

## Multilayer Ceramic Surface Mount ESD Suppressor / Filter

### Description

The new ESD Suppressor / Filter is an advanced series of *JumboTek's* Multilayer Ceramic Transient Voltage suppression devices. Nowadays, the modern electronic systems have migrated towards the manufacture of increased density circuits with the same space constraints of today's densely packaged electronic products. Protection against the Electrostatic Discharge (ESD) generated from the human body model discharge is more important.

*JumboTek's* new ESD suppressor / filter series, specifically characterized for capacitance and impedance, offers a new choice to High-speed data transmission and Radio Frequency (RF) circuits, providing suppression and filtering in a single device. They are ideal for used in portable applications, such as cellular handsets and accessories, computers and PDA, etc. It is compatible with modern reflow and wave soldering procedures. We would give you a solution to prevent ESD problems.

### Features

- Thin layer and high precise techniques
- Able to withstand ESD test of IEC 61000-4-2
- Small size (0402, 0603, 0805 and 1206)
- Characterized for impedance and capacitance
- Operating voltage up to 18 V<sub>M(DC)</sub>
- -55°C~125°C operating temperature range
- Available with Nickel / Tin end terminations

### Applications

- Protection of Cellular phones, PDA, High speed data transmission...etc.,
- ESD Protection for components sensitive to IEC 61000-4-2, provides circuit board transient voltage protection for power supply, Control and signal Lines.
- Used in Mobile communications, Computers / EDP products, Medical products, Hand held/ Portable devices, Industrial equipment, including Diagnostic port protection and I/O interfaces.

## Multilayer Ceramic Surface Mount ESD Suppressor / Filter

### Absolute Maximum Ratings

Continuous:	ESD SERIES	UNITS
Steady State Applied Voltage:		
DC Voltage Range ( $V_{M(DC)}$ ) .....	≤18	V
Operating Ambient Temperature Range ( $T_A$ ) .....	-55 to 125	°C
Storage Temperature Range ( $T_{STG}$ ) .....	-55 to 150	°C

### Test Method / Description

Characteristics	Test Method / Description
<b>Standard Test condition</b>	Environmental condition under which every measuring is done without doubt on the measuring results. Unless specially specified temperature, relative humidity are 5 to 35°C, 45 to 85% RH.
<b>Max. Working Voltage (<math>V_{M(DC)}</math>)</b>	Maximum steady-state DC operating voltage the device can maintain and typical leakage current at 25°C not exceed 25μA. The operating voltage (working voltage) is always less than the breakdown voltage (nominal voltage) of the device.
<b>Nominal Voltage(<math>V_{N(DC)}</math>)</b>	With the specified measuring current of 1mA DC applied and has a specified minimum and maximum voltage listed.
<b>Max. Clamping Voltage (<math>V_C</math>)</b>	Maximum peak voltage across the device measured at a specified pulse current (A) and waveform 8/20μs.
<b>Surge Current (<math>I_{TM}</math>)</b>	Maximum peak current may be applied with the specified waveform without device failure.
<b>Energy Absorption(<math>W_{TM}</math>)</b>	Maximum energy may be dissipated with a specified waveform without device failure.
<b>Typical Capacitance( C )</b>	Device Capacitance measured with zero voltage bias 1V <sub>P.P.</sub> and frequency 1MHz
<b>IEC 61000-4-2</b>	The electrostatic discharge requirements portion of the electromagnetic compatibility standard written by the International Electro technical Commission. The specification describes a specific human body model test conditions and methods.
<b>ESD Test (Contact discharge)</b>	Test Voltage: 8 KV Type of discharge: direct contact discharge Number of test pulses: 20 times Polarity: + / - Discharge network: 150pF, 330Ω Preconditioning: IR reflow soldering on test PCB $\Delta V/V \leq \pm 15\%$ (IEC 61000-4-2)
<b>ESD Test (Air discharge)</b>	Test Voltage: 15 KV Type of discharge: air discharge Number of test pulses: 20 times Polarity: + / - Discharge network: 150pF, 330Ω Preconditioning: IR reflow soldering on test PCB $\Delta V/V \leq \pm 15\%$ (IEC 61000-4-2)

## Multilayer Ceramic Surface Mount ESD Suppressor / Filter

### ESD Series SMD



### DEVICE RATINGS AND SPECIFICATIONS

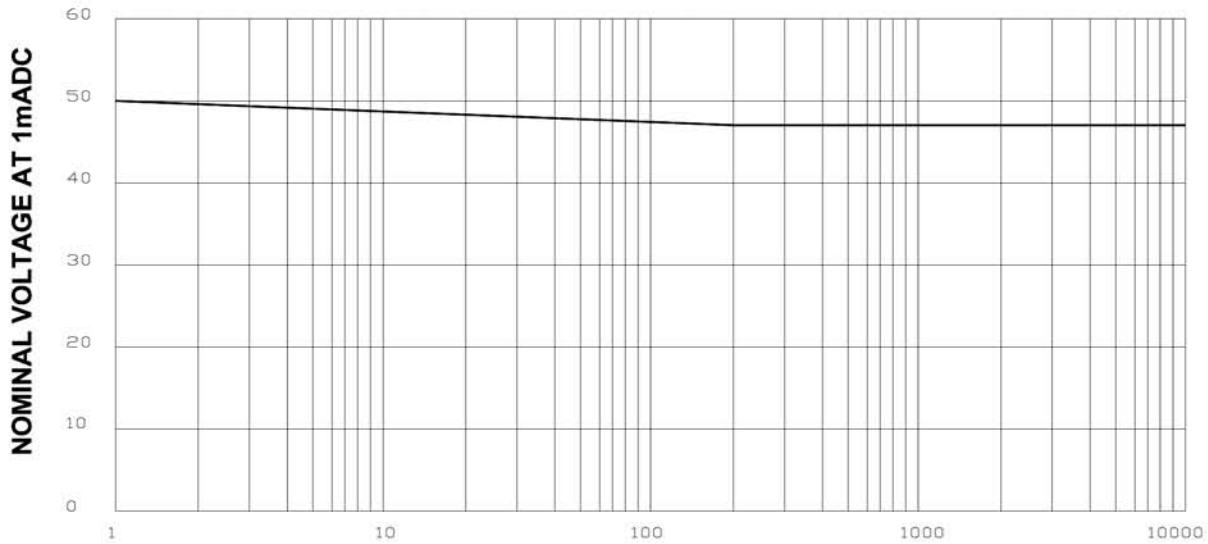
PART NUMBER	Maximum Ratings (125°C)	Performance Specifications (25°C)						
	Maximum Continuous Working Voltage (Notes 1)	Maximum Clamping Voltage at Specified Current (8/20µs)		Maximum Non-Repetitive Surge Energy (10/1000µs)	Maximum ESD Clamp Voltage 8KV Contact (Notes 2)	Nominal Voltage at 1 mA (DC) Test Current		Typical Capacitance @1 MHz (Notes 3)
	$V_{M(DC)}$	$V_C$		W	$V_C$	$V_{N(DC)}$ min.	$V_{N(DC)}$ max.	C
	(V)	(V)		(J)	(V)	(V)	(V)	(PF)
JE0402ML180L□	5 ~ 18	50	1A	0.03	120	22	28	30
JE0402ML180A□	5 ~ 18	50	1A	0.03	120	22	28	40
JE0603ML180L□	5 ~ 18	50	1A	0.05	120	22	28	40
JE0603ML180A□	5 ~ 18	50	2A	0.05	120	22	28	100
JE0805ML180L□	5 ~ 18	50	2A	0.10	100	22	28	100
JE0805ML180A□	5 ~ 18	50	5A	0.10	100	22	28	500
JE1206ML180L□	5 ~ 18	50	5A	0.10	80	22	28	500
JE1206ML180A□	5 ~ 18	50	10A	0.10	80	22	28	800

#### Notes:

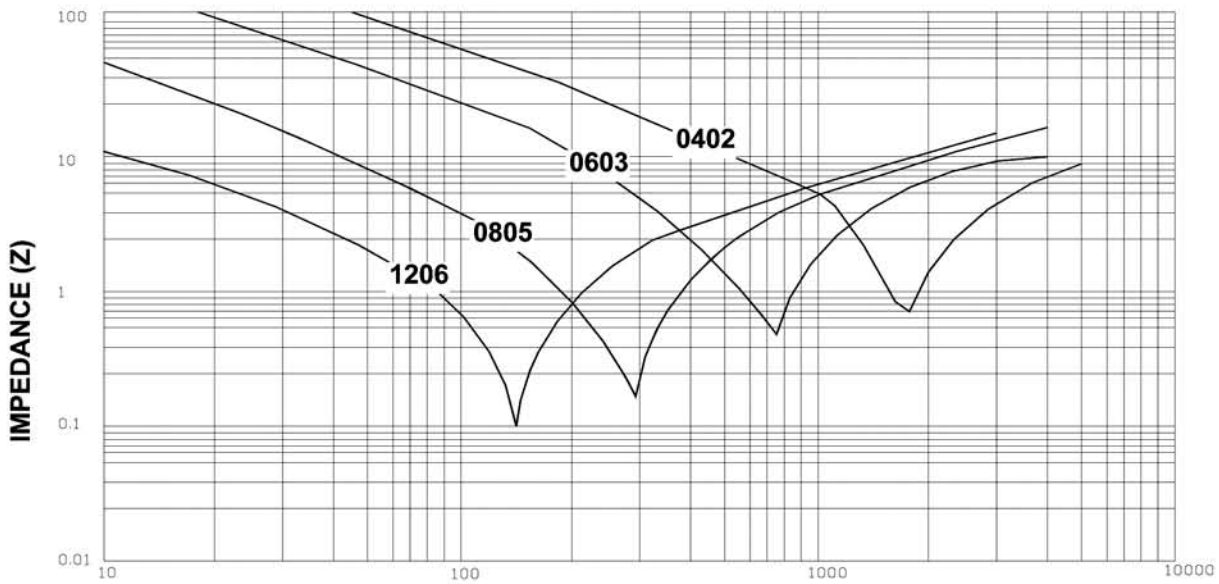
1. For applications of 18  $V_{M(DC)}$  or less. Higher voltages, please contact *JumboTek* for availability.
2. Maximum ESD clamp voltage tested with IEC 61000-4-2 Human Body Model discharge test circuit and direct discharge to device terminals (IEC preferred test method).
3. Capacitance may be customized, please contact *JumboTek* for availability.

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**ESD Series SMD**



**NOMINAL VOLTAGE STABILITY TO MULTIPLE ESD IMPULSES  
(8KV CONTACT DISCHARGES PER IEC 61000-4-2)**



**IMPEDANCE (Z) vs FREQUENCY TYPICAL CHARACTERISTIC**



*Do you need more  
information ?*

**DROP US A CALL !**



**Tel. +39 02 24304651**

**Fax +39 02 24304654**

**E-mail [sales@asiatronix.com](mailto:sales@asiatronix.com)**

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