

## Description

The LY523DC05 is a bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. It complies with IEC 61000-4-2 (ESD),  $\pm 30\text{kV}$  air and  $\pm 30\text{kV}$  contact discharge. It is assembled into a lead-free SOD-523 package. The small size and high ESD surge protection make it an ideal choice to protect cell phone, digital cameras and many other portable application.

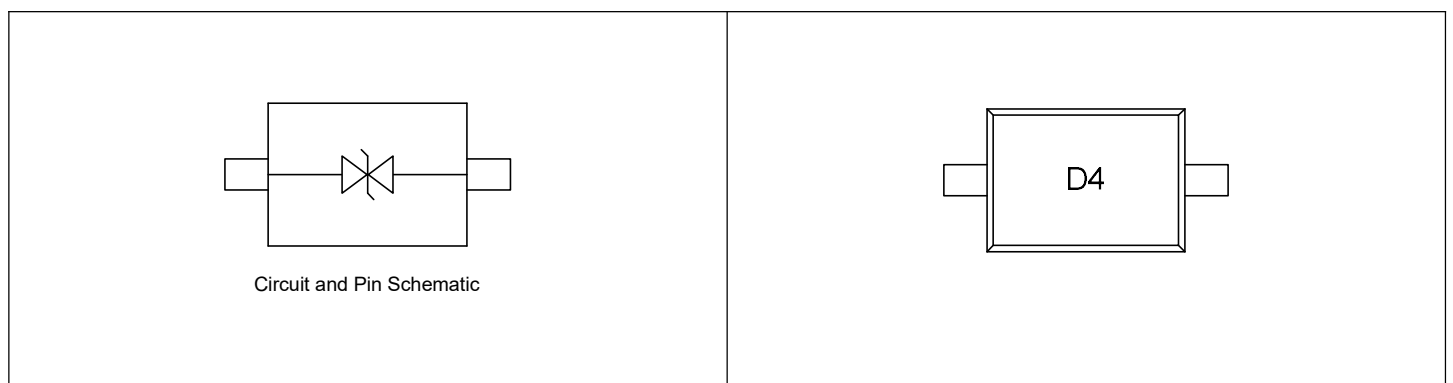
## Features

- Low clamping voltage
- Ultra low leakage current
- Operating voltage: 5V
- RoHS compliant
- IEC-61000-4-2 ESD  $\pm 30\text{kV}$  Air,  $\pm 30\text{kV}$  Contact
- Packaging: 7 inch reel, 3000pcs/reel

## Applications

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

## Pin Configuration and Marking



### Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ )

Parameter	Symbol	Value
Peak Pulse Power (8/20 $\mu\text{s}$ )	$P_{PP}$	200W
Peak Pulse Current (8/20 $\mu\text{s}$ )	$I_{PP}$	15A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	$V_{ESD}$	$\pm 30\text{kV}$ $\pm 30\text{kV}$
Ambient Temperature Range	$T_A$	$-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	$-55^{\circ}\text{C}$ to $+150^{\circ}\text{C}$

### Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ )

Parameter	Symbol	Test Condition	Min.	Typ.	Max.
Reverse Working Voltage	$V_{RWM}$		-	-	5V
Breakdown Voltage	$V_{BR}$	$I_T = 1\text{mA}$	6V	-	8V
Reverse Leakage Current	$I_R$	$V_{RWM} = 5\text{V}$	-	-	0.2 $\mu\text{A}$
Clamping Voltage	$V_C$	$I_{PP} = 1\text{A}$ (8/20 $\mu\text{s}$ )	-	-	8V
		$I_{PP} = 15\text{A}$ (8/20 $\mu\text{s}$ )	-	-	14V
Junction Capacitance	$C_J$	$V_R = 0\text{V}$ , $f = 1\text{MHz}$	-	30pF	50pF

Typical Characteristic Curves ( $T_A=25^{\circ}\text{C}$ )

Figure 1. Peak Pulse Power Rating Curve

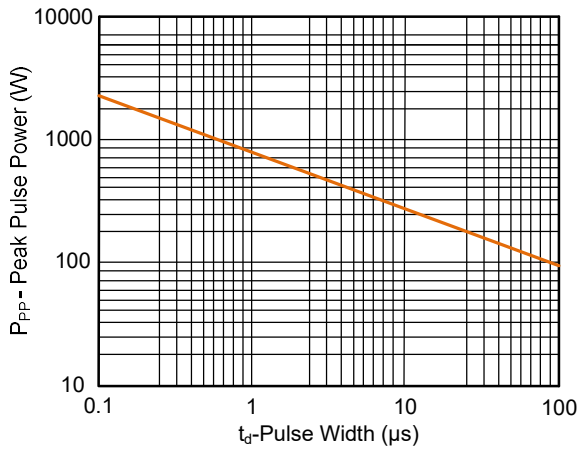


Figure 2. Pulse Derating Curve

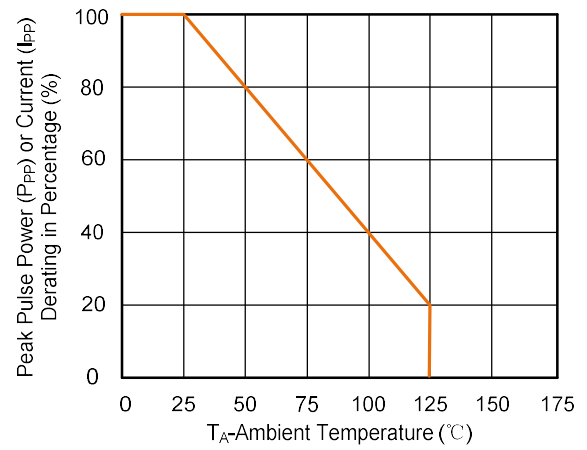


Figure 3. Clamping Voltage vs. Peak Pulse Current

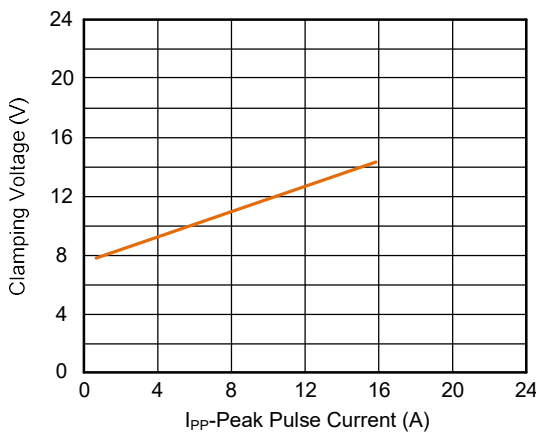


Figure 4. Junction Capacitance vs. Reverse Voltage

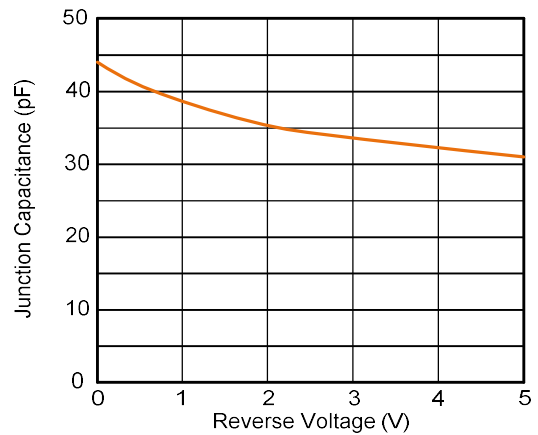


Figure 5. Pulse Waveform (8/20 $\mu\text{s}$ )

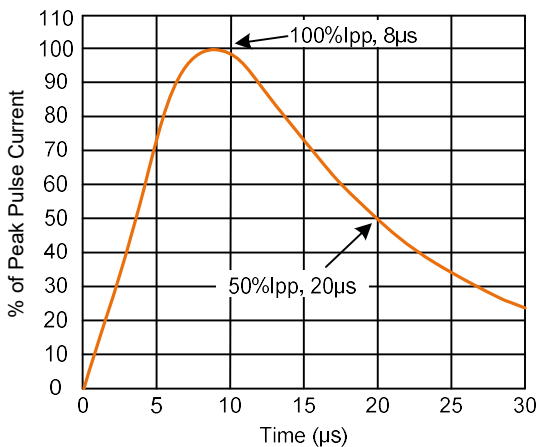
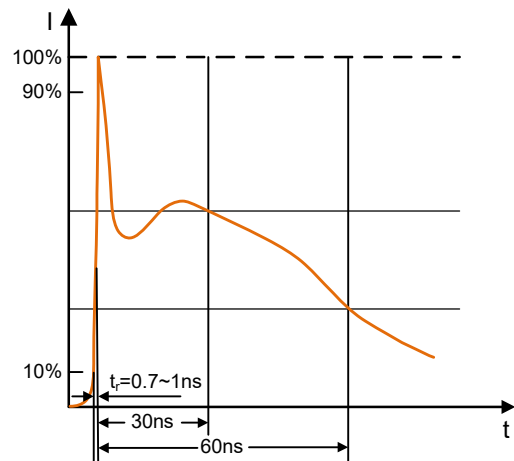
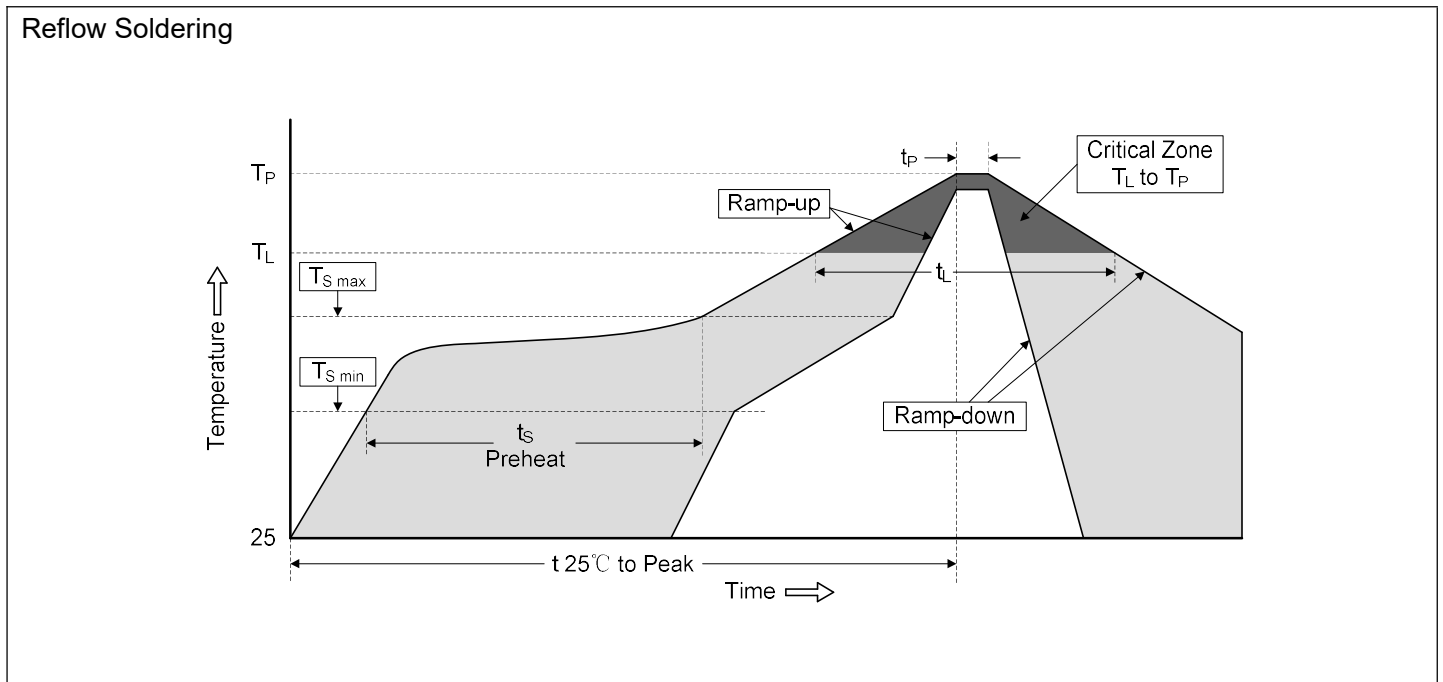


Figure 6. Pulse Waveform (IEC61000-4-2)



## Soldering Parameters



Profile Feature	Pb-Free Assembly
Average ramp-up rate ( $T_L$ to $T_P$ )	3°C/second max.
Preheat -Temperature Min ( $T_{S\ min}$ ) -Temperature Max ( $T_{S\ max}$ ) -Time (min to max) ( $t_s$ )	150°C 200°C 60-180 seconds
$T_{S\ max}$ to $T_L$ -Ramp-up Rate	3°C/second max.
Time maintained above: -Temperature ( $T_L$ ) -Time ( $t_L$ )	217°C 60-150 seconds
Peak Temperature ( $T_P$ )	260°C
Time within 5°C of actual Peak Temperature ( $t_p$ )	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

**Dimensions (SOD-523)**

Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.50	1.70	0.059	0.067
B	0.75	0.85	0.030	0.033
C	1.10	1.30	0.043	0.051
D	0.25	0.35	0.010	0.014
E	0.20 REF		0.008 REF	
H	0.51	0.77	0.020	0.031
H1	0.50	0.70	0.020	0.028
L	0.01	0.07	0.001	0.003
t	0.08	0.15	0.003	0.006
$\theta$	7° REF		7° REF	

Recommended Solder Pad Layout (mm)

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