductor clock speeds and an increasing reliance on batteries as power sources have resulted in the need for varistors that exhibit very low leakage current. The UltraGuard (UG) Series of AVX Transient Voltage Suppressors address this problem.

The UG Series is the ideal transient protection solution for high clock speed integrated circuit application, battery-operated device, backlit display, medical/instrument application, low voltage power conversion circuits and power supervisory chip sets. In addition, UltraGuard's low leakage characteristics are also suitable for optic circuits like LDD, SerDes, and laser diodes.

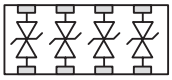
The UG Series is offered as discrete chips (0402, 0603, and 0805), 2-element packages (0405 and 0508), and 4-element packages (0612).



Discrete Chips 0402, 0603, and 0805



2-Element Arrays (0405 and 0508)



4-Element Arrays (0612)

HOW TO ORDER

VC	UG	04	0180	L	1	W	P
VC=Surface Mount Chip	**Series** UG = Low Leakage Series	**Case Size** 04 = 0402 06 = 0603 08 = 0805	**Maximum Working Voltage** 0030 = 3.0VDC 0050 = 5.0VDC 0075 = 7.5VDC 0100 = 10.0VDC 0150 = 15.0VDC 0180 = 18.0VDC	**Capacitance** L = Low H = High	**No. of Elements**	**Packaging (pieces per reel)** D = 1,000 (7" reel) R = 4,000 (7" reel) T = 10,000 (13" reel) W = 10,000 (7" reel, 0402 only)	**Termination Finish** P = Ni/Sn Alloy (Plated)

HOW TO ORDER

MG	UG	06	0150	L	4	D	P
MG=Array	**Series** UG = Low Leakage Series	**Case Size** 04 = 0405 05 = 0508 06 = 0612	**Maximum Working Voltage** 0030 = 3.0VDC 0050 = 5.0VDC 0075 = 7.5VDC 0100 = 10.0VDC 0150 = 15.0VDC	**Capacitance** L = Low H = High	**No. of Elements** 2 = 2 Elements 4 = 4 Elements	**Packaging (pieces per reel)** D = 1,000 (7" reel) R = 4,000 (7" reel) T = 10,000 (13" reel)	**Termination Finish** P = Ni/Sn Alloy (Plated)

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AVX Part Number	V_{CIR}(DC)	V_{CIR}(AC)	Cap Required	Cap	Freq	I_L	Case Size	Elements
MGUG040030L2 _ _	≤3.0	≤2.3	Low	300	M	2	0405	2
MGUG050030L2 _ _	≤3.0	≤2.3	Low	425	M	2	0508	2
MGUG060030L4 _ _	≤3.0	≤2.3	Low	425	M	2	0612	4
VCUG040030L1 _ _	≤3.0	≤2.3	Low	175	M	2	0402	1
VCUG060030L1 _ _	≤3.0	≤2.3	Low	750	K	2	0603	1
VCUG080030H1 _ _	≤3.0	≤2.3	High	3000	K	2	0805	1
VCUG080030L1 _ _	≤3.0	≤2.3	Low	1100	K	2	0805	1
VCUG120030H1 _ _	≤3.0	≤2.3	High	3000	K	2	1206	1
VCUG120030L1 _ _	≤3.0	≤2.3	Low	1200	K	2	1206	1
MGUG040050L2 _ _	≤5.0	≤3.5	Low	40	M	2	0405	2
MGUG050050L2 _ _	≤5.0	≤3.5	Low	425	M	2	0508	2
MGUG060050L4 _ _	≤5.0	≤3.5	Low	425	M	2	0612	4
VCUG040050L1 _ _	≤5.0	≤3.5	Low	175	M	2	0402	1
VCUG060050L1 _ _	≤5.0	≤3.5	Low	550	K	2	0603	1
VCUG080050L1 _ _	≤5.0	≤3.5	Low	750	K	2	0805	1
VCUG120050H1 _ _	≤5.0	≤3.5	High	1050	K	2	1206	1
VCUG120050L1 _ _	≤5.0	≤3.5	Low	600	K	2	1206	1
MGUG040075L2 _ _	≤7.5	≤5.3	Low	40	M	2	0405	2
MGUG050075L2 _ _	≤7.5	≤5.3	Low	425	M	2	0508	2
MGUG060075L4 _ _	≤7.5	≤5.3	Low	425	M	2	0612	4
VCUG040075L1 _ _	≤7.5	≤5.3	Low	100	M	2	0402	1
VCUG060075L1 _ _	≤7.5	≤5.3	Low	425	K	2	0603	1
VCUG080075H1 _ _	≤7.5	≤5.3	High	900	K	2	0805	1
VCUG080075L1 _ _	≤7.5	≤5.3	Low	325	K	2	0805	1
VCUG120075H1 _ _	≤7.5	≤5.3	High	1050	K	2	1206	1
VCUG120075L1 _ _	≤7.5	≤5.3	Low	600	K	2	1206	1
MGUG040100L2 _ _	≤10.0	≤7.1	Low	40	M	2	0405	2
MGUG050100L2 _ _	≤10.0	≤7.1	Low	225	M	2	0508	2
MGUG060100L4 _ _	≤10.0	≤7.1	Low	225	M	2	0612	4
VCUG040100L1 _ _	≤10.0	≤7.1	Low	65	M	2	0402	1
VCUG060100L1 _ _	≤10.0	≤7.1	Low	250	K	2	0603	1
VCUG080100H1 _ _	≤10.0	≤7.1	High	550	K	2	0805	1
VCUG080100L1 _ _	≤10.0	≤7.1	Low	225	K	2	0805	1
VCUG120100H1 _ _	≤10.0	≤7.1	High	900	K	2	1206	1
VCUG120100L1 _ _	≤10.0	≤7.1	Low	350	K	2	1206	1
MGUG040150L2 _ _	≤15.0	≤11	Low	50	M	2	0405	2
MGUG050150L2 _ _	≤15.0	≤11	Low	50	M	2	0508	2
MGUG060150L4 _ _	≤15.0	≤11	Low	75	M	2	0612	4
VCUG040150L1 _ _	≤15.0	≤11	Low	40	M	2	0402	1
VCUG060150L1 _ _	≤15.0	≤11	Low	155	K	2	0603	1
VCUG080150H1 _ _	≤15.0	≤11	High	250	K	2	0805	1
VCUG080150L1 _ _	≤15.0	≤11	Low	120	K	2	0805	1
VCUG120150H1 _ _	≤15.0	≤11	High	500	K	2	1206	1
VCUG040180L1 _ _	≤18.0	≤14	Low	30	M	1	0402	1

└ Termination Finish Code
└ Packaging Code

V_{CIR} (DC)	DC Circuit Voltage (V)
V_{CIR} (AC)	AC Circuit Voltage (V)
Cap Req	Standard or Low
I_L	Maximum Leakage Current at the Circuit Voltage (µA)
Cap	Typical Capacitance (pF) @ frequency specified and 0.5 Vrms
Freq	Frequency at which capacitance is measured (K = 1kHz, M = 1MHz)

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PHYSICAL DIMENSIONS

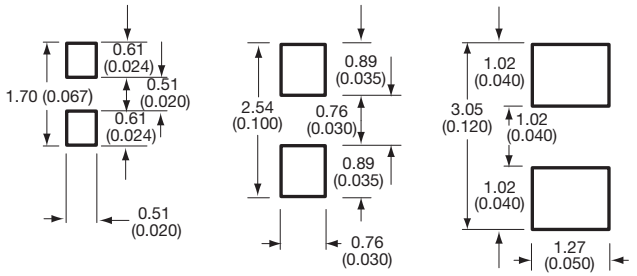
mm (inches)

	0402 Discrete	0603 Discrete	0805 Discrete
Length	1.00 ±0.10 (0.040 ±0.004)	1.60 ±0.15 (0.063 ±0.006)	2.01 ±0.20 (0.079 ±0.008)
Width	0.50 ±0.10 (0.020 ±0.004)	0.80 ±0.15 (0.032 ±0.006)	1.25 ±0.20 (0.049 ±0.008)
Thickness	0.60 Max. (0.024 Max.)	0.90 Max. (0.035 Max.)	1.02 Max. (0.040 Max.)
Term Band Width	0.25 ±0.15 (0.010 ±0.006)	0.35 ±0.15 (0.014 ±0.006)	0.71 Max. (0.028 Max.)

	0405 Array	0508 Array	0612 Array
Length	1.00 ±0.15 (0.039 ±0.006)	1.25 ±0.20 (0.049 ±0.008)	1.60 ±0.20 (0.063 ±0.008)
Width	1.37 ±0.15 (0.054 ±0.006)	2.01 ±0.20 (0.079 ±0.008)	3.20 ±0.20 (0.126 ±0.008)
Thickness	0.66 Max. (0.026 Max.)	1.02 Max. (0.040 Max.)	1.22 Max. (0.048 Max.)
Term Band Width	0.36 ±0.10 (0.014 ±0.004)	0.41 ±0.10 (0.016 ±0.004)	0.41 ±0.10 (0.016 ±0.004)

SOLDER PAD DIMENSIONS

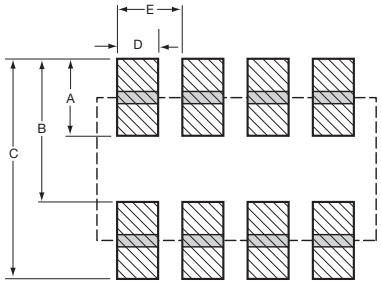
mm (inches)



0402 **0603** **0805**

0612 4-Element Array

A	B	C	D	E
0.89 (0.035)	1.65 (0.065)	2.54 (0.100)	0.46 (0.018)	0.76 (0.030)



2-Element Arrays

	A	B	C	D	E
0405	0.46 (0.018)	0.74 (0.029)	1.20 (0.047)	0.38 (0.015)	0.64 (0.025)
0508	0.89 (0.035)	1.27 (0.050)	2.16 (0.085)	0.46 (0.018)	0.76 (0.030)