

### Description

YSD05H is 1-Line Normal Capacitance Uni-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. YSD05H complies with the IEC 61000-4-2 (ESD) standard with  $\pm 30\text{KV}$  air and  $\pm 30\text{KV}$  contact discharge. It is assembled into a  $1.3 \times 2.5 \times 1\text{mm}$  lead-free package. YSD05H is an ideal choice to protect Audio Players, Cellular Handsets and Accessories, Digital Cameras, Personal Digital Assistants, Notebooks and Handhelds, Portable Instrumentation, etc.



### Features

- 1-Line Normal Capacitance Uni-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:  $\pm 30\text{KV}$
    - Contact discharge:  $\pm 30\text{KV}$
  - IEC61000-4-4 (EFT) 40A (5/50ns)
  - IEC61000-4-5 (Lightning) 80A (8/20us)
- RoHS Compliant

### Mechanical Characteristics

- Package: SOD-323 ( $1.3 \times 2.5 \times 1\text{mm}$ )
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020

### Applications

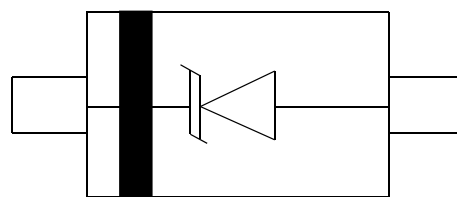
- Audio Players
- Cellular Handsets and Accessories
- Digital Cameras
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation

### Marking Information



77D = 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

**Absolute Maximum Ratings**

Parameter	Symbol	Value	Units
Reverse Working Voltage	$V_{RWM}$	5	V
Peak Pulse Power (8/20 $\mu$ s)	$P_{PK}$	1600	W
Peak Pulse Current (8/20 $\mu$ s)	$I_{PK}$	80	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	$^{\circ}$ C
Storage Temperature Range	$T_{STG}$	-55 to 150	$^{\circ}$ C

**Electrical Parameters**

Parameter	Symbol	Min	Typ	Max	Units	Conditions	Remarks
Breakdown Voltage	$V_{BR}$	6			V	IBR=1mA	
Reverse Leakage Current	$I_R$			0.5	$\mu$ A	VRWM=5V	
Forward Voltage	$V_F$		0.8	1.2	V	IF=10mA	
Clamping Voltage (8/20 $\mu$ s)	$V_C$			9.8	V	IPP=5A	8/20us pulse
Maximum Clamping Voltage (8/20 $\mu$ s)	$V_{CM}$			20	V	IPK=80A	8/20us pulse
Junction Capacitance	$C_J$		300	350	pF	VDC=0V	f = 1MHz

**Rating And Characteristic Curves ( $T_A=25^\circ\text{C}$  unless otherwise noted)**

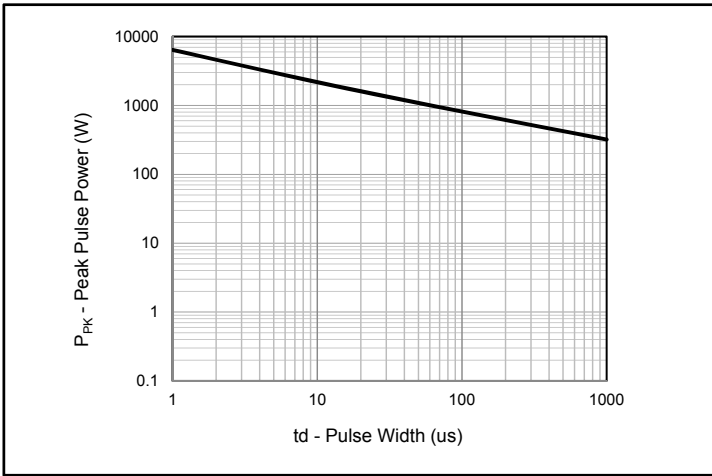


Fig.1 - Peak Pulse Power Rating

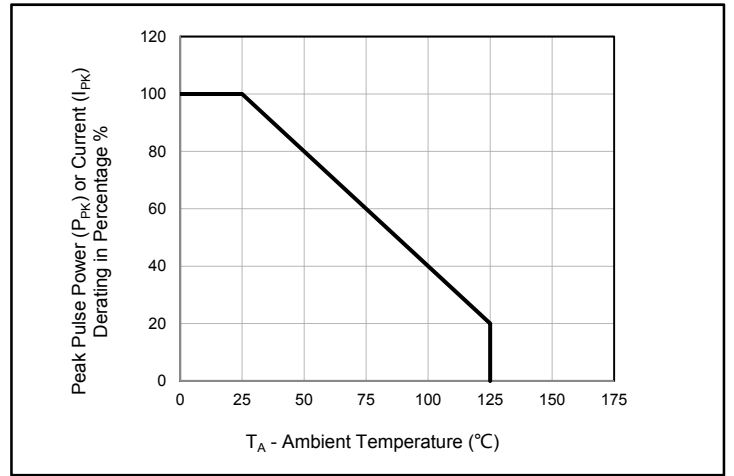


Fig.2 - Pulse Derating Curve

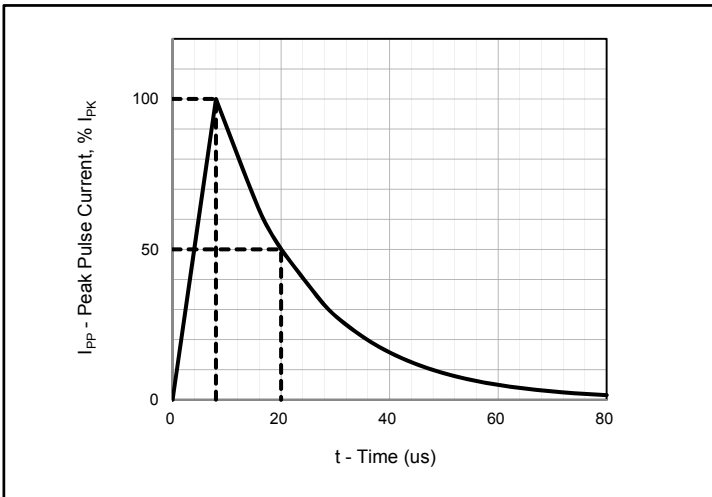


Fig.3 - 8/20us Pulse Waveform

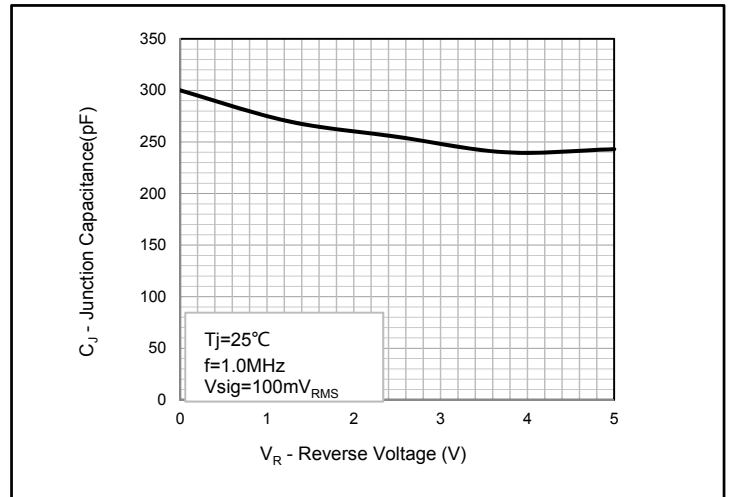


Fig.4 - Typical Junction Capacitance

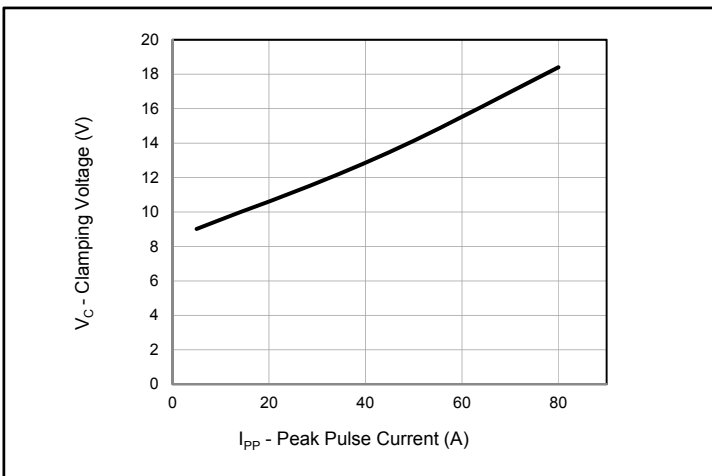
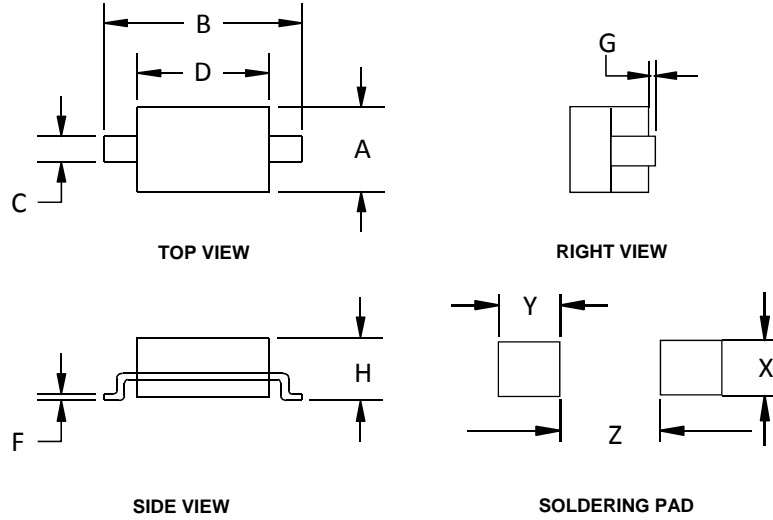


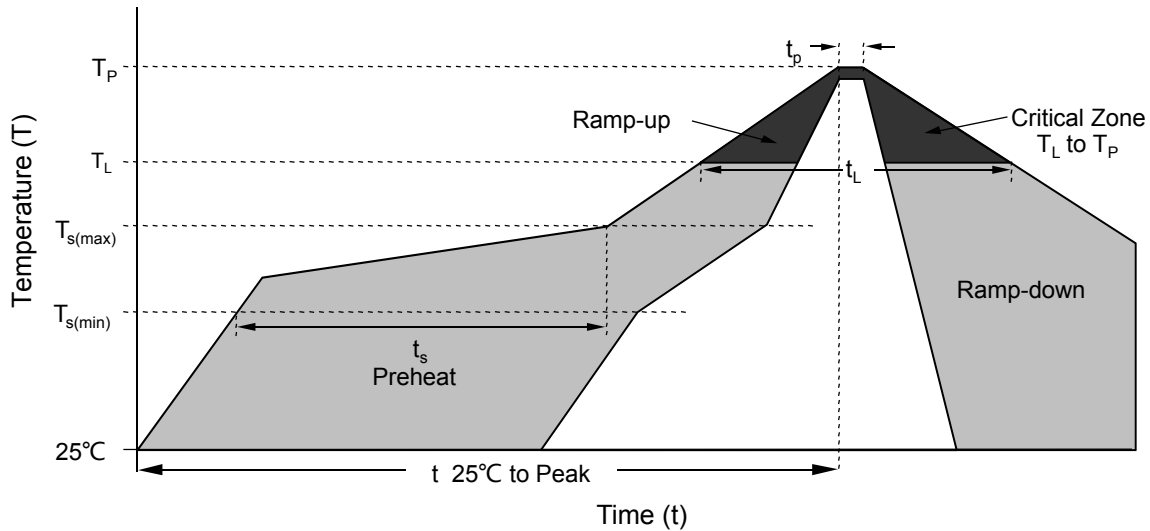
Fig.5 - Clamping Voltage

**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	

### 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 $T_L$ - 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 <sup>+0/-5</sup> °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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