

## Description

The LY553AA05 is a uni-directional 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 voltage sensitive portable electronics. 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-553 package. The combination of small size and high level of ESD protection make it ideal for cellular, notebooks, desktops, and other portable application.

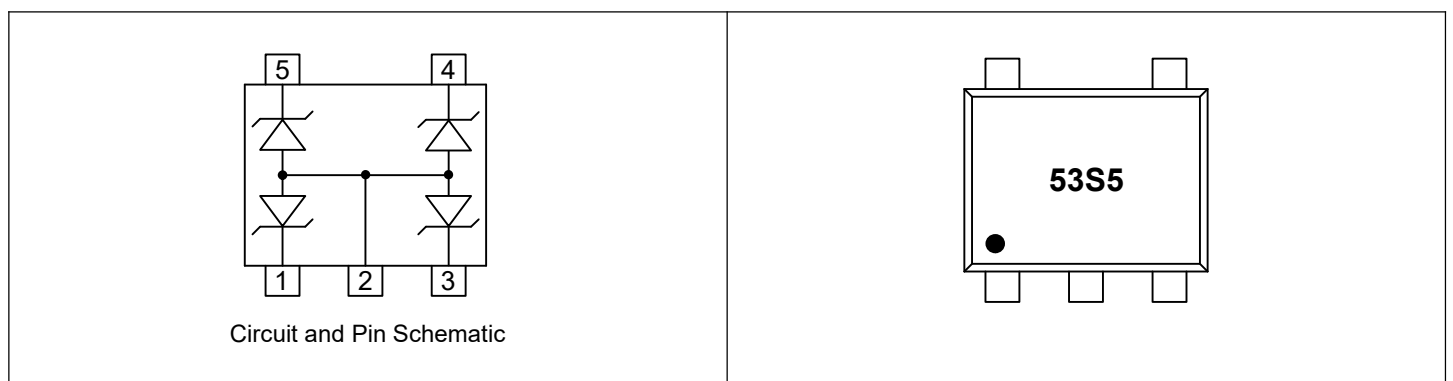
## Features

- 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
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- Peripherals
- Audio Players
- Keypads, Side Keys, LCD Displays

## Pin Configuration and Marking



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

Parameter	Symbol	Value
Peak Pulse Power (8/20 $\mu\text{s}$ )	$P_{PP}$	100W
Peak Pulse Current (8/20 $\mu\text{s}$ )	$I_{PP}$	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	$T_A$	$-55^\circ\text{C}$ 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	-	-
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 $\mu\text{s}$ )	-	-	10V
		$I_{PP} = 8\text{A}$ (8/20 $\mu\text{s}$ )	-	-	12.5V
Junction Capacitance	$C_J$	$V_R = 0\text{V}$ , $f = 1\text{MHz}$ , between I/O pins	-	25pF	-
		$V_R = 0\text{V}$ , $f = 1\text{MHz}$ , any I/O pin to pin 2	-	60pF	-

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

Figure 1. Peak Pulse Power Rating Curve

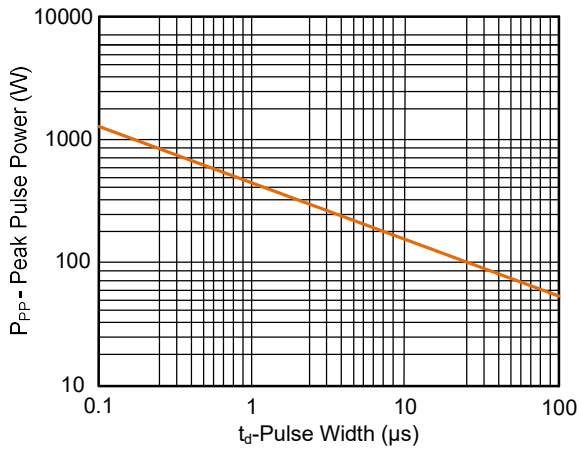


Figure 2. Pulse Derating Curve

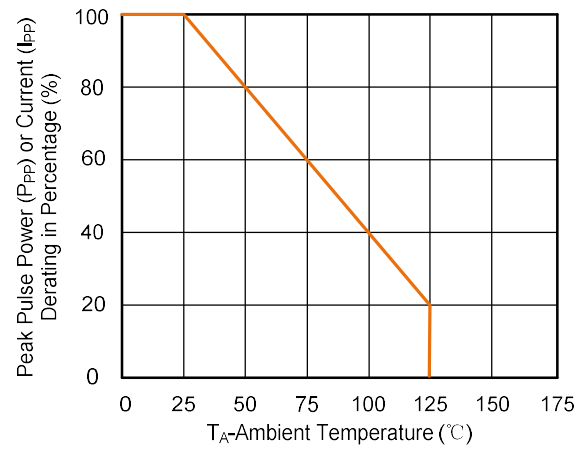


Figure 3. Clamping Voltage vs. Peak Pulse Current

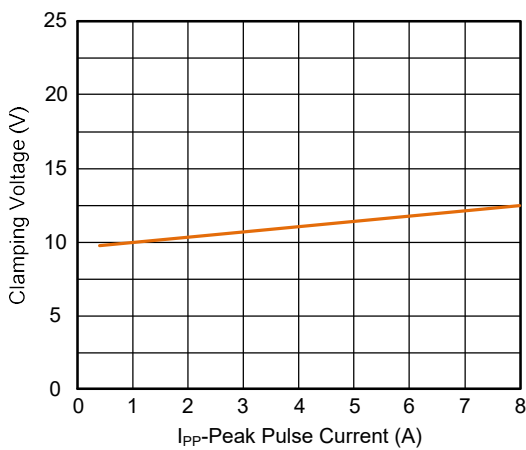


Figure 4. Junction Capacitance vs. Reverse Voltage

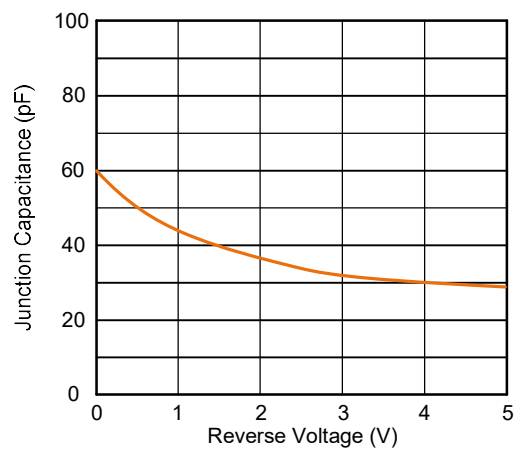


Figure 5. Pulse Waveform (8/20 $\mu\text{s}$ )

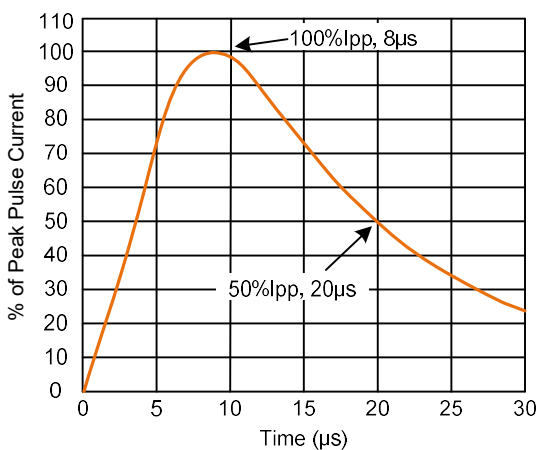
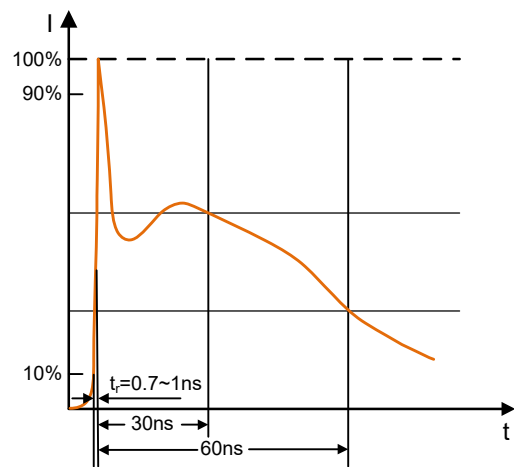
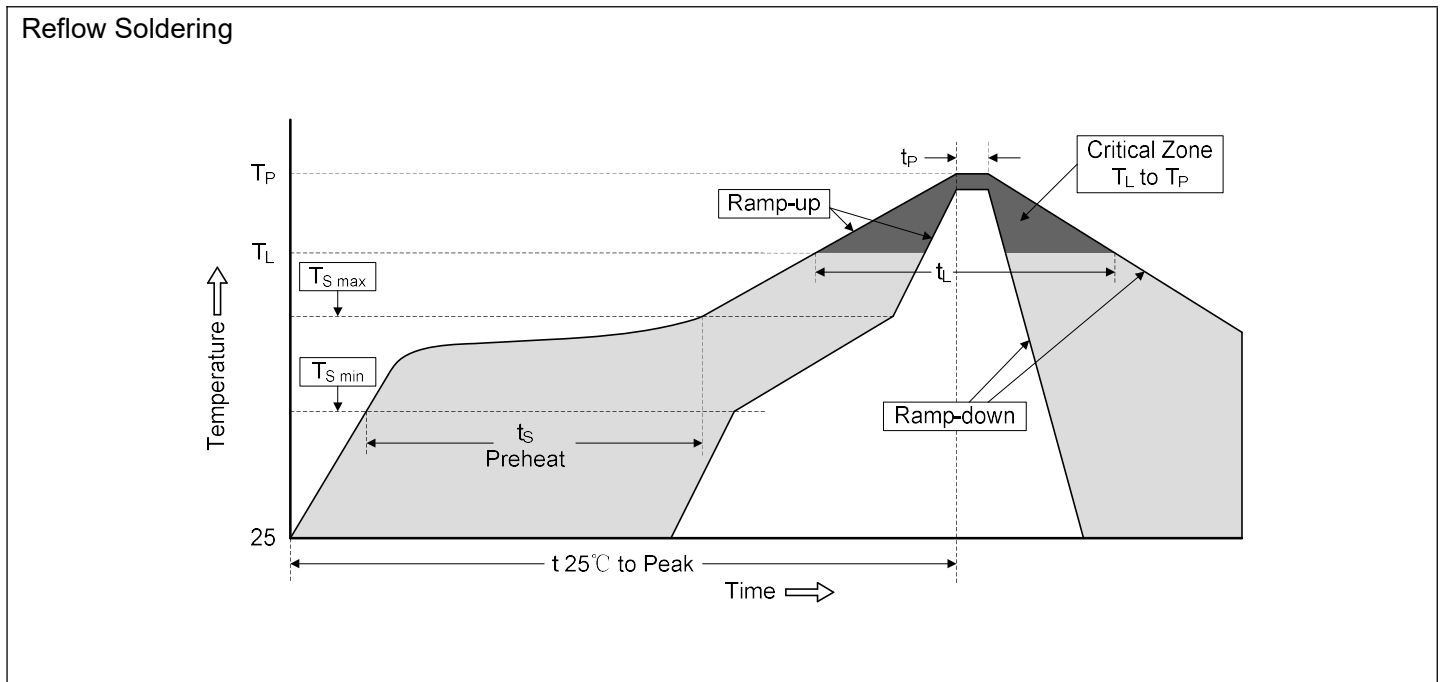


Figure 6. Pulse Waveform (IEC61000-4-2)



## 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 (SOT-553)**

Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.50	1.70	0.059	0.067
B	0.50BSC		0.020BSC	
C	1.50	1.70	0.059	0.067
D	1.10	1.30	0.043	0.051
E	0.17	0.27	0.007	0.011
F	0.50	0.60	0.020	0.024
G	0.08	0.18	0.003	0.007
H	0.10	0.30	0.004	0.012

Recommended Soldering Pad Layout (mm)