

GENERAL DESCRIPTION

The StaticGuard Series are low capacitance versions of the TransGuard and are designed for general ESD protection of CMOS, Bi-Polar, and SiGe based systems. The low capacitance makes these products suitable for use in high speed data transmission lines.

GENERAL CHARACTERISTICS

- Operating Temperature: -55°C to 125°C
- Working Voltage: ≤ 18Vdc
- Case Size: 0402, 0603, 0805, 1206

FEATURES

- Typical ESD failure voltage for CMOS and/or Bi Polar is ≥ 200V
- Low capacitance (<200pF) is required for high-speed data transmission.
- Low leakage current (IL) is necessary for battery operated equipment.
- 15kV ESD pulse (air discharge) per IEC 61000-4-2, Level 4, generates < 20 millijoules of energy.

APPLICATIONS

- Sensors
- CMOS
- SiGe based systems
- Higher speed data lines
- Capacitance sensitive applications and more

HOW TO ORDER

VC	06	LC	18	X	500	X	P
Varistor Chip	Case Size	Low Cap Design	Working Voltage	Energy Rating	Clamping Voltage	Packaging (PCS/REEL)	Termination
			18 = 18.0VDC	A = 0.10 Joules V = 0.02 Joules X = 0.05 Joules	500 = 50V	D = 1,000* R = 4,000* T = 10,000* W = 10,000**	P = Ni/Sn
	04 = 0402						
	06 = 0603						
	08 = 0805						
	12 = 1206						

*Not available for 0402

**Only available for 0402

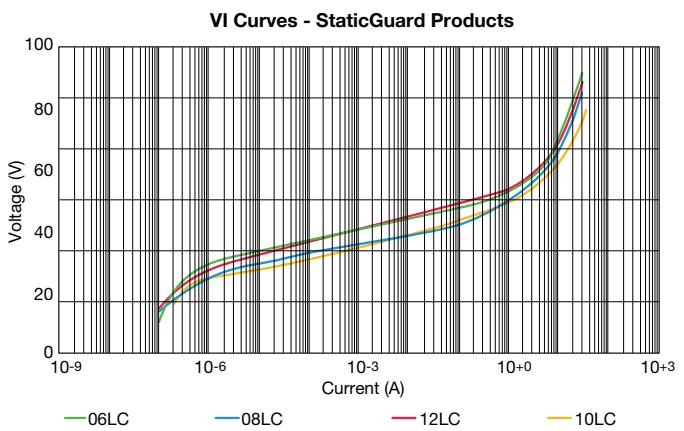
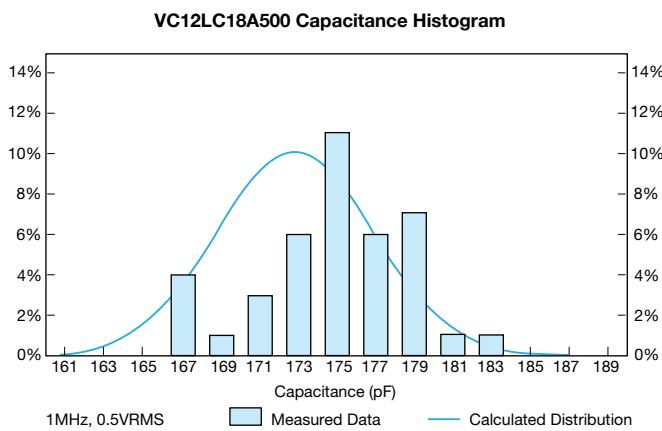
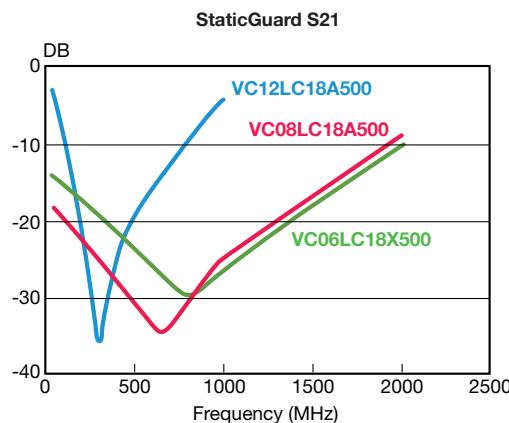
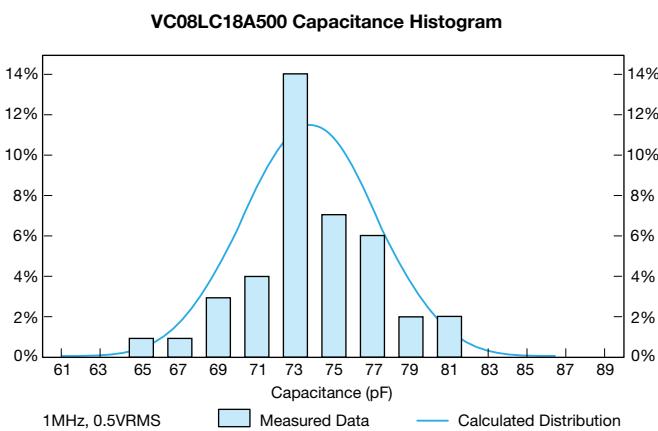
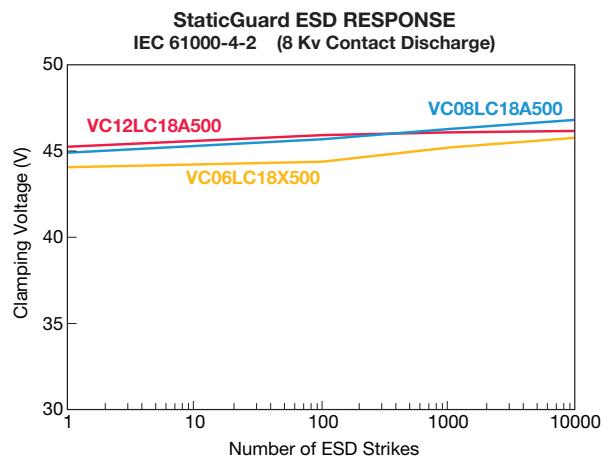
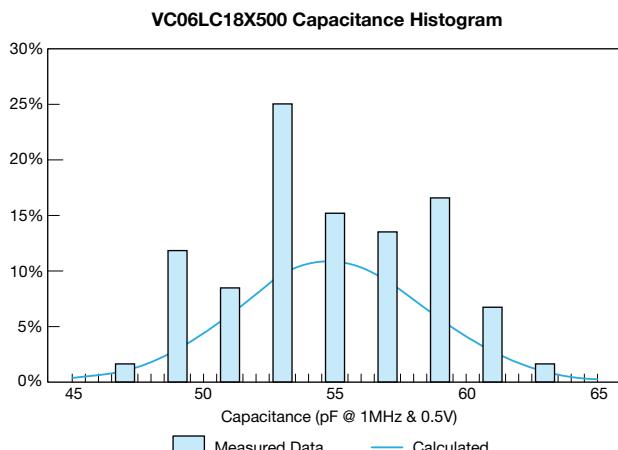
ELECTRICAL CHARACTERISTICS

Part Number	V _w (DC)	V _w (AC)	V _B	V _c	I _{VC}	I _I	E _T	I _P	Cap	Freq	Size
VC04LC18V500	≤18.0	≤14.0	25-40	50	1	10	0.02	15	40	M	0402
VC06LC18X500	≤18.0	≤14.0	25-40	50	1	10	0.05	30	50	M	0603
VC08LC18A500	≤18.0	≤14.0	25-40	50	1	10	0.1	30	80	M	0805
VC12LC18A500	≤18.0	≤14.0	25-40	50	1	10	0.1	30	200	K	1206

V _w (DC)	DC Working Voltage [V]
V _w (AC)	AC Working Voltage [V]
V _B	Typical Breakdown Voltage (Min-Max) [V @ 1mA _{DC} , 25°C]
V _c	Clamping Voltage [V @ I _{VC}]
I _{VC}	Test Current for V _c [A, 8x20μs]

I _L	Maximum leakage current at the working voltage, 25°C [μA]
E _T	Transient Energy Rating [J, 10x1000μS]
I _P	Peak Current Rating [A, 8x20μS]
Cap	Typical capacitance [pF] @ frequency specified and 0.5V _{RMS} , 25°C, K = 1kHz, M = 1MHz

TYPICAL PERFORMANCE DATA



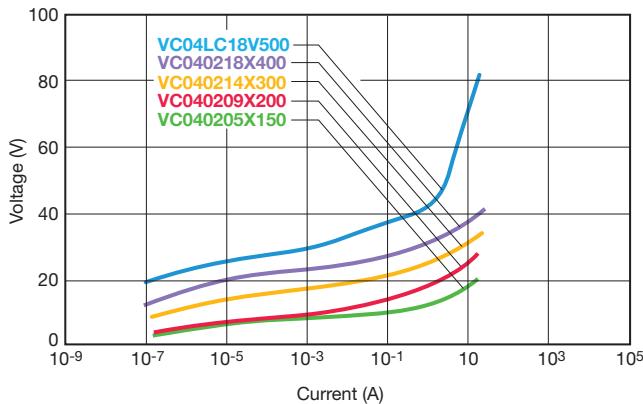
StaticGuard

Multilayer Ceramic Transient Voltage Suppressors

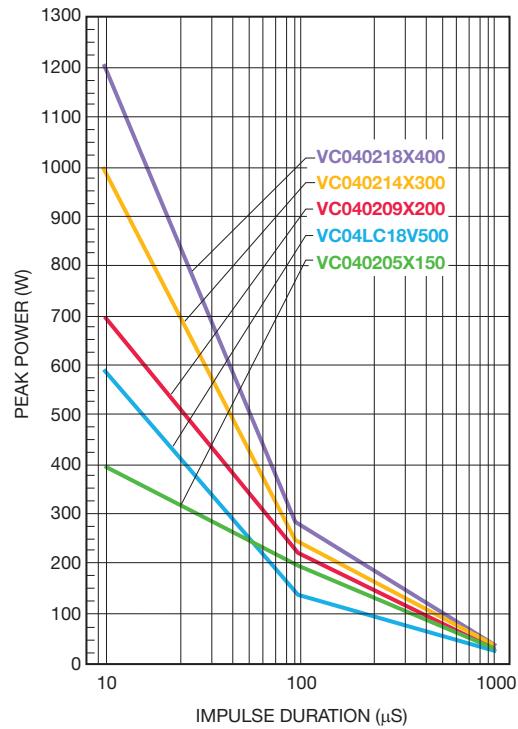
TYPICAL PERFORMANCE CURVES (0402 CHIP SIZE)

VOLTAGE/CURRENT CHARACTERISTICS

Multilayer construction and improved grain structure result in excellent transient clamping characteristics up to 20 amps peak current, while maintaining very low leakage currents under DC operating conditions. The VI curves below show the voltage/current characteristics for the 5.6V, 9V, 14V, 18V and low capacitance StaticGuard parts with currents ranging from parts of a micro amp to tens of amps.



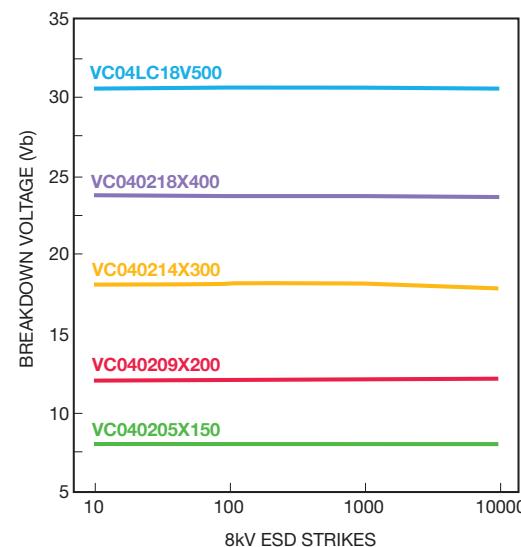
PEAK POWER VS PULSE DURATION



PULSE DEGRADATION

Traditionally varistors have suffered degradation of electrical performance with repeated high current pulses resulting in decreased breakdown voltage and increased leakage current. It has been suggested that irregular intergranular boundaries and bulk material result in restricted current paths and other non-Schottky barrier paralleled conduction paths in the ceramic. Repeated pulsing of TransGuard® transient voltage suppressors with 150Amp peak 8 x 20μS waveforms shows negligible degradation in breakdown voltage and minimal increases in leakage current.

ESD TEST OF 0402 PARTS



INSERTION LOSS CHARACTERISTICS

