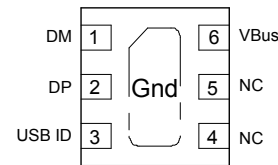


### Features

- Ultra low leakage: nA level
- Operating voltage: 5V
- Low clamping voltage
- 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)
- RoHS Compliant

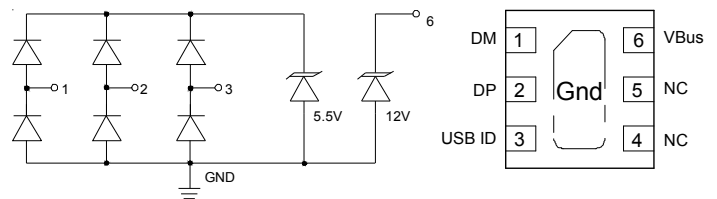
### Dimensions DFN1616-6



### Applications

- USB 2.0/3.1 power and data line
- Set-top box and digital TV
- Digital video interface (DVI)
- Notebook Computers
- SIM Ports
- 10/100/1000 Ethernet
- HDMI 1.3/1.4/2.0 interface

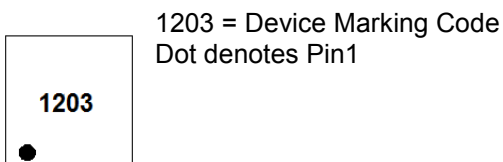
### Pin Configuration



### Mechanical Characteristics

- Package: DFN1616-6
- Lead Finish: Lead Free
- UL Flammability Classification Rating 94V-0
- Quantity Per Reel: 3,000 pcs
- Reel Size: 7 inch

### Marking Information



## Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
<b>DP, DM, USB ID (Pins 1, 2, 3)</b>			
Peak Pulse Power (8/20 $\mu\text{s}$ )	Ppk	100	W
Peak Pulse Current (8/20 $\mu\text{s}$ )	I <sub>PP</sub>	5	A
ESD per IEC 61000-4-2 (Air)	VESD	$\pm 25$	kV
ESD per IEC 61000-4-2 (Contact)		$\pm 20$	
Operating Temperature Range	T <sub>J</sub>	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	$^{\circ}\text{C}$
<b>VBus (Pin 6)</b>			
Peak Pulse Power (8/20 $\mu\text{s}$ )	Ppk	300	W
Peak Pulse Current (8/20 $\mu\text{s}$ )	I <sub>PP</sub>	12	A
ESD per IEC 61000-4-2 (Air)	VESD	$\pm 25$	kV
ESD per IEC 61000-4-2 (Contact)		$\pm 20$	
Operating Temperature Range	T <sub>J</sub>	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	$^{\circ}\text{C}$

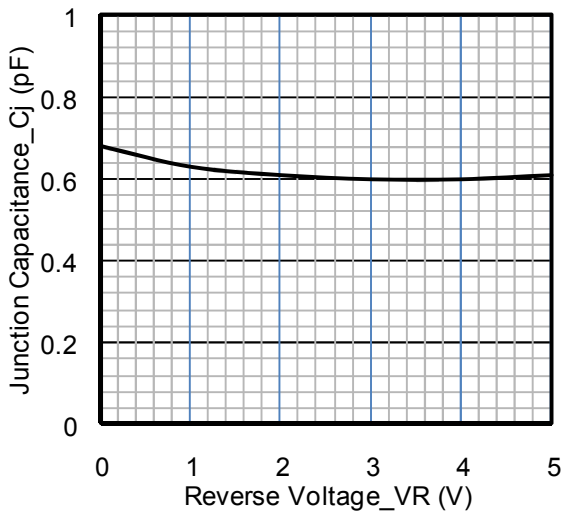
## Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
<b>DP, DM, USB ID TVS</b>						
Reverse Working Voltage	V <sub>RWM</sub>			5.5	V	Any I/O to ground
Breakdown Voltage	V <sub>BR</sub>	6.5			V	I <sub>T</sub> = 1mA, any I/O to ground
Reverse Leakage Current	I <sub>R</sub>			0.5	$\mu\text{A}$	V <sub>RWM</sub> = 5.5V, any I/O to ground
Clamping Voltage	V <sub>C</sub>			10	V	I <sub>PP</sub> = 1A (8 x 20 $\mu\text{s}$ pulse), any I/O pin to ground
Clamping Voltage	V <sub>C</sub>			20	V	I <sub>PP</sub> = 5A (8 x 20 $\mu\text{s}$ pulse), any I/O pin to ground
Junction Capacitance	C <sub>J</sub>			0.5	pF	V <sub>R</sub> = 0V, f = 1MHz, between I/O pins
Junction Capacitance	C <sub>J</sub>			0.8	pF	V <sub>R</sub> = 0V, f = 1MHz, any I/O pin to ground

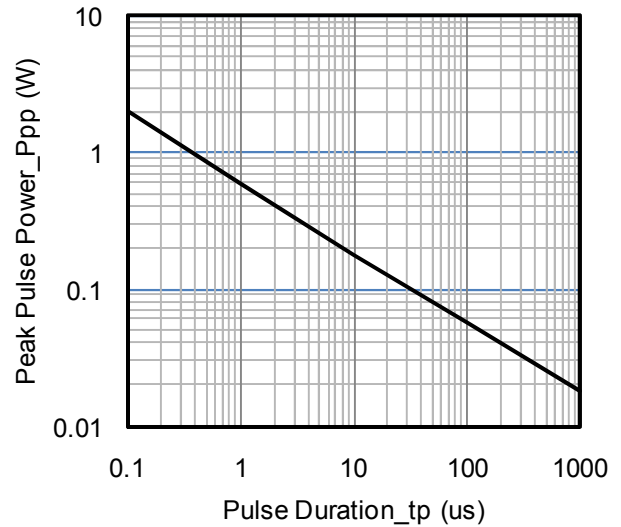
Note: I/O Pins are 1, 2, 3

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
<b>VBus TVS</b>						
Reverse Working Voltage	VRWM			12	V	Pin 6 to ground
Breakdown Voltage	VBR	13.3		18	V	IT = 1mA, pin 6 to ground
Reverse Leakage Current	IR			0.2	μA	VRWM = 12V, pin 6 to ground
Clamping Voltage	VC			18	V	I <sub>PP</sub> = 1A (8 x 20μs pulse), pin 6 to ground
Clamping Voltage	VC			25	V	I <sub>PP</sub> = 12A (8 x 20μs pulse), pin 6 to ground
Junction Capacitance	CJ			100	pF	VR = 0V, f = 1MHz, pin 6 to ground

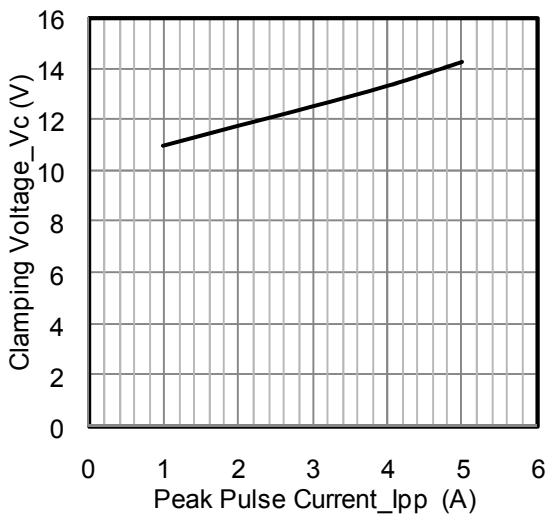
## Typical Performance Characteristics (T<sub>A</sub>=25°C unless otherwise Specified)



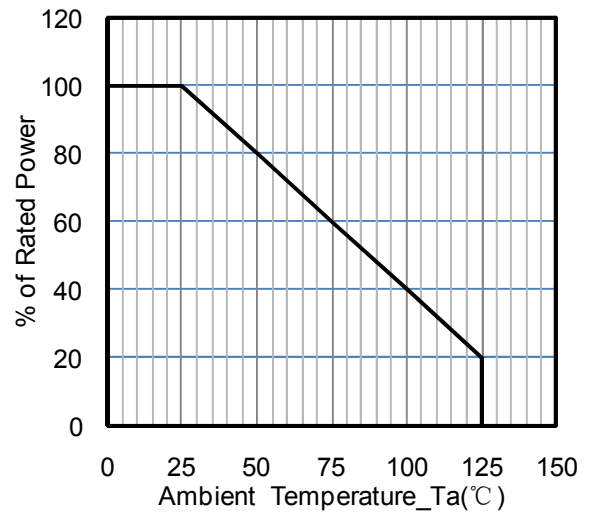
**Junction Capacitance vs. Reverse Voltage**



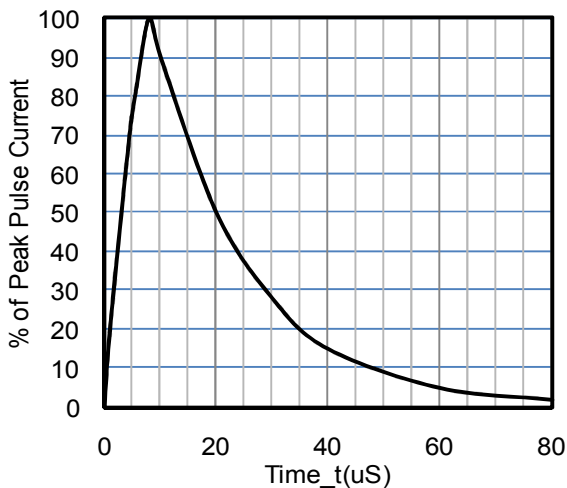
**Peak Pulse Power vs. Pulse Time**



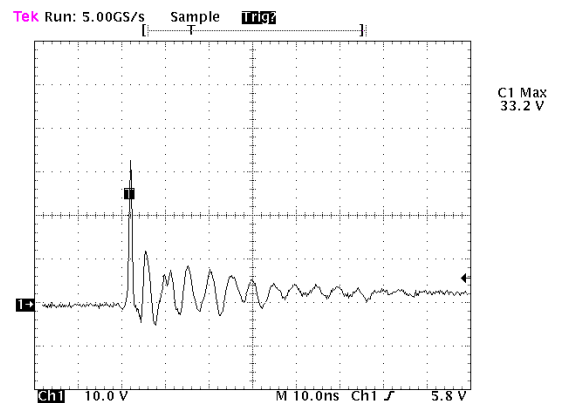
**Clamping Voltage vs. Peak Pulse Current**



**Power Derating Curve**



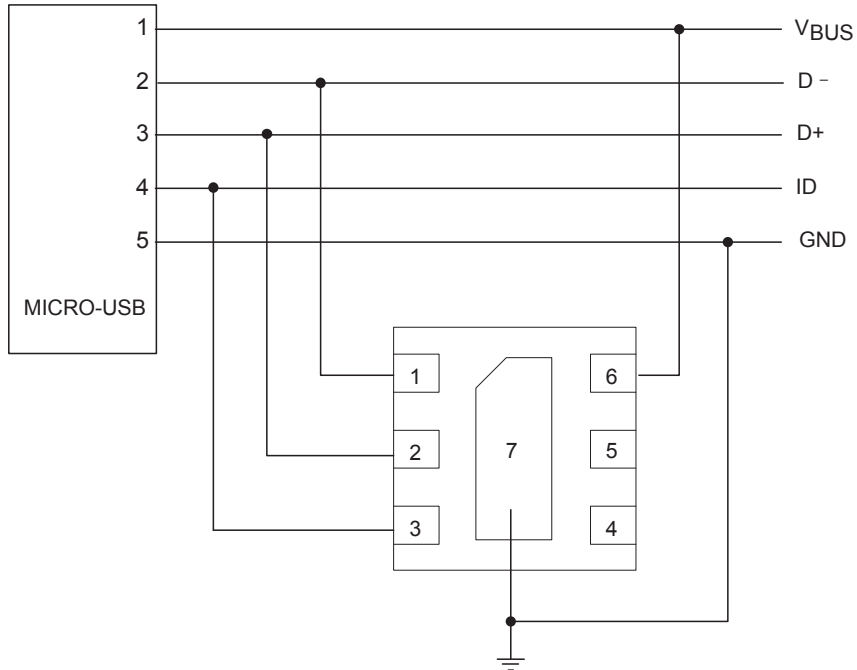
**8 X 20us Pulse Waveform**



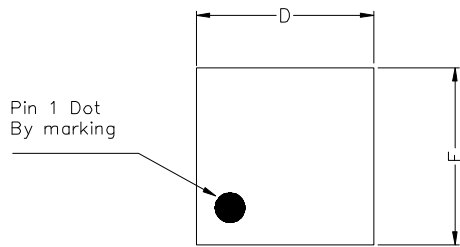
**ESD Clamping Voltage**

**8 kV Contact per IEC61000-4-2**

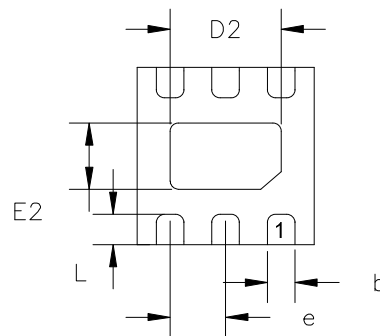
## ULC1654N on USB Port Application



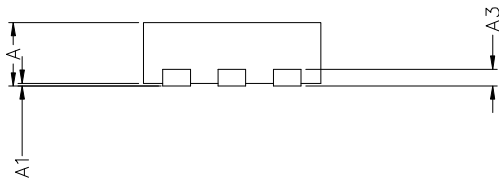
## DFN1616-6 Package Outline Drawing



TOP VIEW



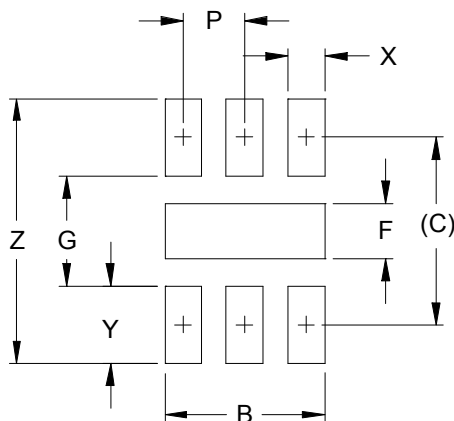
BOTTOM VIEW



SIDE VIEW

COMMON DIMENSIONS(MM)			
PKG. REF.	UT: ULTRA THIN		
	MIN.	NOM.	MAX.
A	0.50	0.55	0.60
A1	0.00	-	0.05
A3	0.15 REF.		
D	1.55	1.60	1.65
E	1.55	1.60	1.65
D2	0.90	1.00	1.05
E2	0.50	0.60	0.65
L	0.20	0.25	0.30
b	0.20	0.25	0.30
e	0.50 BSC		

## Suggested Land Pattern



DIMENSIONS		
DIM	INCHES	MILLIMETERS
B	.051	1.30
C	.060	1.52
P	.020	0.50
F	.018	0.45
G	.035	0.89
X	.012	0.30
Y	.025	0.63
Z	.085	2.15

单击下面可查看定价，库存，交付和生命周期等信息

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