BORN

Overview

The Chip ESD-Suppressor is specially designed to protect sensitive electronics from the threat of the electrostatic discharge (ESD). The product reacts almost instantly to the transient voltage and effectively clamps it to the low voltage for the duration of the ESD transient. The product uses voltage variable polymers that inherently produce low capacitance and very low leakage current. Thus the device is virtually invisible to the circuit during normal operational mode. It is especially transparent to the high-speed digital circuits due to the high off-state impedance and low capacitance. Signals are not distorted or disrupted as shown by extensive testing. Using the ESD-Suppressor ESD protection, devices maintain signal integrity of high- speed data signals while protecting the circuit from ESD. The nature of the material creates a bi- directional part, which means that only one device per surge path is required to provide complete ESD protection regardless of the surge polarity.

Features

- 0402inch/ 1005mm foot print
- Ideal ESD protection for high frequency, low voltage applications.
- Exceeds testing requirements outlined in IEC 61000-4-2
- Ultra low capacitance (0.15pF typ.)
- Very low leakage current
- Fast response time
- Bi-directional
- Surface mount
- RoHS compliant for global applications.

Applications

- High Speed Data Ports
(USB 2.0, IEEE 1394)
- Computers & Peripherals
(Cell phone, PDA, HDTV, DVD players)

Electrical Parameters (Tamb=25℃)

Part Number	Working Voltage (Vdc)	Trigger Voltage(Vv) Vv=±30%	Clamping Voltage (Vc)	Capacitance (Cp)	Leakage Current (IL)
BESDU0402-05	05V	100V	30V	0.15pF	<1nA
BESDU0402-09	09V	100V	30V	0.15pF	<1nA
BESDU0402-12	12V	100V	30V	0.15pF	<1nA
BESDU0402-14	14V	100V	30V	0.15pF	<1nA
BESDU0402-18	18V	100V	30V	0.15pF	<1nA
BESDU0402-24	24V	100V	30V	0.15pF	<1nA

Electrical characteristics

Characteristic	Value
Rated Voltage	05V.09V.12V.18V.24Vdc typ
Clamping Voltage[1]	30typ, 50max
Trigger Voltage[2]	100V typ, 500max
Capacitance (@1MHz)	0.15pF typ, 0.5pF max.
Leakage Current (@12VDC)	0.1nA typ.
ESD Capability IEC61000-4-2 Direct Discharge IEC61000-4-2 Air Discharge	8kV typ. 15kV typ.
ESD Pulse Withstand[1]	>1,000 typ.
Operating Temperature	-40°C to +85°C

Notes

1 Per IEC61000-4-2, Level 4 waveform (8kV direct, 30A) measured 30ns after initiation of pulse.

2 Trigger measurement made using Transmission Line Pulse (TLP) method

Appearance
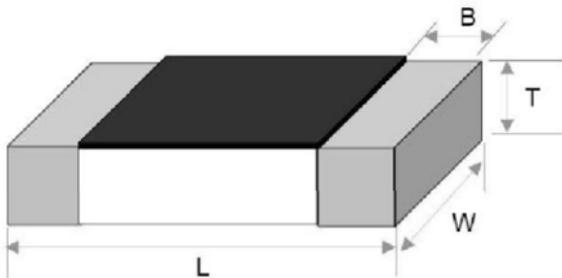
| SIZE EIA (EIAJ)	0402(1005)
L	1.00±0.15
W	0.50±0.10
T	0.50±0.10
B	0.25±0.15

Recommended Soldering Method

1. Wave Solder

- Reservoir Temperature: 260°C (500°F)
- Recommended time in reservoir: ≤10 seconds.

2. Infrared Reflow

- Temperature: 260°C
- Time: 10 seconds maximum at peak temperature.

Recommended Soldering Method
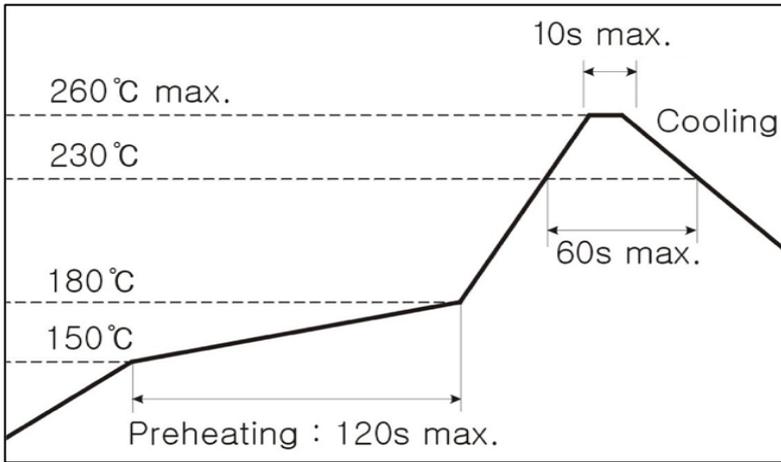
ESD absorption characteristics (voltage waveform)
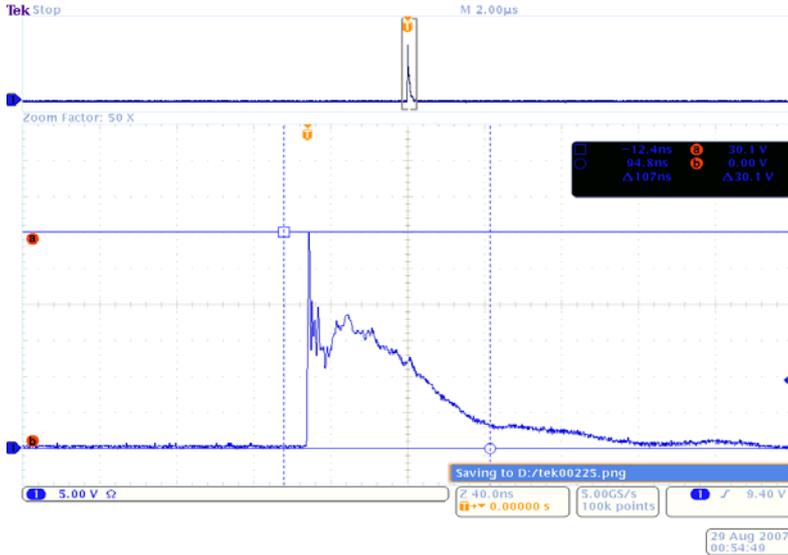
Model Description

BESD   U   0402 -   05

(1)   (2)   (3)   (4)

(1): Series name, " BESD " BORN Single type ESD

(2): Typical Capacitance " U" means U<1 pF (typical)

(3): Chip size, "0402" means (1.0 x 0.5 mm)

(4): Maximum continuous working voltage – Vdc, "05" means 5 V

Quantity Per Reel:

Chip Size	Parts on 7 inch (178 mm) Reel
0402 (1005)	10,000pcs

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