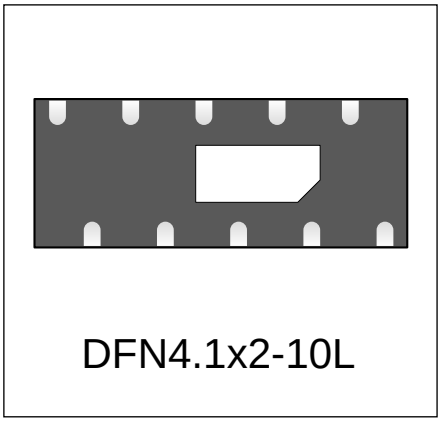
WE03-6R1N

Transient Voltage Suppressor



DFN4.1x2-10L

Features

- Solid-state silicon-avalanche technology
- Low operating and clamping voltage
- ESD Protection for super speed differential signaling channels
- Ultra low capacitance: 0.3pF typical(I/O to I/O)
- Low Leakage
- “feed through” layout

IEC COMPATIBILITY (EN61000-4)

- **IEC 61000-4-2 (ESD) ±22kV (air), ±22kV (contact)**
- **IEC 61000-4-4 (EFT) 40A (5/50ns)**

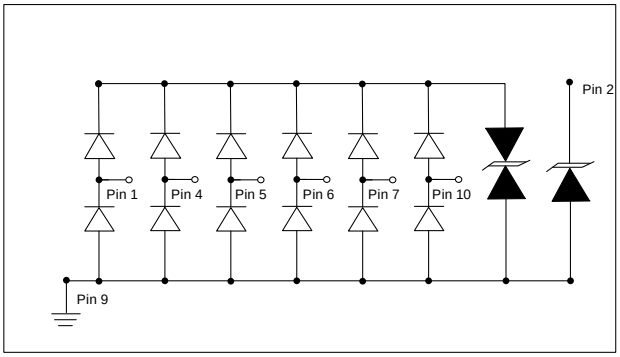
Mechanical Characteristics

- DFN4.1x2-10L package
- Marking: Marking Code
- Packaging: Tape and Reel
- RoHS Compliant& HF

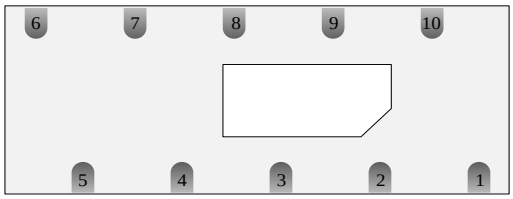
Applications

- USB 3.0
- HDMI 1.4
- High speed port protection
- Portable electronics

Circuit Diagram



Schematic & PIN Configuration



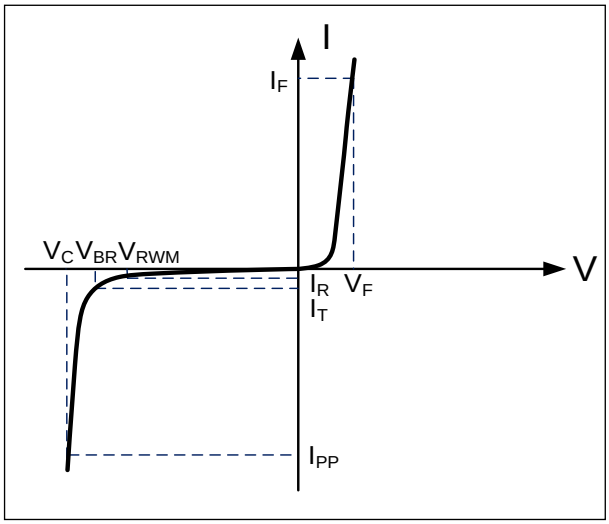
Pin	Identificaion
1,4,5,6,7,10	I/O Lines
2	Vcc Line
9	Ground
3,8	NC

Absolute Maximum Rating

Rating	Symbol	Value(Any I/O pin to Gnd)	Value(Vcc pin to Gnd)	Units
Peak Pulse Power (t_p =8/20μs)	P_{PP}	50	58.5	Watts
Peak Pulse Current (t_p =8/20μs)	I_{pp}	5	4.5	A
Operating Temperature	T_J	-55 to + 125	-55 to + 125	°C
Storage Temperature	T_{STG}	-55 to +150	-55 to +150	°C

Electrical Parameters

Symbol	Parameter
I_{PP}	Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Reverse Stand-Off 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(T=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}	Any I/O pin to ground			3.3	V
		Vcc pin to ground			5.0	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA Any I/O pin to ground	3.7			V
		I_t = 1mA Vcc pin to ground	5.5			V
Reverse Leakage Current	I_R	V_{RWM} = 3.3V Any I/O pin to ground			500	nA
		V_{RWM} = 5.0V Vcc pin to ground			500	nA
Clamping Voltage	Vc	I_{pp}=5A, t_p=8/20μs Any I/O pin to ground		8.5	10	V
		I_{pp}=4.5A, t_p=8/20μs Vcc pin to ground		11	13	V
Dynamic Resistance[1,2]	R_{DYN}	TLP=0.2/100ns Any I/O pin to ground		0.38		Ω
		TLP=0.2/100ns Vcc pin to ground		0.39		Ω
Junction Capacitance	C_j	V_R = 0V, f = 1MHz I/O pin to GND		0.56	0.8	pF
		V_R = 0V, f = 1MHz Vcc pin to ground		30	40	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

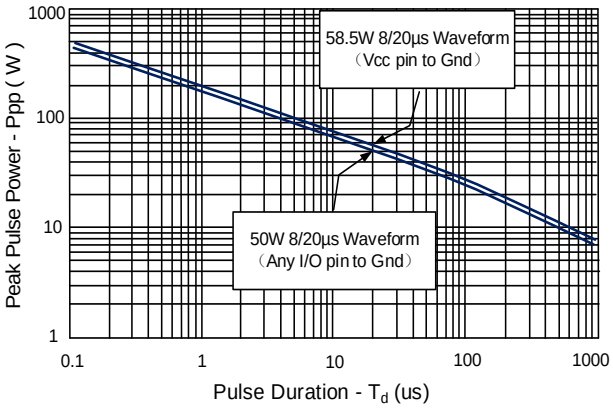


Figure 2: Power Derating Curve

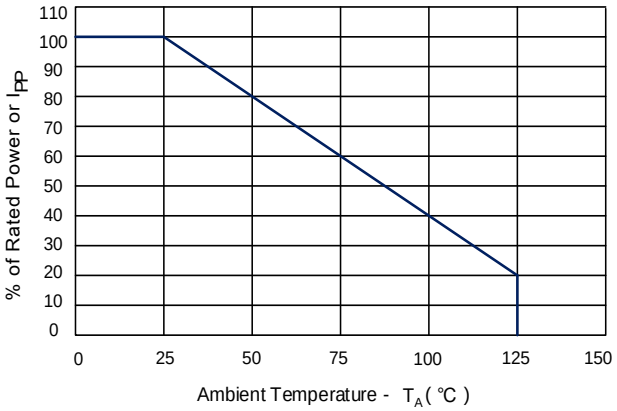


Figure 3: Clamping Voltage vs. Peak Pulse Current

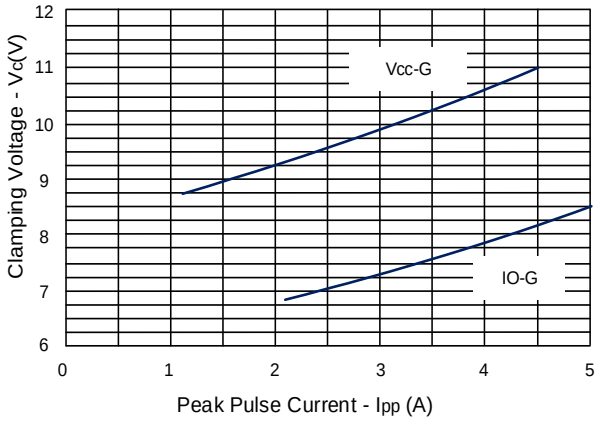


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

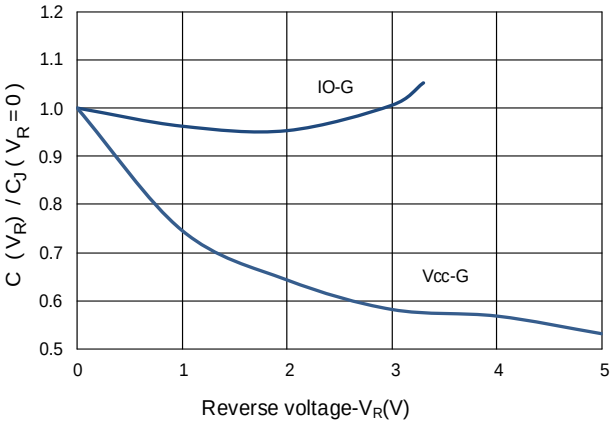


Figure 5: TLP I-V Curve (IO-G)

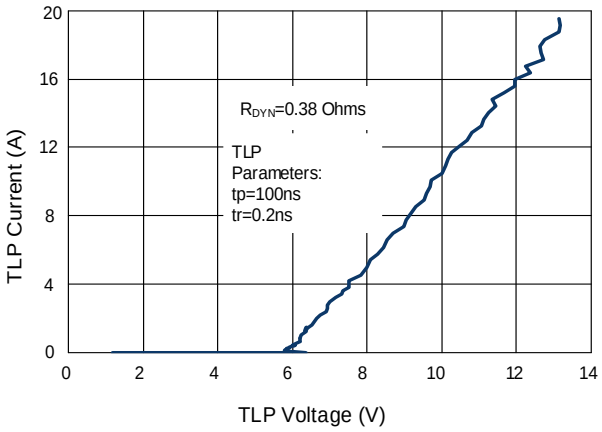
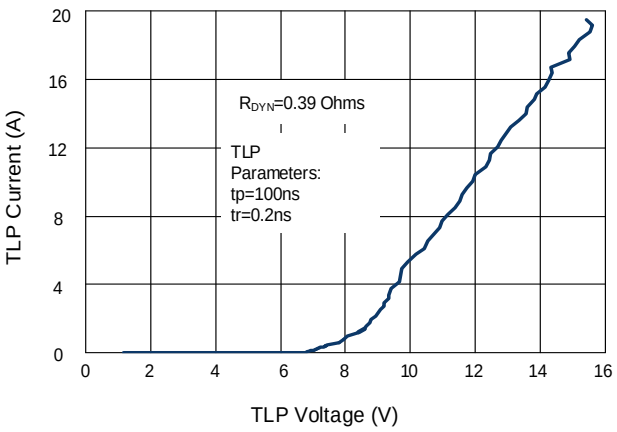
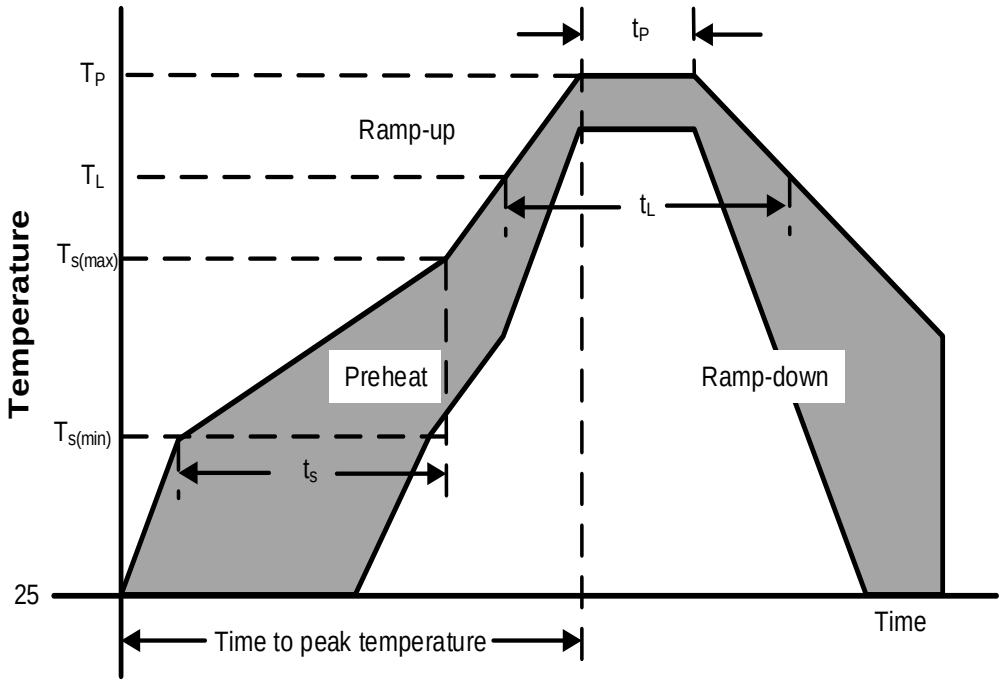


Figure 6: TLP I-V Curve (Vcc-G)



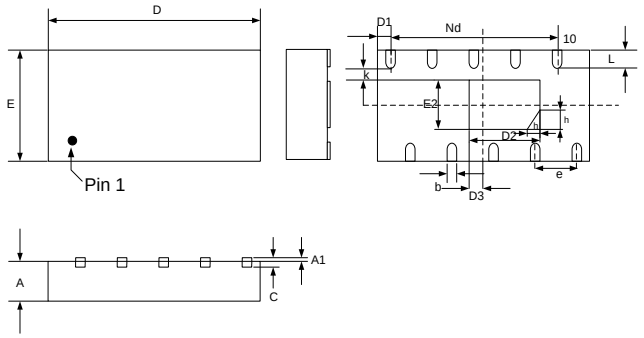
Soldering Parameters

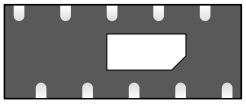
Reflow Condition		Pb – Free assembly
Pre Heat	Temperature Min ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (ts)	60 – 190 secs
Average ramp up rate (Liquidus Temp) (T_L) to peak		5°C/second max
$T_{S(max)}$ to T_L——Ramp-up Rate		5°C/second max
Reflow	Temperature (T_L) (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 –DFN4.1x2-10L

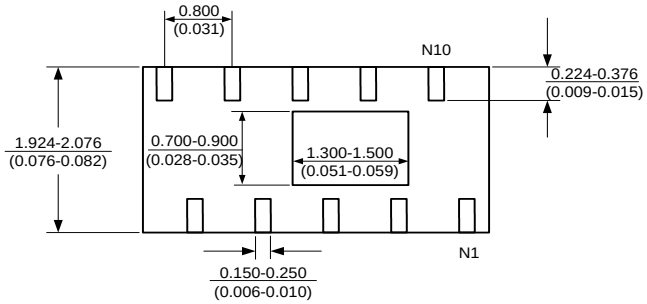
PACKAGE OUTLINE





DFN4.1x2-10L

DIM	MILLIMETERS		
	MIN	MON	MAX
A	0.45	0.50	0.55
A1	——	0.02	0.05
b	0.15	0.20	0.25
c	0.10	0.15	0.20
D	4.00	4.10	4.20
D1	0.20	0.25	0.30
D2	1.30	1.40	1.50
D3	0.25	0.30	0.35
e	0.80BSC		
Nd	3.20BSC		
E	1.90	2.00	2.10
E2	0.70	0.80	0.90
K	0.20	——	——
L	0.25	0.30	0.35
h	0.15	0.20	0.25



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 MANNUFACTURING GUIDELINES ARE MET.

Marking Codes

Part Number	WE03-6R1N	Marking Code	WE03-6R1N

Package Information

Qty：3k/Reel

CONTACT INFORMATION

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