

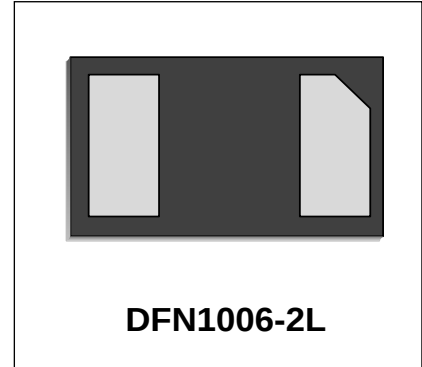


WS03DTRF-B

Transient Voltage Suppressor

Features

- Small Body Outline Dimensions
- Only protects one I/O
- Low Capacitance
- Working Voltage:3.3V
- Low Leakage Current



IEC COMPATIBILITY (EN61000-4)

- IEC 61000-4-2 (ESD) $\pm 10\text{kV}$ (air), $\pm 10\text{kV}$ (contact)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 2.5A (8/20 μs)

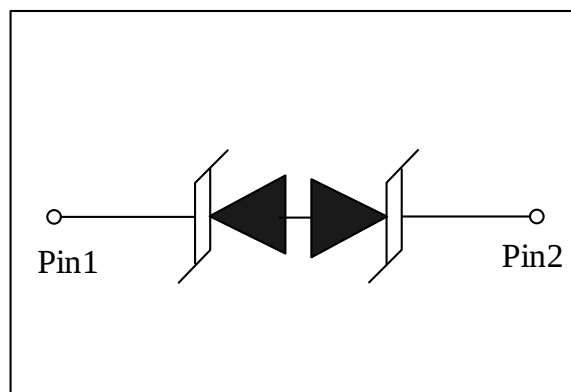
Mechanical Characteristics

- DFN1006-2L package
- Marking: Marking Code
- Packaging: Tape and Reel
- RoHS Compliant

Applications

- USB 2.0 and USB 3.0
- HDMI 1.3 and HDMI 1.4
- SATA and ESATA
- DVI
- IEEE 1394
- PCI Express
- Portable Electronics
- Notebooks

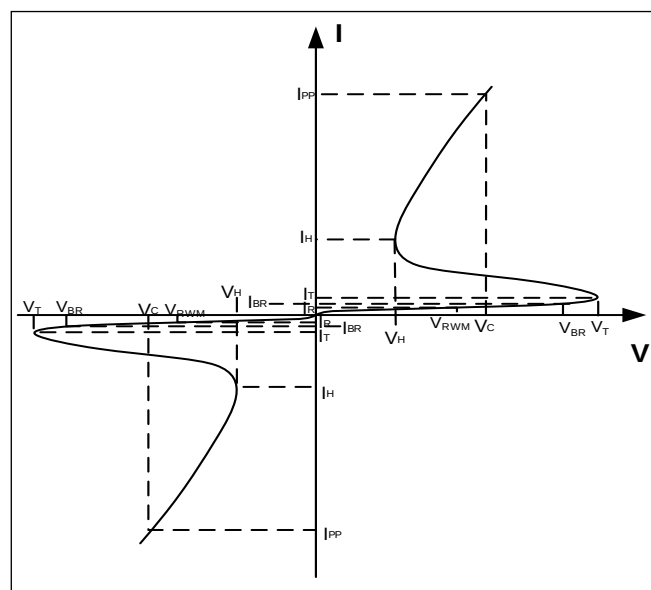
Schematic & PIN Configuration



Absolute Maximum Rating			
Rating	Symbol	Value	Units
Peak Pulse Power ($t_p = 8/20\mu s$)	P_{PP}	15	W
Peak Pulse Current ($t_p = 8/20\mu s$)	I_{pp}	2.5	A
Operating Temperature	T_J	-55 to + 125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

Electrical Parameters (T=25°C)

Symbol	Parameter
I_{PP}	Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Reverse Stand-Off Voltage
I_{BR}	Reverse Stand-Off Current
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
V_C	Test Voltage
I_T	Test Current
V_H	Holding Voltage
I_H	Holding current



Electrical Characteristics

WS03DTRF-B						
Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}				3.3	V
Reverse Breakdown Voltage	V_{BR}	$I_T = 1mA$	3.7			V
Reverse Leakage Current	I_R	$V_{RWM} = 3.3V, T = 25^\circ C$			200	nA
Holding current	I_H	$T = 25^\circ C$		50		mA
Clamping Voltage	V_C	$I_{PP} = 2.5A, t_p = 8/20\mu s$		4.8	6	V
ESD Clamping Voltage ¹	V_C	$I_{PP} = 4A, t_p = 0.2/100ns$		5.5		V
ESD Clamping Voltage ¹	V_C	$I_{PP} = 16A, t_p = 0.2/100ns$		14.4		V
Dynamic Resistance ^{1,2}	R_{DYN}	$TLP = 0.2/100ns$		0.75		Ω
Junction Capacitance	C_j	$V_R = 0V, f = 1MHz$		0.4	0.6	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

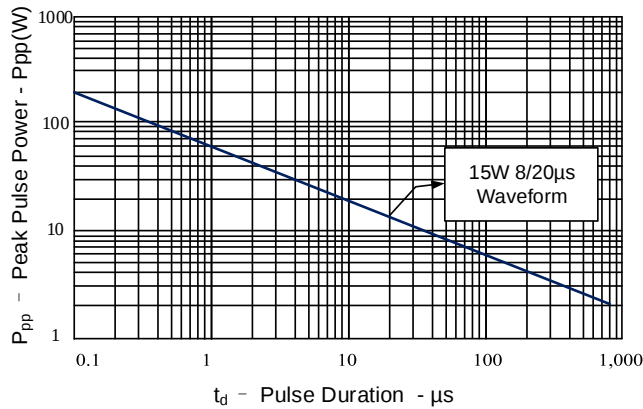


Figure 2: Power Derating Curve

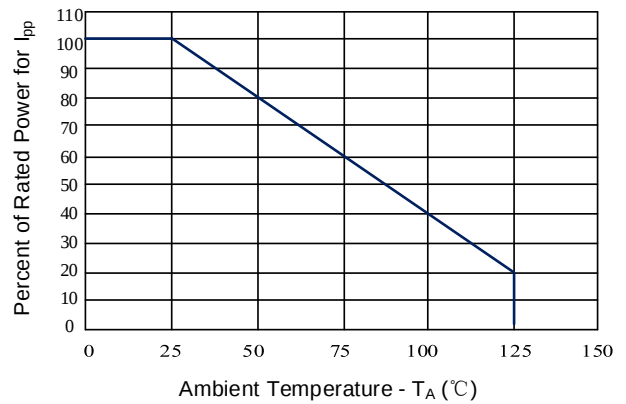


Figure 3: Clamping Voltage vs. Peak Pulse Current

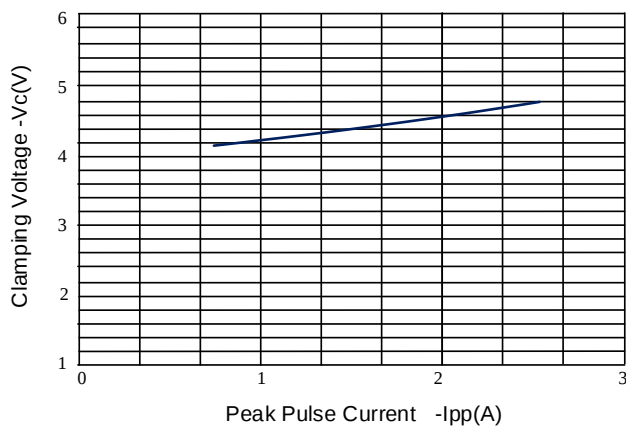


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

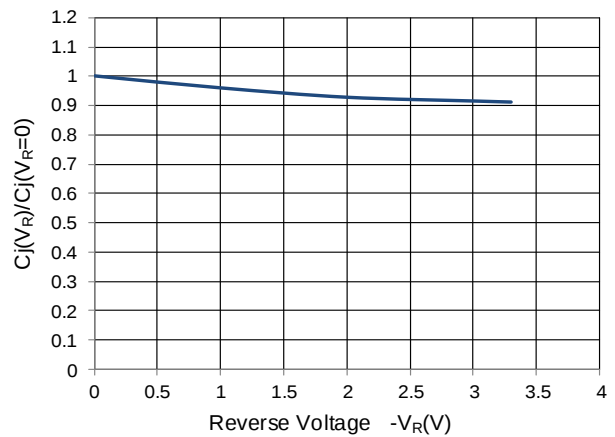


Figure 5: TLP Positive I-V Curve

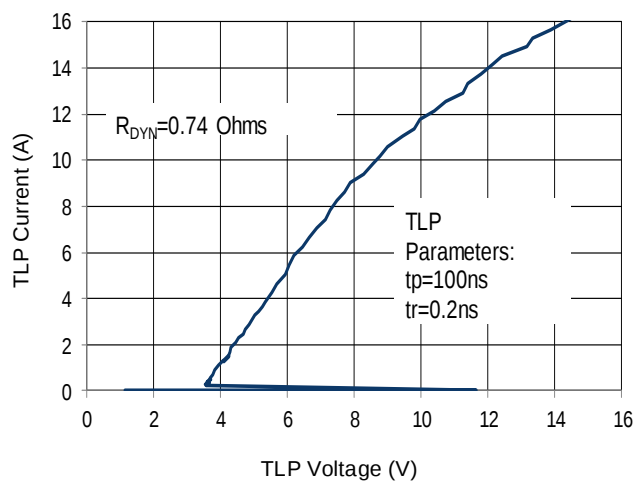
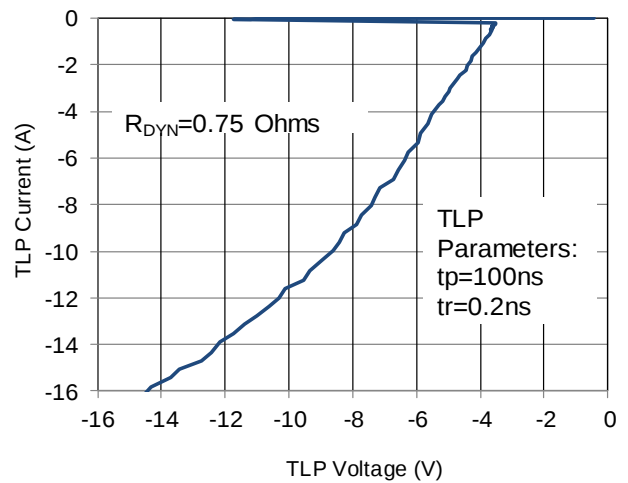
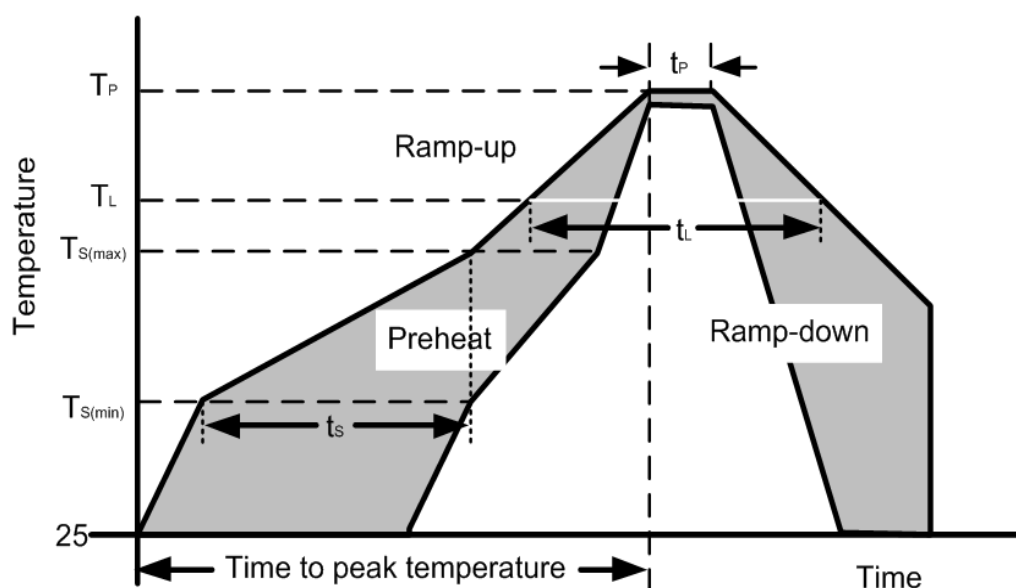


Figure 6: TLP Negative I-V Curve

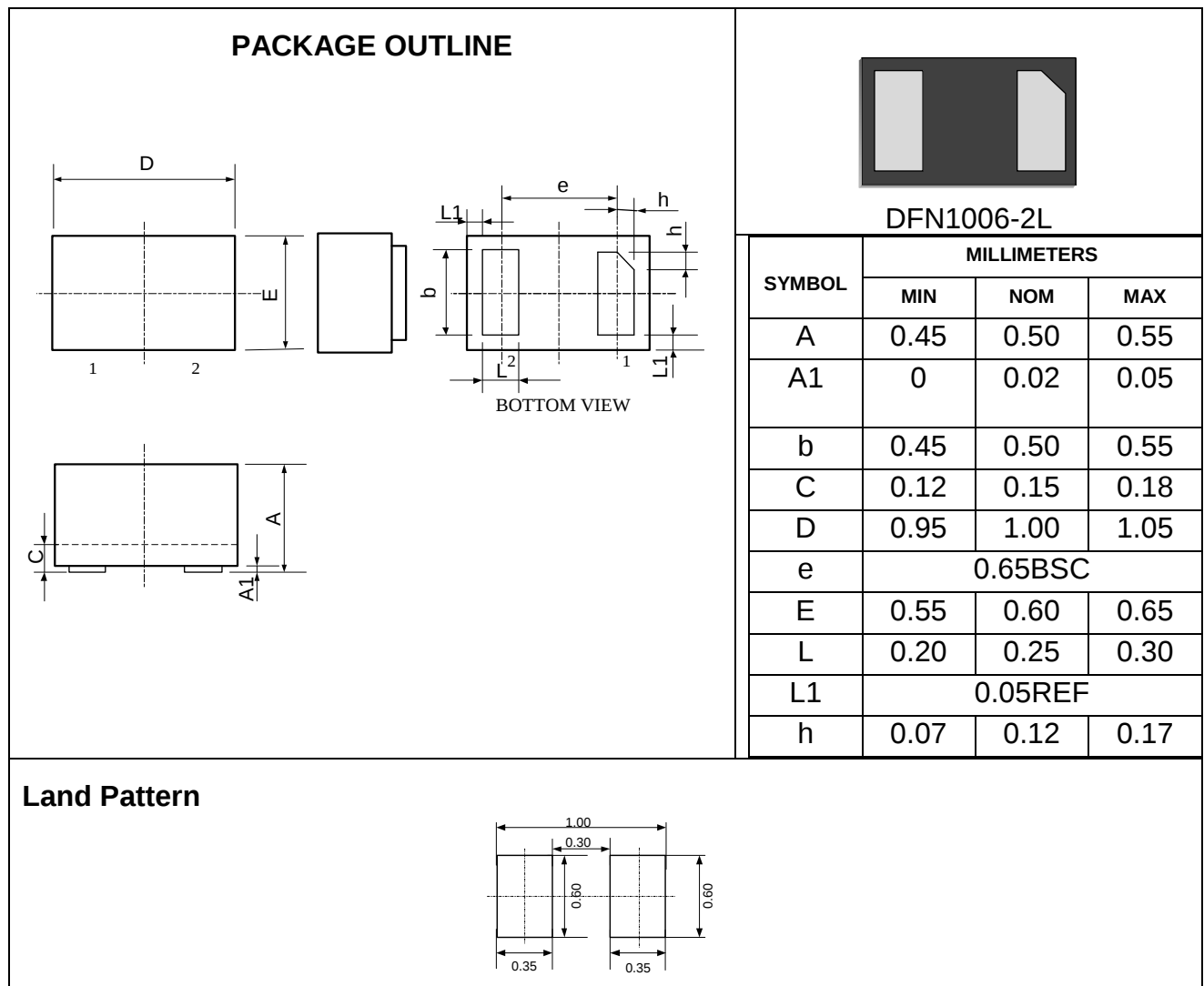


Soldering Parameters

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 –DFN1006-2L



Marking Codes

Part Number	Marking Code
WS03DTRF-B	EFX EF=Specific Device Code X=Month Code

Package Information

Qty: 10k/Reel

CONTACT INFORMATION

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For additional information, please contact your local Sales Representative.

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Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time. Users should verify actual device performance in their specific applications.