TPSE10F10B5.0MA-SP

Electrostatic Discharge Protection Device

FEATURES

- 72Watts peak pulse power (tp = 8/20μs)
- Bidirectional configurations
- Solid-state silicon-avalanche technology
- Working voltages : 5.0 V
- Low leakage current
- Low capacitance: Cj = 0.3pF typ
- Meet AEC-Q101 Requirements

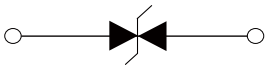
APPLICATIONS

- USB 3.0 and USB3.1
- Ultra-high-speed data lines
- Very sensitive interface lines
- Notebooks, Desktops, and Servers
- Portable Instrumentation

DFN1006

T5

Marking



Schematic Symbol

IEC COMPATIBILITY

- IEC61000-4-2 (ESD) ±25kV (air), ±25kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

THERMAL CONSIDERATIONS

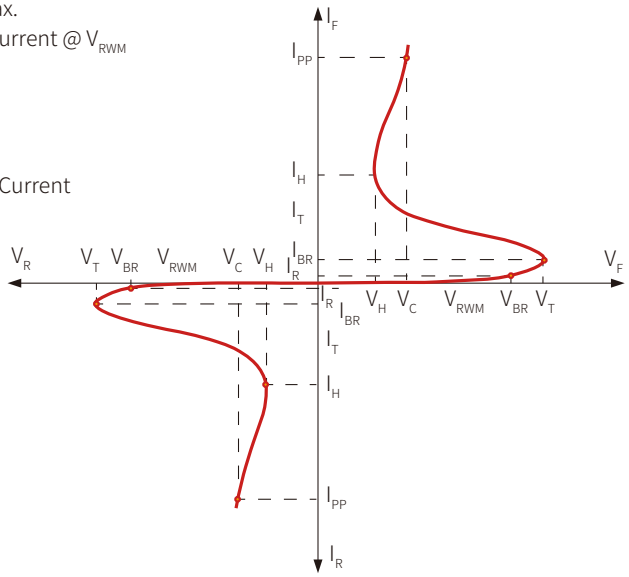
Symbol	Parameter	Value	Unit
P_{pp}	Peak Pulse Power (tp=8/20μs waveform)	72	Watts
T_J	Operating Temperature Range	-55 to +125	°C
T_{STG}	Storage Temperature Range	-55 to +125	°C

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
V_{RWM}	Reverse Stand-off Voltage				5	V
V_{BR}	Reverse Breakdown Voltage	I_T=1mA	6	7		V
V_H	Holding Voltage		2		3.5	V
I_R	Reverse Leakage Current	V_{RWM}=5.0V			0.5	μA
V_C	Clamping Voltage	I_{PP}=9A,tp=8/20μs		7	8	V
V_{CL}	ESD Clamping Voltage	I_{TLP}=4A tp=0.2/100ns		3.7		V
V_{CL}	ESD Clamping Voltage	I_{TLP}=16A tp=0.2/100ns		8		V
I_{PP}	Peak Pulse Current	tp=8/20μs			9	A
R_{dyn}	ESD Dynamic Resistance	T_{LP}=0.2/100ns		0.35		Ω
C_J	Off State Junction Capacitance	V_R=0V, f=1MHz		0.30	0.40	pF

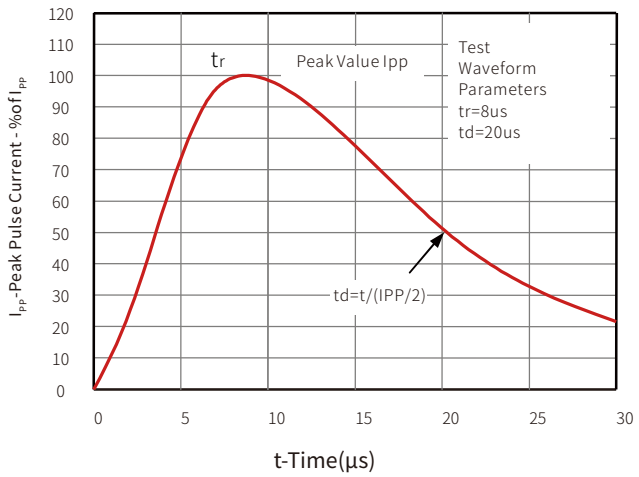
ELECTRICAL PARAMETERS (T_A = 25°C)

V_{RWM} ····· Reverse Working Voltage Max.
I_R ····· Maximum Reverse Leakage Current @ V_{RWM}
V_T ····· Trigger Voltage
V_H ····· Holding Voltage
I_H ····· Holding Current
V_{BR} ····· Reverse Breakdown Voltage
I_{PP} ····· Maximum Reverse Peak Pulse Current
V_C ····· Clamping Voltage @ I_{PP}

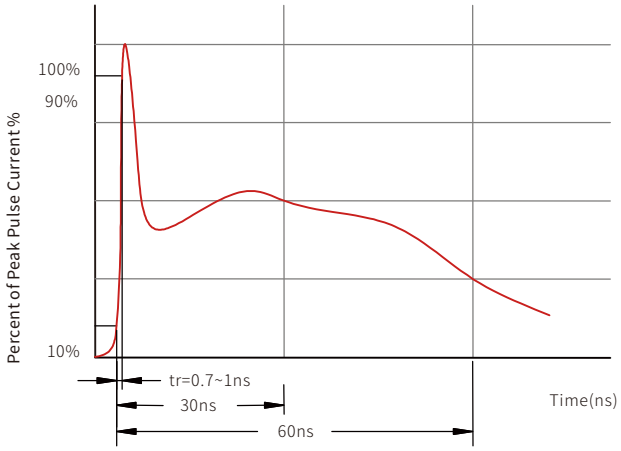


CHARACTERISTIC CURVES

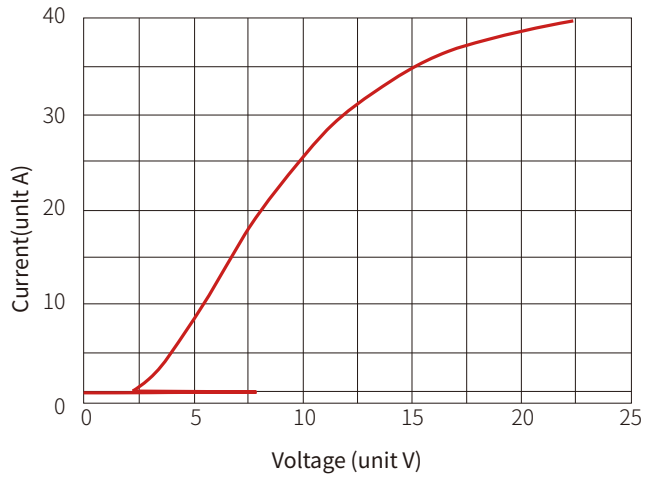
8/20μs Pulse Waveform



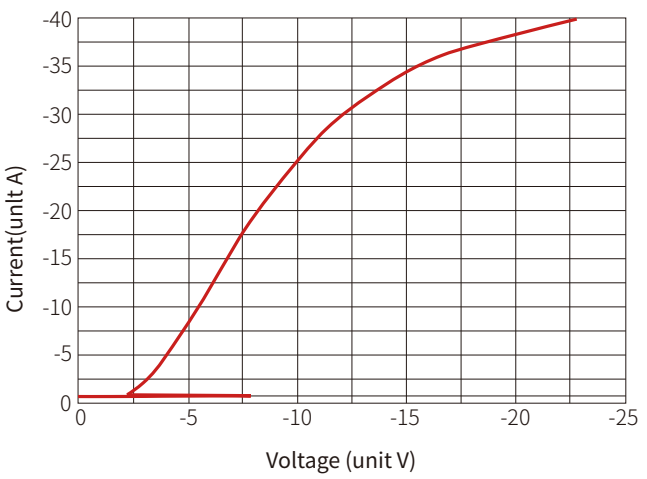
ESD Pulse Waveform (according to IEC 61000-4-2)



TLP Curve: IO-IO(V+)

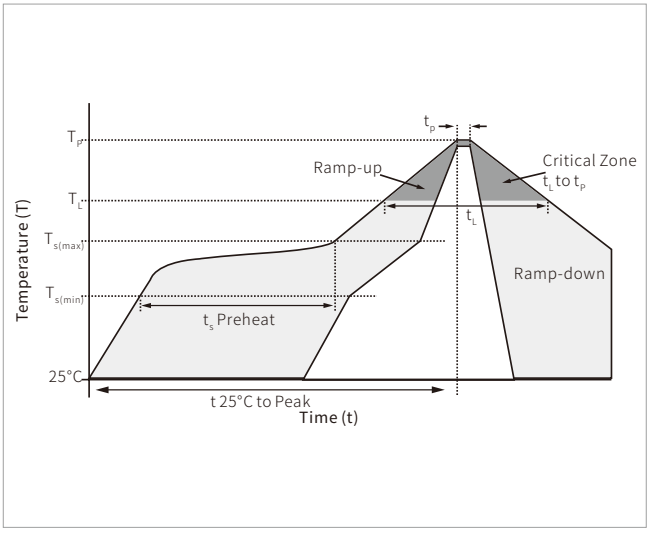


TLP Curve: IO-IO(V-)

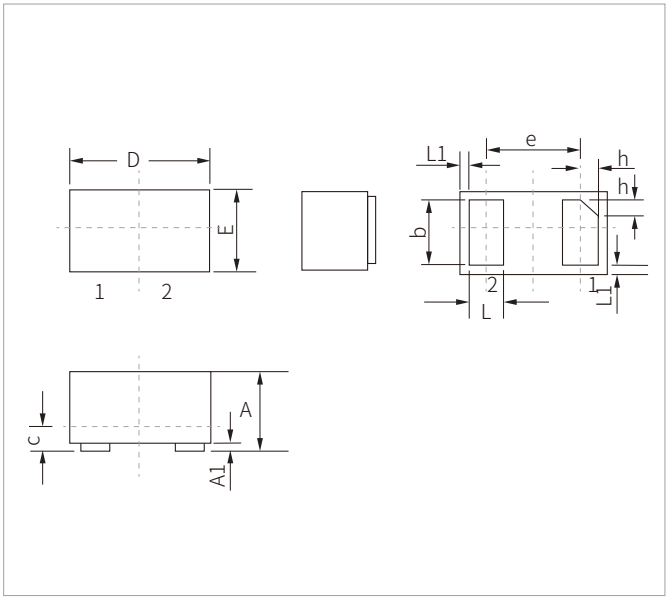


SOLDERING PARAMETERS

Reflow Condition		Lead–free assembly
Pre Heat	Temperature Max ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak		3°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Time (min to max) (t_L)	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 (T_P)		8 minutes max.
Do not exceed		260°C

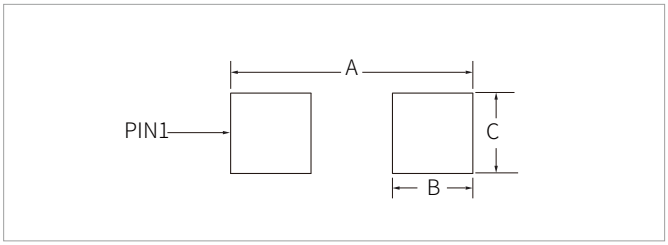


DFN1006 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.40	0.60	0.016	0.024
A1	0	0.05	0	0.002
b	0.40	0.55	0.016	0.022
c	0.12	0.18	0.005	0.007
D	0.90	1.10	0.035	0.043
e	0.65BSC		0.026BSC	
E	0.55	0.75	0.022	0.030
L	0.20	0.35	0.008	0.014
L1	0.05REF		0.002REF	
h	0.07	0.17	0.003	0.007

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters	Inches
A	1.20	0.047
B	0.47	0.019
C	0.60	0.024

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
TPSE10F10B5.0MA-SP	DFN1006	10000PCS	7”

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