Description

The LY143EA05UL is a TVS 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), ±30kV air and ±30kV contact discharge. It is assembled into a lead-free SOT-143 package. It is designed to protect components which are connected to high speed interfaces and transmission lines from voltage surges.

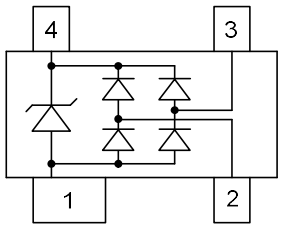
Features

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

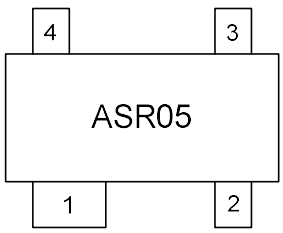
Applications

- Wireless Systems
- LAN/WAN equipment
- Video Line Protection
- Portable Instrumentation
- High Speed Data Line
- I^2C Bus Protection
- ISDN S/T Interface

Pin Configuration and Marking



Circuit and Pin Schematic



Absolute Maximum Ratings (T_A=25℃)

Parameter	Symbol	Value
Peak Pulse Power (8/20μs)	P_{PP}	400W
Peak Pulse Current (8/20μs)	I_{PP}	20A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±30kV ±30kV
Ambient Temperature Range	T_A	−55℃ to +125℃
Storage Temperature Range	T_{STG}	−55℃ to +150℃

Electrical Characteristics (T_A=25℃)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.
Reverse Working Voltage	V_{RWM}		-	-	5V
Breakdown Voltage	V_{BR}	I_T = 1mA	6V	-	-
Reverse Leakage Current	I_R	V_{RWM} = 5V	-	-	0.5μA
Clamping Voltage	V_C	I_{PP} = 1A (8/20μs)	-	-	10V
		I_{PP} = 20A (8/20μs)	-	-	20V
Junction Capacitance	C_J	V_R = 0V, f = 1MHz, between I/O pins	-	-	3pF
		V_R = 0V, f = 1MHz, between I/O pins to ground	-	3pF	6pF

Typical Characteristic Curves (T_A=25℃)

Figure 1. Peak Pulse Power Rating Curve

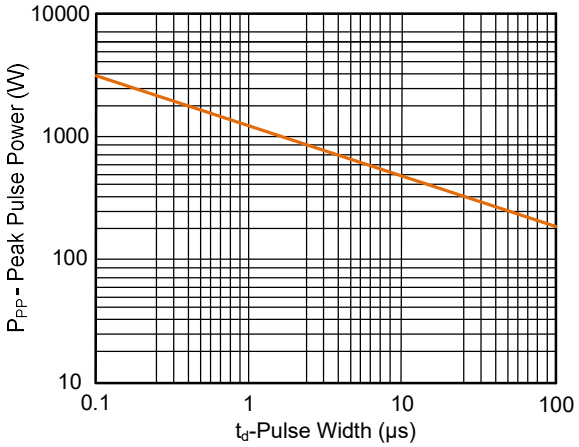


Figure 2. Pulse Derating Curve

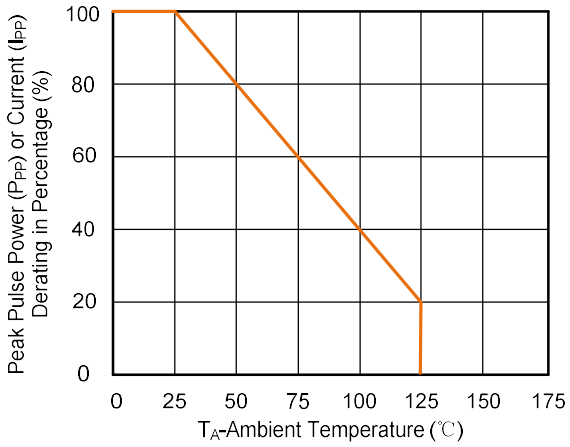


Figure 3. Clamping Voltage vs. Peak Pulse Current

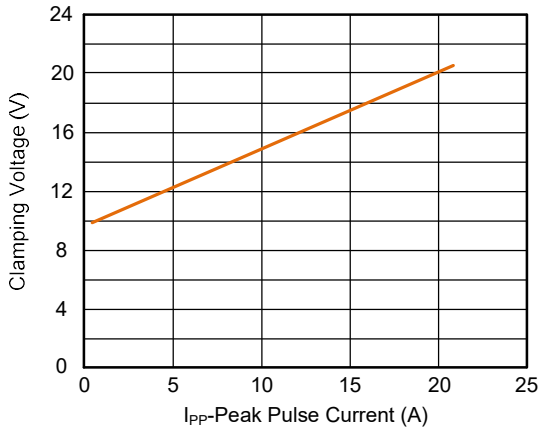


Figure 4. Junction Capacitance vs. Reverse Voltage

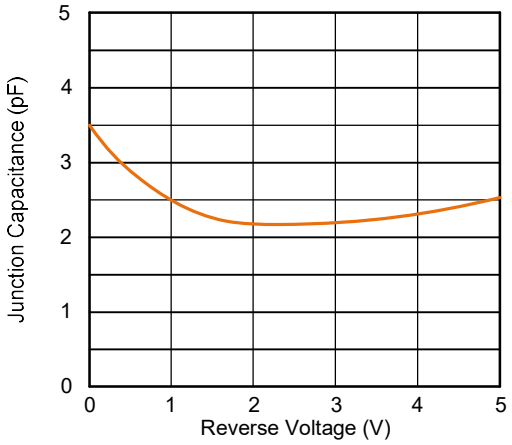


Figure 5. Pulse Waveform (8/20μs)

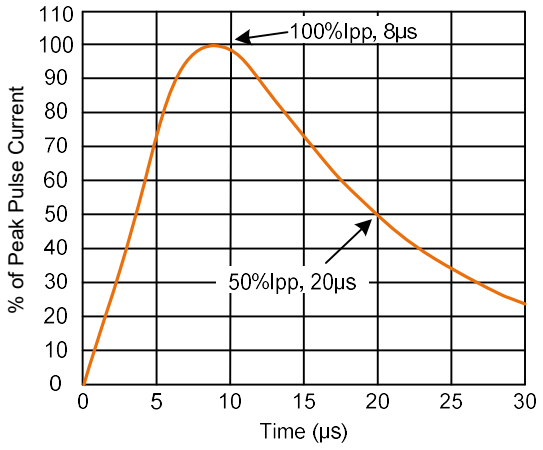
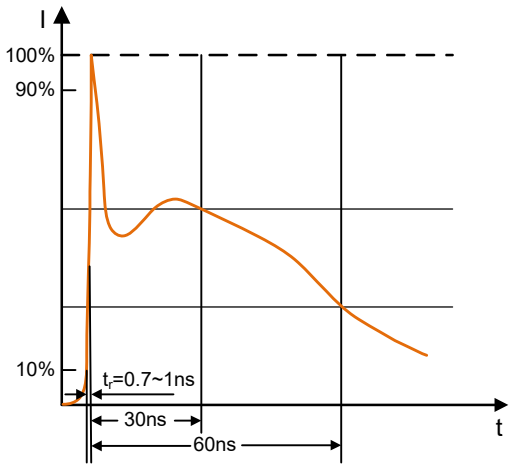
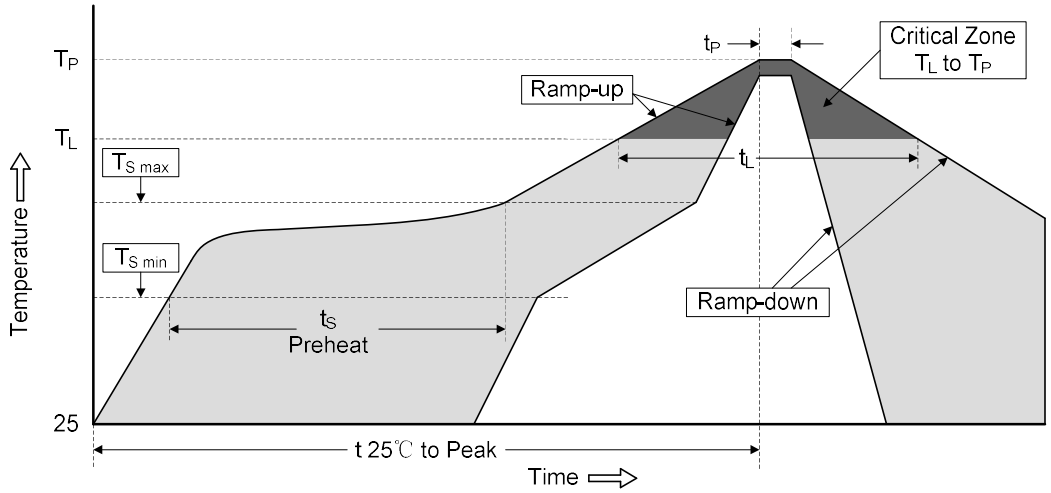


Figure 6. Pulse Waveform (IEC61000-4-2)



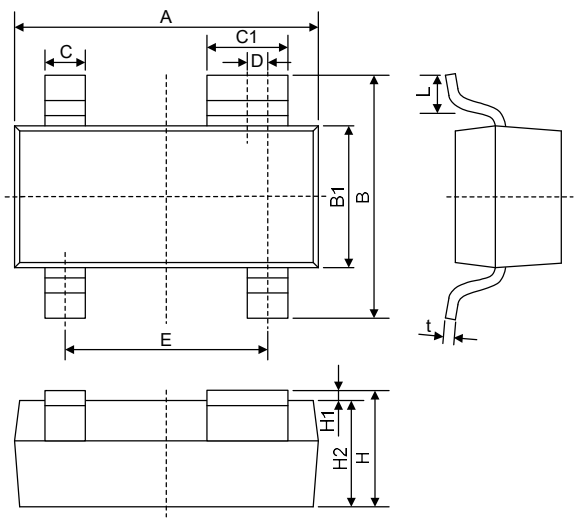
Soldering Parameters

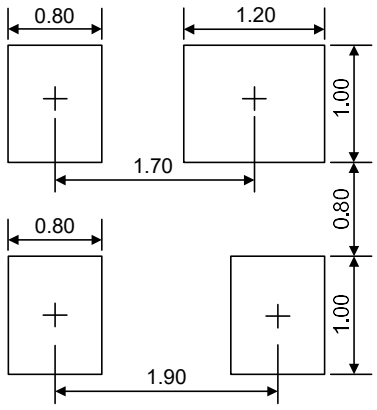
Reflow Soldering



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

Dimensions (SOT-143)





Recommended Solder Pad Layout (mm)

Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.04	0.110	0.120
B	2.10	2.64	0.083	0.104
B1	1.20	1.40	0.047	0.055
C	0.30	0.50	0.012	0.020
C1	0.75	0.94	0.030	0.037
D	0.20BSC		0.008BSC	
E	1.90BSC		0.075BSC	
H	0.80	1.22	0.031	0.048
H1	0.00	0.15	0.000	0.006
H2	0.80	1.07	0.031	0.042
L	0.30	0.60	0.012	0.024
t	0.08	0.20	0.003	0.008