

Features

- ◇ 45W (8/20 μ s) Peak Pulse Power
- ◇ Low Capacitance ESD Protection
- ◇ SOT-143 Package
- ◇ RoHS Compliant
- ◇ Matte Tin Lead finish (Pb-Free)
- ◇ Protect Two High Speed Data Lines and Vcc
- ◇ Meet IEC61000-4-2 Level 4:
Contact Discharge > 15kV
Air Discharge > 20kV

WR1

Applications

- ◇ I²C Bus Protection
- ◇ ISDN S/T Interface
- ◇ Ethernet 10/100 BaseT
- ◇ Portable Electronics
- ◇ Video Line Protection
- ◇ WAN/LAN Equipment
- ◇ Microcontroller Input Protection
- ◇ USB Power and Data Line Protection
- ◇ T1/E1 Secondary IC Side Protection

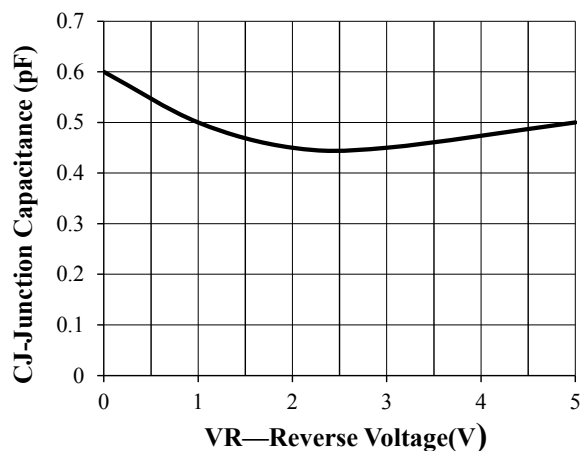
Absolute Maximum Rating

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μ s,I/O-GND)	Ppk	45	W
Peak Pulse Power (8/20 μ s,Vcc-GND)	Ppk	60	W
Peak Pulse Current (8/20 μ s,I/O-GND)	IPP	3	A
Peak Pulse Current (8/20 μ s,Vcc-GND)	IPP	4	A
ESD per IEC 61000-4-2 (Air)	V _{ESD,VDD}	±20	kV
ESD per IEC 61000-4-2 (Contact)	V _{ESD,I/O}	±15	
Operating Temperature Range	TJ	-55 to +125	°C
Storage Temperature Range	Tstg	-55 to +150	°C

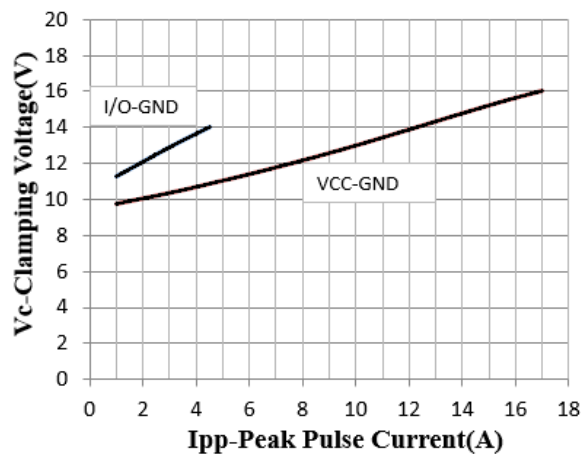
Electrical Characteristics

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}	Pin 5 to GND, I/O-GND			5.0	V
Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$ (Pin 5 to GND, I/O-GND)	6.0	7.5	8.5	V
Reverse Leakage Current	I_R	$V_{RWM} = 5.0\text{V}$			0.5	μA
Forward Breakdown Voltage	V_F	$I_F = 15\text{mA}$, GND to Pin 5/IO		0.8	1.0	V
Clamping Voltage	V_C	$I_{PP} = 3\text{A}$ (8 x 20 μs pulse, I/O to GND)		14.0	15.0	V
Clamping Voltage	V_C	$I_{PP} = 4\text{A}$ (8 x 20 μs pulse, Pin 5 to GND)		16.0	18.0	V
Junction Capacitance	C_J	$V_{pin5} = 5\text{V}$, I/O=0V, $f = 1\text{MHz}$, I/O-GND		0.6	0.7	pF
Junction Capacitance	C_J	$V_{pin5} = 5\text{V}$, I/O=0V, $f = 1\text{MHz}$, I/O-I/O pins		0.3	0.4	pF

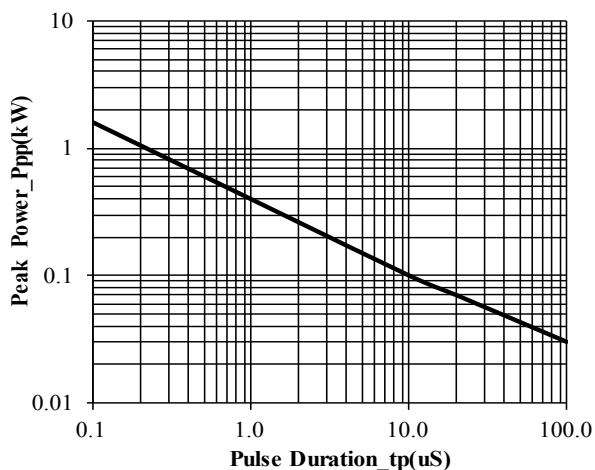
RATING AND CHARACTERISTIC CURVES



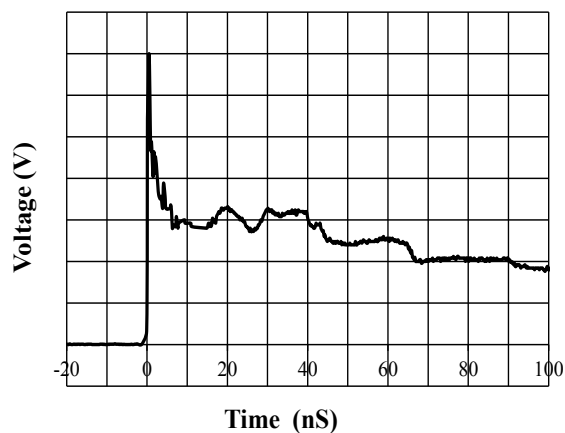
Junction Capacitance vs. Reverse Voltage



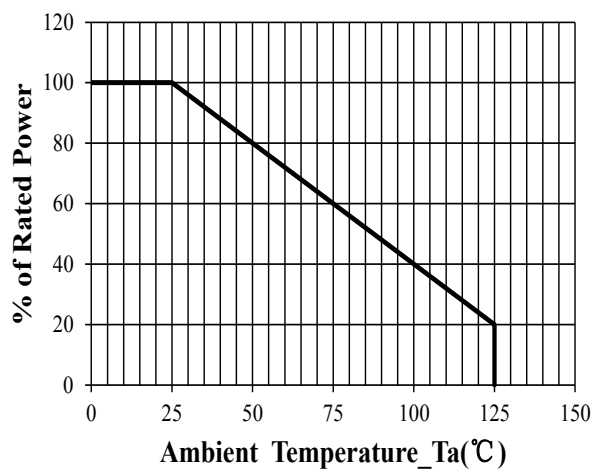
Clamping Voltage vs. Peak Pulse Current



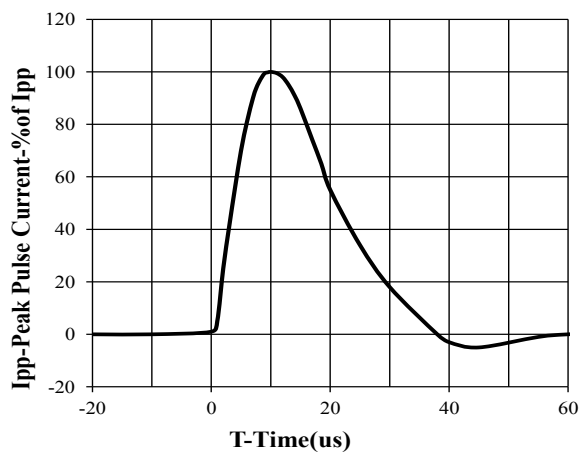
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform



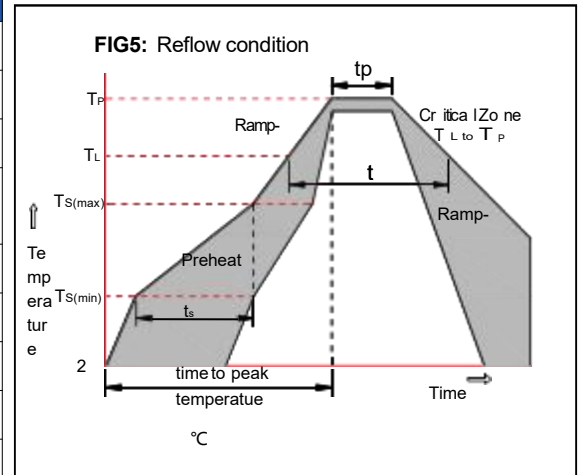
Power Derating Curve



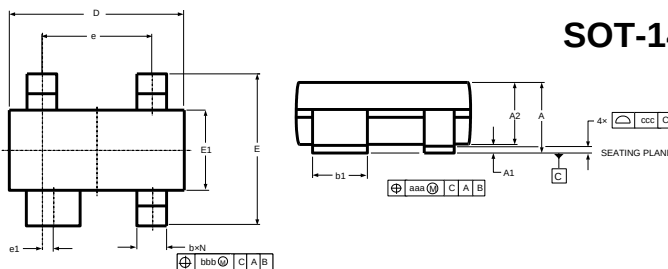
8 X 20us Pulse Waveform

Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150 °C
	-Temperature Max($T_{s(max)}$)	+200 °C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3 °C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3 °C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217 °C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5) °C
Time within 5 °C of actual Peak Temp (t_P)		30 secs. Max
Ramp-down Rate		6 °C/sec. Max
Time 25 °C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260 °C

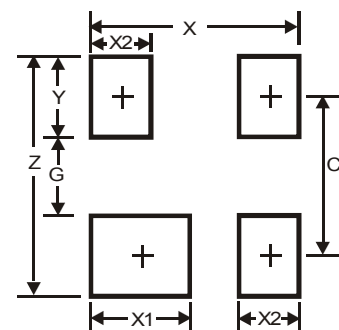


Package Dimensions & Suggested Pad Layout



SOT-143

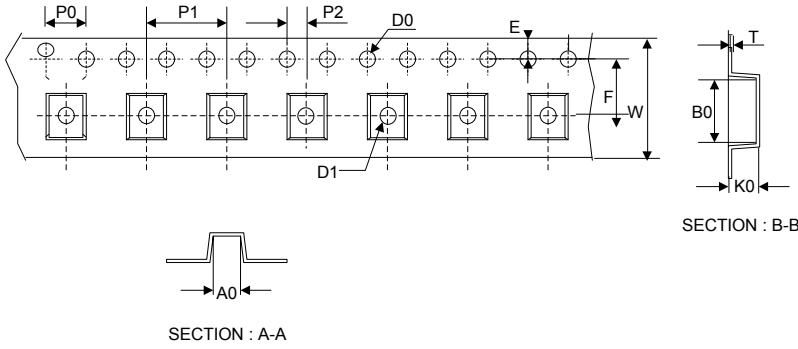
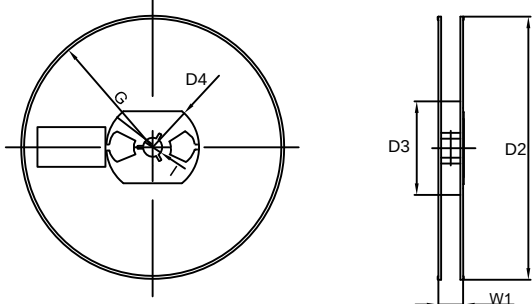
DIMENSIONS				
SYMBOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
b1	0.750	0.900	0.030	0.035
D	2.800	3.000	0.110	0.118
e	1.800	2.000	0.071	0.079
e1	0.200TYP		0.008TYP	
E	2.250	2.550	0.089	0.100
E1	1.200	1.400	0.047	0.055
θ	0°	8°	0°	8°
aaa	.006		0.15	
bbb	.008		0.20	
ccc	.004		0.10	



Dimensions	Value (in mm)
Z	2.90
G	1.20
X	2.50
X1	1.00
X2	0.60
Y	0.85
C	2.05

Dimensions in inches and (millimeters)

Tape & reel specification

Tape		Symbol	Dimension (mm)
		P0	4.00±0.20
		P1	4.00±0.20
		P2	2.00±0.20
		D0	1.55±0.20
		D1	1.20±0.20
		E	1.55±0.25
		F	3.60±0.20
		W	8.00±0.20
		A0	3.80±0.20
		B0	3.10±0.20
		K0	1.40±0.20
		T	0.20±0.20
		D2	177.0±5.0
		D3	55Min.
7" Reel		D4	R24.6±2.0
		G	R82.0±2.0
		I	13.0±2.0
		W1	10.20±3.0
		Quantity: 3000PCS	