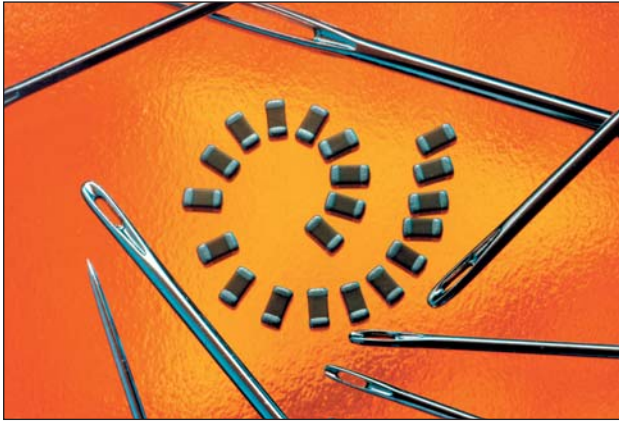


# StaticGuard

## AVX Multilayer Ceramic Transient Voltage Suppressors

### ESD Protection for CMOS, Bi Polar and SiGe Based Systems



### 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 ( $I_L$ ) 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 speeded data lines
- Capacitance sensitive applications and more

### HOW TO ORDER

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

\*Not available for 0402  
\*\*Only available for 0402

### ELECTRIAL CHARACTERISTICS

| AVX PN       | V <sub>W</sub> (DC) | V <sub>W</sub> (AC) | V <sub>B</sub> | V <sub>C</sub> | I <sub>VC</sub> | I <sub>L</sub> | E <sub>T</sub> | I <sub>P</sub> | 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<sub>W</sub>(DC) DC Working Voltage [V]  
V<sub>W</sub>(AC) AC Working Voltage [V]  
V<sub>B</sub> Typical Breakdown Voltage (Min-Max) [V @ 1mA<sub>DC</sub>, 25°C]  
V<sub>C</sub> Clamping Voltage [V @ I<sub>VC</sub>]  
I<sub>VC</sub> Test Current for V<sub>C</sub> [A, 8x20µs]

I<sub>L</sub> Maximum leakage current at the working voltage, 25°C [µA]  
E<sub>T</sub> Transient Energy Rating [J, 10x1000µs]  
I<sub>P</sub> Peak Current Rating [A, 8x20µs]  
Cap Typical capacitance [pF] @ frequency specified and 0.5V<sub>rms</sub>, 25°C, K = 1kHz, M = 1MHz

# StaticGuard

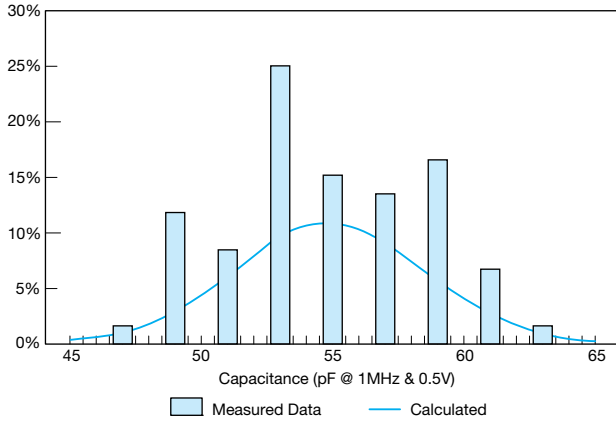
## AVX Multilayer Ceramic Transient Voltage Suppressors

### ESD Protection for CMOS, Bi Polar and SiGe Based Systems

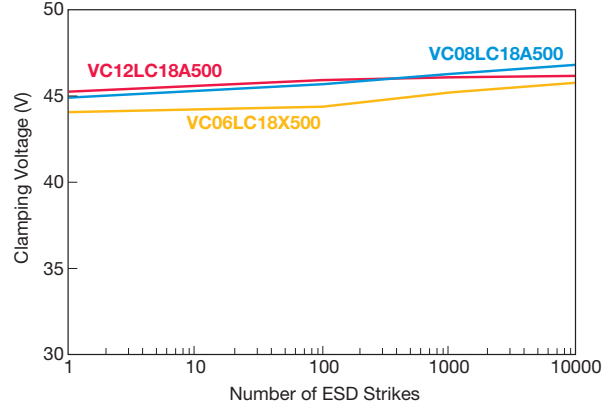


#### TYPICAL PERFORMANCE DATA

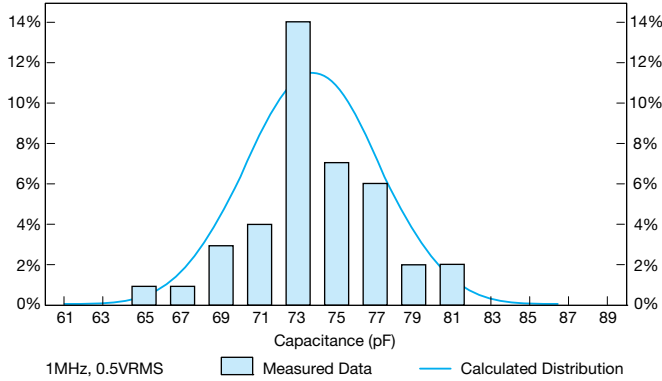
VC06LC18X500 Capacitance Histogram



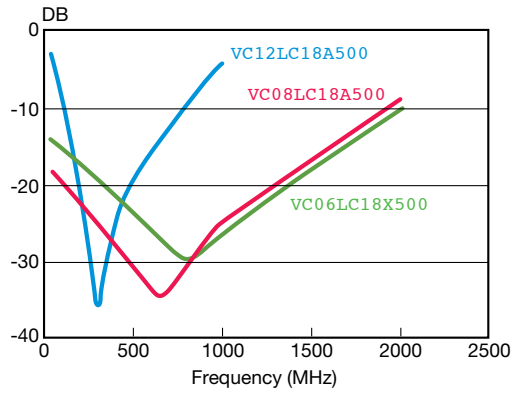
StaticGuard ESD RESPONSE  
IEC 61000-4-2 (8 Kv Contact Discharge)



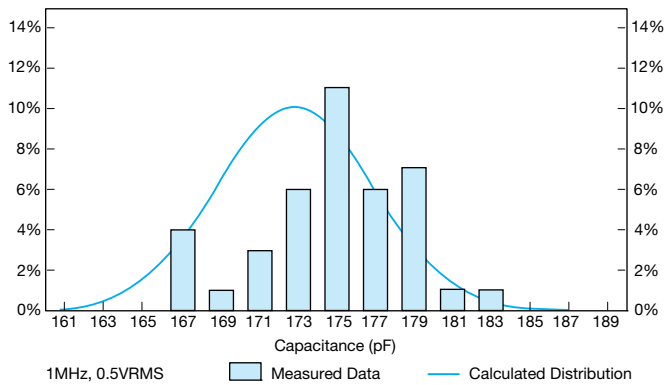
VC08LC18A500 Capacitance Histogram



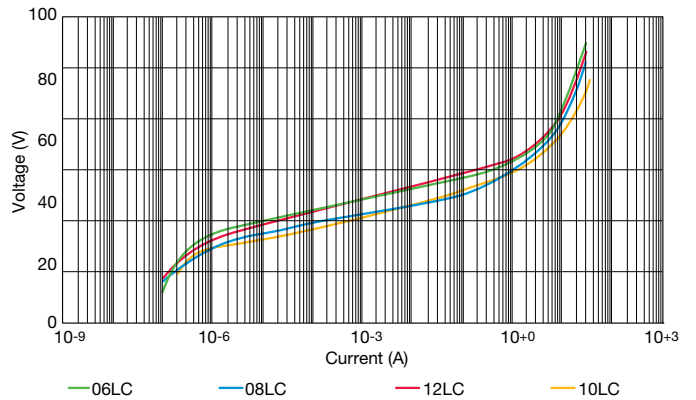
StaticGuard S21



VC12LC18A500 Capacitance Histogram



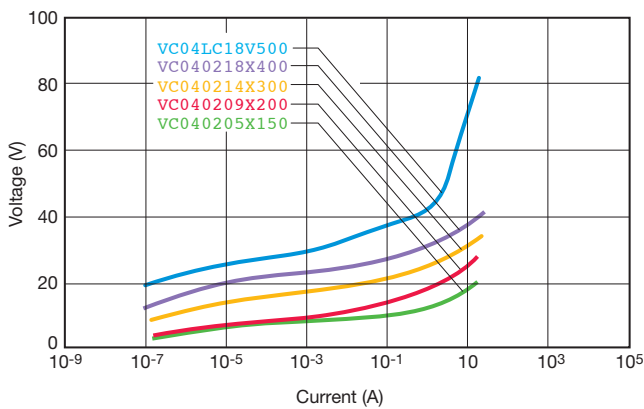
VI Curves - StaticGuard Products



### 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.



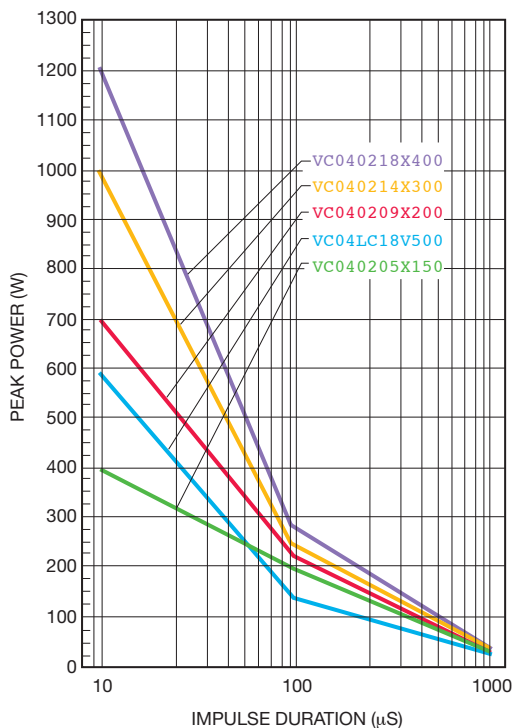
#### PULSE DEGRADATION

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.

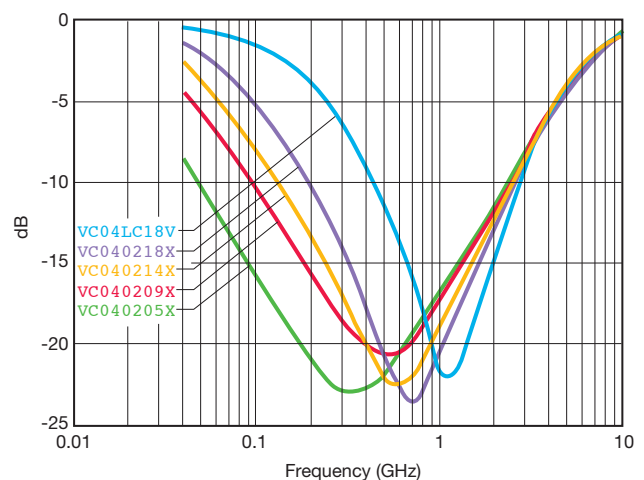
#### ESD TEST OF 0402 PARTS



#### PEAK POWER VS PULSE DURATION



#### INSERTION LOSS CHARACTERISTICS





Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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