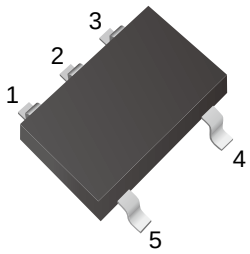
1-Line Uni-directional TVS Diode

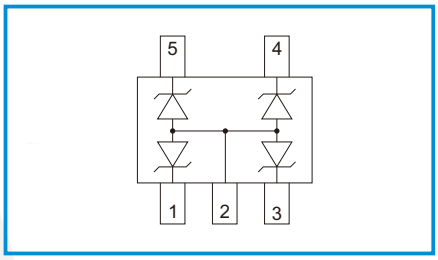
Features

- Ultra low leakage: nA level
- Operating voltage: 5V
- Low clamping voltage
- Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±30kV
    - Contact discharge: ±30kV
  - – IEC61000-4-5 (Lightning) 15A (8/20μs)
- RoHS Compliant



SOT-353

Functional Diagram



Applications

- Peripherals
- Industrial Equipment
- Notebook Computers
- Portable Instrumentation
- Microprocessor Based Equipment
- Cell Phone Handsets and Accessories
- Personal Digital Assistants (PDAs) and Pagers

Mechanical Characteristics

- Package: SOT-353
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking: MF05

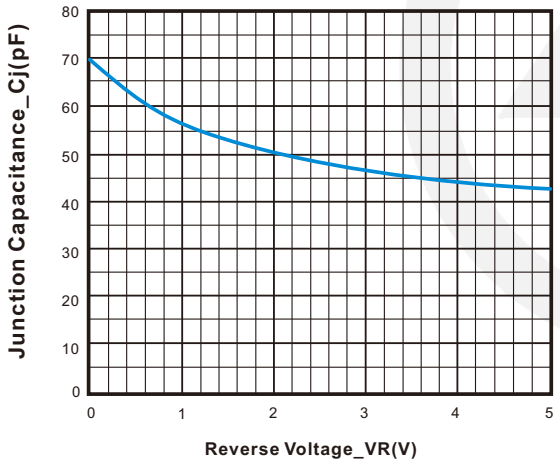
Absolute Maximum Ratings (Tamb=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	200	W
Peak Pulse Current (8/20μs)	Ipp	15	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±30 ±30	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

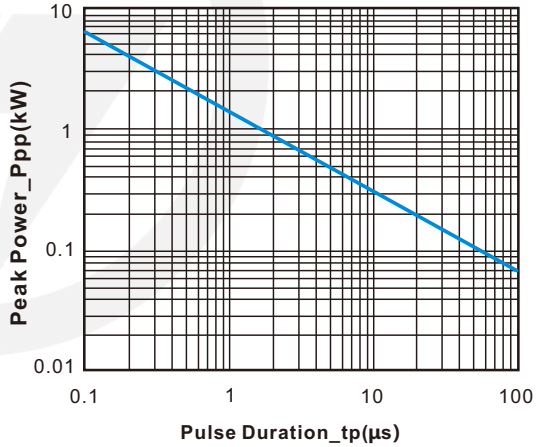
Electrical Characteristics(TA=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6			V	I_T = 1mA
Reverse Leakage Current	I_R			1	μA	V_{RWM} = 5V
Forward Voltage	V_F		1.0		V	I_F = 10mA
Clamping Voltage	V_C			9	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			14	V	I_{PP} = 15A (8 x 20μs pulse)
Junction Capacitance	C_J		100		pF	VR = 0V, f = 1MHz

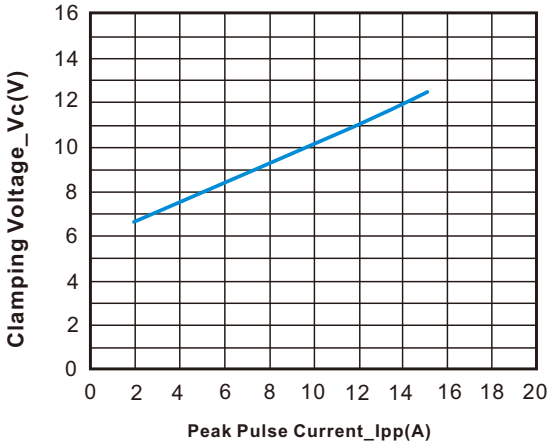
Characteristic Curves



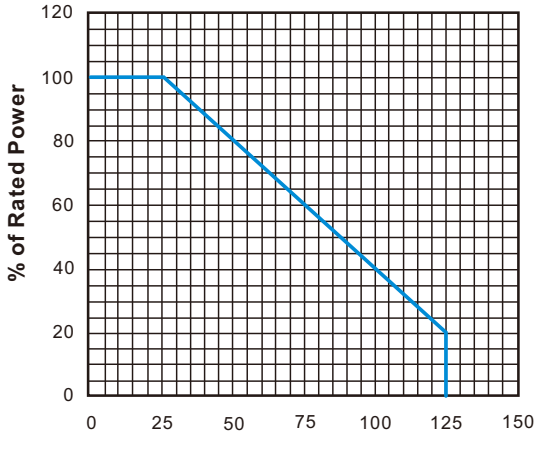
Junction Capacitance vs. Reverse Volatage



Peak Pulse Power vs. Pulse Time

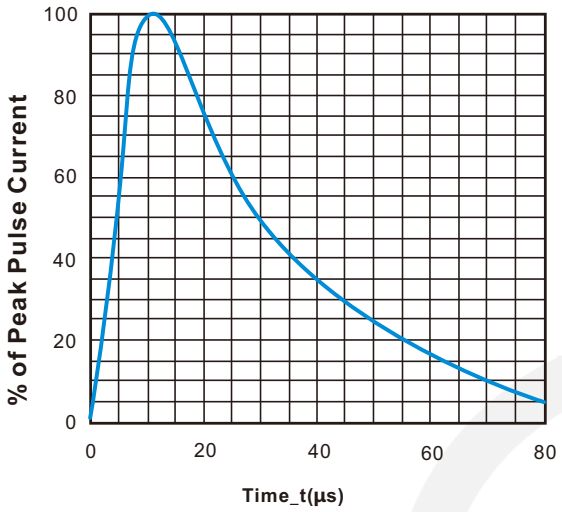


Clamping Voltage vs. Peak Pulse Current(tp=8/20μs)

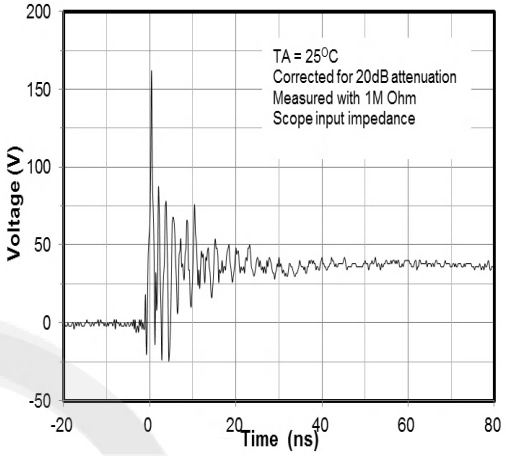


Power Derating Curve

Characteristic Curves



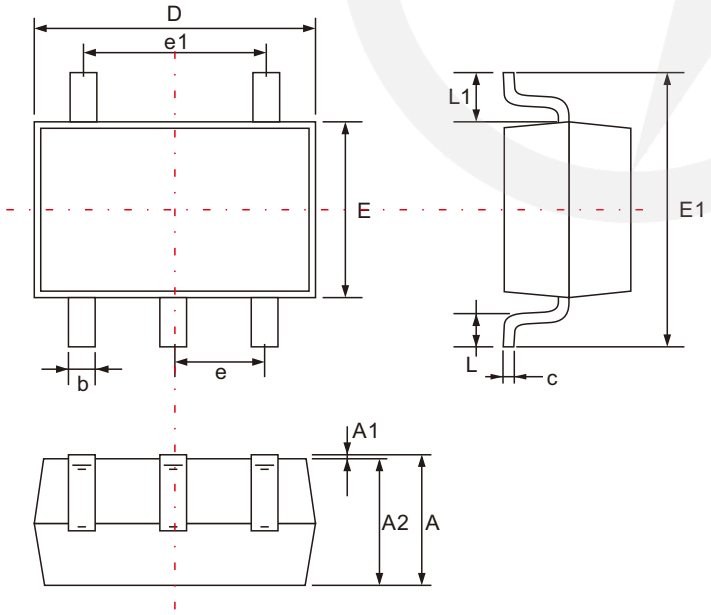
8x20μs Pulse Waveform



ESD Clamping Voltage

8 kV Contact per IEC61000−4−2

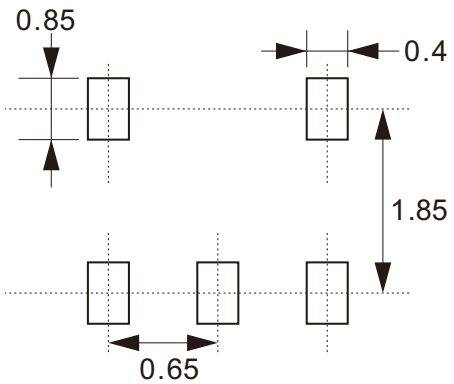
SOT-353 Packeage Outline



Unit: mm

SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	-	1.100
A1	0.000	0.100
A2	0.700	1.000
b	0.150	0.300
c	0.080	0.220
D	1.900	2.100
E	1.150	1.350
E1	2.100TYP.	
e	0.650TYP.	
e1	1.300TYP.	
L1	0.420 TYP.	
L	0.260	0.460

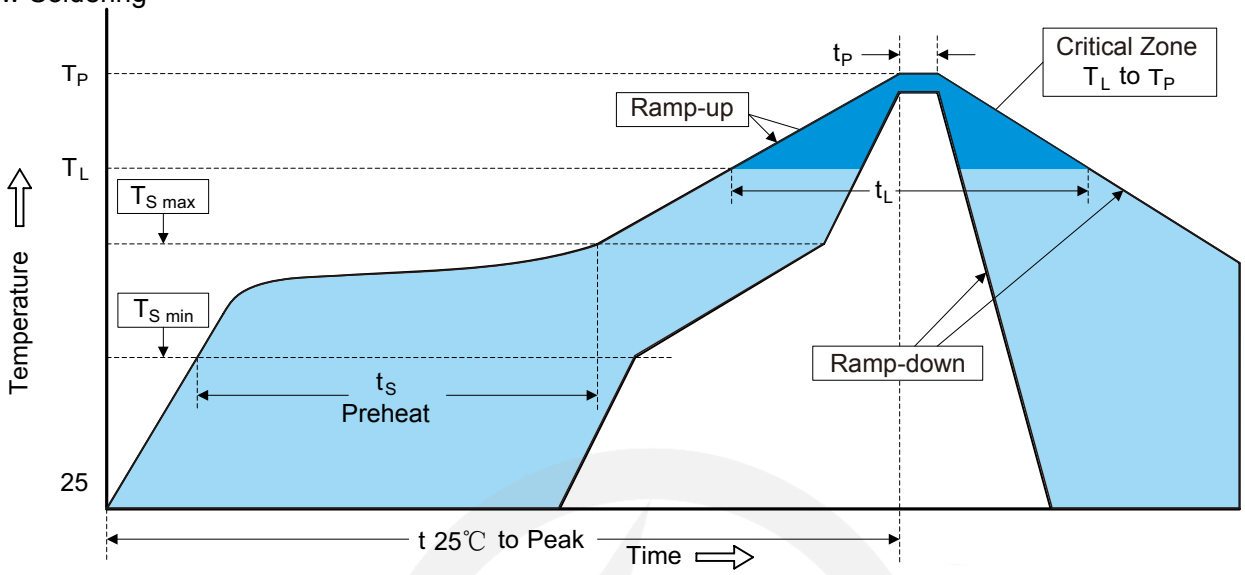
SOT-353 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm
3.The pad layout is for reference purpose only.

Recommended Soldering Conditions

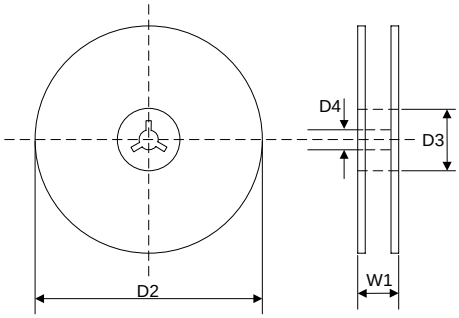
Reflow Soldering



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) (t_S)	 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.

7” Reel



D2	Φ178.0±2.0
D3	Φ50.0Min.
D4	Φ13.0±0.5
W1	16.0±2.0
Quantity: 3000PCS	