

Description

The LY523BA05 is a uni-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.

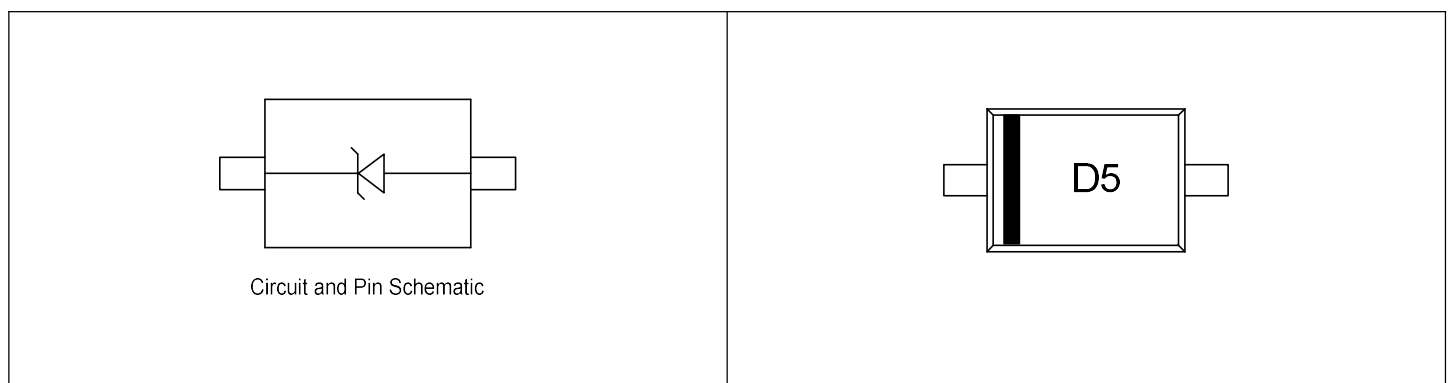
Features

- 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 μs) | P_{PP} | 100W |
| Peak Pulse Current (8/20 μs) | I_{PP} | 8A |
| 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°C to $+125^\circ\text{C}$ |
| Storage Temperature Range | T_{STG} | -55°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} | $I_T = 1\text{mA}$ | 6.0V | - | 8.5V |
| Reverse Leakage Current | I_R | $V_{RWM} = 5\text{V}$ | - | - | 0.2 μA |
| Clamping Voltage | V_C | $I_{PP} = 8\text{A}$ (8/20 μs) | - | - | 12V |
| Junction Capacitance | C_J | $V_R = 0\text{V}$, $f = 1\text{MHz}$ | - | 60pF | - |

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

Figure 1. Peak Pulse Power Rating Curve

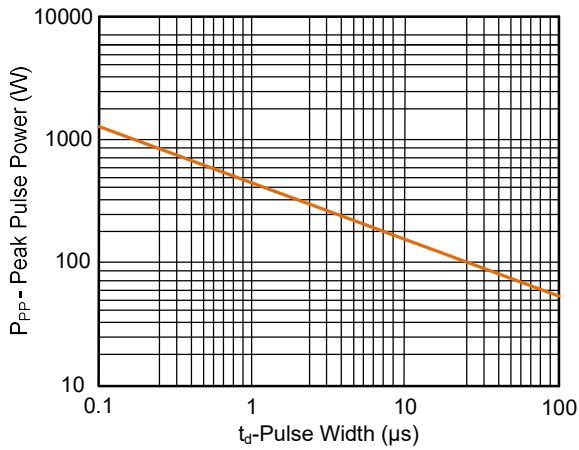


Figure 2. Pulse Derating Curve

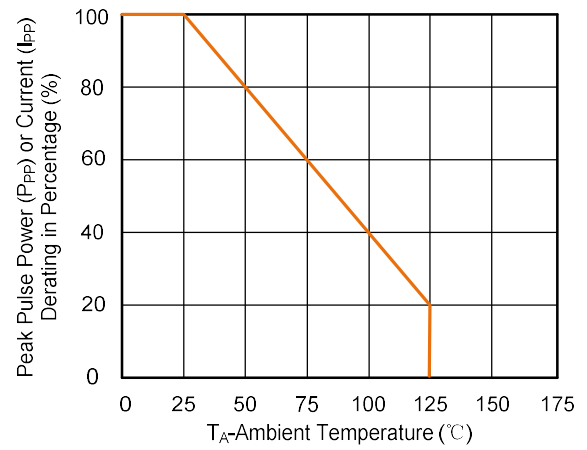


Figure 3. Clamping Voltage vs. Peak Pulse Current

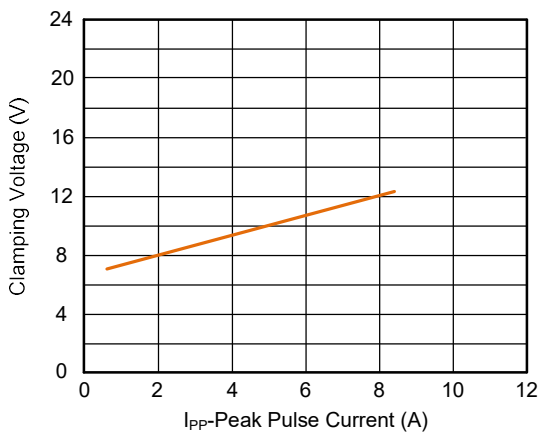


Figure 4. Junction Capacitance vs. Reverse Voltage

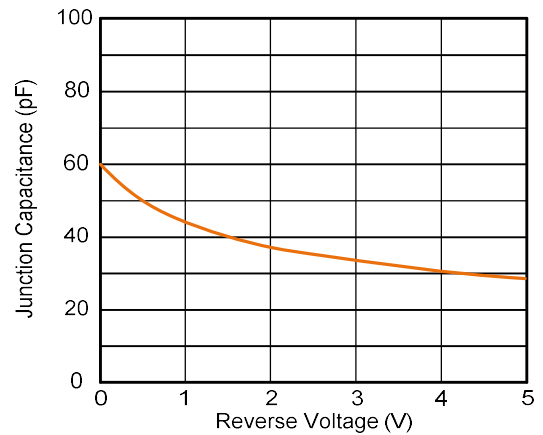


Figure 5. Pulse Waveform (8/20μs)

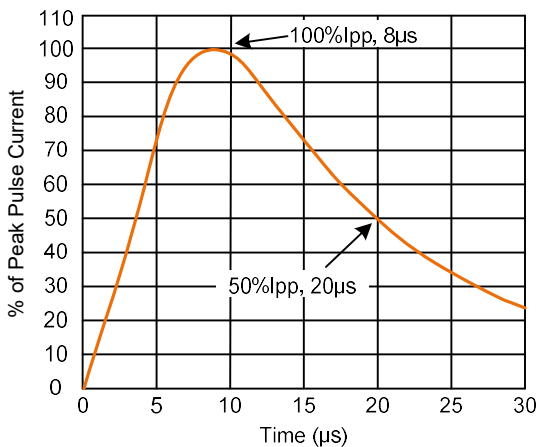
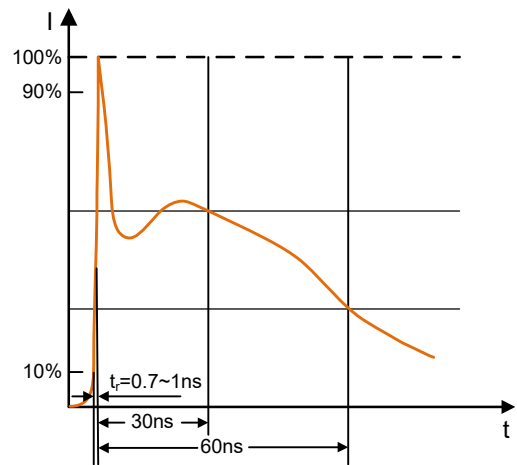
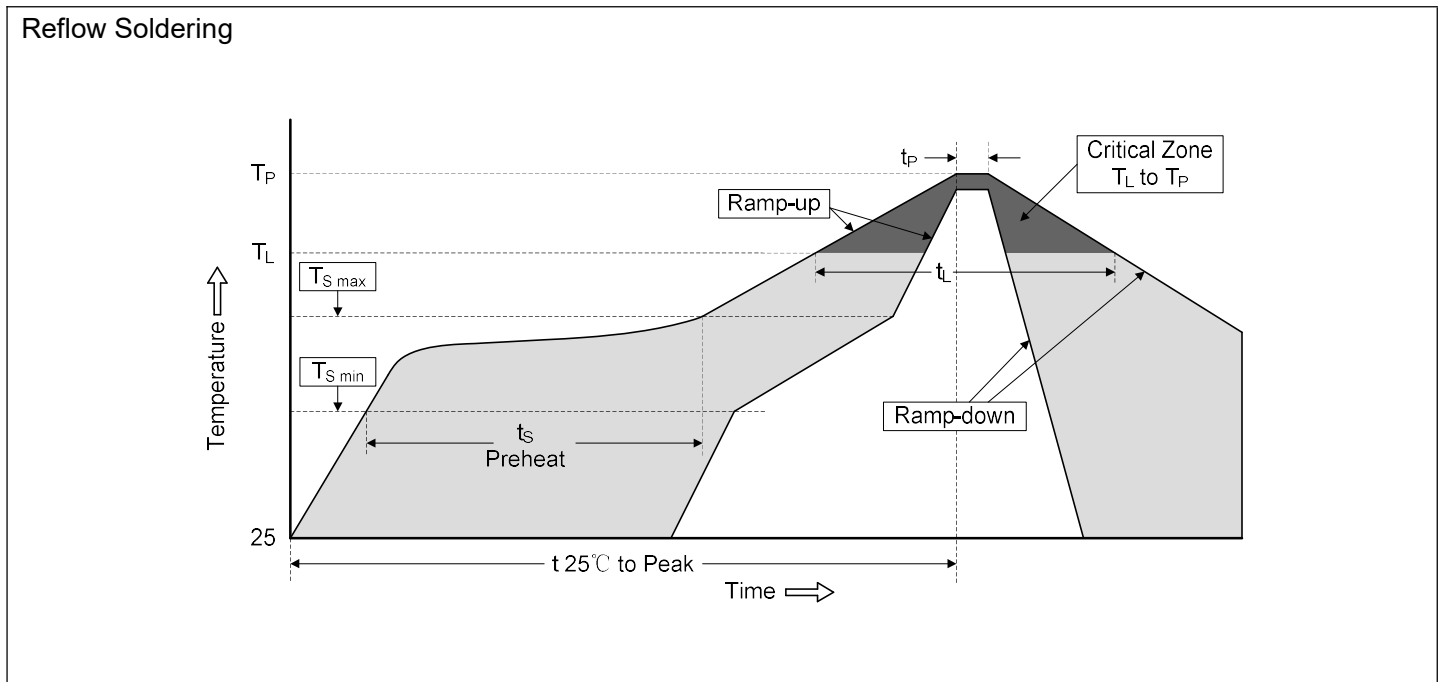


Figure 6. Pulse Waveform (IEC61000-4-2)



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 |
| θ | 7° REF | | 7° REF | |

Recommended Solder Pad Layout (mm)

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