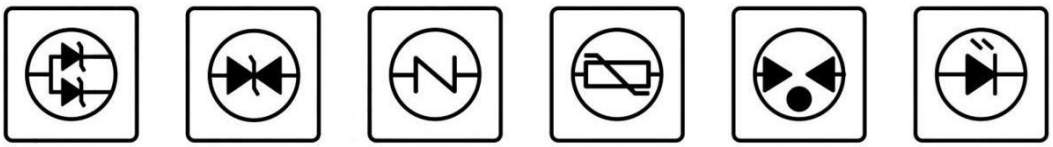
MSKSEMI 美森科
SEMICONDUCTOR



ESD9LE5.0C-MS

Product specification

ESD9LE5.0C-MS

1-Line Bidirectional ESD Protection Diode

General description

Ultra low capacitance bidirectional ElectroStatic Discharge (ESD) protection diode in a ultra-small and flat lead SOD-923 plastic package designed to protect one signal line from the damage caused by ESD and other transients.

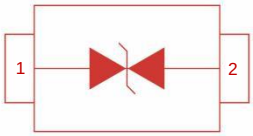
Features and benefits

- Reverse stand-off voltage: 5.0V Max
- Ultra Low Capacitance 0.3pF
- Low leakage current: nA Level
- IEC 61000-4-2 (ESD Air): ±30kV
- IEC 61000-4-2 (ESDContact): ±30kV
- IEC61000-4-5(Lightning 8/20μS): 5.5A

Application information

- High- speed data lines
- Smart phones
- USB Ports
- Wireless Systems
- Ethernet 10/100/1000 Base T
- Computers and peripherals

Reference News

SOD-923	GRAPHIC SYMBOL	MARKING
		N*

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Maximum Ratings (T_A = 25°C, unless otherwise specified)

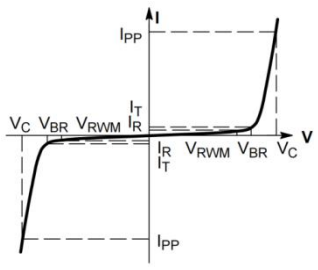
Parameter	Symbol	Value	Unit
Peak Pulse Power (Tp = 8/20μs)	P_{PPM}	55	W
Rated Peak Pulse Current (Tp = 8/20μs)	I_{PPM}	5.5	A
ESD voltage IEC 61000-4-2 (air discharge)	V_{ESD}	30	kV
ESD voltage IEC 61000-4-2 (contact discharge)	V_{ESD}	30	kV
Maximum lead temperature for soldering during 10s	T_L	260	°C
Storage Temperature Range	T_{stg}	-55 to +150	°C
Operating Temperature Range	T_J	-40 to +125	°C

Electrical Characteristics (T_A = 25 。C, unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Reverse Working Voltage	V_{RWM}	--	--	5.0	V	
Breakdown Voltage	V_{BR}	6.5	--	8.5	V	I_T=1mA
Leakage Current ILeak	I_R	--	--	100	nA	V_{RWM}=5.0V
Clamping Voltage	V_C	--	5.0	7.0	V	I_{PP}=1A,Tp=8/20μs
Clamping Voltage	V_C	--	8.5	10.0	V	I_{PP}=5.5A,Tp=8/20μs
Junction Capacitance	C_j	--	0.30	0.40	pF	V_R=0V, f=1MHz
Junction Capacitance	C_j	--	0.30	0.40	pF	V_R=5.0V, f=1MHz

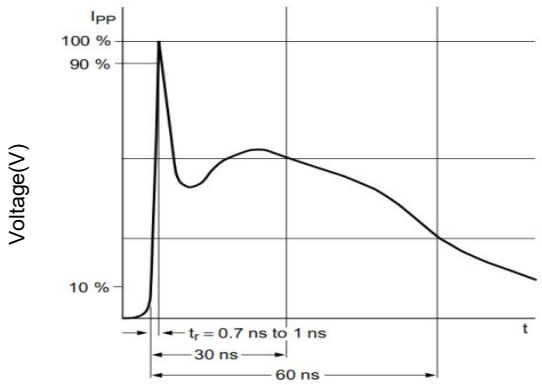
Portion Electronics Parameter

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	V_{BR} Test Current



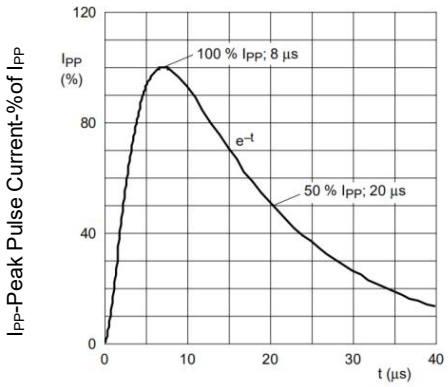
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TypicalPerformanceCharacteristics (T_A=25℃ unlessotherwiseSpecified)



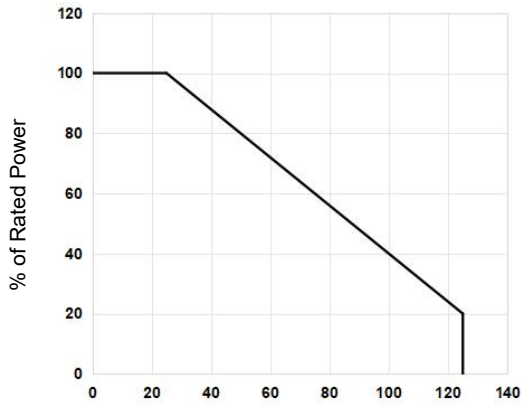
Time(nS)

IEC61000−4−2 Pulse Waveform



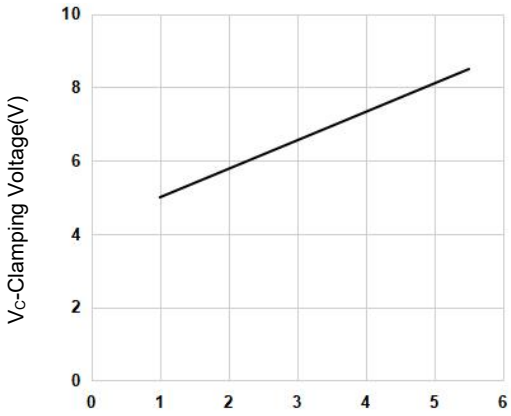
T-Time(µS)

IEC61000−4−5 8X20µs Pulse Waveform



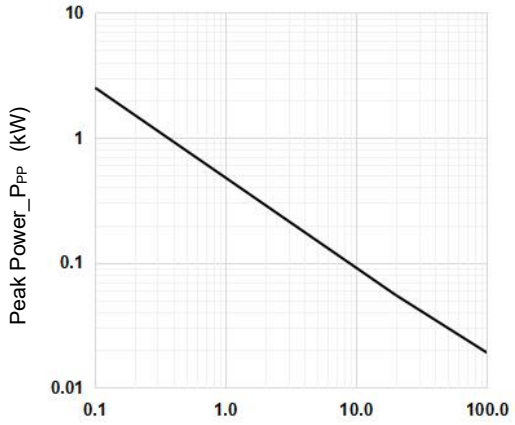
Ambient Temperature_Ta(℃)

Power Derating Curve



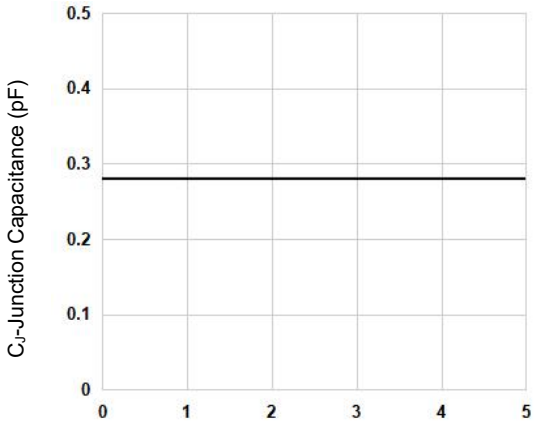
IPP-Peak Pulse Current(A)

Clamping Voltage vs. Peak Pulse Current



Pulse Duration_tp(µS)

Peak Pulse Power vs. Pulse Time



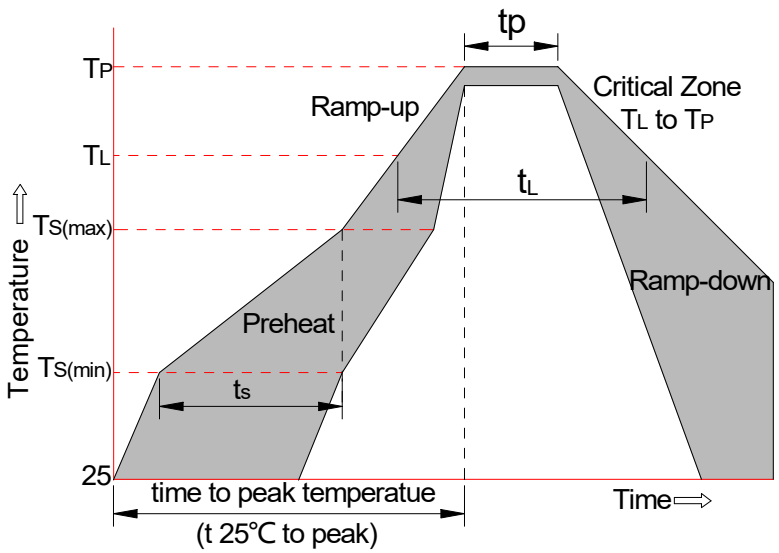
VR—Reverse Voltage(V)

Junction Capacitance vs. Reverse Voltage

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Soldering Parameters

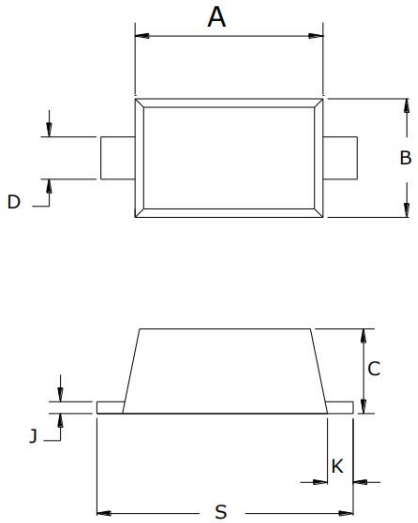
Reflow Condition		Pb-Free Assembly
Pre-heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid 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
xTime 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C



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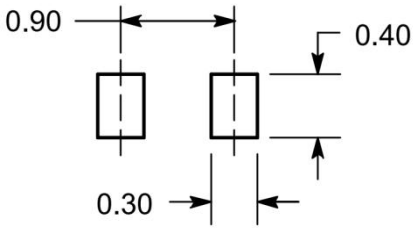
PackageOutlineDimensions

SOD923



SYMBOL	MILLIMETERS	
	MIN	MAX
A	0.74	0.86
B	0.54	0.66
C	0.35	0.45
D	0.14	0.26
K	0.04	0.16
S	0.95	1.10

SolderingFootprint (mm)



Order information

Orderable Device	Package	Packing Option
ESD9LE5.0C-MS	SOD-923	8000PCS

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