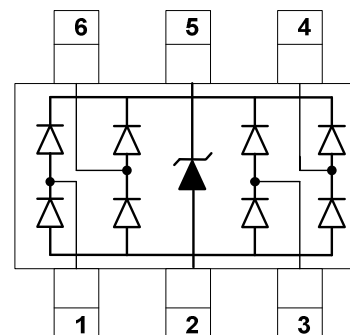


Features

- Ultra low capacitance: 0.3 pF typical (I/O to I/O)
- Ultra low leakage: nA level
- Low operating voltage: 5V
- Low clamping voltage
- Up to 4 data lines and one power line protects
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 25\text{kV}$
 - Contact discharge: $\pm 20\text{kV}$
 - IEC61000-4-4 (EFT) 40A (5/50ns)
- – IEC61000-4-5 (Lightning): 4.7A (8 /20 μs)
- ROHS Compliant



Applications

- USB 2.0 and USB 3.0 Ports
- USB OTG
- Digital video interface(DVI)
- Monitor and Flat Panel Displays
- PCI Express and Serial SATA Ports
- Gigabit Ethernet
- IEEE 1394 firewire ports
- Consumer products (STB, DVD, DSC, DVC...)

Mechanical Characteristics

- Package: SOT23-6
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020

Absolute Maximum Ratings (T_{amb}=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (tp=8 /20 μs)(Vcc-GND)	Ppp	300	W
Peak Pulse Current (tp=8 /20 μs)	IPP	4.7	A
ESD per IEC 61000-4-2 (Air)	VESD	± 25	kV
ESD per IEC 61000-4-2 (Contact)		± 20	
Operating Temperature Range	TJ	-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	VRWM			5	V	Any I/O pin to ground
Breakdown Voltage	VBR	6			V	IT = 1mA, any I/O pin to ground
Reverse Leakage Current	IR			0.08	μA	VRWM = 5V, any I/O pin to ground
Clamping Voltage	VC			11	V	I _{PP} = 3A (8 x 20μs pulse) any I/O pin to ground
Clamping Voltage	VC			15	pF	I _{PP} = 4.7A (8 x 20μs pulse) any I/O pin to ground
Junction Capacitance	CJ			18	pF	I _{PP} = 17A (8 x 20μs pulse) VCC to ground
Junction Capacitance	CJ		0.3	0.4	pF	VR = 0V, f = 1MHz, between I/O pins
Junction Capacitance	CJ			0.8	pF	VR = 0V, f = 1MHz, any I/O pin to ground

Typical Characteristics

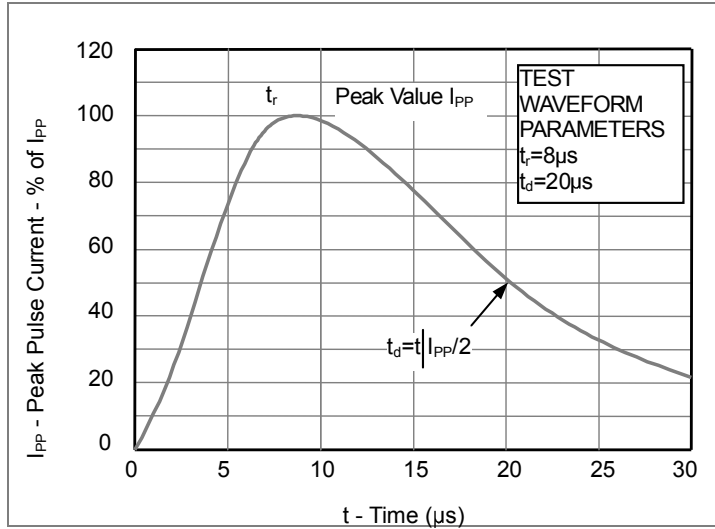
Fig1. 8/20 μ s Pulse Waveform

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

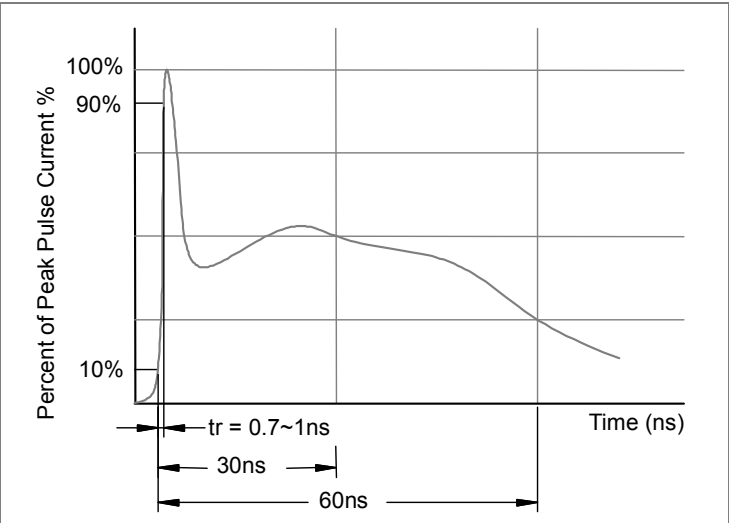
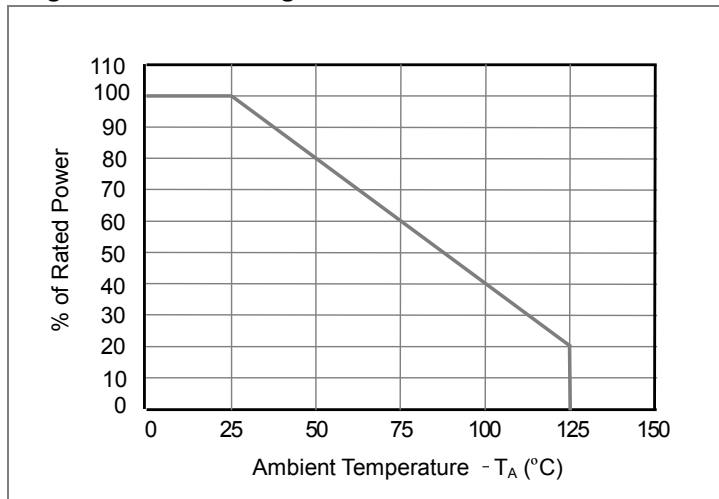
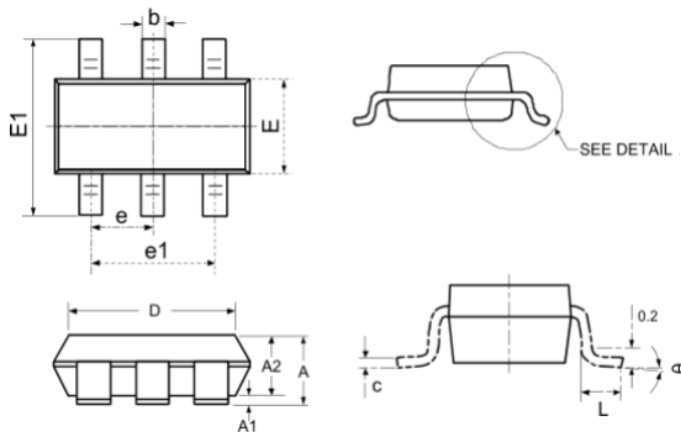


Fig3. Power Derating Curve

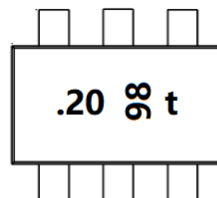


Outline Drawing – SOT23-6



Symbol	Dimensions (mm)	
	Min	Max
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
D	2.820	3.020
E	1.500	1.700
E1	2.650	2.950
b	0.300	0.500
e	0.950 (BSC)	
e1	1.800	2.000
L	0.300	0.600
θ	0°	8°

Marking



Ordering information

Order code	Package	Base qty	Delivery mode
IP4220CZ6	SOT23-6	3000	Tape and reel