

## Description

The CSHxxFU are designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time. The CSHxxFU are suited for use in cellular phones, portable device, digital cameras, power supplies and many other portable applications.



## Mechanical Characteristics

- ◆ DNF1006-2L
- ◆ ROHS/ Compliant
- ◆ Halogen free
- ◆ Molding compound flammability rating: UL 94V-0
- ◆ Marking: Part number
- ◆ Packing: Tape and Reel per EIA 481



## Features

- ◆ IEC 61000-4-2 (ESD)
  - $\pm 30\text{kV}$  Contact Discharge
  - $\pm 30\text{kV}$  Air Discharge
- ◆ 300W Peak pulse Power (8/20us)
- ◆ IEC 61000-4-4 EFT Protection
  - 40A (5/50ns)
- ◆ Halogen free and RoHS compliant
- ◆ Protects one directional I/O line
- ◆ Low clamping voltage
- ◆ Low capacitance
- ◆ Low leakage current

## 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		
3	GND	Connect to GND		

## Ordering Information

Part Number	Package	Material	Packing	Quantity per reel	Flammability Rating	Reel Size	
CSHxxFU	DFN1006-2L	Halogen free	Tape & Reel	10,000 PCS	UL 94V-0	7 inches	
Marking for the CSHxxFU series							
V <sub>RWM</sub>	3.3V	5V	7V	12V	15V	24V	36V
Marking	3	5	7	12	15	24	36

## Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise specified)

Parameters	Symbol	Min.	Max.	Unit
Peak pulse power (tp=8/20us)@25°C	P <sub>pk</sub>	-	300	W
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>	-	125	°C
Operating temperature	T <sub>OP</sub>	-40	125	°C
Storage temperature	T <sub>STG</sub>	-55	150	°C
Lead temperature	T <sub>L</sub>	-	260	°C

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

Part Number	VRWM (max.)	VBR (min.)	VCL@I=1A (max.)	IPP (max.)	VCL@I=IPP (max.)	IR (max.)	CJ (typ.)
	(V)	(V)	(V)	(A)	(V)	( $\mu\text{A}$ )	(pF)
CSH03FU	3.3	4.0	8.5	24.0	18	1.0	200
CSH05FU	5.0	6.0	9.5	15.0	20	1.0	180
CSH07FU	7.0	7.4	11	10.0	22	1.0	140
CSH12FU	12.0	13.3	19	8.0	35	1.0	100
CSH15FU	15.0	16.4	25	7.0	45	1.0	80
CSH24FU	24.0	26.0	40	6.0	55	1.0	60
CSH36FU	36.0	37.9	50	5.0	70	1.0	40

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

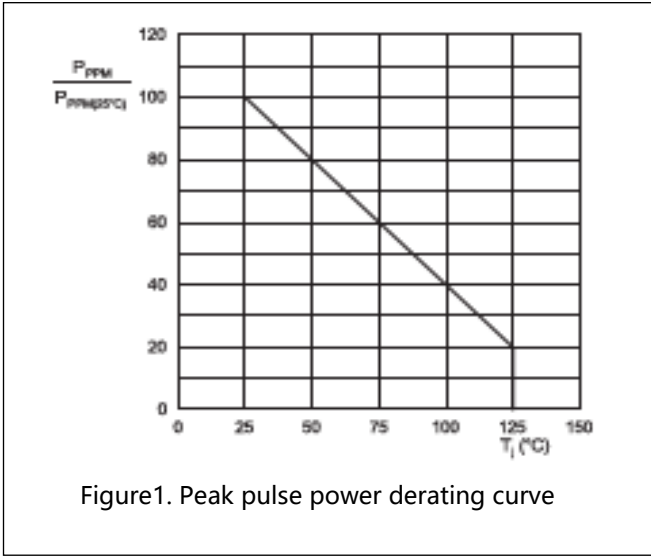


Figure1. Peak pulse power derating curve

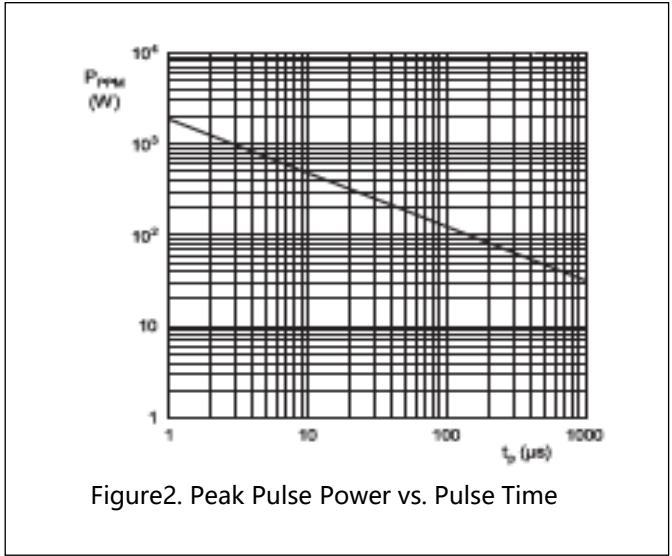


Figure2. Peak Pulse Power vs. Pulse Time

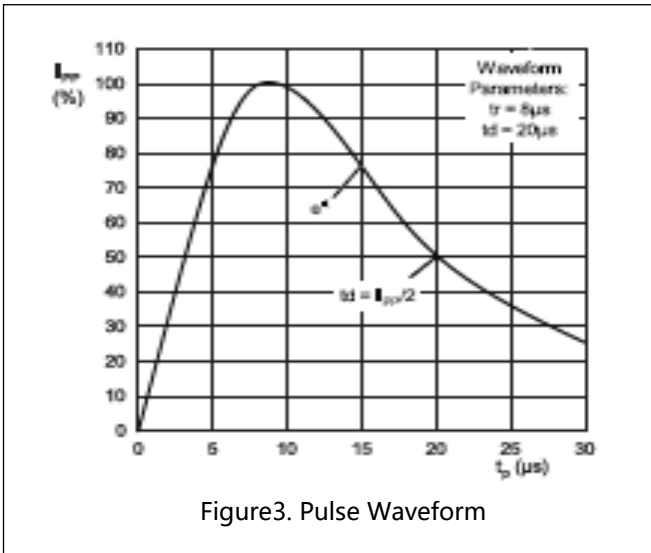


Figure3. Pulse Waveform

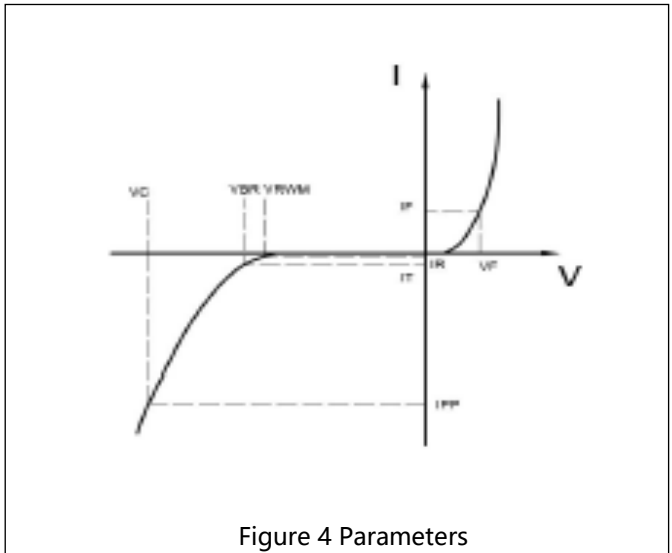
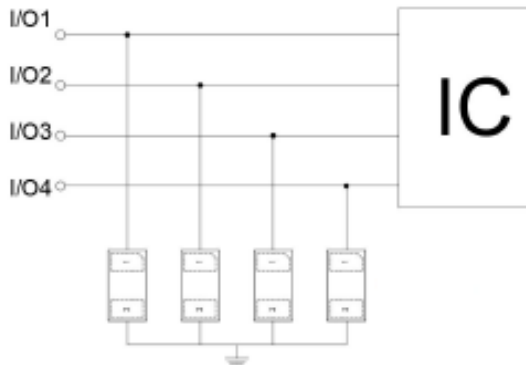


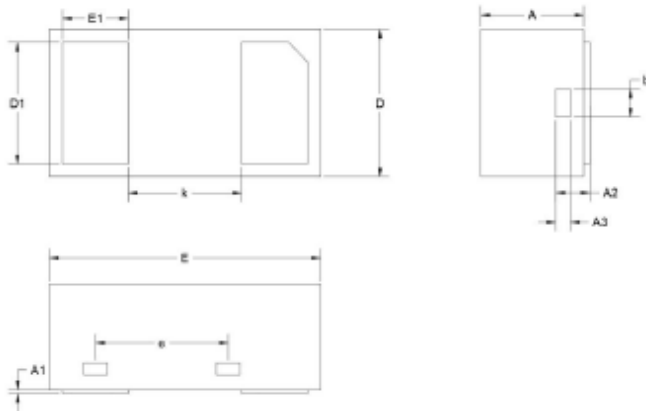
Figure 4 Parameters

Applications Information

Typical Interface Application



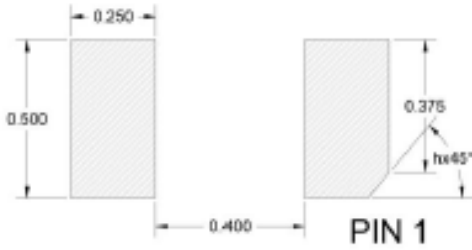
Package Outline Drawing



Units in millimeters

Symbol	Min.	Nom.	Max.
A	0.350	0.450	0.550
A1	0.000	0.020	0.050
A2	0.077	0.127	0.207
A3	0.013	0.063	0.113
b	0.070	0.120	0.200
D	0.500	0.600	0.700
D1	0.400	0.500	0.600
E	0.900	1.000	1.100
E1	0.150	0.250	0.350
e	0.310	0.410	0.560
k	0.300	0.400	0.500

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	13-Aug-2021