Etek Microelectronics

ES332R2PA

Transient Voltage Suppressor

Features

- Low operating and clamping voltage
- Up to four I/O Lines of Protection
- low capacitance
- Low Leakage
- Low operating voltage:3.3V
- Flow-Through design

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) 5A (8/20μs)**

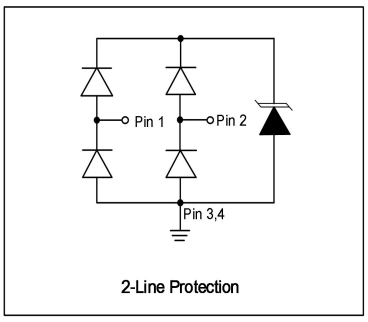
Mechanical Characteristics

- DFN1610-6L package
- Marking: Marking Code
- Packaging: Tape and Reel
- RoHS Compliant

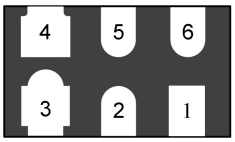
Applications

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

Schematic & PIN Configuration



2-Line Protection



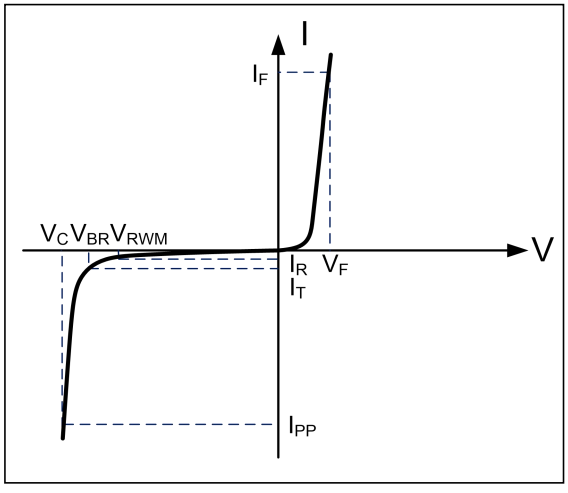
Pin	Identificaion
1,2	Input line
5,6	Output Lines (No Internal Connection)
3,4	Ground

Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power (t_p =8/20μs)	P_{PP}	60	Watts
Peak Pulse Current (t_p =8/20μs)	I_{pp}	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_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

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°C			500	nA
Clamping Voltage	V_C	I_{PP}=5A, t_p=8/20μs I/O pin to GND		10	12	V
Dynamic Resistance[1,2]	R_{DYN}	TLP=0.2/100ns		0.27		Ω
ESD Clamping Voltage[1]	V_C	I_{PP} = 4A, tp = 0.2/100ns (TLP)		8.0		V
ESD Clamping Voltage[1]	V_C	I_{PP} = 16A, tp = 0.2/100ns (TLP)		11.3		V
Junction Capacitance	C_j	VR = 0V, f = 1MHz I/O pin to GND		0.8	1.2	pF
		VR = 0V, f = 1MHz Between I/O pins		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

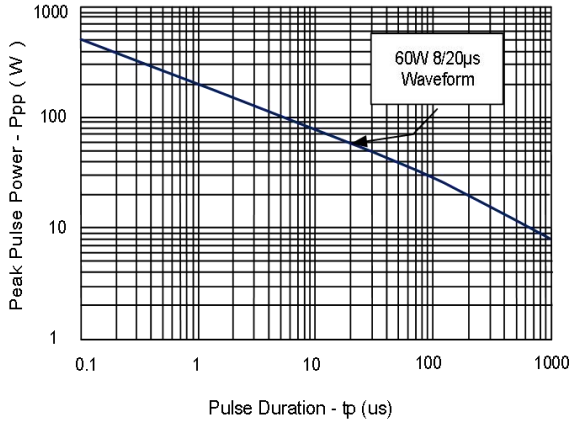


Figure 2: Power Derating curve

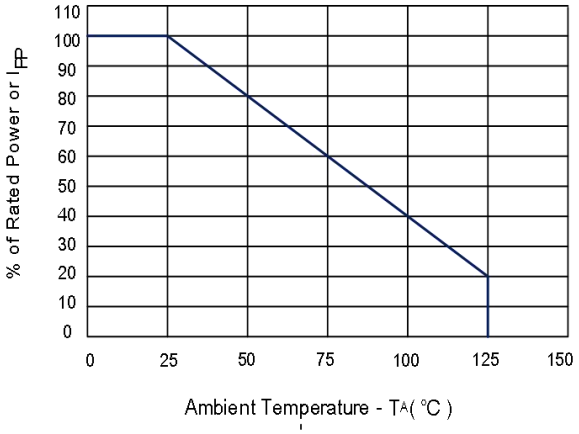


Figure 3: Clamping Voltage vs. Peak Pulse Current

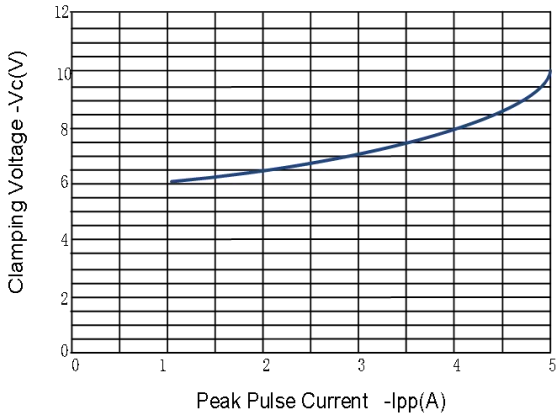


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

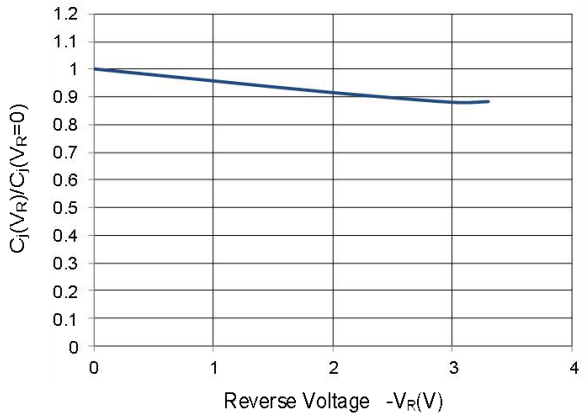


Figure 5: 8/20μs Pulse Waveform

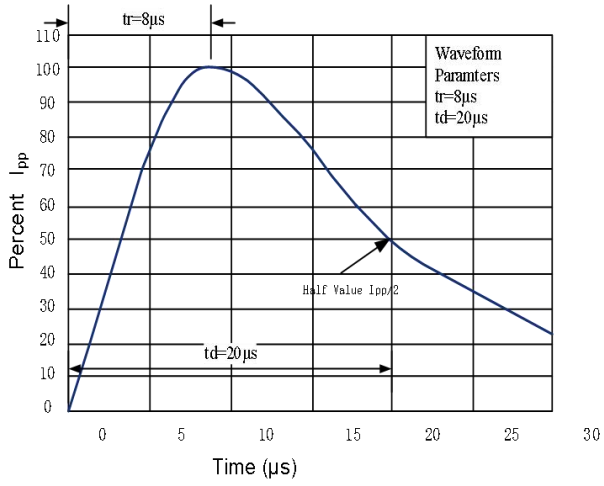
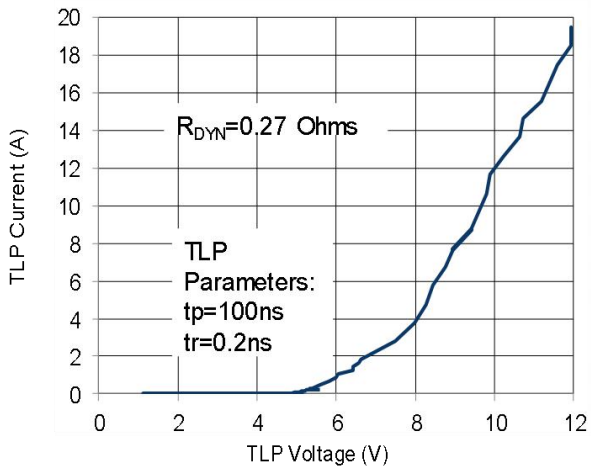
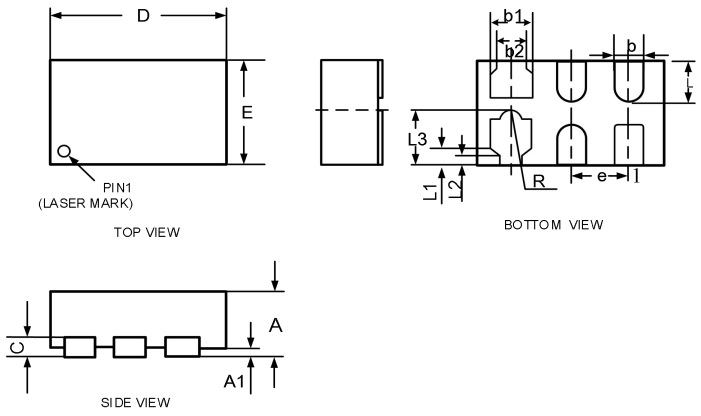


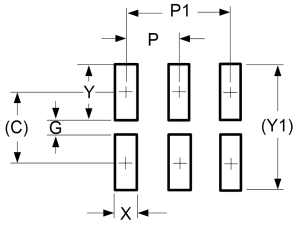
Figure 6: TLP I-V Curve



Outline Drawing – DFN1610-6L



SYMBOL	MILLIMETERS		
	MIN	NOM	MAX
A	0.50	0.55	0.60
A1	-	0.02	0.05
b	0.15	0.20	0.25
b1	0.35	0.40	0.45
b2	0.20	0.25	0.30
c	0.10	0.15	0.20
D	1.55	1.60	1.65
e	0.50BSC		
E	0.95	1.00	1.05
L	0.33	0.38	0.43
L1	0.10REF		
L2	0.05REF		
L3	0.49REF		
R	0.08	0.13	0.18



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:
Controlling Dimension: Millimeter.

Marking Codes

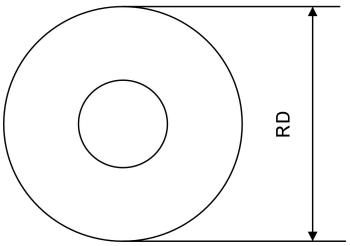
Part Number	Marking Code
ES332R2PA	1R2P

Package Information

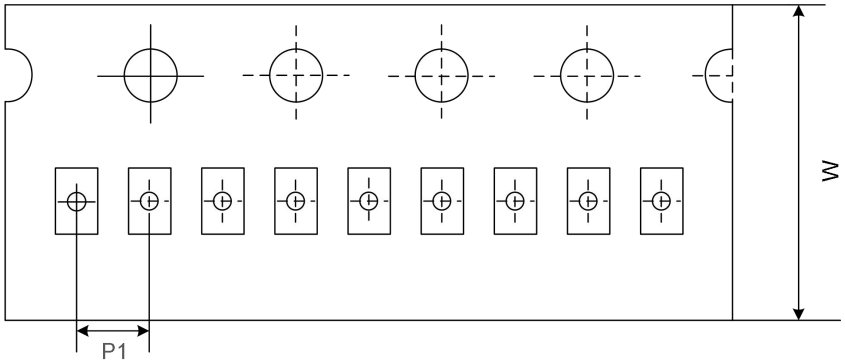
Qty：10k/Reel

Tape And Reel Information

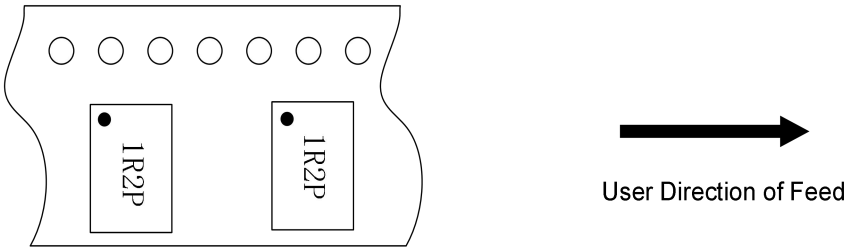
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



RD	Reel Dimensions	7 inch
W	Overall width of the carrier tape	8 mm
P1	Pitch between successive cavity centers	2mm

Revision History

No.	Version	Date	Revision Item	Request	Function and characteristic checking	Package dimension checking	Typos checking
1	1.0	2018-09-15	Released Version	Qi Shu Kun	Qi Shu Kun	Liu Jia Ying	Liu Jia Ying