ESD PROTECTION

■ Description

SD05C is 1-Line Normal Capacitance Bi-Directional ElectroStatic Discharge Protection Device, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltagesensitive data lines. SD05C complies with the IEC 61000-4-2 (ESD) standard with±30KV air and ± 30KV contact discharge.It is assembled into a 1.3×2.5×1mm lead-free package.SD05C is an ideal choice to protect Mobile Set,Cellular Handsets and Accessories,Personal Digital Assistants,Notebooks and Handhelds,Portable Instrumentation,Desktop and Servers,etc.



■ Features

- 1-Line Normal Capacitance Bi-Directional
- Ultra low leakage
- Low operating voltage
- Low clamping voltage
- Silicon technology
- Epoxy resin package
- Complies with following standards:
  – IEC 61000-4-2 (ESD) immunity test
    Air discharge: ±30KV
    Contact discharge: ±30KV
  – IEC61000-4-4 (EFT) 40A (5/50ns)
  – IEC61000-4-5 (Lightning) 24A (8/20us)
- RoHS Compliant

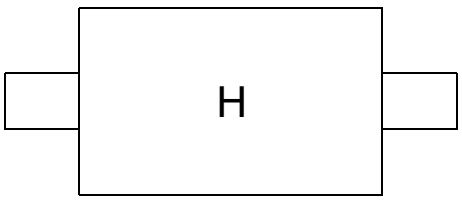
■ Mechanical Characteristics

- Package: SOD-323 (1.3×2.5×1mm)
- Lead Finish: Matte Tin
- Case Material: “Green” Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020

■ Applications

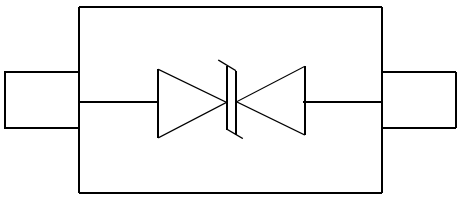
- Mobile Set
- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Desktop and Servers

■ Marking Information



05 = Marking Code

■ Pin Configuration



■ Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
SOD-323	8mm tape/7" reel	3000PCS/Reel	EIA-481-1

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■ Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Reverse Working Voltage	V_{RWM}	5	V
Peak Pulse Power (8/20μs)	P_{PK}	350	W
Peak Pulse Current (8/20μs)	I_{PK}	24	A
ESD per IEC 61000−4−2 (Air)	$V_{ESD-Air}$	30	KV
ESD per IEC 61000−4−2 (Contact)	$V_{ESD-Contact}$	30	KV
Operating Temperature Range	T_J	-55 to 125	℃
Storage Temperature Range	T_{STG}	-55 to 150	℃

■ Electrical Parameters

Parameter	Symbol	Min	Typ	Max	Units	Conditions	Remarks
Breakdown Voltage	V_{BR}	6		8	V	IBR=1mA	
Reverse Leakage Current	I_R			0.1	uA	VRWM=5V	
Clamping Voltage (8/20 μs)	V_C			10	V	IPP=5A	8/20us pulse
Maximum Clamping Voltage (8/20μs)	V_{CM}			15	V	IPK=24A	8/20us pulse
Junction Capacitance	C_J		65	80	pF	VDC=0V	f = 1MHz

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■ Rating And Characteristic Curves (T_A=25°C unless otherwise noted)

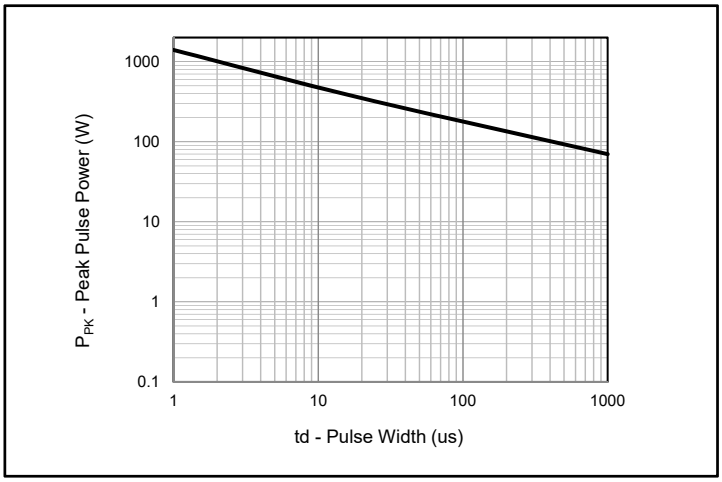


Fig.1 - Peak Pulse Power Rating

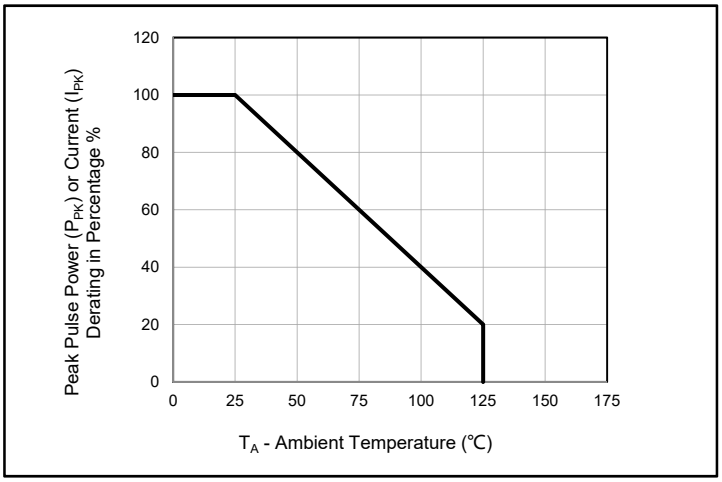


Fig.2 - Pulse Derating Curve

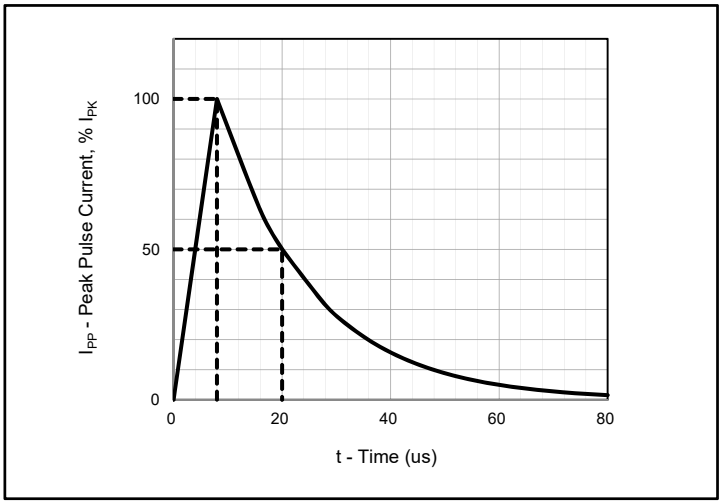


Fig.3 - 8/20us Pulse Waveform

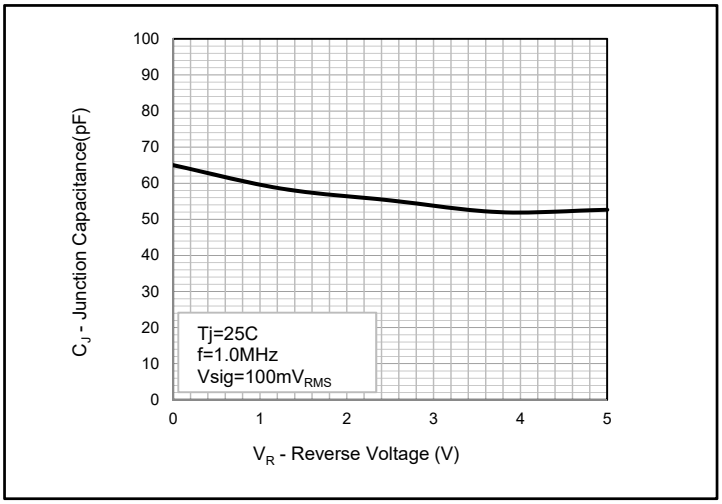


Fig.4 - Typical Junction Capacitance

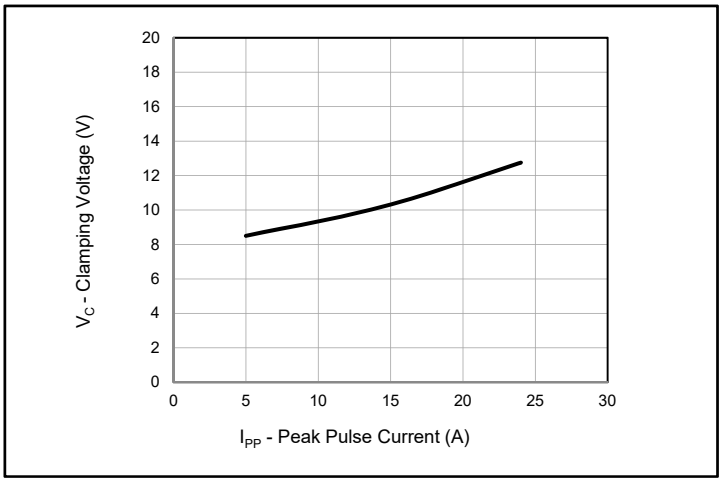
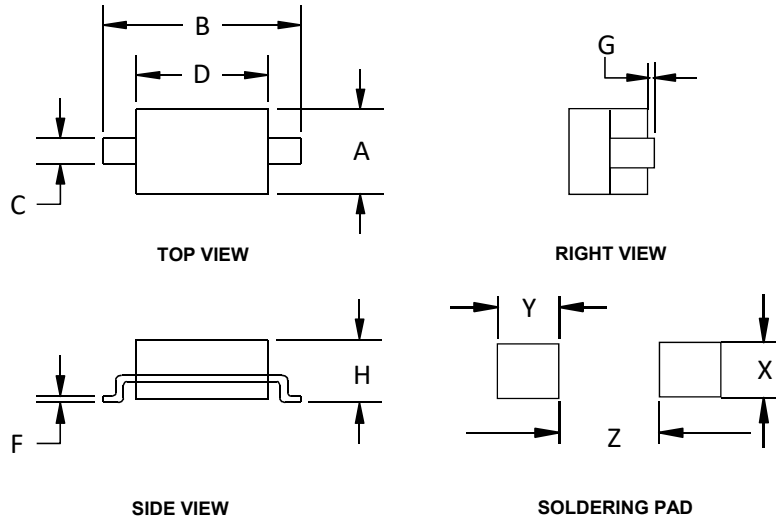


Fig.5 - Clamping Voltage

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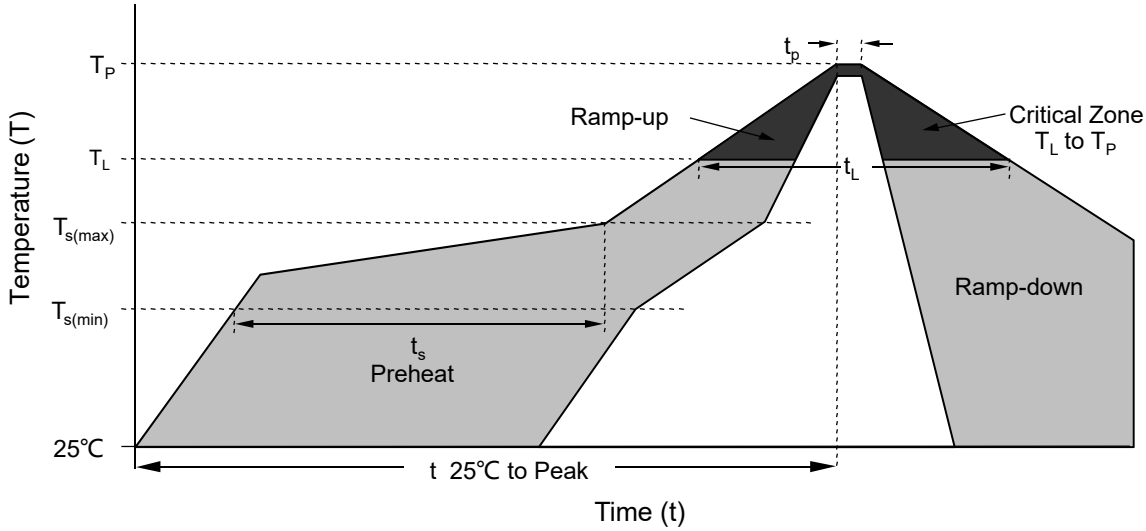
■ Package Dimensions



SOD-323						
Dimension	Inches			Millimeters		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.047	0.051	0.055	1.2	1.3	1.4
B	0.091	0.098	0.106	2.3	2.5	2.7
C	0.012		0.016	0.3		0.4
D	0.059		0.071	1.5		1.8
F	0.004		0.01	0.1		0.25
G	-		0.004	-		0.1
H	0.035	0.039	0.043	0.9	1	1.1
X		0.031			0.8	
Y		0.031			0.8	
Z		0.061			1.55	

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■ Soldering Parameters



Reflow Condition		Lead-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 (Liquidus Temp (T_L) to peak)		3°C/second max
$T_{S(max)}$ to TL - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Time (t_L)	60 – 150 secs
Peak Temperature (T_P)		$260^{+0/-5\ °C}$
Time within 5°C of actual peak Temperature (t_p)		20 – 40 secs
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (t)		8 minutes Max.
Do not exceed		260°C

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