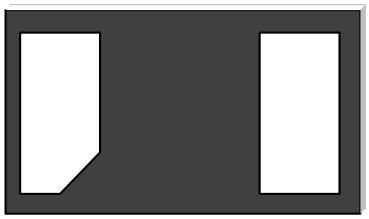
Etek Microelectronics

ES4850DPVL

Transient Voltage Suppressor

Features

- 2160 Watts Peak Pulse Power per Line (t_p = 8/20μs)
- Protects one I/O or power line
- Low Clamping Voltage
- Working Voltage: 4.85V
- Low Leakage Current



DFN1610-2L

IEC COMPATIBILITY (EN61000-4)

- **IEC 61000-4-2 (ESD) ±30kV (air), ±30kV (contact)**
- **IEC 61000-4-4 (EFT) 40A (5/50ns)**
- **IEC 61000-4-5 (Lightning) 180A (8/20μs)**

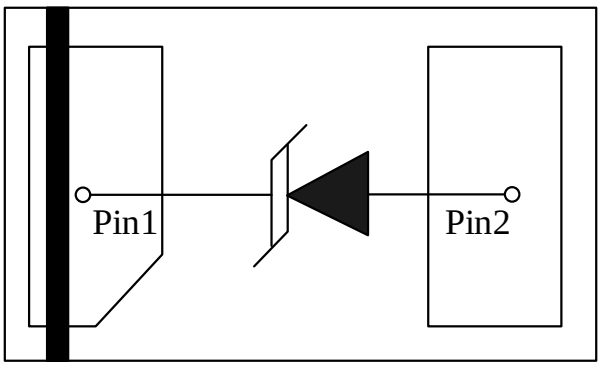
Mechanical Characteristics

- DFN1610-2L package
- Marking : Marking Code
- Packaging : Tape and Reel per EIA 481
- RoHS Compliant

Applications

- Laptop Computers
- Cellular Phones
- Digital Cameras
- Personal Digital Assistants (PDAs)

Schematic & PIN Configuration

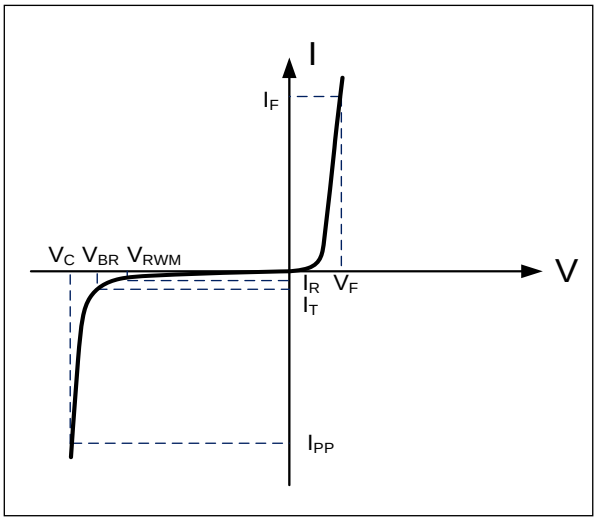


BOTTOM VIEW

Absolute Maximum Rating			
Rating	**Symbol**	**Value**	**Units**
Peak Pulse Power（t_p =8/20μs）	P_{PP}	2160	Watts
Peak Pulse Current（t_p =8/20μs）	I_{PP}	180	A
Operating Temperature	T_J	-55 to + 125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

Electrical Parameters (T=25℃)

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

ES4850DPVL						
Parameter	**Symbol**	**Conditions**	**Minimum**	**Typical**	**Maximum**	**Units**
Reverse Stand-Off Voltage	V_{RWM}				4.85	V
Reverse Breakdown Voltage	V_{BR}	I_T=1mA	4.9		6.5	V
Forward Voltage	V_F	I_F=10 mA	0.5		1	V
Reverse Leakage Current	I_R	V_{RWM}=4.85V, T=25°C			1	uA
Clamping Voltage	V_C	I_{PP}=180A, t_p=8/20μs		10	12	V
Dynamic Resistance[1,2]	R_{DYN}	TLP=0.2/100ns		0.02		Ω
ESD Clamping Voltage[1]	V_C	I_{PP} = 4A t_p = 0.2/100ns		5.3		V
ESD Clamping Voltage[1]	V_C	I_{PP} = 16A t_p = 0.2/100ns		5.5		V
Junction Capacitance	C_j	V_R = 0V, f= 1MHz		500	600	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

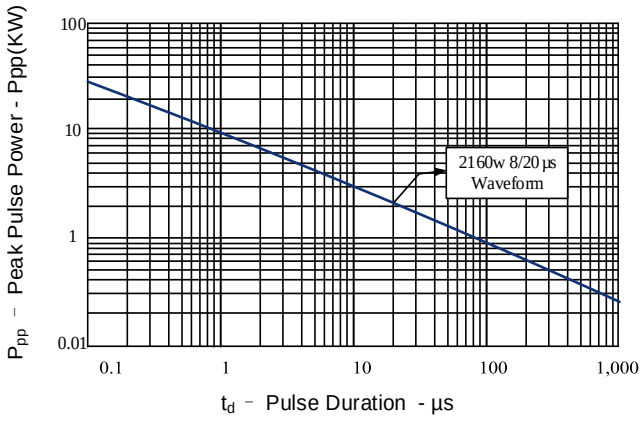


Figure 2: Power Derating Curve

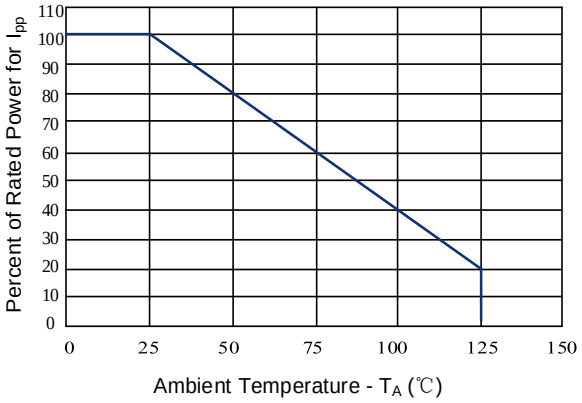


Figure 3: Clamping Voltage vs. Peak Pulse Current

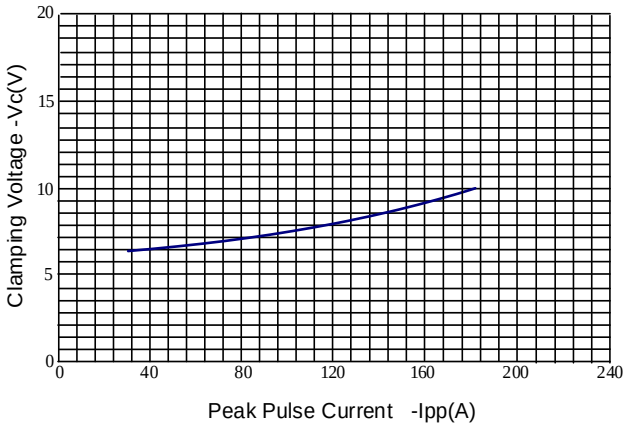


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

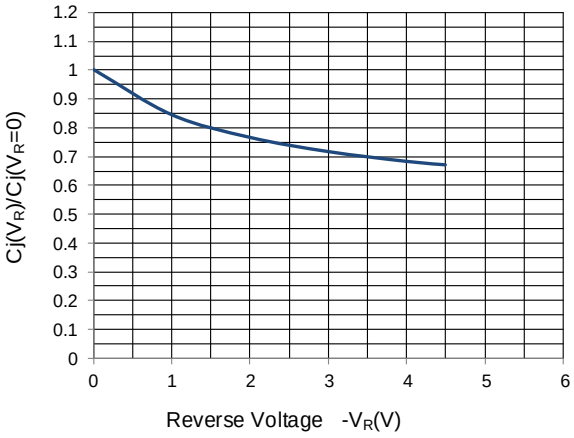


Figure 5: Pulse Waveform

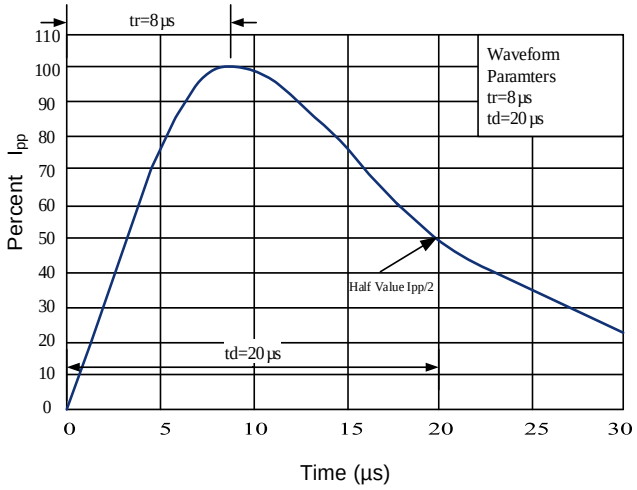
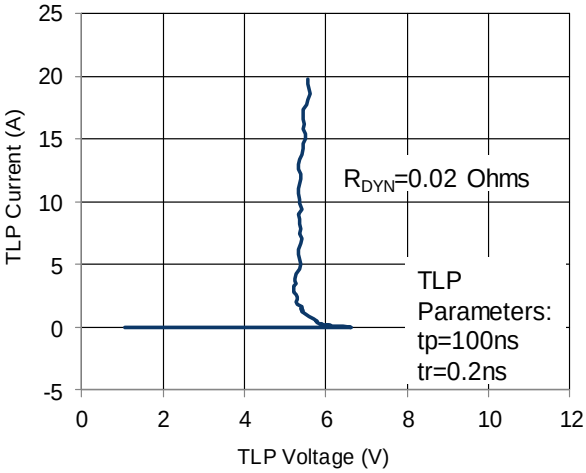
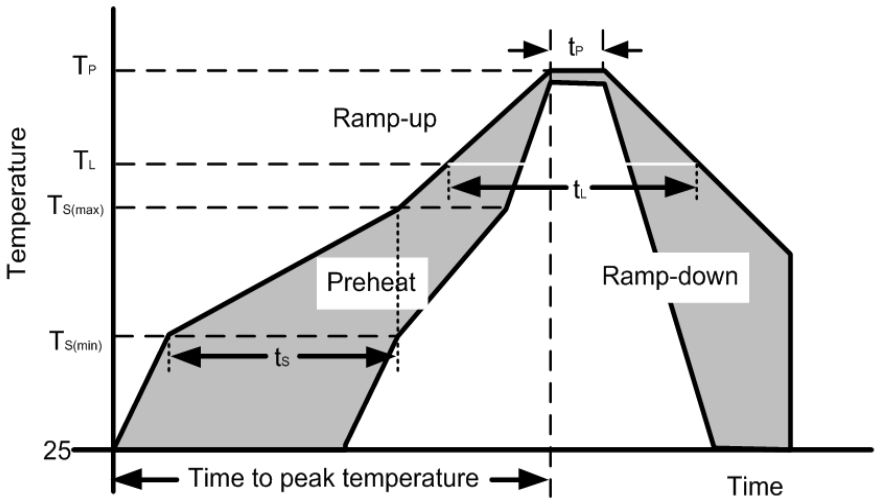


Figure 6: TLP I-V Curve

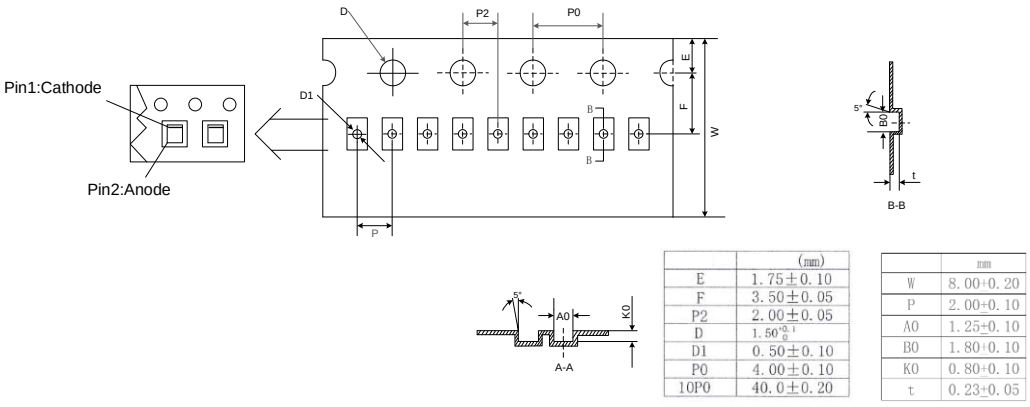


Soldering Parameters

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) (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



Tape

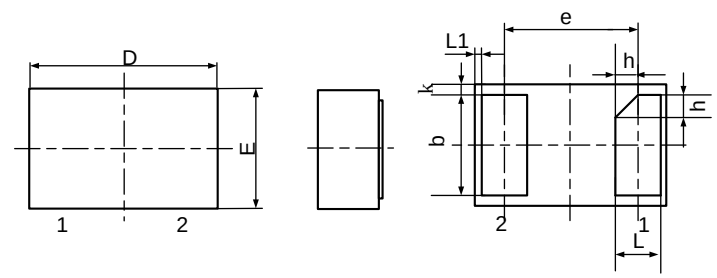


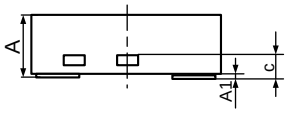
	(mm)
E	1.75±0.10
F	3.50±0.05
P2	2.00±0.05
D	1.50$^{+0.1}_{0}$
D1	0.50±0.10
P0	4.00±0.10
10P0	40.0±0.20

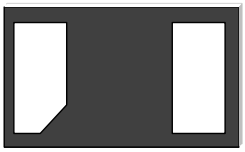
	mm
W	8.00±0.20
P	2.00±0.10
A0	1.25±0.10
B0	1.80±0.10
K0	0.80±0.10
t	0.23±0.05

Outline Drawing –DFN1610-2L

PACKAGE OUTLINE







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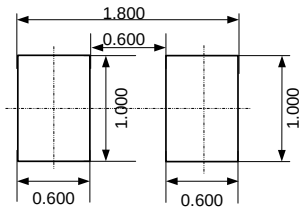
SYMBOL	MILLIMETERS		
	MIN	NOM	MAX
A	0.450	0.500	0.550
A1	0.000	0.020	0.050
b	0.750	0.800	0.850
c		0.152REF	
D	1.550	1.600	1.650
e		1.100BSC	
E	0.950	1.000	1.050
L	0.350	0.400	0.450
L1		0.05REF	
h	0.150	0.200	0.250
k	0.050	0.100	0.150

Land Pattern



Marking Codes

Part Number	Marking Code
ES4850DPVL	1 MLX 2 ML=Specific Device Code X=Month Code

Package Information

Qty：10k/Reel