ESD Protection Array

Feature

1. Meet IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
2. Meet IEC61000-4-4 (EFT) rating. 40A (5/50ns)
3. Meet IEC61000-4-5 (Lightning) rating. 12A (8/20μs)
4. Protects two I/O lines
5. Working Voltage : 5.0V
6. Pb free version, RoHS compliant, and Halogen free

Applications

1. USB Power & Data Line protection
2. Notebooks, Desktops, and Servers protection
3. Monitors and Flat Panel Displays protection
4. Telecom equipment, Ethernet port RJ45 protection
5. Audio and Video equipment protection
6. Portable Instruments protection

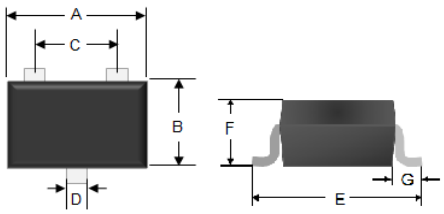
Mechanical Data

1. Case : SOT523 small outline plastic package
2. Terminal: Matte tin plated., solderable per MIL-STD-202, Method 208
3. Molding Compound Flammability Rating : UL 94V-O
4. High temperature soldering guaranteed: 260° C/10 second
5. Rework/Hand Soldering Temperature Resistance : T ≥350°C, 3 seconds
6. Weight : 3mg (approximately)

Ordering Information

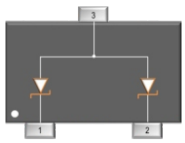
Package	Part Number	Packing	Marking
SOT-523	ESDH35V0UP	3K/7" Reel	3

SOT-523
Outline Drawing and Dimension



Dimension	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.50	1.70	0.059	0.067
B	0.75	0.85	0.029	0.033
C	1.00 Ref		0.039 Ref	
D	0.15	0.32	0.006	0.013
E	1.45	1.75	0.057	0.069
F	0.60	0.90	0.023	0.035
G	0.56 Ref		0.022 Ref	

Pin Configuration



Maximum Ratings and Electrical Characteristics

(Rating at 25° C ambient temperature unless otherwise specified)

Maximum Ratings

Parameters		Symbols	Value	Units
Peak Pulse Power	(tp=8/20 μs wave form) (Note1.)	P_{PP}	100	W
ESD per IEC 61000-4-2 (Note 2.)	(Air)	V_{ESD}	± 15	KV
ESD per IEC 61000-4-2	(Contact)		± 8	°C
Junction and Storage Temperature Range		T_J, T_{STG}	-55 ~ 150	°C

Electrical Characteristics

Parameter		Symbol	Min	Max	Unit
Reverse Stand-Off Voltage		V_{RWM}	-	5	V
Reverse Breakdown Voltage	I_R = 1mA	V_{BR}	6.0	-	V
Reverse Leakage Current	V_R = 5V	I_R	-	1.0	μA
Clamping Voltage	I_{PP} = 1A	V_C	-	12.0	V
Junction Capacitance	V_R = 0V, f = 1MHz	C_J	0.8 (Typ.)		PF

Note 1. Device stressed with ten non-repetitive current pulses (8/20 μs exponential decay waveform according to IEC 61000 -4-5 and IEC 61643-321).
Note 2. Device stressed with ten non-repetitive ESD pulses.

ESD Protection Array

Application Information

1. Designed to protect two unidirectional I/O line, operating at 5.0 volts.
2. Protect sensitive electronics from damage or latch-up due to ESD
3. The ground connection should be made directly to a ground plane. The path length should be kept as short as possible to minimize parasitic inductance.
4. During transient conditions, the steering diodes direct the transient to either the positive side of the power supply lineor to ground
5. The internal TVS diode prevents over-voltage on the power line, protecting any downstream components

Circuit Board Layout Recommendation

1. Place the ESD Protection Diode near the input terminals or connectors to restrict transient coupling.
2. Minimize the path length between the Protection Diode and the protected line
3. Minimize all conductive loops including power and ground loops
4. The ESD transient return path to ground should be kept as short as possible
5. Never run critical signals near board edges
6. Use ground planes whenever possible

Rating and Characteristic Curves

Fig 1 Non-Repetitive Peak Pulse Power vs. Pulse Time

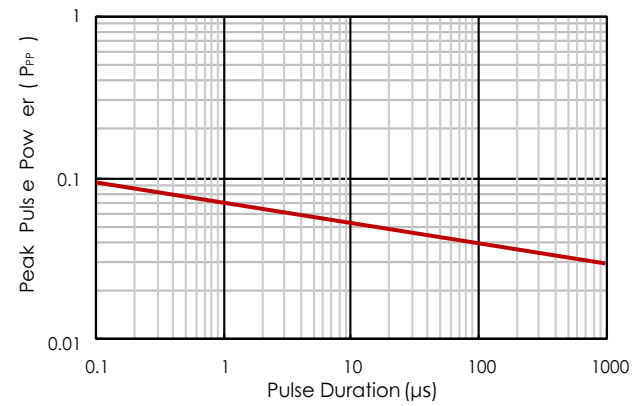


Fig 2 ClampingVoltage vs. PeakPulse Current

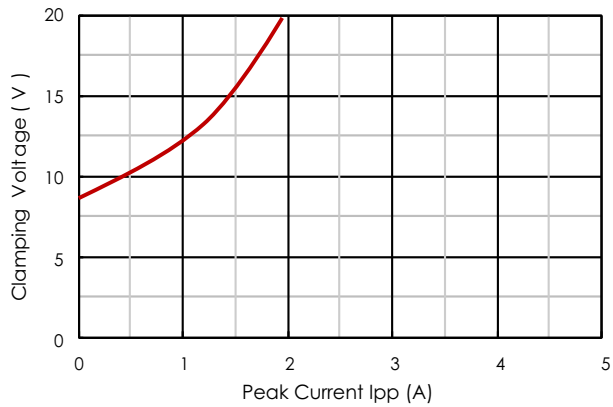


Fig 3 Admissible Power Dissipation Curve

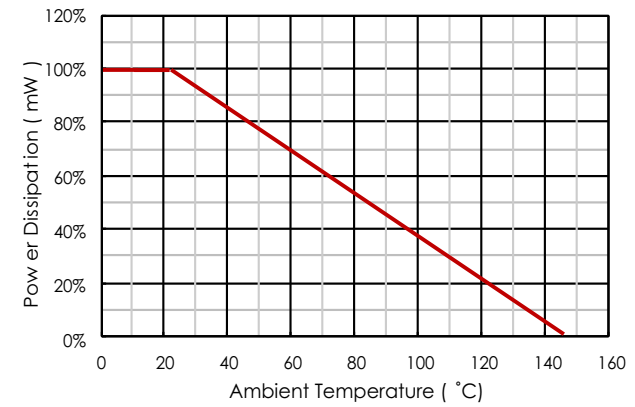
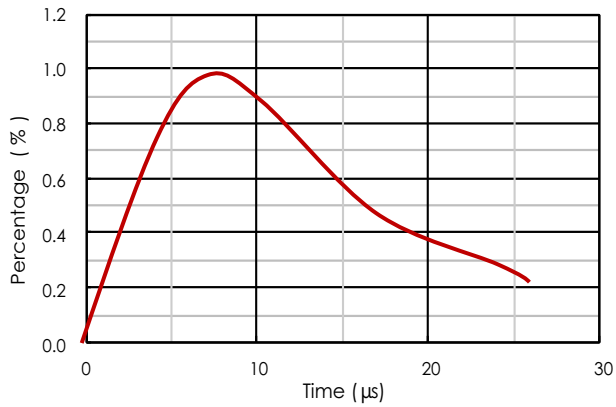
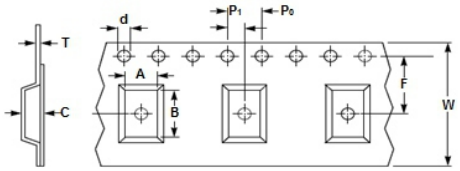


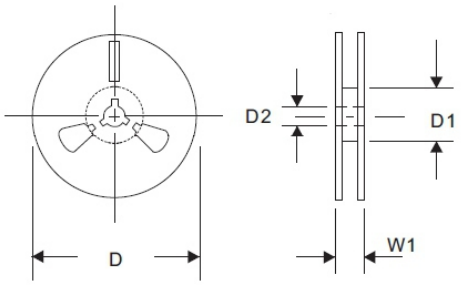
Fig 4 Pulse Waveform



ESD Protection Array

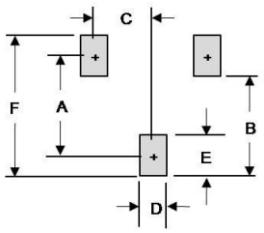
Tape and Reel Specification





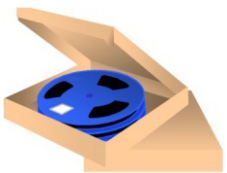
Item	Symbol	Dimension (mm)
Carrier width	A	1.70 ± 0.10
Carrier length	B	1.85 ± 0.10
Carrier depth	C	0.90 ±0.10
Sprocket hole	d	1.5 ± 0.1
Reel outside diameter	D	178 ± 1
Reel inner diameter	D1	55 Min
Feed hole width	D2	13.0 ± 0.20
Sprocke hole position	E	1.75 ±0.10
Punch hole position	F	3.50 ±0.05
Punch hole pitch	P	4.00 ±0.10
Sprocke hole pitch	P0	4.00 ±0.10
Embossment center	P1	2.00 ±0.05
Overall tape thickness	T	0.23 ± 0.05
Tape width	W	8.00 ±0.20
Reel width	W1	14.4 Max

Foot Print Recommendation



Dimention	A	B	C	D	E	F
Inch	0.046	0.039	0.020	0.014	0.021	0.067
mm	1.160	0.980	0.500	0.350	0.540	1.700

Packing Specification

Package Code	Reel Size Inches	Qty/Reel (EA)	Inner Box Size (mm)	Q'ty/Box (EA)	Carton Size (mm)	Q'ty/Carton (EA)	Approx. Weight (Kg)
R0	7	3,000	190x190x80	18,000	390x280x210	216,000	9.5
Note							

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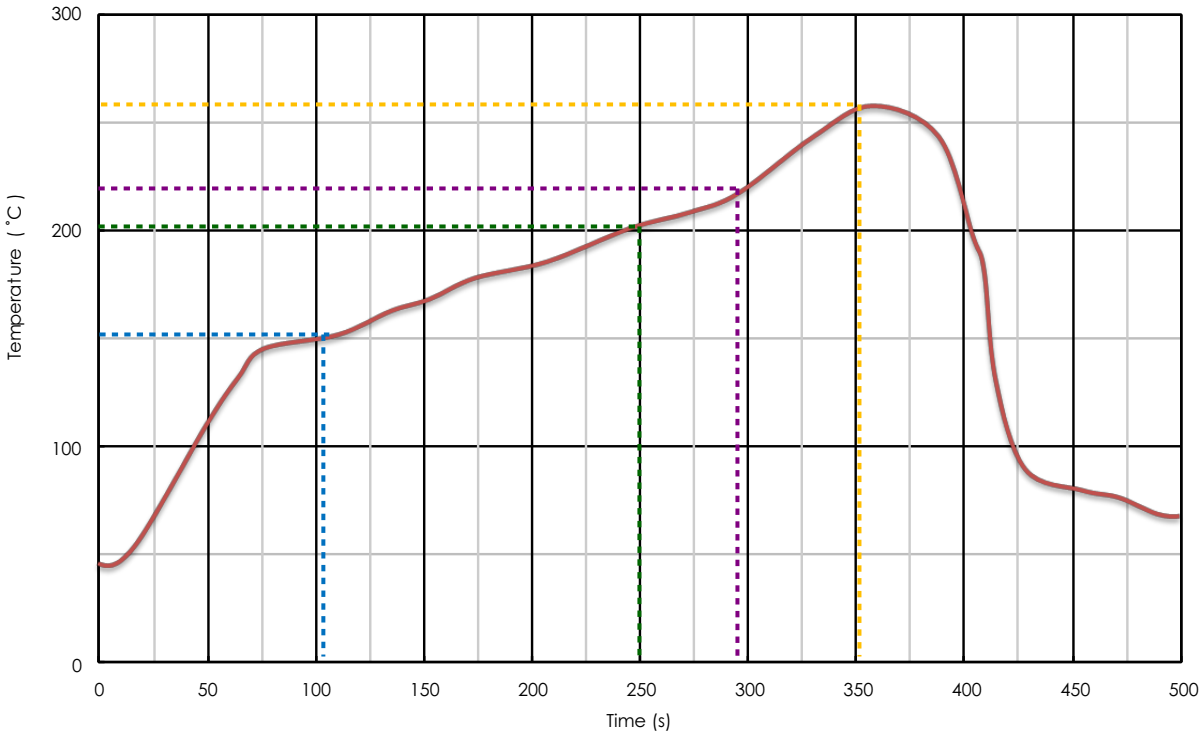
IR Reflow Profile Recommendation



Measure point (1)		Measure point (2)		Measure point (3)		Max Temperature	
Temp (℃)	Reached at (sec)	Temp (℃)	Reached at (sec)	Temp (℃)	Reached at (sec)	Max Temp (℃)	Reached at (sec)
150	115	200	253	217	300	259	359

1. Suitable for SOT series package
2. Speed : 17cm/minute