

Features

- ESD Protect for 4 high-speed I/O channels
- Provide ESD protection for each channel to IEC 61000-4-2 (ESD) $\pm 18\text{kV}$ (air), $\pm 14\text{kV}$ (contact) IEC 61000-4-4 (EFT) (5/50ns) Level-3, 20A for I/O, 80A for Power IEC 61000-4-5 (Lightning) 6.5A (8/20 μs)
- 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



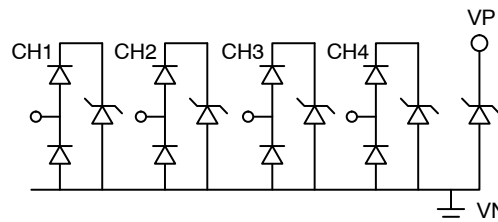
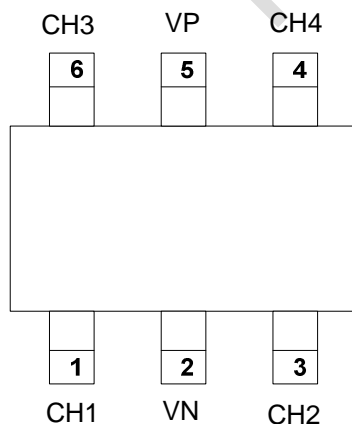
Applications

- 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

Absolute Maximum Ratings (T_{amb}=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)	V _{ESD}	18	kV
ESD per IEC 61000-4-2 (Contact)		14	
ESD per IEC 61000-4-2(Air)(VDD-GND)	V _{ESD_VDD}	30	kV
ESD per IEC 61000-4-2(Contact) (VDD-GND)		30	
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	ΔC _{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 characteristics

Fig1. 8/20μs Pulse Waveform

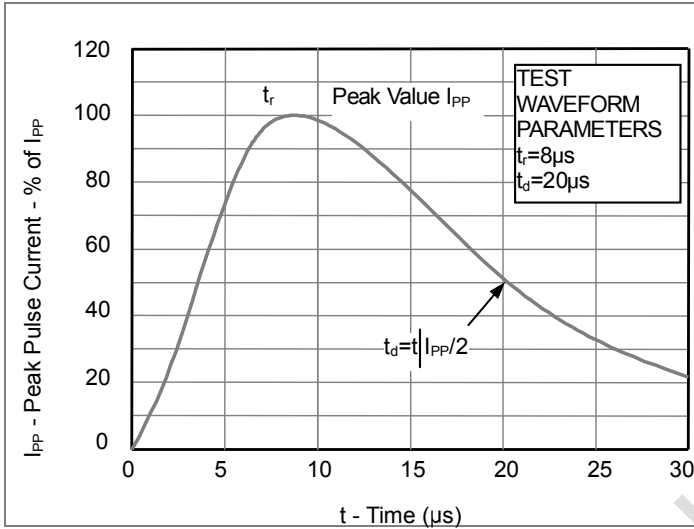


Fig2. ESD Pulse Waveform (according to IEC 61000-4-2)

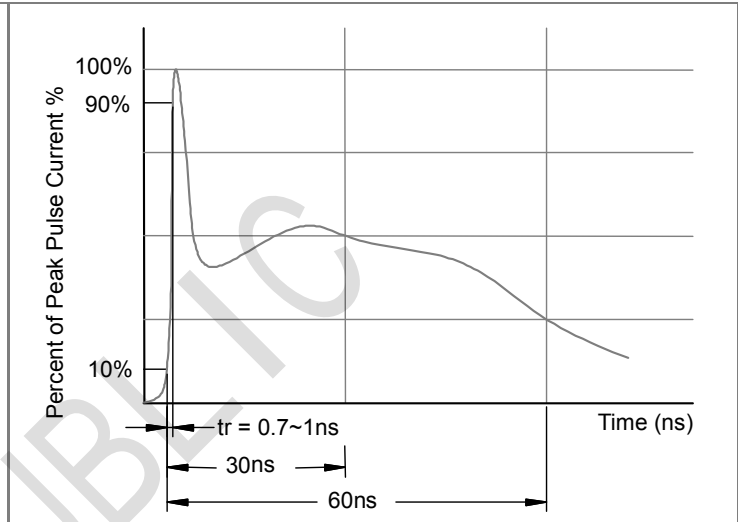
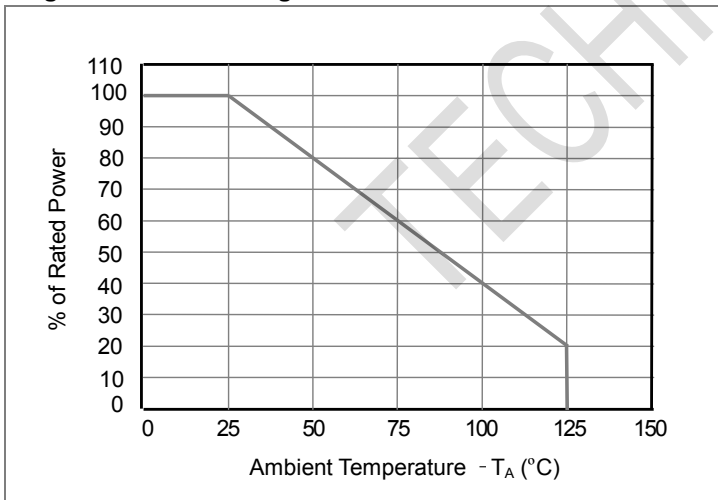
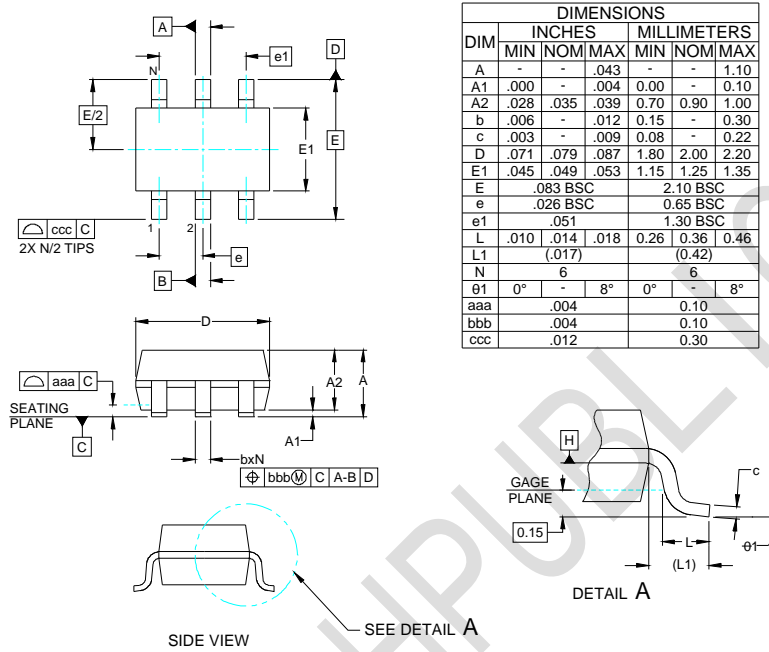


Fig3. Power Derating Curve



Outline Drawing - SOT363



Land Pattern -SOT363

