

Description

The LY23BA05UL 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 high-speed data lines. It complies with IEC 61000-4-2 (ESD), $\pm 25\text{kV}$ air and $\pm 20\text{kV}$ contact discharge. It is assembled into a lead-free SOT-23 package. The small size, ultra-low capacitance and high ESD surge protection make it an ideal choice to protect cell phone, digital video interfaces and other high speed ports.

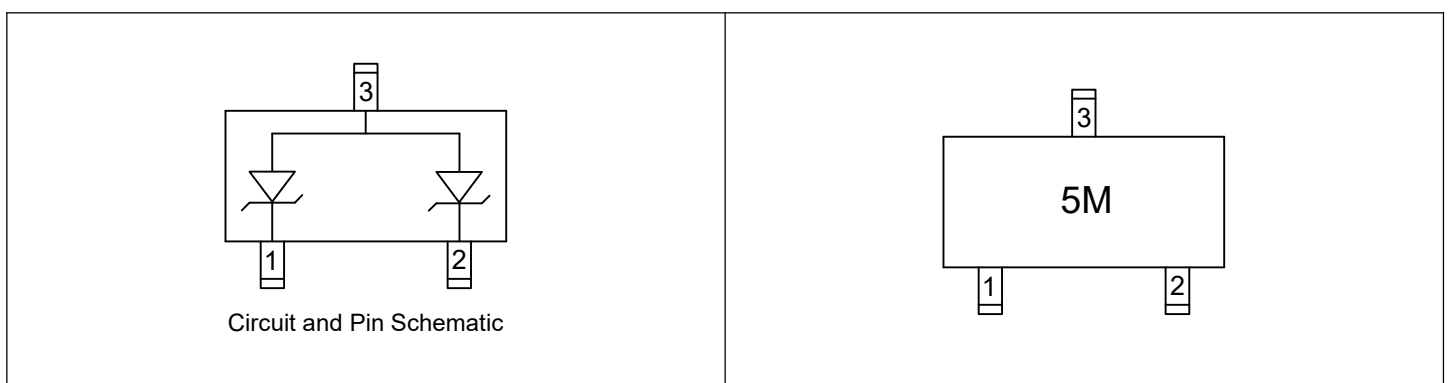
Features

- Low clamping voltage
- Ultra low leakage current
- Operating voltage: 5V
- RoHS compliant
- IEC-61000-4-2 ESD $\pm 25\text{kV}$ Air, $\pm 20\text{kV}$ 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}	80W
Peak Pulse Current (8/20 μs)	I_{PP}	5A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	$\pm 25\text{kV}$ $\pm 20\text{kV}$
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}	$I_T = 1\text{mA}$	6V	-	-
Reverse Leakage Current	I_R	$V_{RWM} = 5\text{V}$	-	-	0.5 μA
Clamping Voltage	V_C	$I_{PP} = 1\text{A}$ (8/20 μs)	-	-	9V
		$I_{PP} = 5\text{A}$ (8/20 μs)	-	-	16V
Junction Capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$	-	-	0.8pF

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

Figure 1. Peak Pulse Power Rating Curve

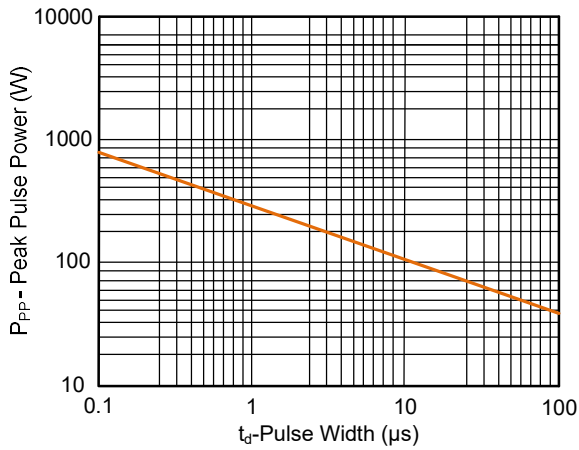


Figure 2. Pulse Derating Curve

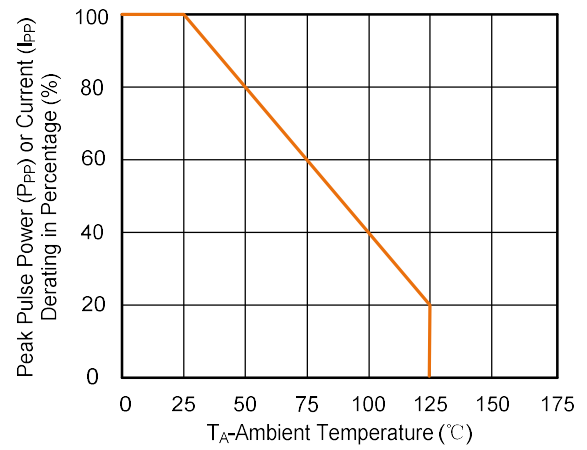


Figure 3. Clamping Voltage vs. Peak Pulse Current

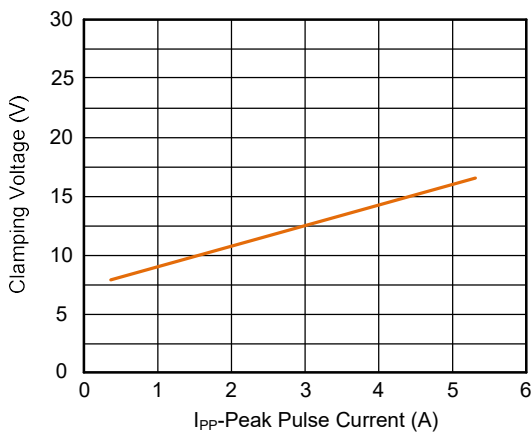


Figure 4. Junction Capacitance vs. Reverse Voltage

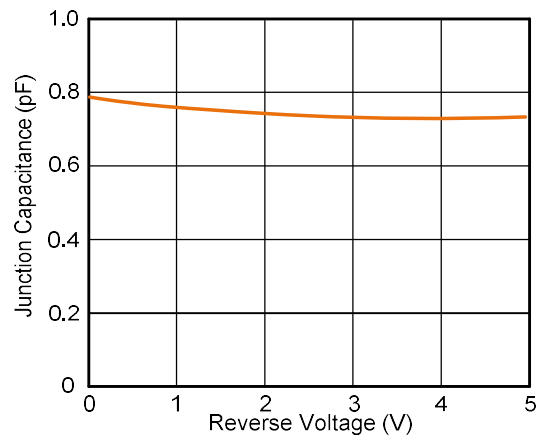


Figure 5. Pulse Waveform (8/20μs)

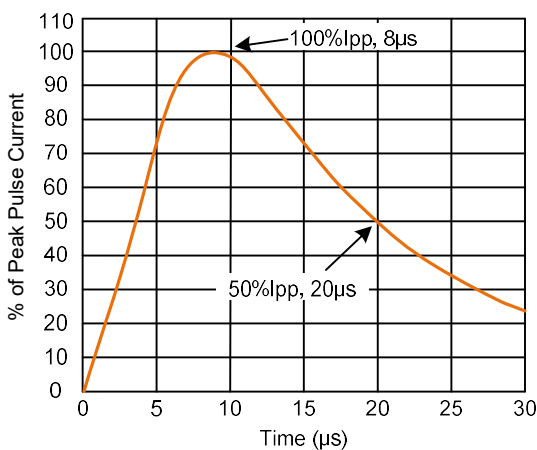
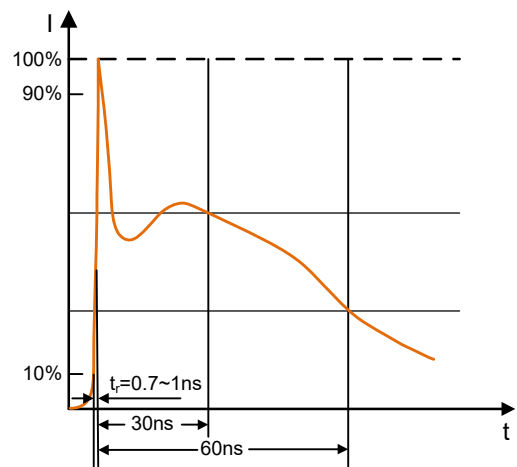
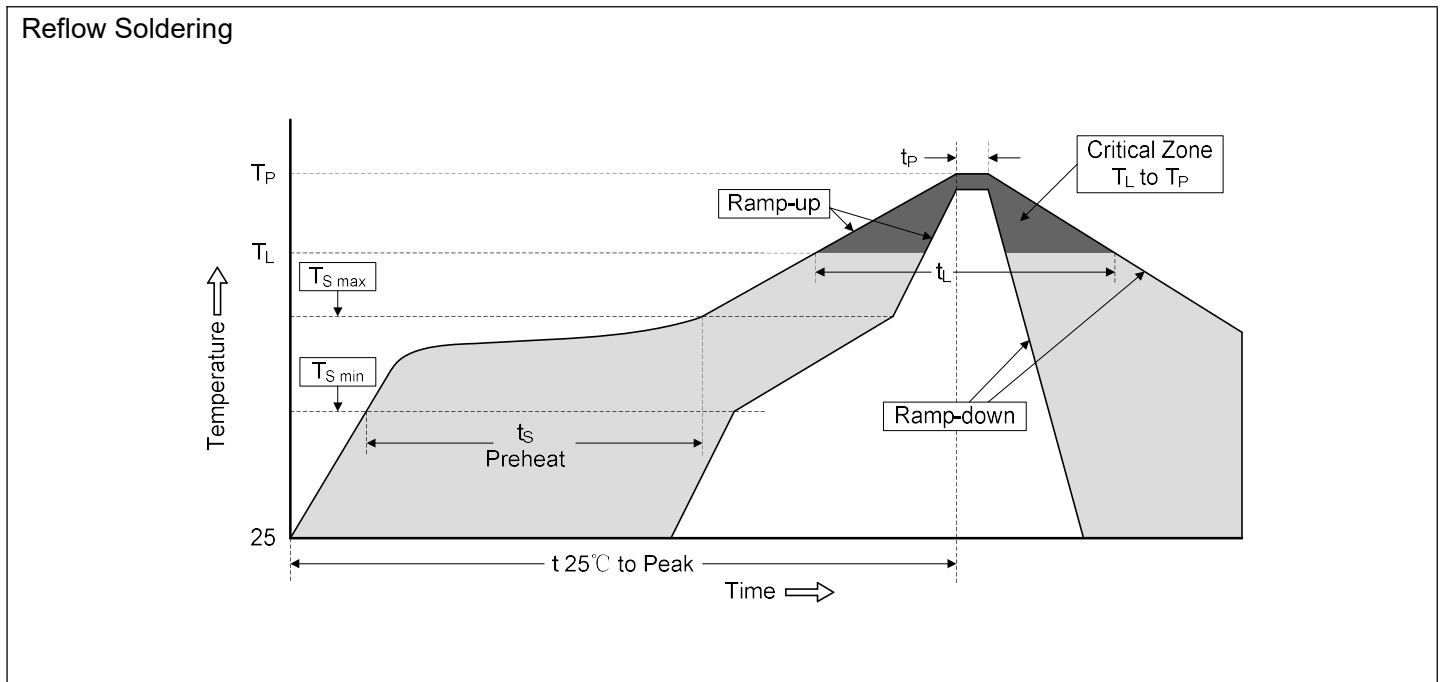


Figure 6. Pulse Waveform (IEC61000-4-2)



Soldering Parameters



Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat <ul style="list-style-type: none"> -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 <ul style="list-style-type: none"> -Ramp-up Rate 	3°C/second max.
Time maintained above: <ul style="list-style-type: none"> -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 (SOT-23)

Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.00	0.110	0.118
B	2.25	2.55	0.089	0.100
B1	1.20	1.40	0.047	0.055
C	0.30	0.50	0.012	0.020
D	0.95 TYP		0.037 TYP	
D1	1.80	2.00	0.071	0.079
H	0.90	1.15	0.035	0.045
H1	0.00	0.10	0.000	0.041
H2	0.90	1.05	0.035	0.041
t	0.08	0.15	0.003	0.006

Recommended Solder Pad Layout (mm)