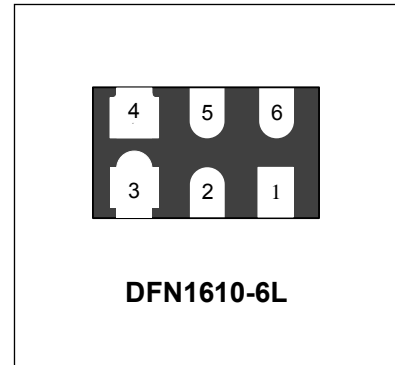


Features

- Solid-state silicon-avalanche technology
- Low operating and clamping voltage
- Up to four I/O Lines of Protection
- Ultra low capacitance: 0.25pF typical(I/O to I/O)
- Low Leakage
- Low operating voltage:5V
- Flow-Through design



IEC COMPATIBILITY (EN61000-4)

- IEC 61000-4-2 (ESD) $\pm 25\text{kV}$ (air), $\pm 20\text{kV}$ (contact)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 5A (8/20 μs)

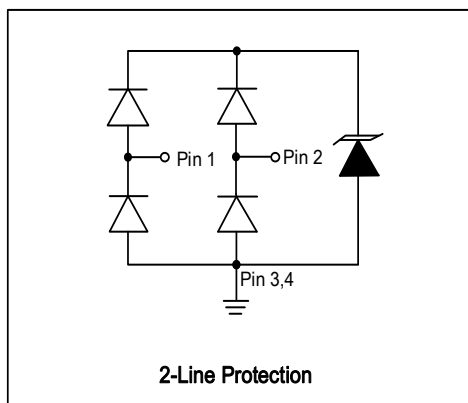
Mechanical Characteristics

- DFN1610-6L package
- Molding compound flammability rating: UL 94V-0
- Marking: Marking Code
- Packaging: Tape and Reel
- RoHS Compliant

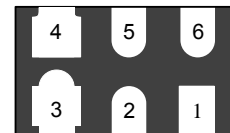
Applications

- Digital Visual Interface(DVI)
- MDDI Ports
- Display Port TM Interface
- PCI Express
- High Definition Multi-Media Interface(HDMI)
- HDMI Interfaces

Circuit Diagram



Schematic & PIN Configuration

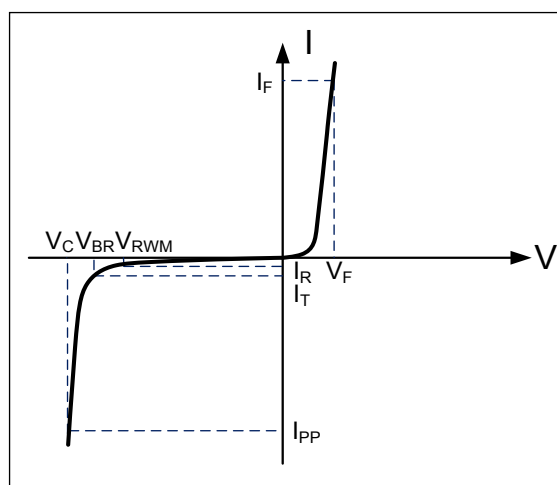


Pin	Identifaion
1,2	Input line
5,6	Output Lines (No Internal Connection)
3,4	Ground

Absolute Maximum Rating			
Rating	Symbol	Value	Units
Peak Pulse Power ($t_p = 8/20\mu s$)	P_{PP}	100	Watts
Operating Temperature	T_J	-55 to + 125	°C
Storage Temperature	T_{STG}	-55 to +125	°C

Electrical Parameters (T=25°C)

Symbol	Parameter
I_{PP}	Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_F	Forward Current
V_F	Forward Voltage @ I_F



Electrical Characteristics

US05-2R2P						
Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}	Any I/O pin to ground			5.0	V
Reverse Breakdown Voltage	V_{BR}	$I_t = 1mA$ Any I/O pin to ground	5.6		10	V
Reverse Leakage Current	I_R	$V_{RWM} = 5V, T=25°C$ Any I/O pin to ground			500	nA
Peak Pulse Current	I_{PP}	$t_p = 8/20\mu s$			5	A
Clamping Voltage	V_C	$I_{pp} = 5A, t_p = 8/20\mu s$ Any I/O pin to ground		12	15	V
Dynamic Resistance ^{1,2}	R_{DYN}	TLP=0.2/100ns		0.8		Ω
ESD Clamping Voltage ¹	V_C	$I_{pp} = 4A, t_p = 0.2/100ns$ (TLP)		10.8		V
ESD Clamping Voltage ¹	V_C	$I_{pp} = 16A, t_p = 0.2/100ns$ (TLP)		19.6		V
Junction Capacitance	C_j	$V_R = 0V, f = 1MHz$ I/O pin to GND		0.6	0.8	pF
		$V_R = 0V, f = 1MHz$ Between I/O pins		0.25	0.4	pF

Notes : 1、 TLP Setting : $t_p = 100ns, t_r = 0.2ns, I_{TLP}$ and V_{TLP} sample window: $t_1 = 70ns$ to $t_2 = 90ns$.
 2、 Dynamic resistance calculated from $I_{PP} = 4A$ to $I_{PP} = 16A$ using "Best Fit".

Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

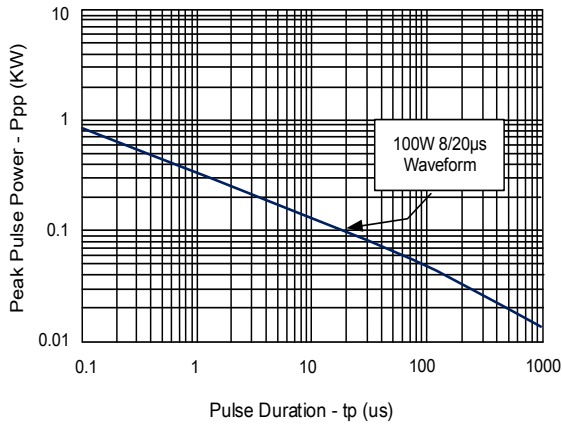


Figure 2: Power Derating curve

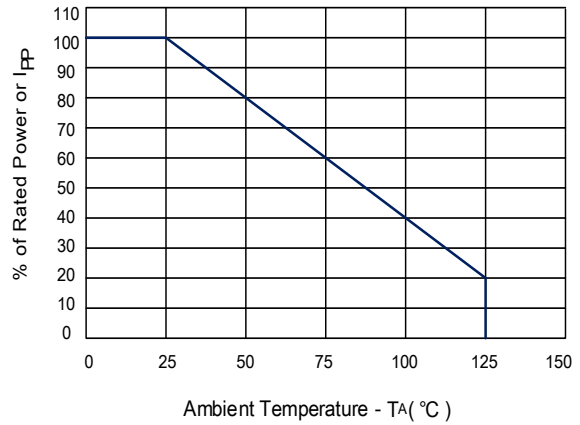


Figure 3: Clamping Voltage vs. Peak Pulse Current

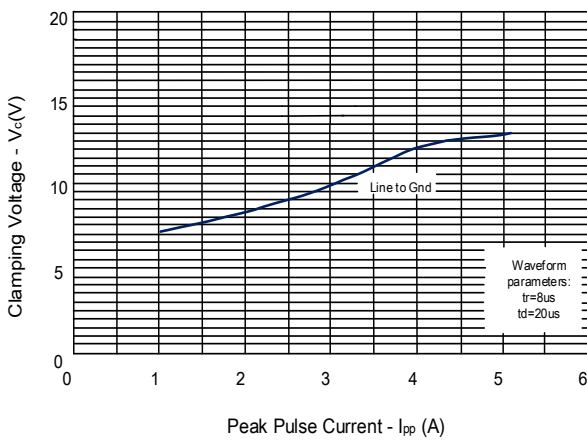


Figure 4: Normalized Capacitance vs. Reverse Voltage

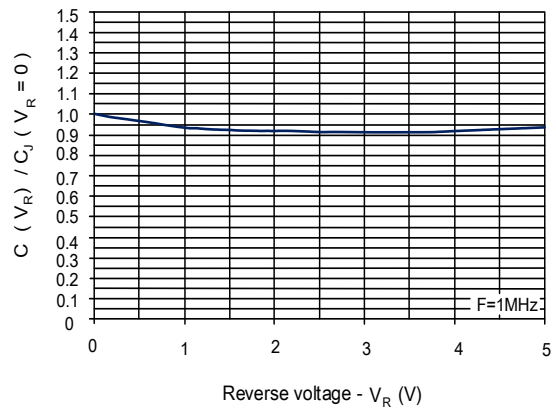


Figure 5: 8/20us Pulse Waveform

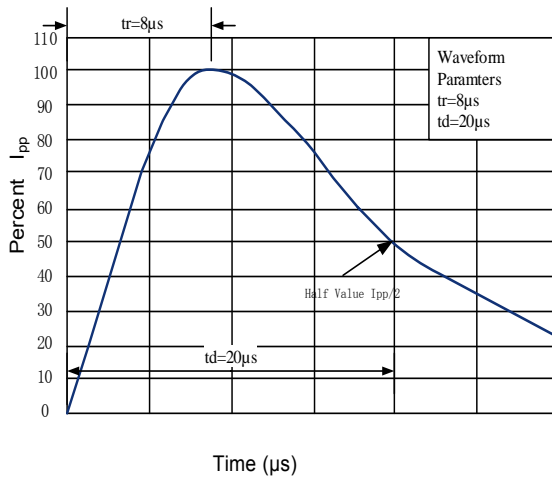
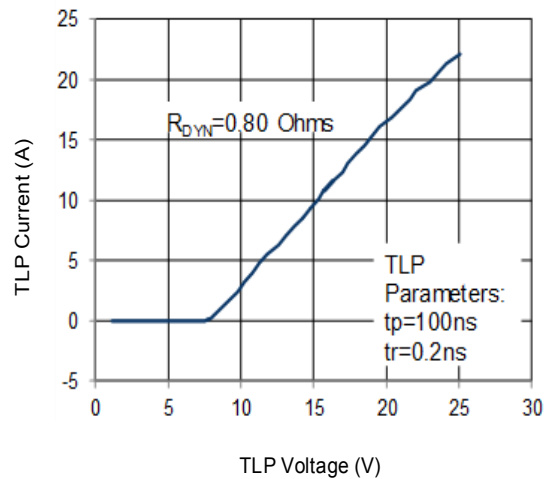
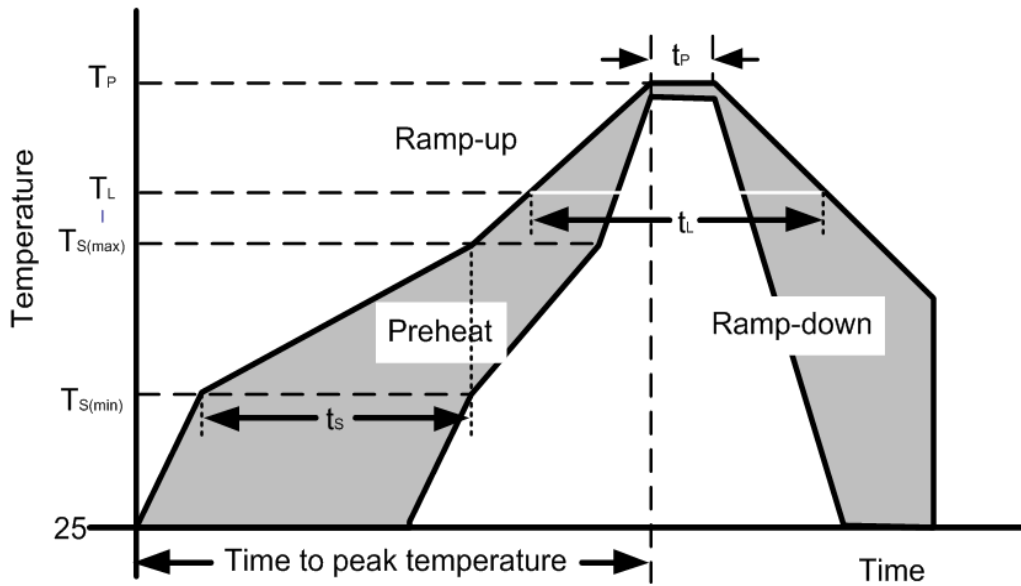


Figure 6: TLP I-V Curve



Soldering Parameters

Reflow Condition		Pb – Free assembly
Pre Heat	Temperature Min ($T_{S(min)}$)	150°C
	Temperature Max ($T_{S(max)}$)	200°C
	Time (min to max) (t_s)	60 – 190 secs
Average ramp up rate (Liquidus Temp) (T_L) to peak		5°C/second max
$T_{S(max)}$ to T_L —Ramp-up Rate		5°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_P)		260+0/-5 °C
Time within actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		280°C



Outline Drawing – DFN1610-6L

PIN1 INDICATOR (LASER MARK)

NOTES:
CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).

DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
D	1.55	1.65	0.061	0.065
E	0.95	1.05	0.037	0.041
L	0.33	0.43	0.013	0.017
b	0.15	0.25	0.006	0.010
b1	0.35	0.45	0.014	0.018
b2	0.25	0.35	0.010	0.014
e	0.50BSC		0.020BSC	
e1	1.00BSC		0.039BSC	
A	0.45	0.55	0.018	0.022
A1	0.15REF		0.006REF	
A2	0.00	0.05	0.000	0.002

DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	0.024	0.60
G	0.004	0.10
P	0.020	0.50
P1	0.039	1.00
X	0.012	0.30
Y	0.020	0.50
Y1	0.043	1.10

NOTES:

1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. THIS LAND PATTERN IS FOR REFERENCE PURPOSES ONLY.

CONSULT YOUR MANUFACTURING TO ENSURE YOUR COMPANYS
MANUFACTURING GUIDELINES ARE MET.

Marking Codes

Part Number	US05-2R2P
Marking Code	2R2P

Package Information

Qty: 3k/Reel