

# SMD Transient Voltage Suppressors

## ESD Solutions Suppressor Series

MLE Series is special designed for ESD transients protection. It meets IEC61000-4-2 ESD test Standard level 4. There are several capacitance values to choose. It also can be used as MLCC for EMI function when non-working status.

### Part Number Identification

Size	Working Voltage	Series	Capacitance	Tolerance	Lead Free
0402	050	E	330	NP	LF
0201=0.6x0.3(mm)	050=5x10 <sup>0</sup> =5(V)	MLE	330=33x10 <sup>0</sup> =33(pF)	NP=±30%	
0402=1.0x0.5(mm)	120=12x10 <sup>0</sup> =12(V)		2R5=2.5x10 <sup>0</sup> =2.5(pF)	PP=+80-20%	
0603=1.6x0.8(mm)	240=24x10 <sup>0</sup> =24(V)				
0805=2.0x1.2(mm)					

### Features

- Fast Response < 0.5ns
- Low Clamping Voltage
- Low Leakage Current < 1uA
- Low Working Voltage
- Low Capacitance 0.05pF
- Bi-Directional

### Application

- Normal Single I/O
- USB 2.0 / USB 3.0
- Vdd / Reset
- Audio / Video I/O
- HDMI/ DP/ DVI

### Specification

0201 Size

Part No,	Working Voltage	ClampingVoltage	Leakage Current	Capacitance Volume	ESD Contact	ESD Air
(Unit)	VDC (max)	Vclamp(max)	uA(max)	pF	KV	KV
0201-050E330NP-LF	5	48	1	33	≥8	≥15
0201-050E100NP-LF	5	72	1	10	≥8	≥15
0201-050E050PP-LF	5	72	1	0.5	≥8	≥15
0201-120E2R5PP-LF	12	130	1	2.5	≥8	≥15
0201-120E0R8PP-LF	12	200	1	0.8	≥8	≥15
0201-120E0R4PP-LF	12	200	1	0.4	≥8	≥15

# SMD Transient Voltage Suppressors

## Specification

(XXXX=0402 and 0603 size)

Part No,	Working Voltage	Clamping Voltage		Leakage Current	Capacitance Volume	ESD Contact	ESD Air
		Vclamp(max)					
(Unit)	VDC (max)	0402	0603	uA(max)	pF	KV	KV
XXXX-050E101NP-LF	5	52	36	1	100	≥ 8	≥ 15
XXXX-050E560NP-LF	5	52	36	1	56	≥ 8	≥ 15
XXXX-050E330NP-LF	5	52	34	1	33	≥ 8	≥ 15
XXXX-050E220NP-LF	5	52	34	1	22	≥ 8	≥ 15
XXXX-050E100NP-LF	5	72	65	1	10	≥ 8	≥ 15
XXXX-050E050PP-LF	5	72	55	1	4~9	≥ 8	≥ 15
XXXX-120E101NP-LF	12	55	55	1	100	≥ 8	≥ 15
XXXX-120E560NP-LF	12	55	55	1	56	≥ 8	≥ 15
XXXX-120E330NP-LF	12	55	55	1	33	≥ 8	≥ 15
XXXX-120E220NP-LF	12	55	55	1	22	≥ 8	≥ 15
XXXX-120E100NP-LF	12	72	60	1	10	≥ 8	≥ 15
XXXX-120E050PP-LF	12	72	85	1	4 ~9	≥ 8	≥ 15
XXXX-240E2R5PP-LF	24	200	240	1	2~4.5	≥ 8	≥ 15
XXXX-240E3R0PP-LF	24	200	240	1	1.65~5.4	≥ 8	≥ 15
XXXX-240E0R8PP-LF	24	200	200	1	0.8~1.5	≥ 8	≥ 15

## 0805 Size

Part No,	Working Voltage	Clamping Voltage	Leakage Current	Capacitance Volume	ESD Contact	ESD Air
(Unit)	VDC (max)	Vclamp(max)	uA(max)	pF	KV	KV
0805-120E560NP-LF	12	60	1	56	≥ 8	≥ 15

1. This clamping Voltage at which the device stabilized during the transition from high to low impedance 8/20  $\mu$ s waveform current 1A.
2. All capacitance test under 1MHz, and the Leakage current was measured at working voltage.