



RS INDUSTRY LIMITED

ESD Protector
Overvoltage Protection Device

PRODUCT: RSD01BF15Q

Specification Status: Released

BENEFITS

- ESD protection for high frequency applications
- Smaller form factor for board space savings
- Helps protect electronic circuits against damage from electrostatic discharge (ESD) events
- Assists equipment to pass IEC 61000-4-2, level 4 testing

FEATURES

- 0.1 pF (typ) Capacitance
- Low leakage current
- Low clamping voltage
- Fast response time (<1ns)
- Capable of withstanding numerous ESD strikes
- Compatible with standard reflow installation procedures
- Thick film technology
- Bi-directional protection

APPLICATIONS

- HDMI 2.0 interface
- LCD, HDTV
- Cellular phones
- Antennas (cell phones, GPS...)
- Portable video devices (PDA, DSC, Bluetooth...)
- Printer ports
- High speed Ethernet
- USB 3.1 and IEEE 1394 interfaces
- DVI interface

CAUTION: This device should not be used in Power Bus applications

MATERIALS INFORMATION

RoHS Compliant

Directive 2002/95/EC
Compliant

ELV Compliant

Directive 2000/53/EC
Compliant

Halogen Free*



Lead-Free



PART NUMBERING

RSD01BF15Q



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TYPICAL DEVICE RATINGS AND CHARACTERISTICS

	Max Operating Voltage	Typical TLP Trigger Voltage ¹	Typical TLP Clamping Voltage ¹ after 30ns	Typical Capacitance ² @ 1 MHz, 1V _{rms}	Typical Leakage Current @10V _{DC}	Max Leakage Current @10V _{DC}
Symbol	V _{DC}	V _{T(TLP)}	V _{C(TLP 30)}	C _p	I _{L(Typ)}	I _{L(MAX)}
Unit	V	V	V	pF	μA	μA
Value	10	85	50	0.1	<0.01	10.0

GENERAL CHARACTERISTICS

Operating temperature: -55°C to +125°C

Storage temperature: -55°C to +125°C

ESD voltage capability (tested per IEC 61000-4-2)

- Contact discharge mode: 8kV (typ), 15kV (max)
- Air discharge mode: 15kV (typ), 25kV (max) [1 pulse: per customer request]

ESD pulse withstand: Typically 500 pulses (tested per IEC 61000-4-2, level 4, and contact method)

Environmental Specifications

	Bias Humidity Test	Thermal Shock	Bias Heat Test	Bias Low Temp Test	Solderability	Solder Heat	Vibration	Mechanical Shock	Solvent Resistance
Test Conditions	@ 85°C @ 85% RH V _{DC} (max) 1000 hours	-55°C to 125°C 30min dwell 1000 cycles	@ 125°C V _{DC} (max) 1000 hours	@ -55°C V _{DC} (max) 1000 hours	250°C +/- 5°C 3s +/- 1s	260°C, 10s	10 to 50Hz, 60s cycle, 2hrs each in X-Y-Z axis	1500G, 0.5ms, X-Y-Z axis 3 times	IPA ultrasonic 300s
Pass/Fail Criteria	I _L ≤ 10μA	I _L ≤ 10μA	I _L ≤ 10μA	I _L ≤ 10μA	95% coverage	90% coverage	No Physical Damage I _L ≤ 10 μA	No Physical Damage I _L ≤ 10 μA	No Physical Damage I _L ≤ 10 μA

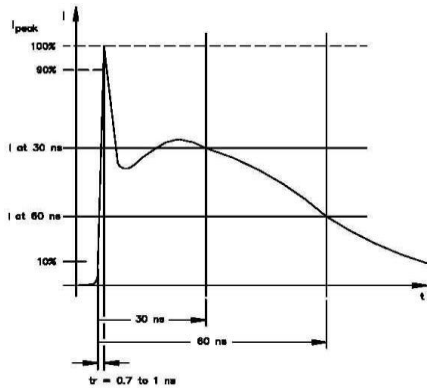


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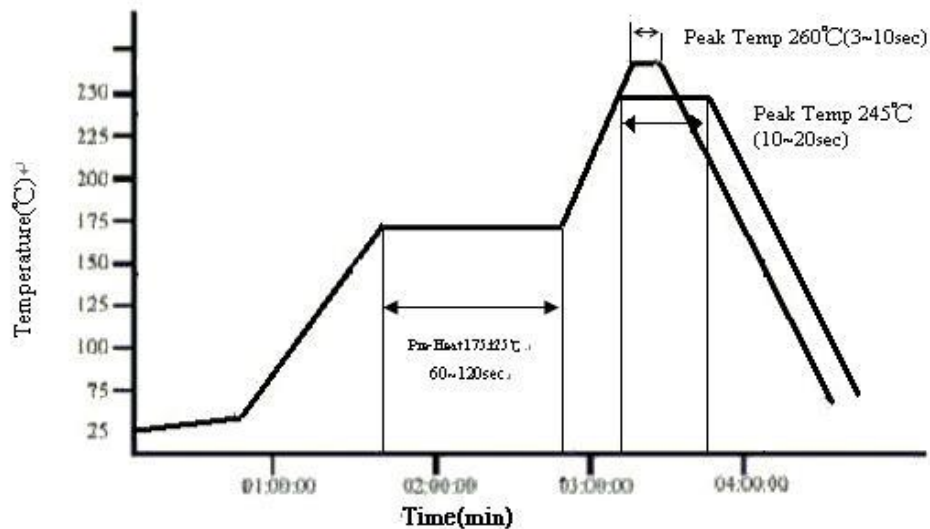
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ESD Wave Form



IEC 61000-4-2 Compliant ESD Current Pulse Waveform

The IR REFLOW and TEMPERATURE of SOLDERING for Pb Free



☆ IR reflow Pb Free Process suggestion profile

- (1) The solder recommend is Sn96.5/Ag 3.5 of 120 to 150 μ m
- (2) Ramp-up rate (217°C to Peak) + 3°C/second max
- (3) Temp. maintain at 175 +/- 25°C 180 seconds max
- (4) Temp. maintain above 217 °C 60-150 seconds
- (5) Peak temperature range 245°C +20°C/ -10 °C time within 5 °C of actually peak temperature (tp) 10~20 seconds
- (6) Ramp down rate +6 °C/second max.

※Perform adequate test in advance as the reflow temperature profile will vary according to the conditions of the manufacturing process, and the specification of the reflow furnace.



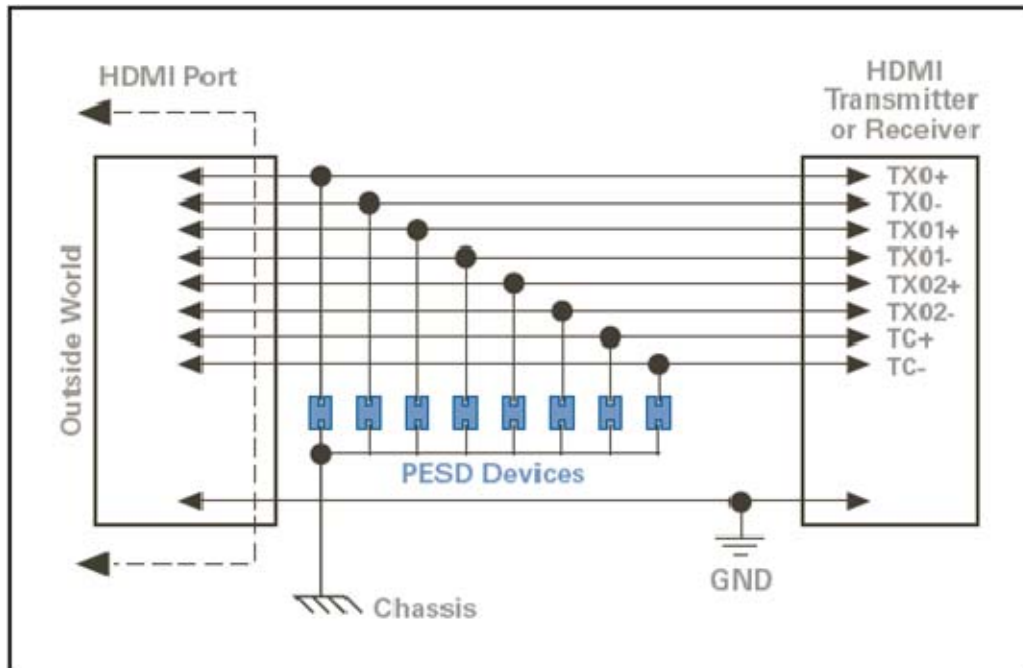
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ESD Application Guide

Reference Layout and Test Results available





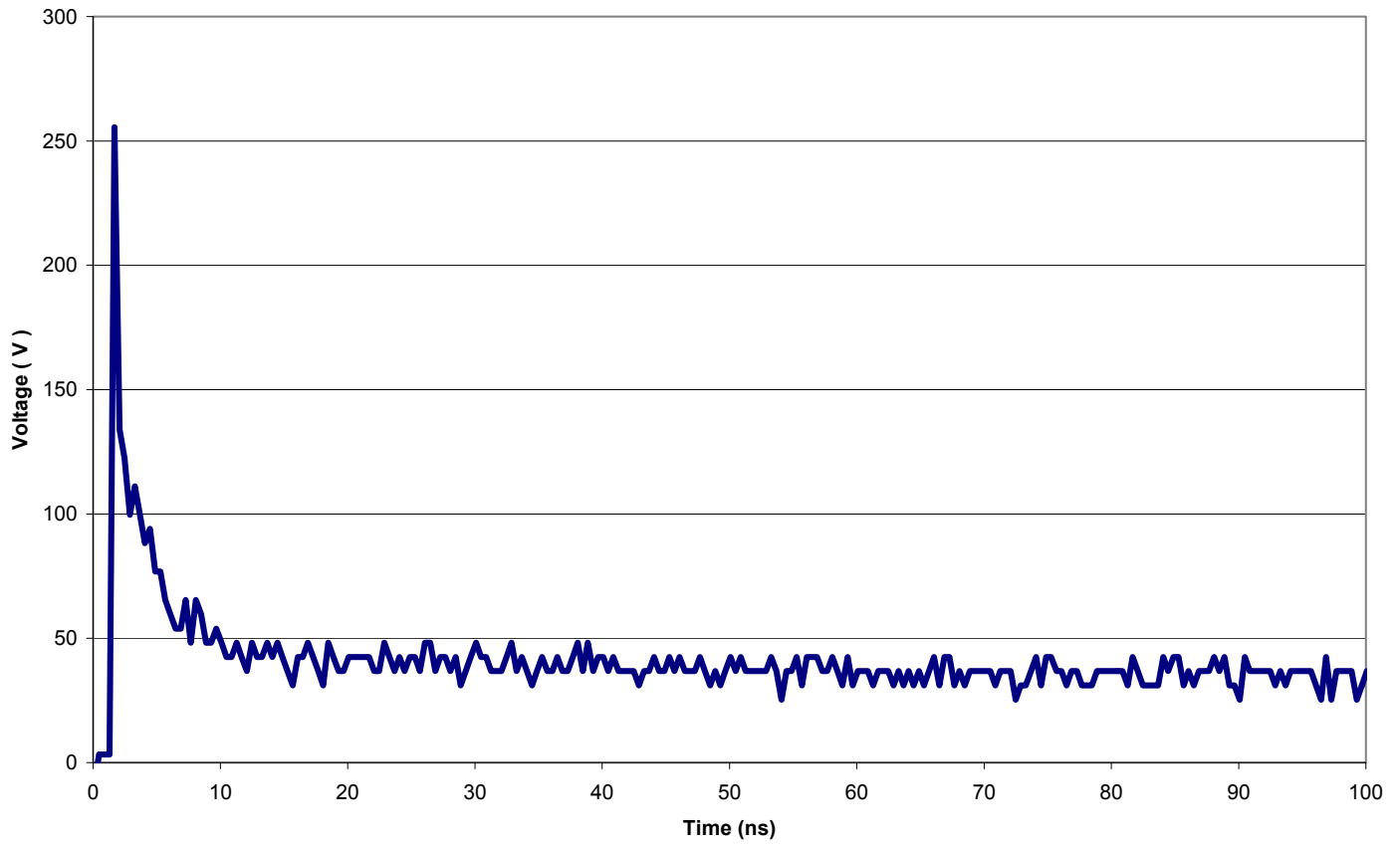
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FIG 5: TYPICAL TRANSMISSION LINE PULSE RESPONSE GRAPH

Typical TLP Clamping Voltage





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DIMENSIONS

Model	0402(1005)	0603(1608)	0805(2012)	1206(3216)	1210(3225)	1812(4532)	2220(5750)
Length(L)	1.00 ±0.10	1.60±0.15	2.00±0.20	3.20±0.20	3.20±0.20	4.50±0.20	5.70±0.20
Width(W)	0.50 ±0.10	0.80±0.10	1.25±0.15	1.60±0.15	2.50±0.20	3.20±0.20	5.00±0.20
Thickness(T)	0.60 max	0.90 max	1.20 max	1.50 max	1.50 max	2.00 max	2.50 max
Termination(a)	0.25±0.1	0.3±0.1	0.3±0.1	0.5±0.2	0.5±0.2	0.5+0.3/-0.1	0.5+0.3/-0.1

RECOMMENDED LAND PATTERN:

(Unit : mm)

	A	B	C	D
0402	0.4~0.6	1.4~1.8	0.5~0.6	0.6~1.2
0603	0.9~1.2	2.7~3.2	0.7~1.0	0.9~1.2
0805	1.0~1.5	2.6~3.2	1.2~1.5	1.1~1.8
1206	1.8~2.5	4.2~5.2	1.2~1.8	1.2~1.8
1210	1.8~2.5	4.2~5.2	2.2~3.0	1.3~2.0
1812	2.5~3.3	5.5~6.7	2.8~3.6	1.3~2.2
2220	3.8~4.6	6.6~7.8	4.8~5.5	1.3~2.2

