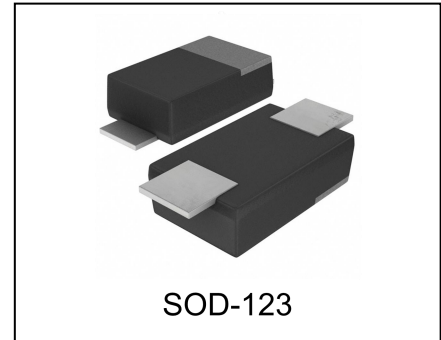


Features

- Bidirectional Protection
- Fast Response Time : Typically < 1ns
- Excellent Clamping Capability
- Low clamping voltage
- Built-in Strain relief
- Low inductance
- Low profile package
- High temperature solder:260°C/10 seconds at terminal
- IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (air), $\pm 30\text{kV}$ (contact)



Mechanical Characteristics

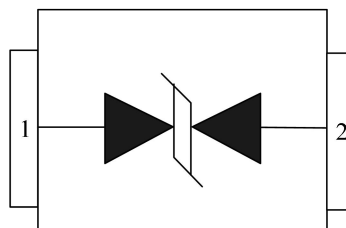
- SOD-123 package
- Matte tin lead – free plated
- Marking: Marking Code
- RoHS Compliant
- MSL1

Applications

- I/O Interfaces
- Power lines
- Automotive and Telecommunication
- Industrial Electronics

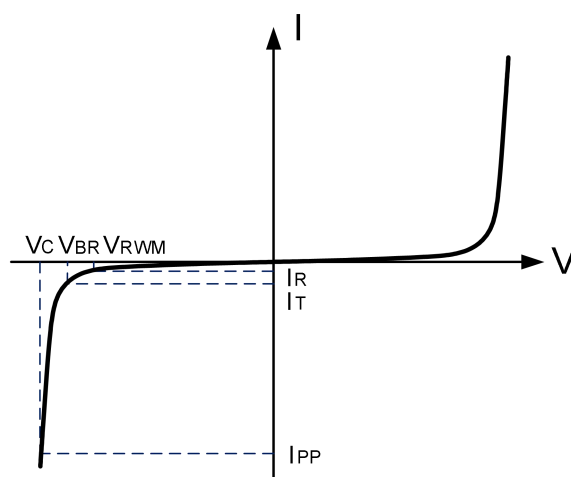
Absolute Maximum Rating			
Rating	Symbol	Value	Units
Peak pulse power (8/20 μs)	P_{PP}	5000	W
Peak pulse current (8/20 μs)	I_{PP}	150	A
Operating Junction Temperature range	T_J	-55 to + 150	°C
Storage Temperature range	T_{STG}	-55 to + 150	°C

Pin Configuration



Electrical Characteristics

Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current



Electrical Characteristics

ES24P4S1-B						
Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}				24	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1mA$	26.7		29.5	V
Reverse Leakage Current	I_R	$V_{RWM}=24V, T=25^{\circ}C$			1	μA
Clamping Voltage	V_C	$I_{PP}=150A, t_p=8/20\mu s$			35.0	V
Junction Capacitance	C_j	$V_{BIAS}=0V, f=1MHz$		320		pF

Typical Characteristics

Figure 1: Peak Pulse Power Rating Curve

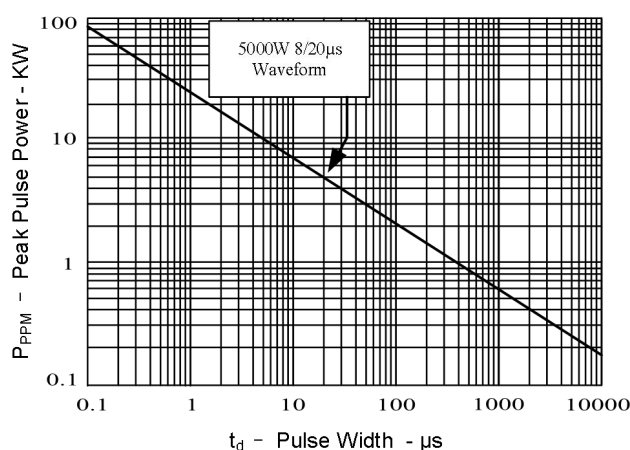


Figure 2: Pulse Derating Curve

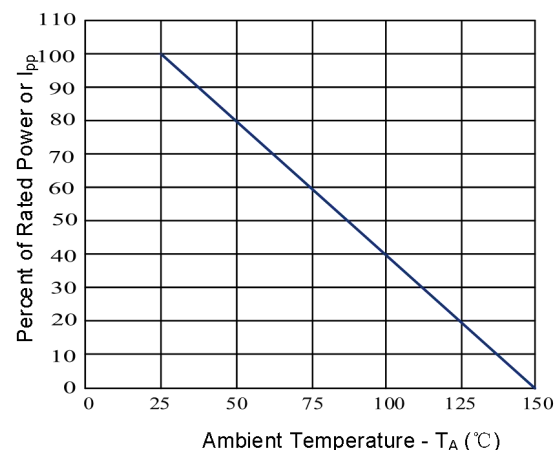


Figure 3: 8/20μs Pulse Waveform

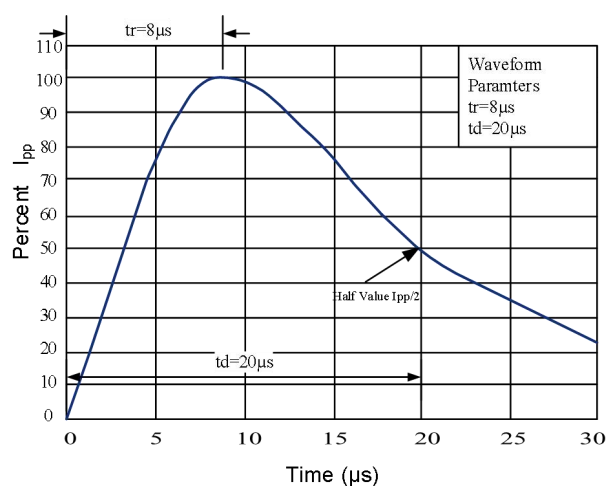
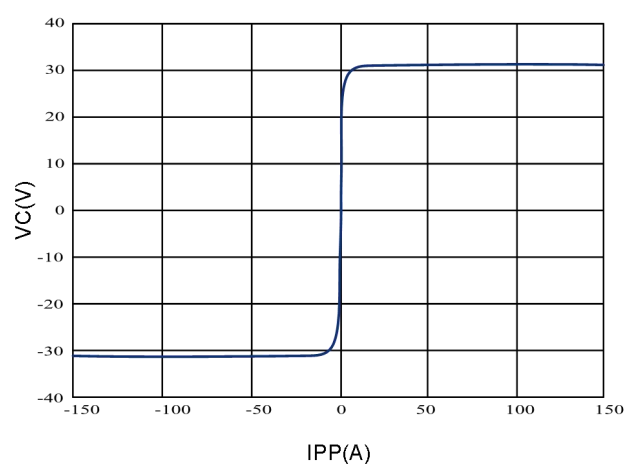
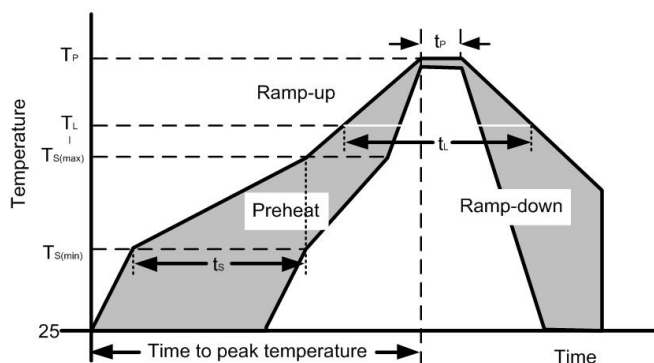


Figure 4: Clamping Voltage Curve(8/20μs, 2 Ω)



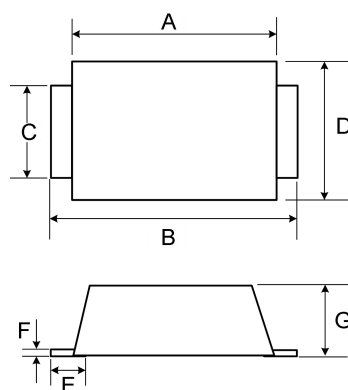
Soldering Parameters

Reflow Condition		
Pre-Heat	Temperature min ($T_{s(min)}$)	150°C
	Temperature max ($T_{s(max)}$)	200°C
	Time (min to max) (t_s)	60-190 s
Average ramp up rate (Liquidus Temp) (T_L) to peak		3°C/s max
$T_s(max)$ to T_L - Ramp-up Rate		3°C/s max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Temperature (t_L)	60-150 s
Peak Temperature (T_P)		260 ^{+0/-5} °C
Time within actual peak Temperature (t_p)		20-40 s
Ramp-down Rate		5°C/s max
Time 25°C to peak Temperature (T_P)		8 minutes max
Do not exceed		260°C

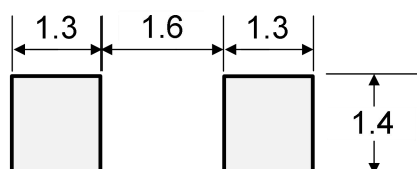


Outline Drawing – SOD-123

Ref. (mm)	Millimeters	
	Min.	Max.
A	2.50	2.95
B	3.40	3.95
C	0.70	1.10
D	1.50	1.90
E	0.45	0.95
F	0.05	0.26
G	0.90	1.05



Recommended Solder Pad Layout



Dimensions in mm

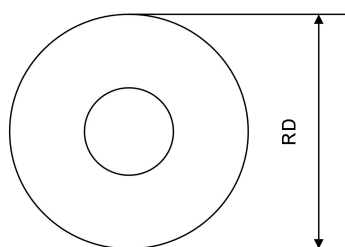
Marking Code



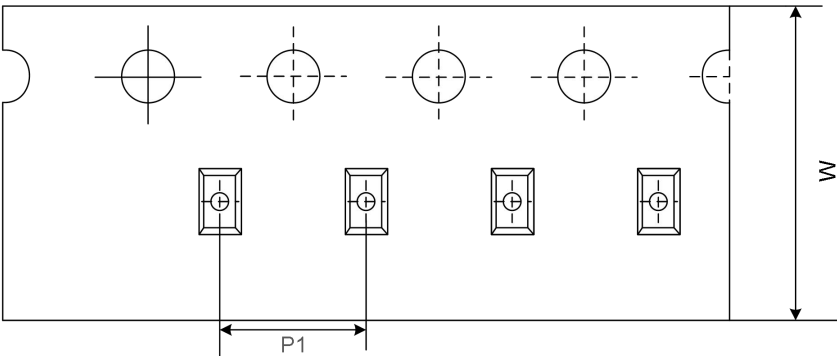
Package Information

Package Type	Description	Quantity (pcs)
SOD-123	Tape & Reel -8mm/7" tape	3000

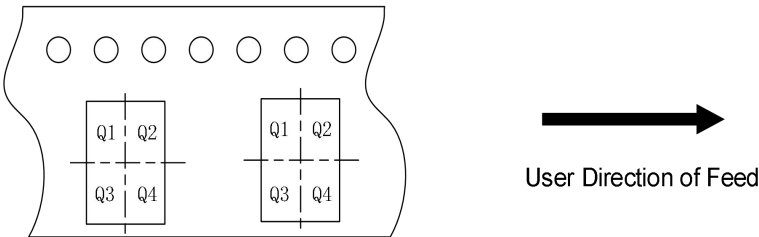
Tape and Reel Information



Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape

RD	Reel Dimensions	7 inch
W	Overall width of the carrier tape	8 mm
P1	Pitch between successive cavity centers	4 mm
Pin1	Pin1 Quadrant	Q1 Q2