



## 1-Line Uni-directional ESD Protection Diode

### General description

The ESD8FT5.0 is an uni-directional TVS diode, 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 data and power line. The ESD8FT5.0 complies with the IEC 61000-4-2 (ESD) standard with  $\pm 30\text{kV}$  air and  $\pm 30\text{kV}$  contact discharge. It is assembled into an ultra-small 1.0x0.6x0.5mm lead-free DFN package. The small size and high ESD surge protection make ESD8FT5.0 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

### Features and benefits

- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm 30\text{kV}$
    - Contact discharge:  $\pm 30\text{kV}$
  - IEC61000-4-5 (Lightning) 50A (8/20  $\mu\text{s}$ )
- Low clamping voltage
- Ultra small package: 1.0x0.6x0.5mm
- RoHS Compliant

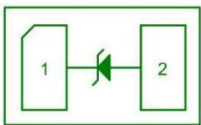
### Application information

- Hand Held Portable Applications
- Vbat pin for Mobile Devices
- Battery Protection
- Power Line Protection
- Mobile Phones
- Portable electronics

### Ordering information

Device	Package	Packaging	Reel Size
ESD8FT5.0	DFN1006-2L	10000/Tape & Reel	7 Inch

### Schematic & Pin configuration

Graphic symbol	Pin	Symbol	Description
	1	K	Cathode
	2	A	Anode

**Maximum Ratings** ( $T_{OP} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

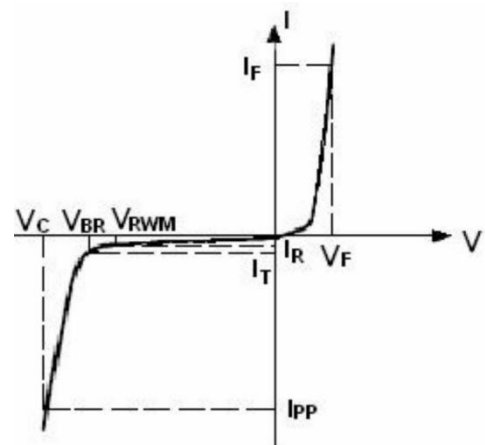
Parameter	Symbol	Value	Unit
Peak Pulse Power ( $T_p = 8/20\text{ }\mu\text{s}$ )	$P_{PPM}$	550	W
Rated Peak Pulse Current ( $T_p = 8/20\text{ }\mu\text{s}$ )	$I_{PPM}$	50	A
ESD voltage IEC 61000-4-2 (air discharge)	$V_{ESD}$	30	kV
ESD voltage IEC 61000-4-2 (contact discharge)	$V_{ESD}$	30	kV
Maximum lead temperature for soldering during 10s	$T_L$	260	$^{\circ}\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^{\circ}\text{C}$
Operating Temperature Range	$T_{OP}$	-40 to +125	$^{\circ}\text{C}$

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

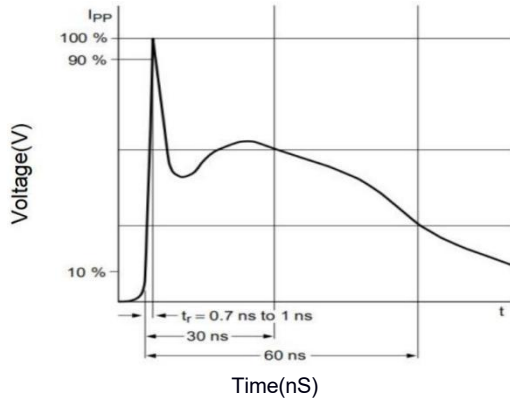
Parameter	Symbol	Min	Typ	Max	Unit	Condition
Reverse Working Voltage	$V_{RWM}$	--	--	5.0	V	
Breakdown Voltage	$V_{BR}$	5.6	6.1	7.6	V	$I_T=1\text{mA}$
Leakage Current $I_{Leak}$	$I_R$	--	--	0.1	$\mu\text{A}$	$V_{RWM}=5.0\text{V}$
Forward Voltage	$V_F$	0.6	--	1.1	V	$I_F=10\text{mA}$
Forward Clamping Voltage	$V_{CF}$	--	--	8.5	V	$I_{PP}=40\text{A}, T_p=8/20\mu\text{s}$
Reverse Clamping Voltage	$V_{CR}$	--	9.0	11.0	V	$I_{PP}=50\text{A}, T_p=8/20\mu\text{s}$
Junction Capacitance	$C_j$	--	100	150	$\text{pF}$	$V_R=0\text{V}, f=1\text{MHz}$

**Portion Electronics Parameter**

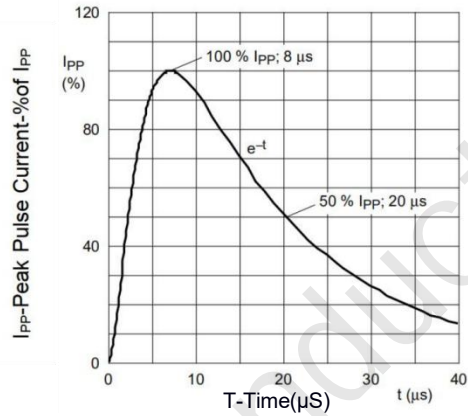
Symbol	Parameter
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$V_{RWM}$	Working Peak Reverse Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$I_T$	Test Current
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$



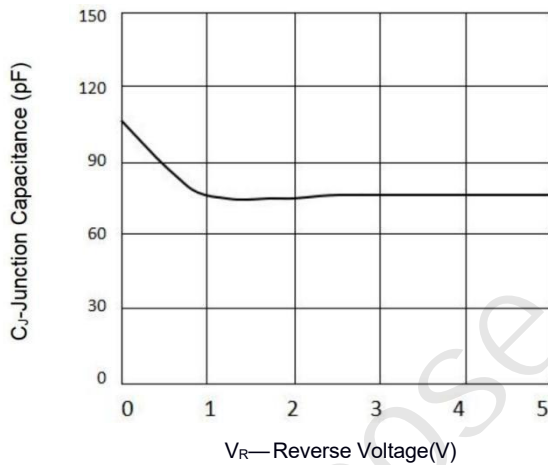
**Typical Performance Characteristics** ( $T_A=25^\circ\text{C}$  unless otherwise Specified)



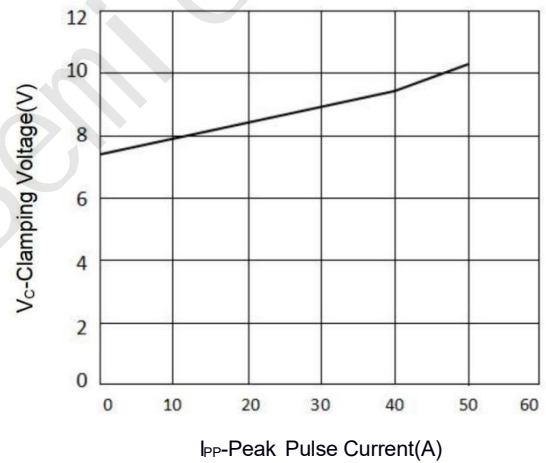
**IEC61000-4-2 Pulse Waveform**



**IEC61000-4-5 8X20µs Pulse Waveform**



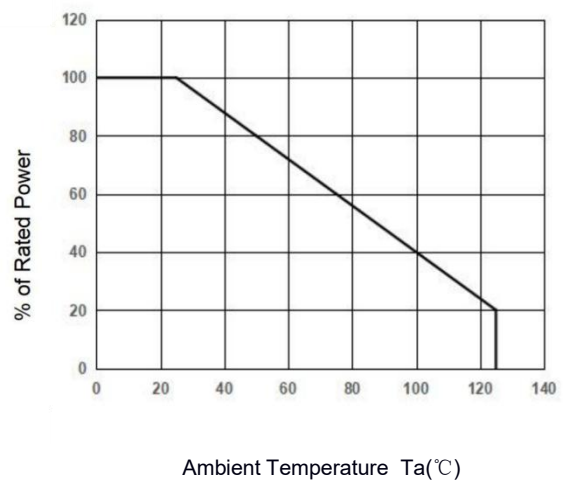
**Junction Capacitance vs. Reverse Voltage**



**Clamping Voltage vs. Peak Pulse Current**



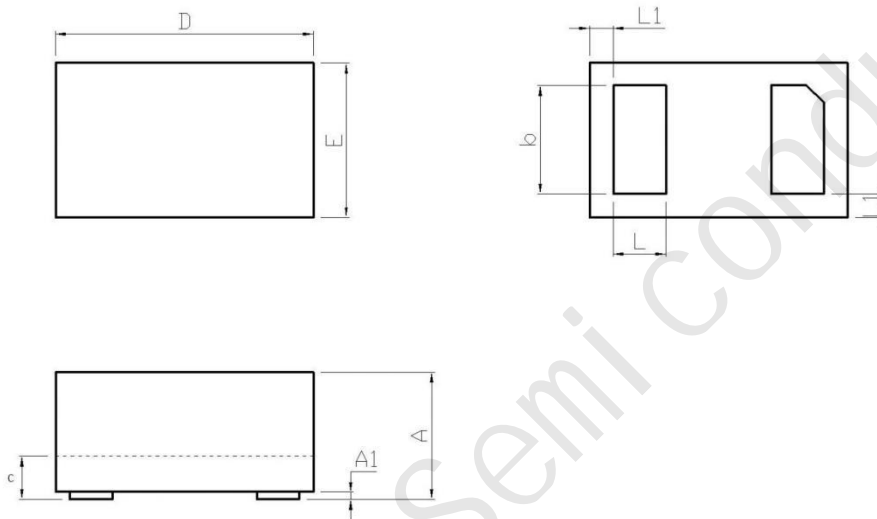
**Peak Pulse Power vs. Pulse Time**



**Power Derating Curve**

## Package Outline Dimensions

### DFN1006-2L



DFN1006-2L (mm)			
Dim	Min	Typ.	Max
A	0.45	0.50	0.55
A1	0	0.02	0.05
b	0.45	0.5	0.55
c	0.12	0.15	0.18
D	0.95	1.00	1.05
E	0.55	0.60	0.65
L	0.20	0.25	0.30
L1	0.035	0.05	0.065

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