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TPESD3636P

4-Channel ESD Protection Diode for USB Type-C and HDMI 2.0

www.sot23.com.tw

Features

- Ultra low capacitance: 0.25 pF typical (I/O to I/O)
- Ultra low leakage: nA level
- Breakdown Voltage: 5.5 V (Minimum)
- Low clamping voltage
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±20kV
    - Contact discharge: ±15kV
  - IEC61000-4-4 (EFT) 80A (5/50ns)
  - IEC61000-4-5 (Lightning) : 4 A(8/20μs)
- ROHS Compliant

Mechanical Characteristics

- Package: DFN2510-10 (2.5×1.0×0.5mm)
- Ultra low leakage: nA level
- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below

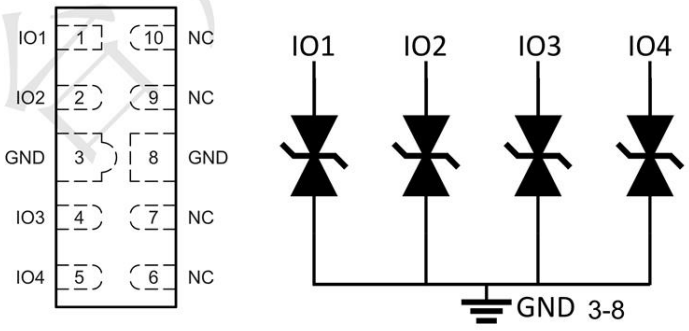
Applications

- End Equipment
- Laptops and Desktops
- Set-Top Boxes
- TV and Monitors
- Mobile and Tablets

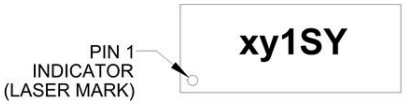
Ordering Information

Part Number	Qty per Reel	Reel Size
TPESD3636P	3000	7″

Dimensions and Pin Configuration



Marking:



1SY = Device code
xy = Month code

Absolute Maximum Ratings (Tamb=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	60	W
Peak Pulse Current (8/20μs)	I_{PP}	4	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	± 20 ± 15	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

Electrical Characteristics (TA=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}	-3.6		3.6	V	IIO < 10 nA
Breakdown Voltage	V_{BR}	5.5	6.4	7.5	V	I_T = 1mA, any I/O pin to ground
Breakdown Voltage	V_{BR}	-5.5	-6.4	-7.5	V	I_T = 1mA, any ground pin to I/O
Reverse Leakage Current	I_R			10	nA	V_{IO}=± 2.5V any I/O pin to ground
Dynamic resistance	R_{DYN}		0.47		Ω	any I/O pin to ground
Clamping Voltage	V_C		7.2		V	I_{PP} = 1A (8 x 20μs pulse), any I/O pin to ground
Clamping Voltage	V_C		9		V	I_{PP} = 4A (8 x 20μs pulse), any I/O pin to ground
Junction Capacitance	C_J		0.25	0.4	pF	VR = 0V, f = 1MHz, between I/O pins

Characteristic Curves

Fig1. 8/20μs Pulse Waveform

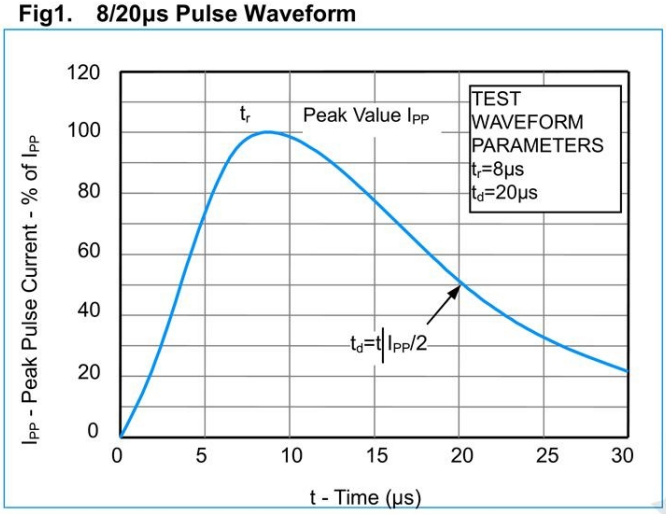


Fig2. ESD Pulse Waveform (according to IEC 61000-4-2)

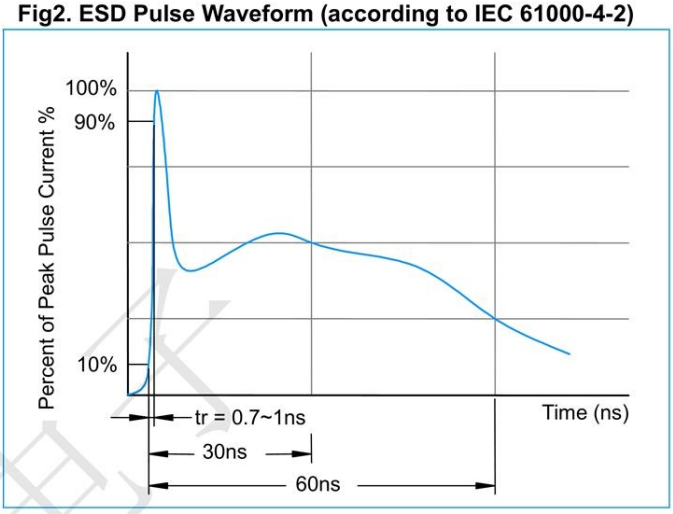
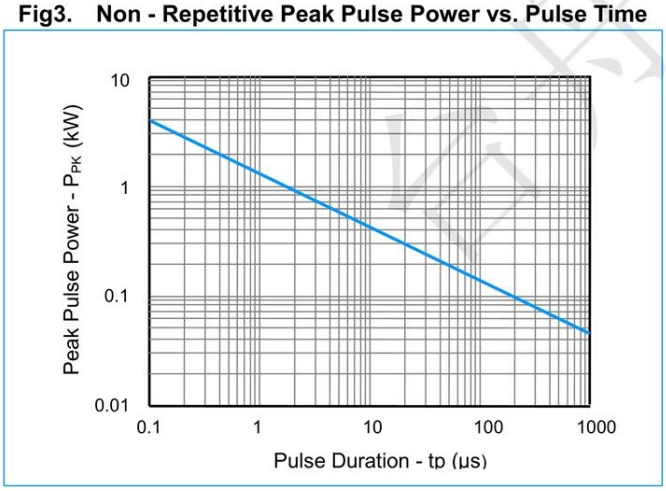
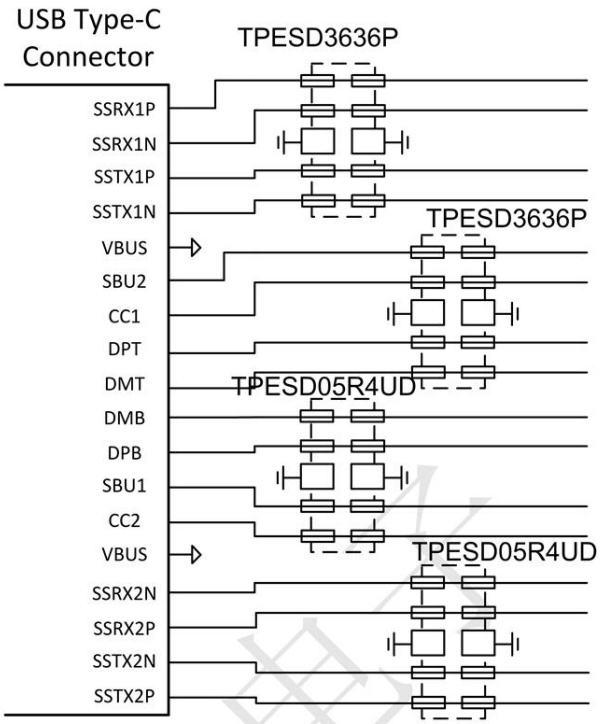


Fig3. Non - Repetitive Peak Pulse Power vs. Pulse Time

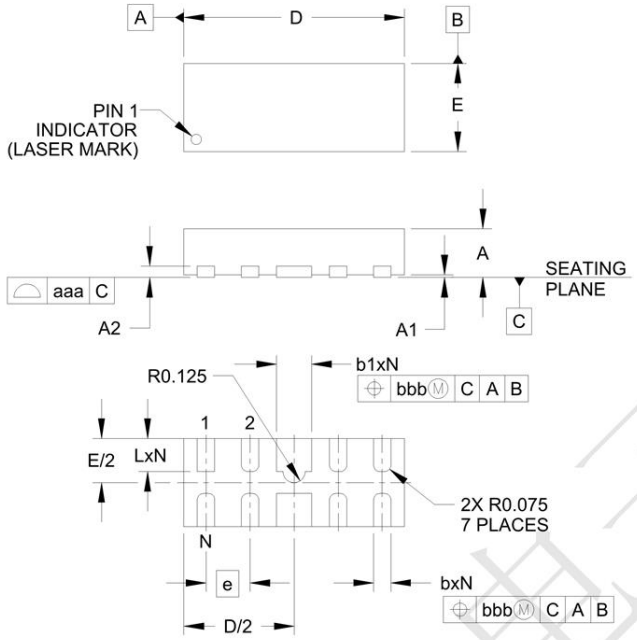


Application Information



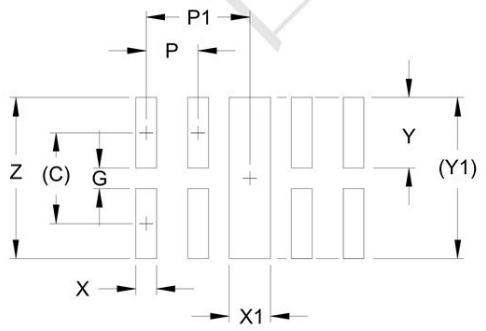
USB 3.1 Gen 2 Type-C ESD Schematic

Outline Drawing - DFN2510-10



DIM	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	.020	.023	.026	0.50	0.58	0.65
A1	0.00	.001	.002	0.00	0.03	0.05
A2		(.005)			(0.13)	
b	.006	.008	.010	0.15	0.20	0.25
b1	.014	.016	.018	0.35	0.40	0.45
D	.094	.098	.102	2.40	2.50	2.60
E	.035	.039	.043	0.90	1.00	1.10
e		.020 BSC			0.50 BSC	
L	.012	.015	.017	0.30	0.38	0.425
N		8			8	
aaa		.003			0.08	
bbb		.004			0.10	

Land Pattern - DFN2510-10



DIM	INCHES	MILLIMETERS
C	(.034)	(0.875)
G	.008	0.20
P	.020	0.50
P1	.039	1.00
X	.008	0.20
X1	.016	0.40
Y	.027	0.675
Y1	(.061)	(1.55)
Z	.061	1.55