1- Line Bidirectional ESD Protection Diode

General description

These surge protection diodes are designed for applications requiring transient overvoltage protection capability. They are intended for use in voltage and ESD sensitive equipment such as computers, printers, business machines, communication systems, medical equipment and other applications. These devices are ideal for situations where board space is at a premium.

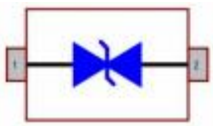
Features and benefits

- Reverse stand-off voltage: 24V Max
- Ultra Low Capacitance: 25pF
- Low leakage current: nA Level
- IEC 61000-4-2 (ESD Air): ±30kV
- IEC 61000-4-2 (ESDContact): ±30kV
- IEC61000-4-5(Lightning 8/20μS): 9A

Application information

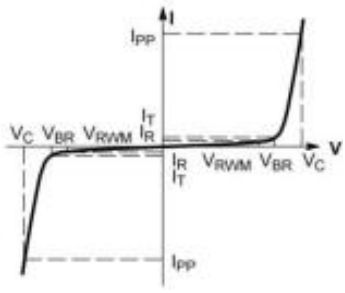
- Cell Phone Handsets and Accessories
- Microprocessor based equipmen
- Personal Digital Assistants (PDA's)
- Notebooks, Desktops, and Servers
- Computers and peripherals

Schematic & Pin configuration

Simplified outline	Graphic symbol
	

Portion Electronics Parameter

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



Maximum Ratings

(T_A = 25 ℃, unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (Tp = 8/20μs)	P_{PPM}	414	W
Rated Peak Pulse Current (Tp = 8/20μs)	I_{PPM}	9	A
ESD voltage IEC 61000-4-2 (air discharge)	V_{ESD}	30	kV
ESD voltage IEC 61000-4-2 (contact discharge)	V_{ESD}	30	kV
Maximum lead temperature for soldering during 10s	T_L	260	°C
Storage Temperature Range	T_{stg}	-55 to +150	°C
Operating Temperature Range	T_J	-40 to +125	°C

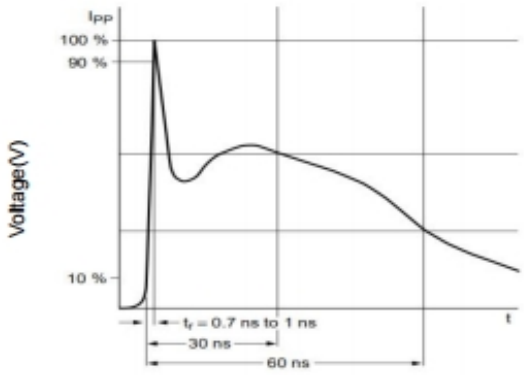
Electrical Characteristics

(T_A = 25 ℃, unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Reverse Working Voltage	V_{RWM}	--	--	24	V	
Breakdown Voltage	V_{BR}	27	--	33	V	I_T=1mA
Leakage Current ILeak	I_R	--	--	100	nA	V_{RWM}=24V
Clamping Voltage	V_C	--	32	--	V	I_{PP}=1A,T_p=8/20μs
Clamping Voltage	V_C	--	44	46	V	I_{PP}=9A,T_p=8/20μs
Junction Capacitance	C_j	--	23	30	pF	V_R=0V, f=1MHz
Junction Capacitance	C_j	--	11	13	pF	V_R=24V, f=1MHz

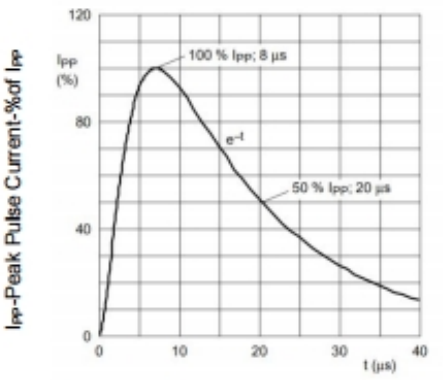
Typical Performance Characteristics

(T_A=25℃ unless otherwise Specified)



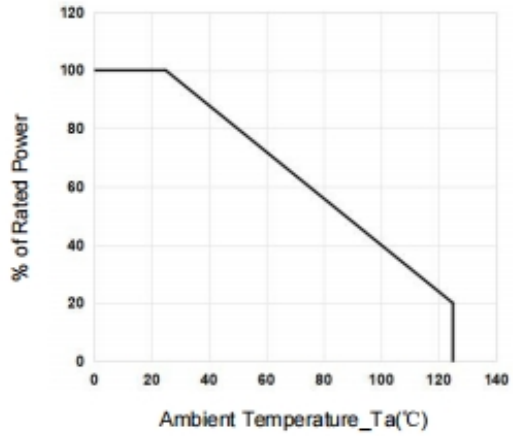
Time(nS)

IEC61000-4-2 Pulse Waveform

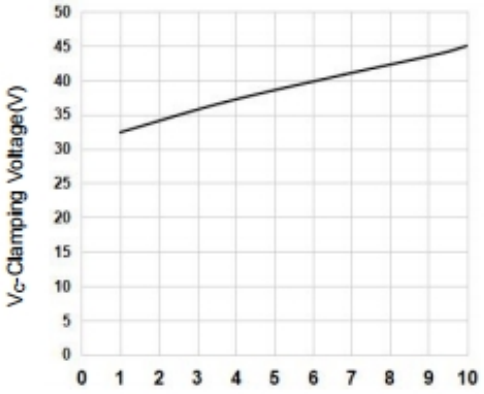


T-Time(μS)

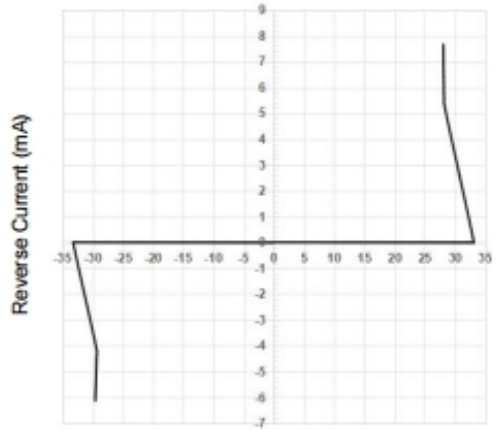
IEC61000-4-5 8X20μs Pulse Waveform



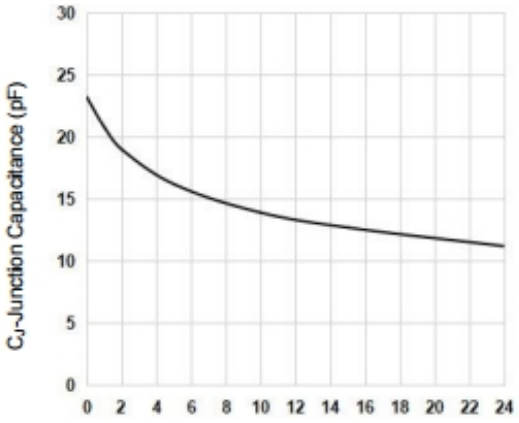
Power Derating Curve



Clamping Voltage vs. Peak Pulse Current



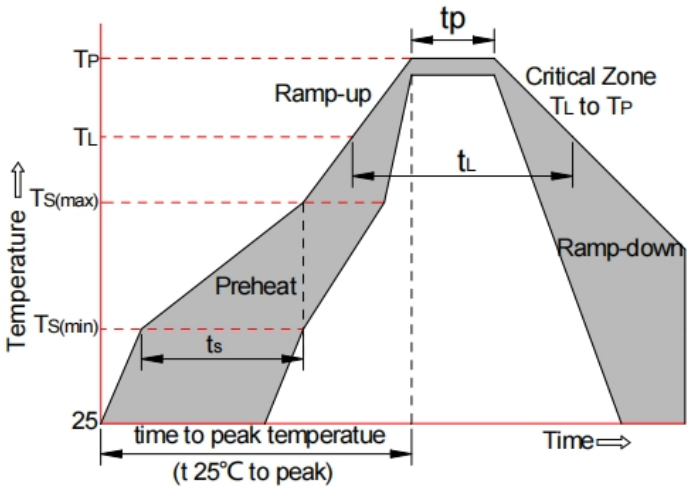
Reverse Current vs. Reverse Voltage



Junction Capacitance vs. Reverse Voltage

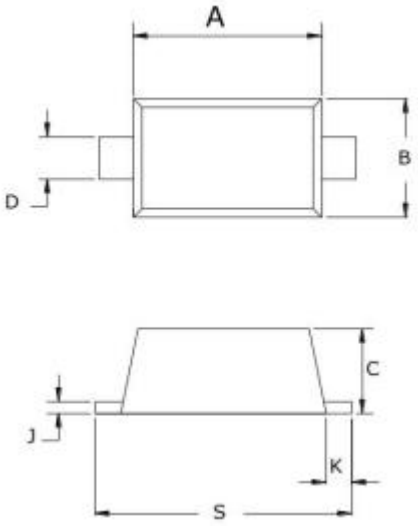
Soldering Parameters

Reflow Condition		Pb-Free Assembly
Pre-heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	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
xTime 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C



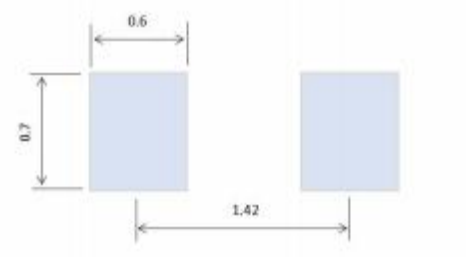
Package Outline Dimensions

SOD523



SYMBOL	MILLIMETERS	
	MIN	MAX
A	1.10	1.30
B	0.70	0.90
C	0.50	0.70
D	0.25	0.35
J	0.07	0.20
K	0.15	0.25
S	1.50	1.70

Soldering Footprint (mm)



Ordering information

Package	Reel Size	Packaging (pcs)	Units/InnerBox(pcs)	Units/OuterBox(pcs)
SOD523	7 Inch	3000/Tape & Reel	45000	180000

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