TECH PUBLIC
台舟电子

TPNUP4114UCW1T2G
4-line Ultra Low Capacitance TVS Diode Array

www.sot23.com.tw

Features

- ESD Protect for 4 high-speed I/O channels
- Provide ESD protection for each channel to
  IEC 61000-4-2 (ESD) ±18kV (air), ±14kV (contact)
  IEC 61000-4-4 (EFT) (5/50ns) Level-3, 20A for I/O, 80A for Power
  IEC 61000-4-5 (Lightning) 6.5A (8/20μs)
- For below 5V operating voltage
- Low capacitance : 1.5pF typical
- Fast turn-on and Low clamping voltage
- Array of surge rated diodes with internal equivalent TVS diode
- Small package saves board space
- Solid-state silicon-avalanche and active circuit triggering technology
- Green part available

Mechanical Characteristics

- Package:SOT363
- Lead Finish :Matte Tin
- UL Flammability Classification Rating 94V-0

RoHS

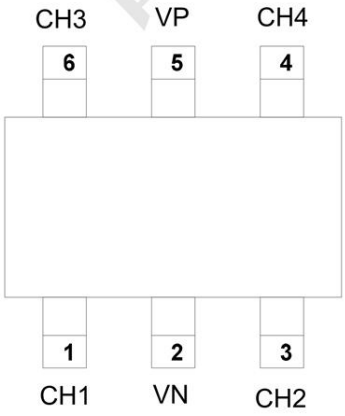
Applications

- USB2.0 Power and Data lines protection
- Notebook and PC Computers
- Monitors and Flat Panel Displays
- IEEE 1394 Firewire Ports
- Video Graphics Cards
- SIM ports

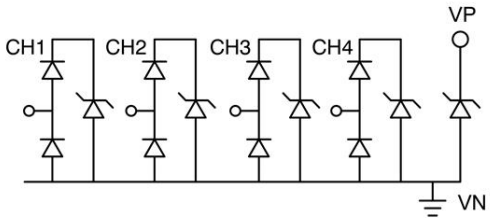
Ordering Information

Part Number	Qty per Reel	Reel Size
TPNUP4114UCW1T2G	3000	7″

Dimensions and Pin Configuration



Circuit and Pin Schematic



Marking:CO7xy
xy=date code

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

PARAMETER	PARAMETER	RATING	UNITS
Peak Pulse Current (tp =8/20μs)	I_{PP}	6.5	A
Operating Supply Voltage (VDD-GND)	V_{DC}	6	V
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	18 14	kV
ESD per IEC 61000-4-2(Air)(VDD-GND) ESD per IEC 61000-4-2(Contact) (VDD-GND)	V_{ESD_VDD}	30 30	kV
Lead Soldering Temperature	T_{SOL}	260 (10 sec.)	°C
Operating Temperature	T_{OP}	-55 to +85	°C
Storage Temperature	T_{STO}	-55 to +150	°C
DC Voltage at any I/O pin	V_{IO}	(GND – 0.5) to (VDD + 0.5)	V

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

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Reverse Stand-Off Voltage	V_{RWM}	Pin 5 to pin 2, T=25 °C			5	V
Reverse Leakage Current	I_{Leak}	V_{RWM} = 5V, T=25 °C, Pin 5 to pin 2			5	μA
Channel Leakage Current	I_{CH_Leak}	$V_{Pin\ 5}$ = 5V, $V_{Pin\ 2}$ = 0V, T=25 °C, V_{CH} = 0 ~ 5V			1	μA
Reverse Breakdown Voltage	V_{BV}	I_{BV} = 1mA, T=25 °C Pin 5 to Pin 2	6		9	V
Forward Voltage	V_F	I_F = 15mA, T=25 °C Pin 2 to Pin 5		0.8	1	V
Clamping Voltage	V_{CL}	I_{PP}=5A, tp=8/20μs, T=25 °C Any Channel pin to Ground		8.1	9	V
ESD Clamping Voltage –I/O	V_{clamp_io}	IEC 61000-4-2 +6kV, T=25 °C, Contact mode, Any Channel pin to Ground		12.5		V
ESD Clamping Voltage –VDD	V_{clamp_VDD}	IEC 61000-4-2 +6kV, T=25 °C, Contact mode, VDD pin to Ground		9		V
ESD Dynamic Turn-on Resistance –I/O	$R_{dynamic\_io}$	IEC 61000-4-2 0~+6kV, T=25 °C, Contact mode, Any Channel pin to Ground		0.35		Ω
ESD Dynamic Turn-on Resistance –VDD	$R_{dynamic\_VDD}$	IEC 61000-4-2 0~+6kV, T=25 °C, Contact mode, VDD pin to Ground		0.2		Ω
Channel Input Capacitance	C_{IN}	V_{pin5} = 5V, V_{pin2} = 0V, **V_{IN} = 2.5V**, f = 1MHz, T=25 °C, Any Channel pin to Ground		1.5		pF
Channel to Channel Input Capacitance	C_{CROSS}	V_{pin5} = 5V, V_{pin2} = 0V, **V_{IN} = 2.5V**, f = 1MHz, T=25 °C , Between Channel pins		0.12	0.14	pF
Variation of Channel Input Capacitance	$\triangle C_{IN}$	V_{pin5} = 5V, V_{pin2} = 0V, **V_{IN} = 2.5V**, f = 1MHz, T=25 °C , Channel_x pin to Ground - Channel_y pin to Ground		0.05	0.07	pF

PROTECTION PRODUCTS
Typical charateristics

Fig1. 8/20μs Pulse Waveform

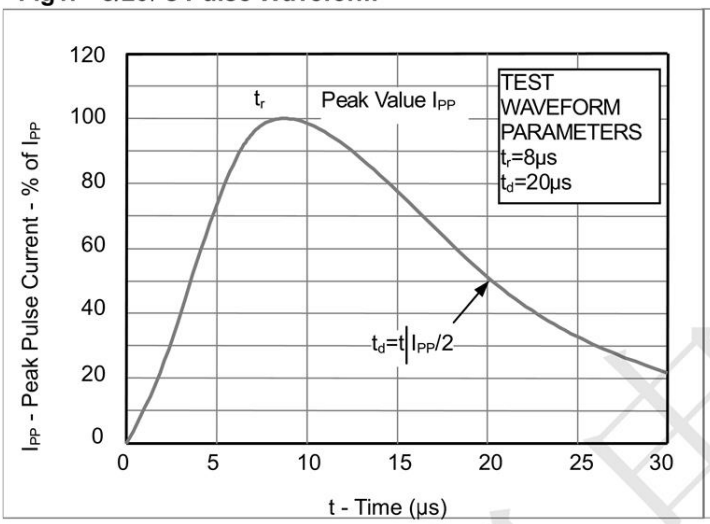


Fig2. ESD Pulse Waveform (according to IEC 61000-4-2)

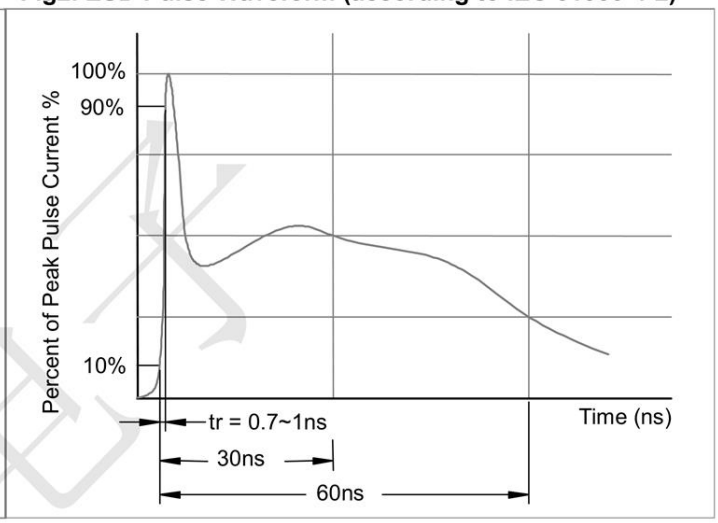
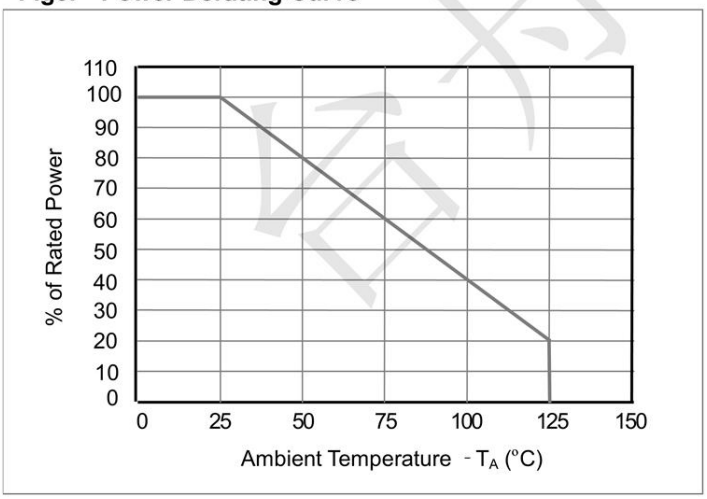
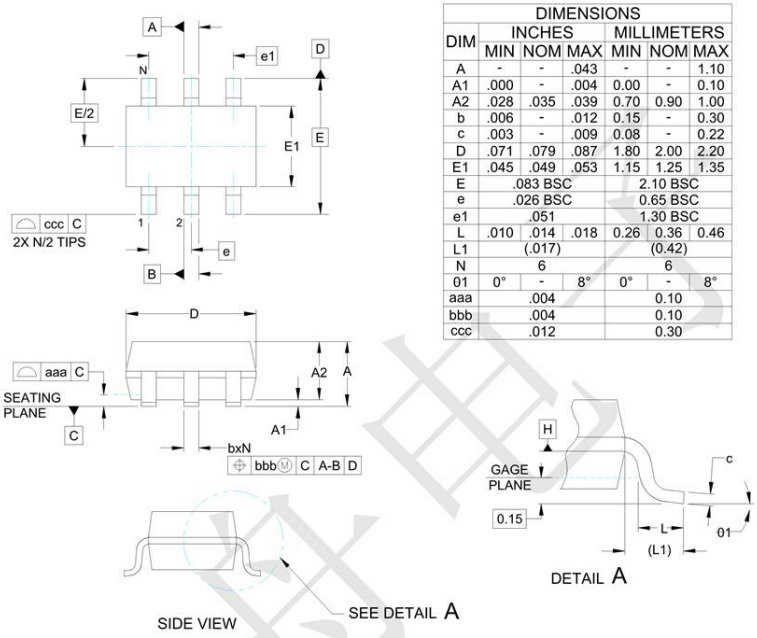


Fig3. Power Derating Curve

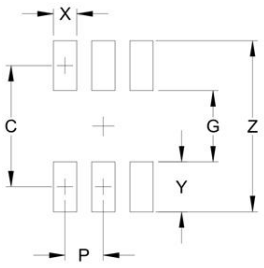


Outline Drawing - SOT363



DIM	DIMENSIONS					
	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	-	-	.043	-	-	1.10
A1	.000	-	.004	0.00	-	0.10
A2	.028	.035	.039	0.70	0.90	1.00
b	.006	-	.012	0.15	-	0.30
c	.003	-	.009	0.08	-	0.22
D	.071	.079	.087	1.80	2.00	2.20
E1	.045	.049	.053	1.15	1.25	1.35
E	.083 BSC			2.10 BSC		
e	.026 BSC			0.65 BSC		
e1	.051			1.30 BSC		
L	.010	.014	.018	0.26	0.36	0.46
L1	(.017)			(0.42)		
N	6			6		
θ1	0°	-	8°	0°	-	8°
aaa	.004			0.10		
bbb	.004			0.10		
ccc	.012			0.30		

Land Pattern -SOT363



DIM	DIMENSIONS	
	INCHES	MILLIMETERS
C	(.073)	(1.85)
G	.039	1.00
P	.026	0.65
X	.016	0.40
Y	.033	0.85
Z	.106	2.70