

## Description

The ASHxxE2U series transient voltage suppressor arrays, designed to protect applications such as computers, printers, business machines, communication system and other applications. This series is rated at 350 Watts for an 8/20 $\mu$ s waveshape and also can be used as bidirectional suppressor by connecting only pin 1 and 2. This series offers low leakage current in a SOT-23 package.



## Mechanical Characteristics

- ◆ SOT-23
- ◆ ROHS/ Compliant
- ◆ Halogen free
- ◆ Molding compound flammability rating: UL 94V-0
- ◆ Marking: Part number

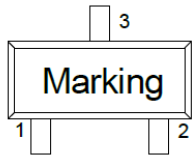
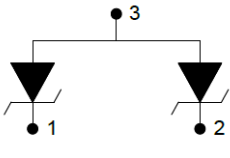
## Features

- ◆ IEC 61000-4-2 (ESD)
  - $\pm$ 30kV Contact Discharge
  - $\pm$ 30kV Air Discharge
- ◆ 350W peak pulse power (tp=8/20us)
- ◆ IEC 61000-4-4 EFT Protection
  - 40A (5/50ns)
- ◆ Halogen free and RoHS compliant
- ◆ Protects one directional I/O line
- ◆ Low clamping current
- ◆ Low leakage current
- ◆ AEC-Q101 qualified

## Applications

- ◆ Cell Phone Handsets and Accessories
- ◆ Microprocessor based equipment
- ◆ Personal Digital Assistants
- ◆ Notebooks / Desktops / Servers
- ◆ Portable Instrumentation
- ◆ Peripherals & Pagers

### Dimensions and Pin Configuration

Pin	Name	Description	Outline	Circuit Diagram
1	IO	Connect to IO		
2	IO	Connect to IO		
3	GND	Connect to GND		

### Ordering Information

Part Number	Package	Material	Packing	Quantity per reel	Flammability Rating	Reel Size		
ASHxxE2U	SOT-23	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches		
Marking for the ASHxxE2U series								
$V_{RWM}$	3.3V	5V	7V	12V	15V	18V	24V	36V
Marking	M03	M05	M07	M12	M15	M18	M24	M36

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

Parameters	Symbol	Min.	Max.	Unit
Peak pulse power ( $t_p=8/20\mu\text{s}$ )@25°C	$P_{pk}$	-	350	W
ESD (IEC61000-4-2 air discharge) @25°C	$V_{ESD}$	-	±30	kV
ESD (IEC61000-4-2 contact discharge) @25°C	$V_{ESD}$	-	±30	kV
Junction temperature	$T_J$	-	125	°C
Operating temperature	$T_{OP}$	-40	125	°C
Storage temperature	$T_{STG}$	-55	150	°C
Lead temperature	$T_L$	-	260	°C

**Electrical Characteristics ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)**

Part Number	$V_{RWM}$ (max.)	$V_{BR}$ (min.)	$V_{CL@I=1A}$ (max.)	$I_{PP}$ (max.)	$V_{CL@I=I_{PP}}$ (max.)	$I_R$ (max.)	$C_J$ (typ.)
	(V)	(V)	(V)	(A)	(V)	( $\mu\text{A}$ )	(pF)
ASH03E2U	3.3	4	8	25	15	1	200
ASH05E2U	5	6	9	15	18	1	180
ASH07E2U	7	7.5	10	14	20	1	150
ASH12E2U	12	13.3	19	12	28	1	100
ASH15E2U	15	16.5	24	10	33	1	80
ASH18E2U	18	20	29	9	45	1	75
ASH24E2U	24	26	38	6	48	1	60
ASH36E2U	36	38	55	4	65	1	50

Typical Performance Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise Specified)

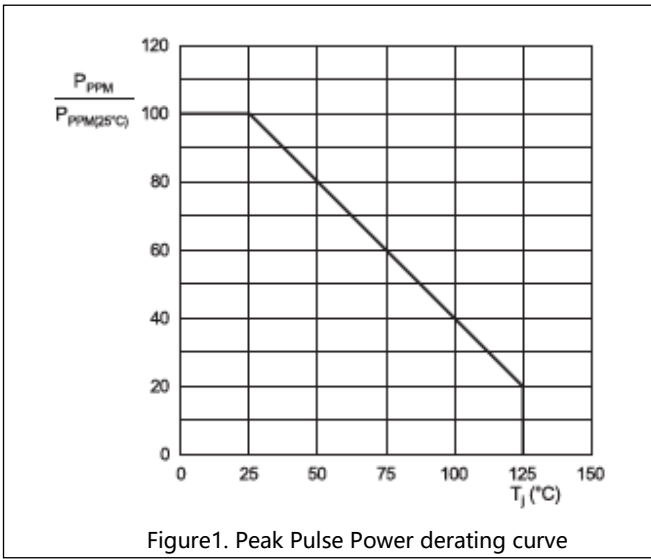


Figure1. Peak Pulse Power derating curve

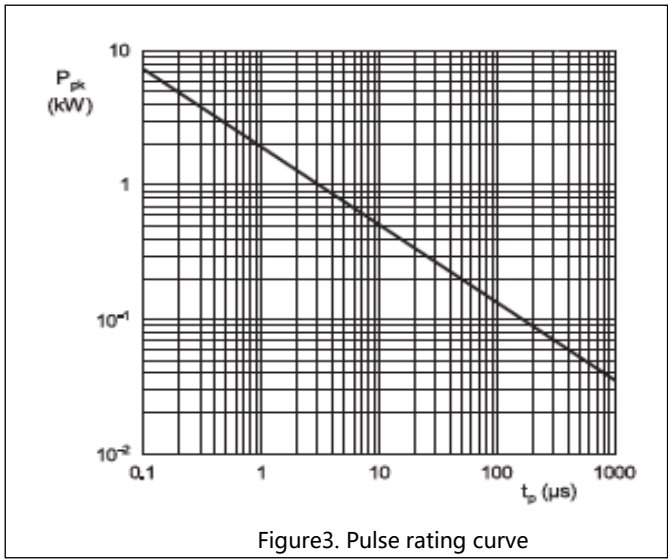


Figure3. Pulse rating curve

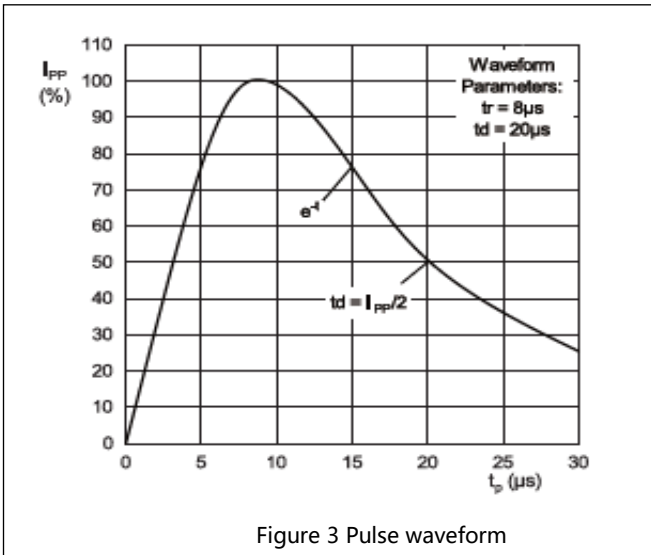


Figure 3 Pulse waveform

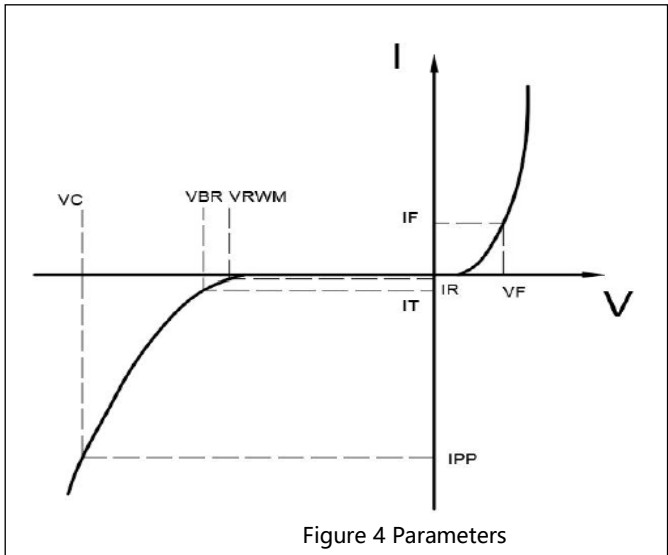
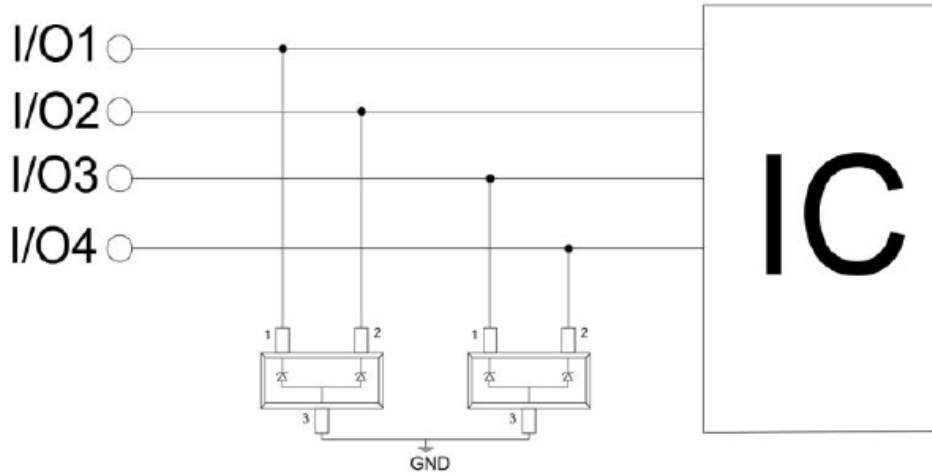


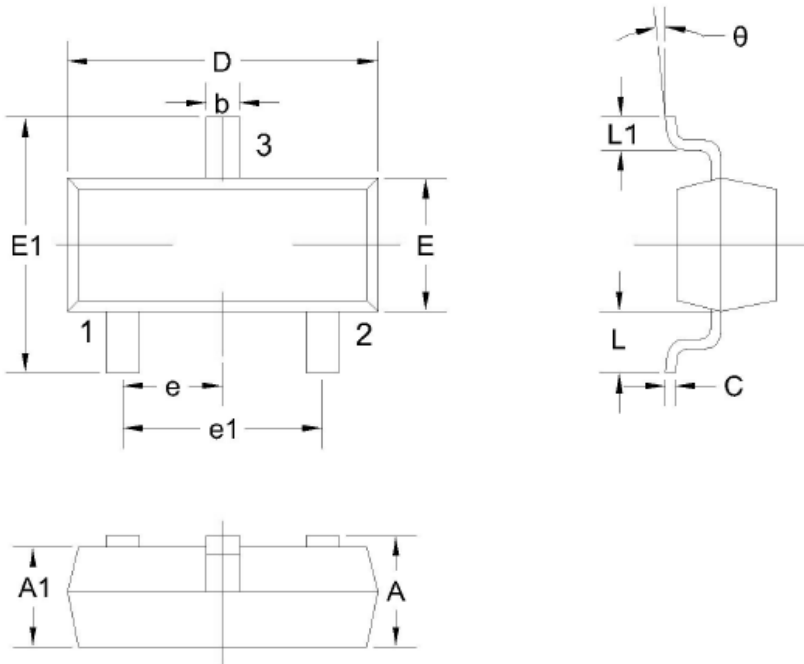
Figure 4 Parameters

## Applications Information

Typical Internet Application



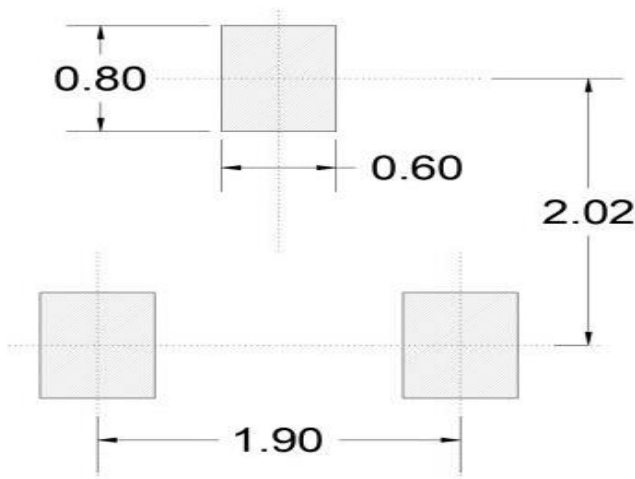
Package Outline Drawing



Units in millimeters

Dimensions in Millimeters					
Symbol	Min.	Max.	Symbol	Min.	Max.
A	0.9	1.15	e1	1.8	2
A1	0.9	1.05	L	0.55REF	
b	0.3	0.5	L1	0.3	0.5
C	0.08	0.15	θ	0°	8°
D	2.8	3			
E	1.2	1.4			
E1	2.25	2.55			
e	0.95TYP				

Recommended Land Pattern



Note:

1. Controlling dimension: in millimeters
2. General tolerance: ±0.05mm
3. The pad layout is for reference only



Revision history of Specification

Version	Change Items	Effective Date
1.0	Initial Release	13-Aug-2021

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