Electrostatic Discharged Protection Devices (ESD) Data Sheet

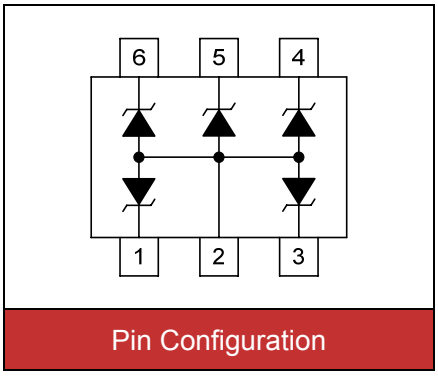
Description

The unidirectional TVS arrays are designed to protect sensitive electronics from damage or latch-up due to ESD and other voltage induced transient events. They are designed for use in applications where board space is at a premium. The will protect up to five lines. They are unidirectional devices and may be used on lines where the signal polarities are above ground. TVS diodes are solid-state device designed specifically for transient suppression.
They feature large cross-sectional area junctions for conducting high transient currents. They offer desirable characteristics for board level protection including fast response time, low and clamping voltage, and no device degradation.The devices may be used to meet the immunity requirements of IEC61000-4-2, level 4. The size SOT-563 package makes them ideal for use in portable electronics such as cell phones, PDA's, notebook computers, and digital cameras.

Contact : ±30kV
Air : ±30kV

Features

- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- SOT-563 (1.6×1.6mm) surface mount package
- Protects five I/O lines
- Peak power dissipation of 100W under 8/20μs waveform
- Working voltage: 5V
- Low leakage current
- Low operating and clamping voltages
- Solid-state silicon avalanche technology
- Lead Free/RoHS compliant
- Solder reflow temperature: Pure Tin-Sn, 260~270℃
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- Marking: U5



Pin Configuration

Applications

- Cell phone handsets and accessories
- Microprocessor based equipment
- Personal digital assistants (PDA's) and Pagers
- Desktops PC and Servers
- Notebooks, Laptop and Palmtop computers
- Portable instrumentation
- Peripherals
- MP3 players

Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse power (tp=8/20μs waveform)	P_{PP}	100	W
ESD voltage (Contact discharge)	V_{ESD}	±30	kV
ESD voltage (Air discharge)		±30	
Lead soldering temperature	T_L	260	℃
Storage & operating temperature range	T_{STG} ,T_J	-55~+150	℃

Electrical Characteristics (T_J=25℃)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				5	V
Reverse breakdown voltage	V_{BR}	I_{BR}=1mA	6			V
Reverse leakage current	I_R	V_R=5V Each I/O pin			1	μA
Clamping voltage (tp=8/20μs)	V_C	I_{PP}=1A			9.8	V
Clamping voltage (tp=8/20μs)	V_C	I_{PP}=5A			18.5	V
Off state junction capacitance	C_J	0Vdc,f=1MHz Between I/O pins and GND		30		pF

Typical Characteristics Curves

Figure 1. Power Derating Curve

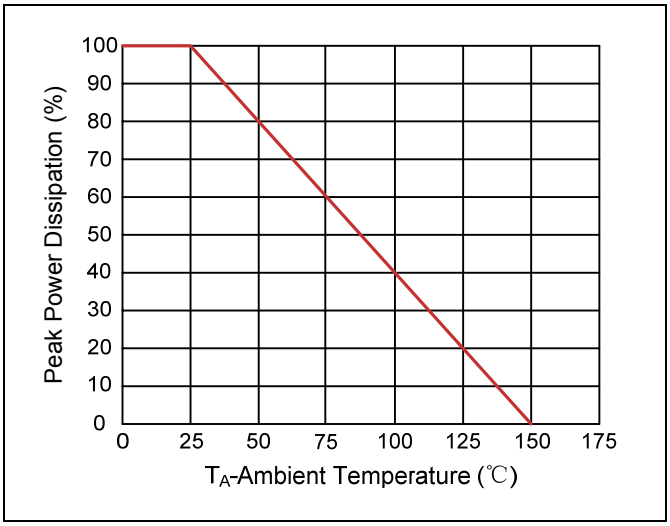


Figure 2. Pulse Waveforms

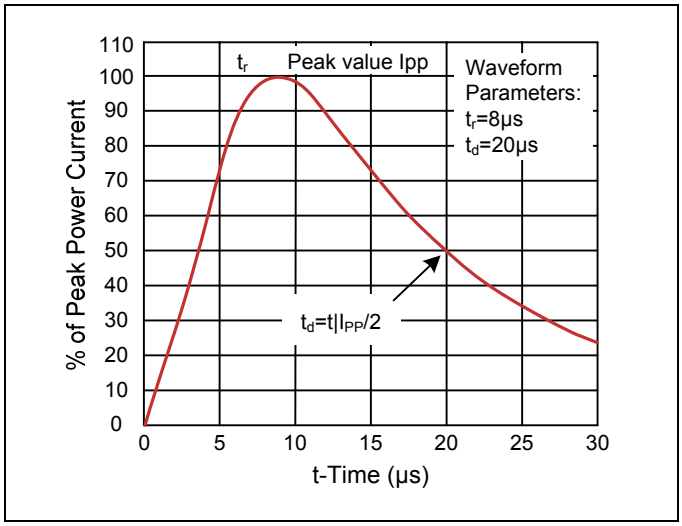


Figure 3. Non-Repetitive Peak Pulse vs. Pulse Time

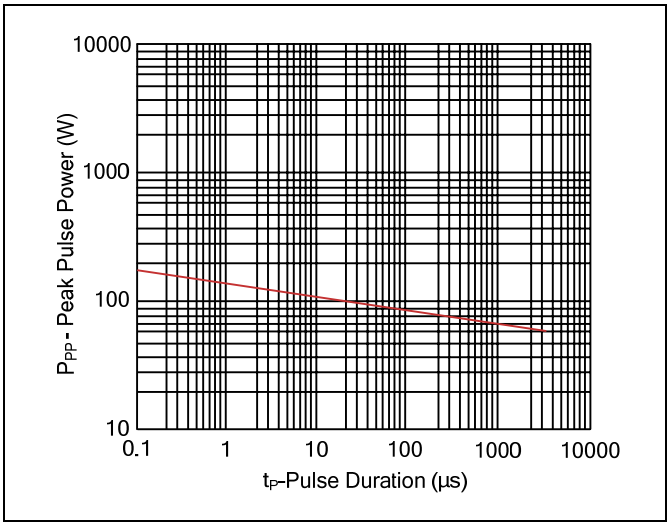


Figure 4. Normalized Capacitance vs. Reverse Voltage

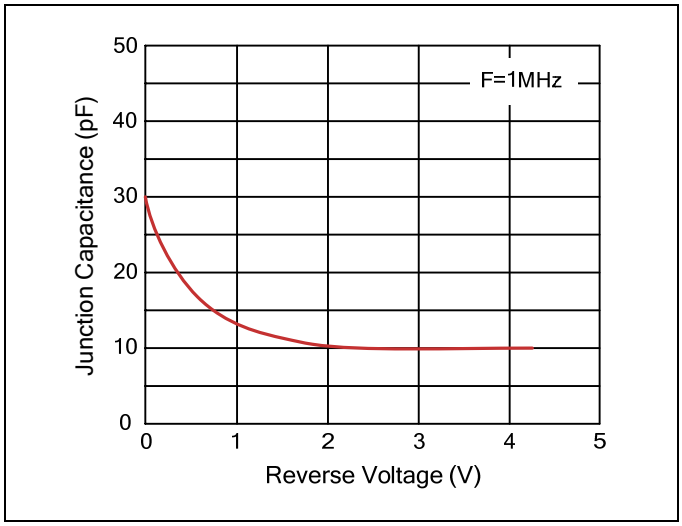


Figure 5. ESD Clamping(8kV Contact IEC61000-4-2)

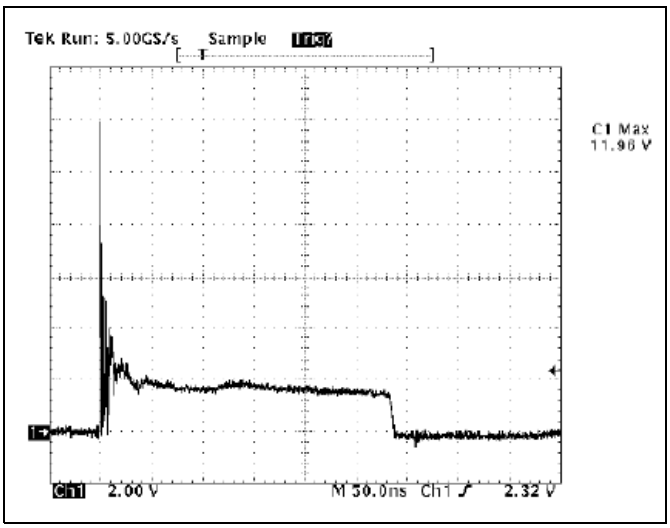
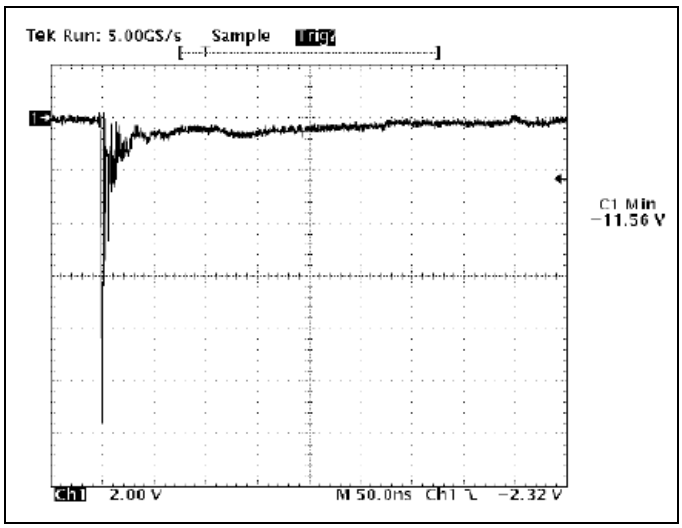
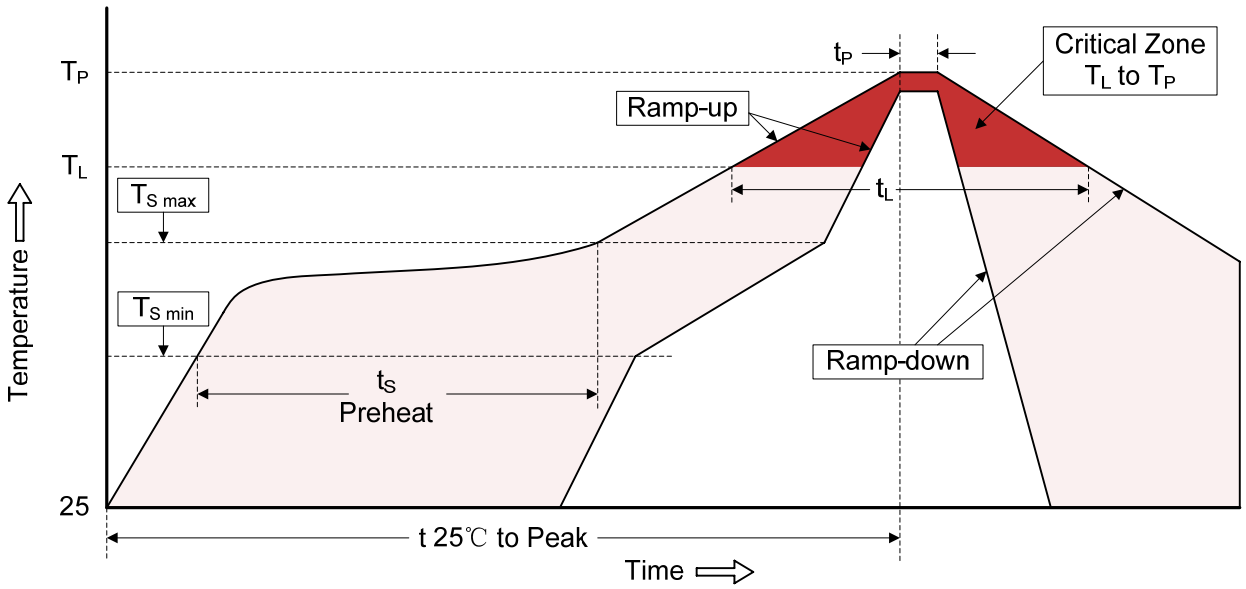


Figure 6. ESD Clamping(-8kV Contact IEC61000-4-2)



Recommended Soldering Conditions

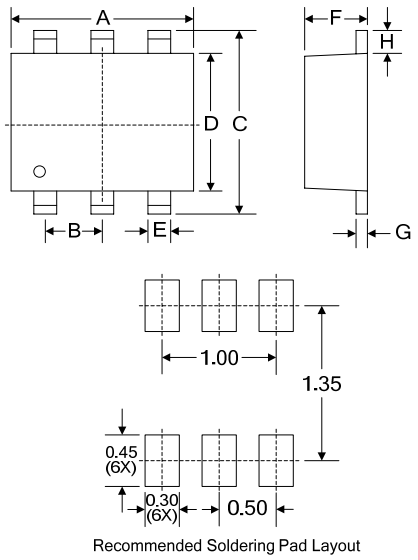
Reflow Soldering



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3℃/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (ts)	 150℃ 200℃ 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3℃/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	 217℃ 60-150 seconds
Peak Temperature (T_P)	260℃
Time within 5℃ of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.

Dimensions (SOT-563)

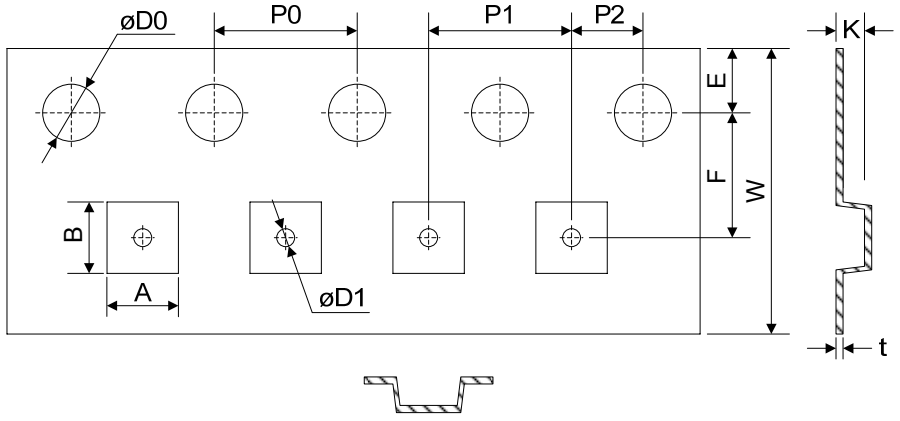


Recommended Soldering Pad Layout

Symbol	Dimension			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.50	1.70	0.059	0.067
B	0.50BSC		0.020BSC	
C	1.50	1.70	0.059	0.067
D	1.10	1.30	0.043	0.051
E	0.17	0.27	0.007	0.011
F	0.50	0.60	0.020	0.024
G	0.08	0.18	0.003	0.007
H	0.10	0.30	0.004	0.012

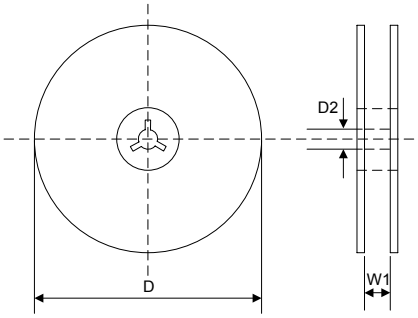
Packaging

Tape



Symbol	Dimension (mm)
W	8.00±0.30
P0	4.00±0.10
P1	4.00±0.10
P2	2.00±0.10
D0	Φ1.55±0.10
D1	Φ0.50±0.05
E	1.75±0.10
F	3.50±0.10
A	1.90±0.10
B	1.95±0.10
K	0.70±0.10
t	0.20±0.05

Reel



D	Φ178.0±2.0
D2	Φ13.0
W1	9.5
Quantity: 3000PCS	