

Description

The LY23DCXX is a bi-directional TVS diode array, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting sensitive semiconductor components from damage. 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 SOT-23 package. It is designed to protect components which are connected to data and transmission lines from voltage surges.

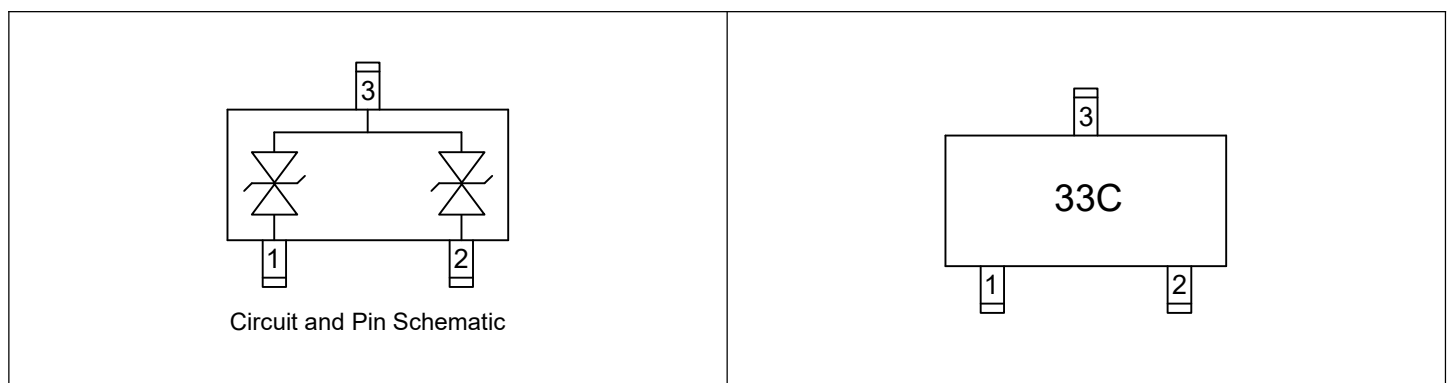
Features

- Low clamping voltage
- Ultra low leakage current
- Operating voltage: 3.3V~36V
- 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
- Server and Desktop PC
- Notebooks and Handhelds
- Industrial Controls
- Set Top Box

Pin Configuration and Marking



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

Parameter	Symbol	Value
Peak Pulse Power (8/20 μs)	P_{PP}	300W
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 ($T_A=25^\circ\text{C}$)

Part Number	Marking	Reverse Working Voltage	Reverse Breakdown Voltage @ $I_T=1\text{mA}$	Reverse Leakage Current @ V_{RWM}	Clamping Voltage @8/20 μs		Peak Pulse Current	Junction Capacitance @ $V_R=0\text{V}$, $f=1\text{MHz}$	
		V_{RWM} (V)	V_{BR} (V)	I_R (μA)	V_C (V)		I_{PP} (A)	C_J (pF)	
		Max.	Min.	Max.	@1A	@ I_{PP} Max.	Max.	Typ.	Max.
LY23DC03	33C	3.3	3.8	1.0	6	12	25	-	100
LY23DC05	05C	5	6	1.0	8	15	20	-	80
LY23DC12	12C	12	13.3	0.5	18	25	12	-	50
LY23DC15	15C	15	16.7	0.5	20	37.5	8	-	40
LY23DC24	24M	24	27	0.2	40	60	5	15	30
LY23DC36	36C	36	38	0.2	50	75	4	12	20

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

Figure 1. Peak Pulse Power Rating Curve

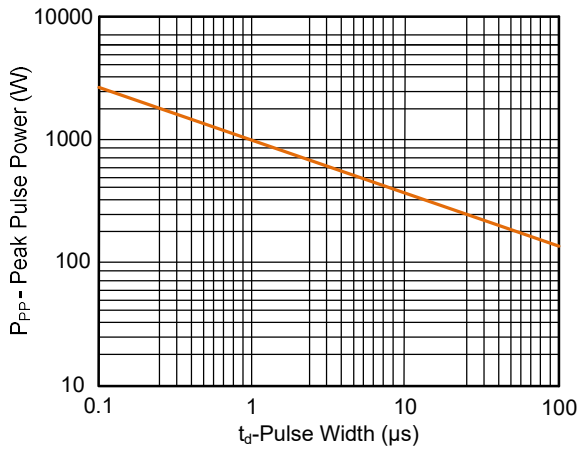


Figure 2. Pulse Derating Curve

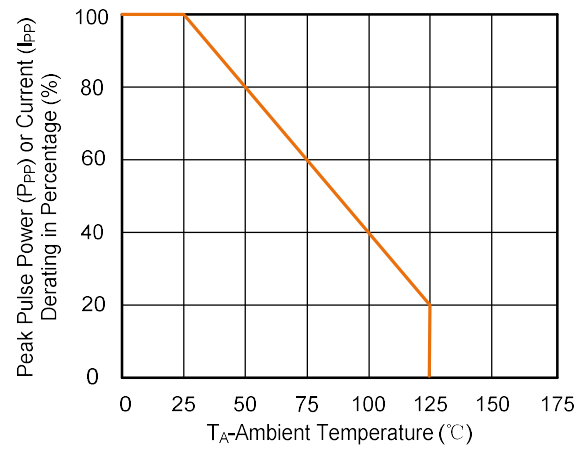


Figure 3. Pulse Waveform (8/20 μs)

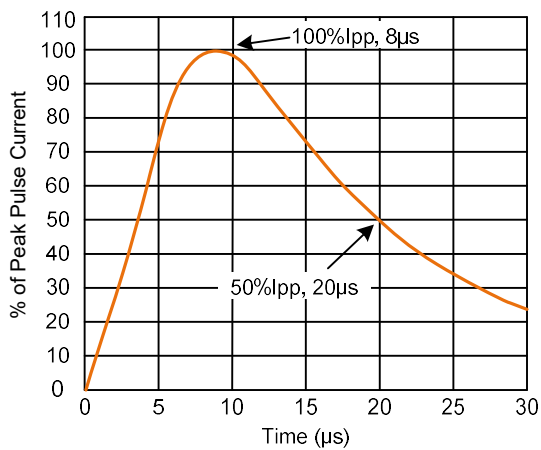
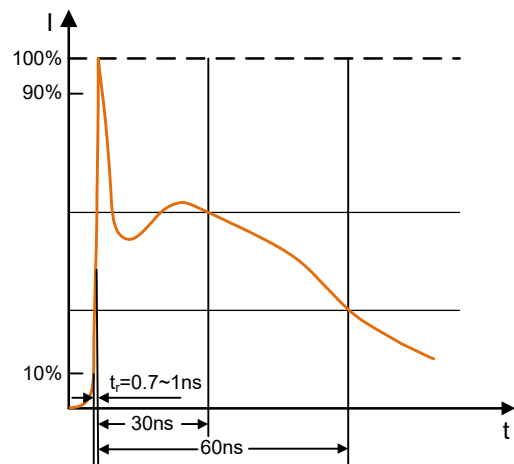
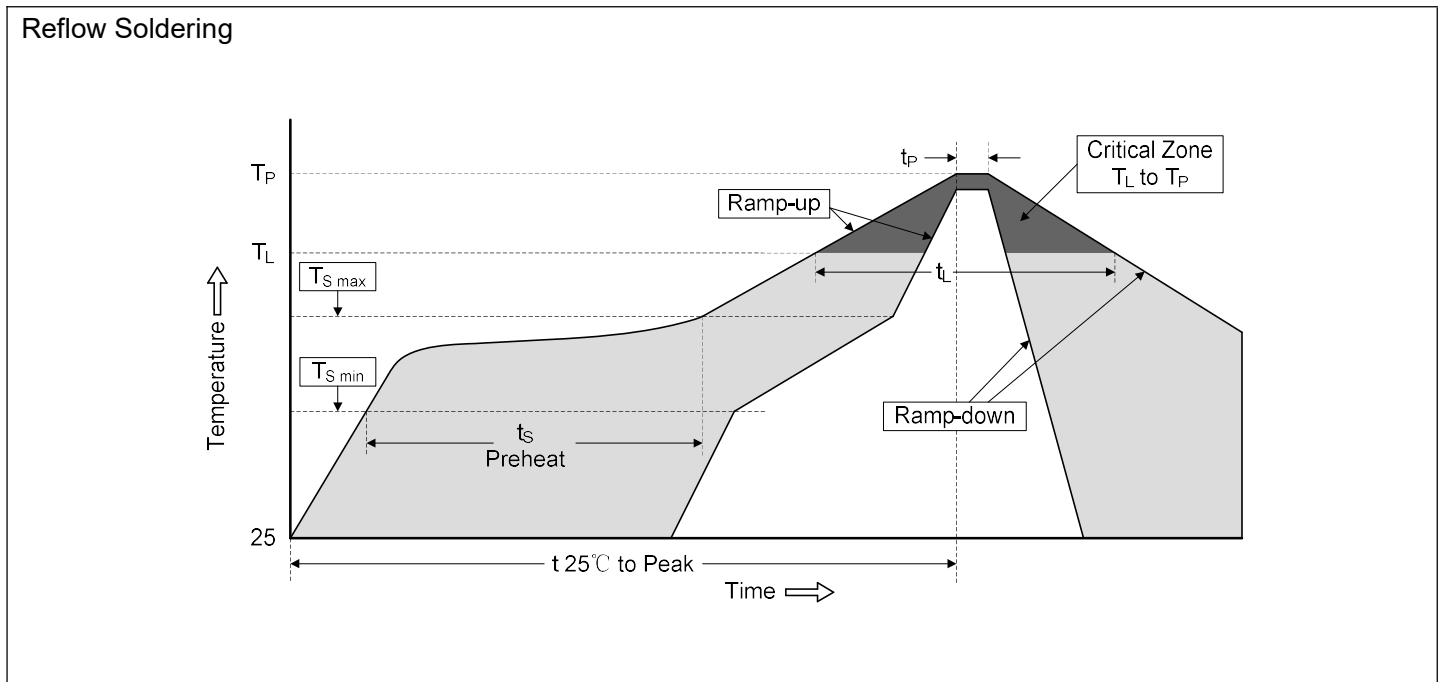


Figure 4. Pulse Waveform (IEC61000-4-2)



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 (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)

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