

## Description

The CSH12W2U3 is a high power TVS, 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 lines.. It is assembled into a 3-pin DFN2020-3 lead-free package. Each device will protect one line. The combination of small size, and high surge capability makes them ideal for use in applications such as cellular phones, LCD displays, MSB, and multi media card



## Features

- ◆ 5000 Watts peak pulse power (tp=8/20μs)
- ◆ Low leakage current
- ◆ Low clamping voltage
- ◆ Solid-state silicon-avalanche technology
- ◆ RoHS compliant

## Mechanical Data

- ◆ Power lines
- ◆ Personal digital assistants (PDA's)
- ◆ Microprocessors based equipment
- ◆ Notebooks, desktops, and servers
- ◆ Cell phone handsets and accessories
- ◆ Portable electronics
- ◆ Peripherals

## Ordering Information

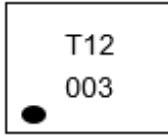
Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
CSH12W2U3	DFN2*2- 3L		Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

### Pin Configuration and Functions

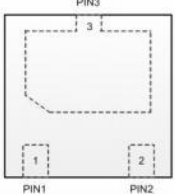

Outline	Circuit Diagram
	

Table-2 Pin configuration

### Absolute Maximum Rating

Over operating free-air temperature range (unless otherwise noted)

Parameters	Symbol	Min.	Max.	Unit
Peak pulse power (tp=8/20μs)@25°C	P <sub>pk</sub>	-	5000	W
Peak pulse current (tp=8/20μs)@25°C	I <sub>PP</sub>		200	A
ESD (IEC61000-4-2 air discharge) @25°C	V <sub>ESD</sub>	-	±30	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V <sub>ESD</sub>	-	±30	kV
Junction temperature	T <sub>J</sub>	-	150	°C
Operating temperature	T <sub>OP</sub>	-55	150	°C
Storage temperature	T <sub>STG</sub>	-55	150	°C
Lead temperature	T <sub>L</sub>	-	260	°C

Table-3 Absolute Maximum rating

## Electrical Characteristics

At Ta = 25°C unless otherwise noted

Parameters	Symbol	conditions	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	$V_{RWM}$				12	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T = 1mA$	12.8	14	15	V
Reverse Leakage Current	$I_R$	$V_{RWM} = 12V$			0.5	$\mu A$
Peak Pulse Current	$I_{PP}$	$TP = 8/20\mu s @ 25^\circ C$		200		A
Clamping Voltage	$V_{CL}$	$I_{PP} = 50A ; TP = 8/20\mu s$		16	20	V
		$I_{PP} = 100A ; TP = 8/20\mu s$		18	22	
		$I_{PP} = 200A ; TP = 8/20\mu s$		20	24	
Junction capacitance	$C_J$	$V_{RWM} = 0V, f = 1MHz$		1000	1300	pF

Table-4 Electrical Characteristics

Ratings and Characteristic Curves (TA =25°C unless otherwise noted)

Figure 1. ESD clamping

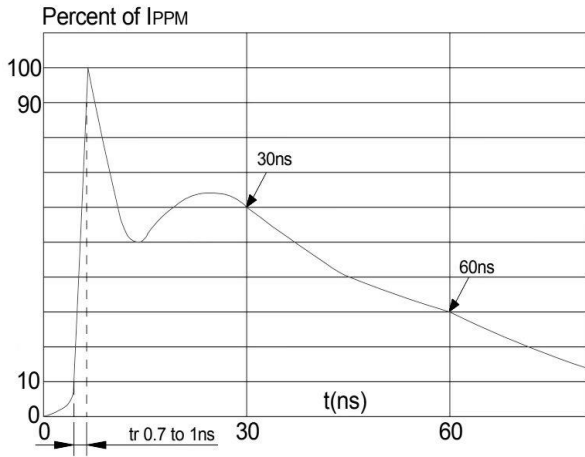


Figure 2. Peak pulse power derating curve

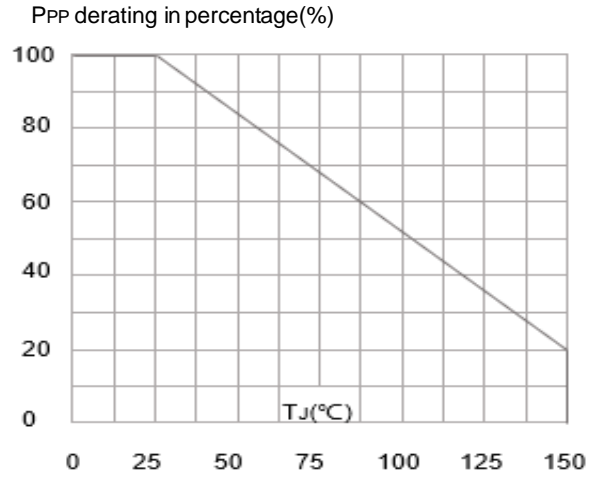


Figure 3. 8/20μs Pulse Waveform

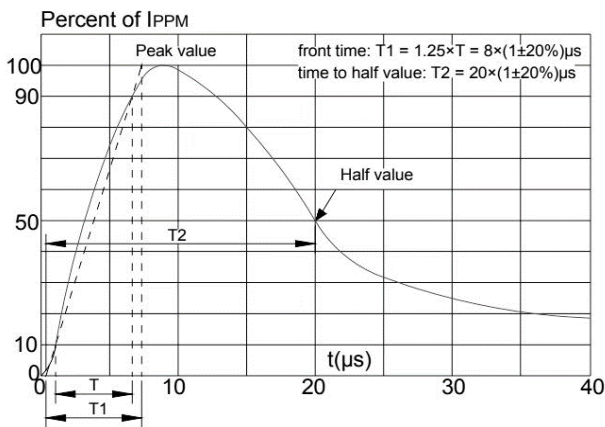
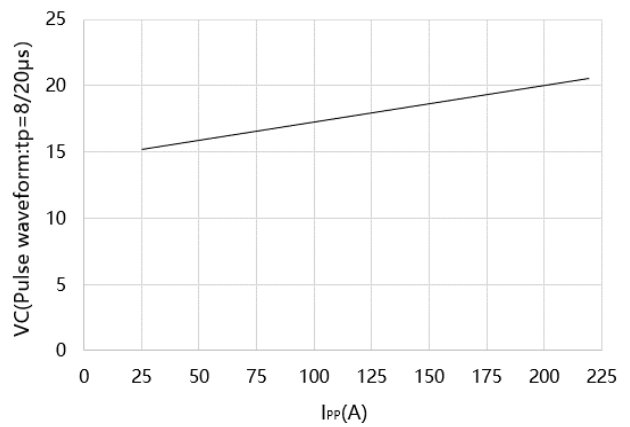
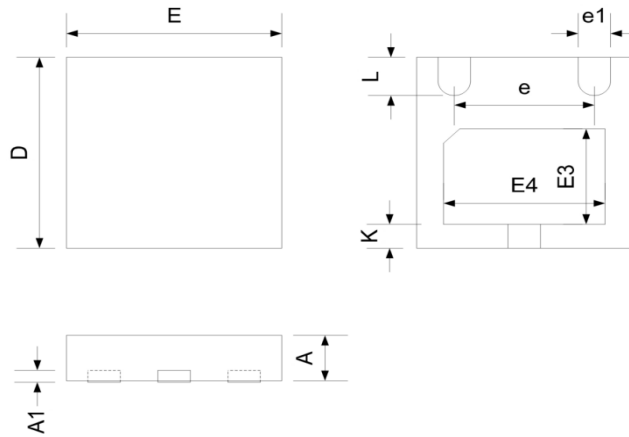


Figure 4. Clamping voltage vs.peak pulse current





Dimension

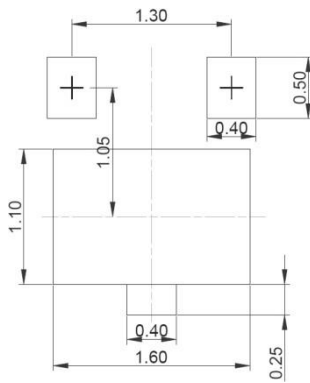


Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
D	1.900	2.000	2.100
E	1.900	2.000	2.100
e	1.200	1.300	1.400
e1	0.200	0.300	0.400
E3	0.850	1.000	1.150
E4	1,350	1.500	1.650
K	0.150	0.250	0.350
L	0.300	0,400	0.500
A	0.425	0.475	0.525
A1	0.100	0.125	0.150

Table-5 product dimension



### Recommended Land Pattern



#### Note:

1. Controlling dimension: in millimeters
2. General tolerance:  $\pm 0.05\text{mm}$
3. The pad layout is for reference only

### Revision history of Specification

Version	Change Items	Effective Date
1.0	Initial Release	10-Oct-2023