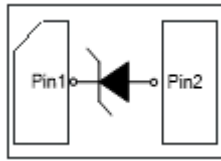


1-Line, Uni-directional, Transient Voltage Suppressor



DFN1610-2L

Features

- Ultra small package
- Stand-off voltage: 12~24V Max
- Transient protection for each line according to IEC61000-4-2(ESD): $\pm 30\text{kV}$ (contact)
- Low leakage current
- Low clamping voltage
- RoHS Compliant

Applications

- Power supply protection
- Power management
- Battery Contacts

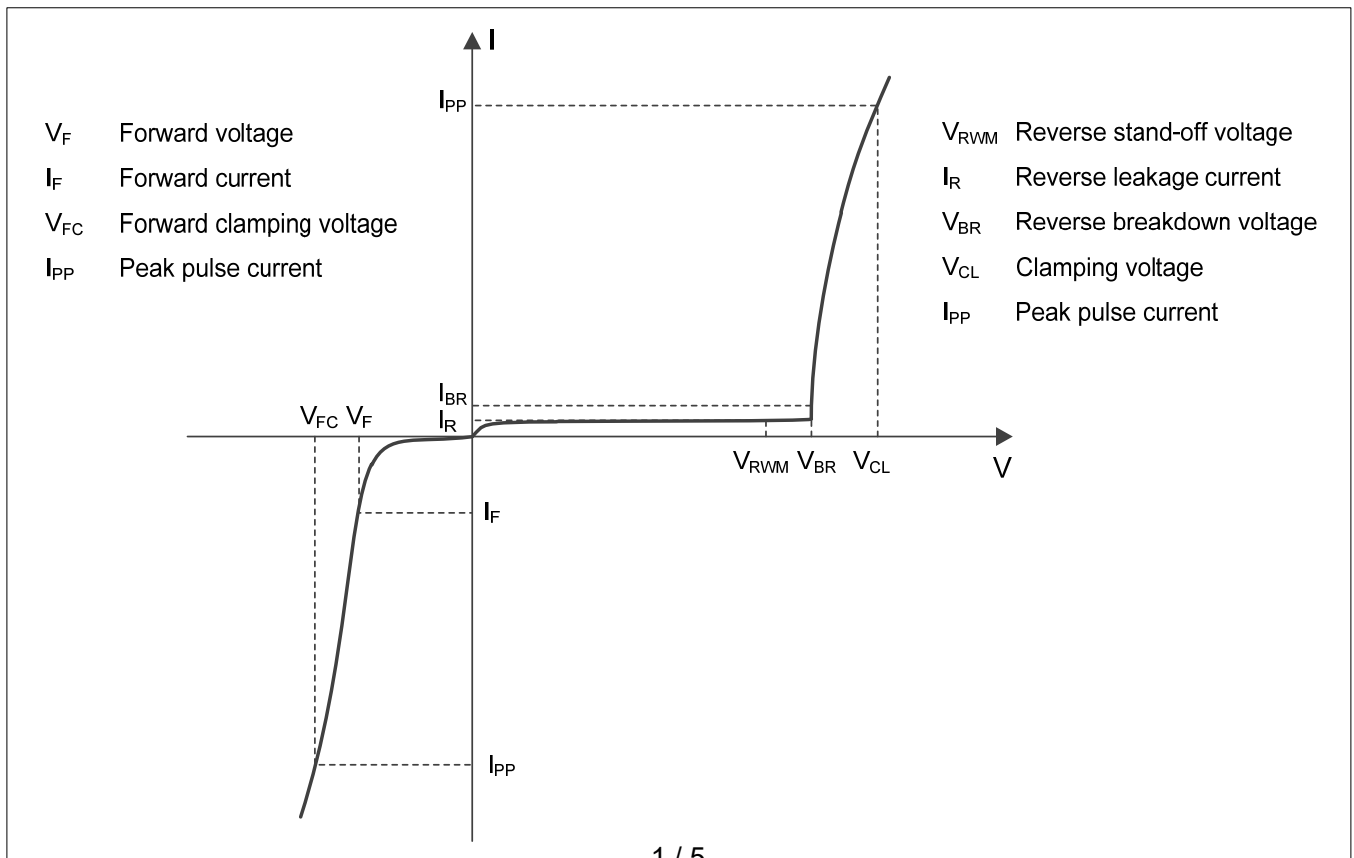
Mechanical Characteristics

- Package: DFN1610-2L
- Case Material: "Green" Molding Compound.
- Marking Information: See Below



Device	Device code
ESD12VP6A1	cDC
ESD15VP6A1	fDC
ESD24VP6A1	oDC

■Definitions of electrical characteristics





ESD12VP6A1 THRU ESD24VP6A1

■Absolute Maximum Ratings (Ta=25°C unless otherwise specified)

PARAMETER	SYMBOL	Rating	UNIT
Peak pulse power ($t_p = 8/20\mu s$)	P_{pk}	2000	W
ESD according to IEC61000-4-2 air discharge	V_{ESD}	± 30	KV
ESD according to IEC61000-4-2 contact discharge		± 30	KV
Junction temperature	T_J	125	°C
Storage temperature	T_{STG}	-55~150	°C

■Electrical Characteristics (Ta=25°C Unless otherwise specified)

Type number	Reverse Standoff Voltage VRWM (V)	Breakdown voltage VBR(V) IBR = 1mA			Reverse leakage current IRM(nA) at VRWM		Forward voltage VF(V) IF = 20mA		Junction capacitance F=1MHz, VR=0V (pF)	
	Max	Min	Typ	Max	Typ	Max	Min	Max	Typ	Max
ESD12VP6A1	12	13	14	16	-	1000	0.45	1.25	450	500
ESD15VP6A1	15	15.5	17	20	-	1000	0.45	1.25	350	400
ESD24VP6A1	24	26	28	31.5	-	500	0.45	1.25	190	240

Type number	Rated peak pulse current I_{PP} (A) ¹⁾²⁾	Clamping voltage V_{CL} (V) at I_{PP} (A) ¹⁾²⁾	
	Max.	Typ.	Max.
ESD12VP6A1	90	22	24
ESD15VP6A1	80	24	26
ESD24VP6A1	70	28	30

(1). TLP parameter: $Z_0 = 50\Omega$, $t_p = 100ns$, $t_r = 2ns$, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.

(2). Contact discharge mode, according to IEC61000-4-2.

(3). Non-repetitive current pulse, according to IEC61000-4-5.

■Ordering Information (Example)

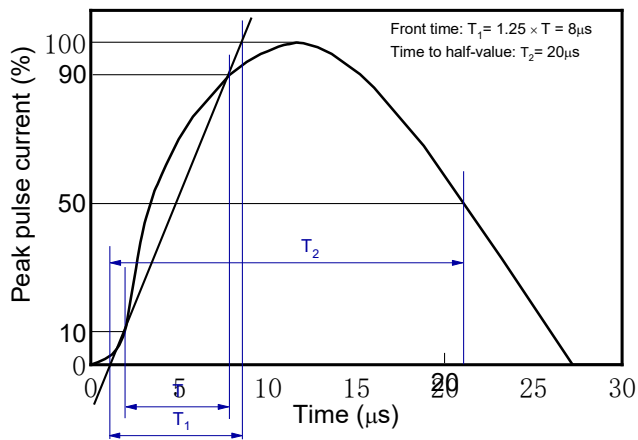
PREFERRED P/N	UNIT WEIGHT(mg)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
ESDxxVP6A1	Approximate 10	3000	30000	120000	Tae& reel



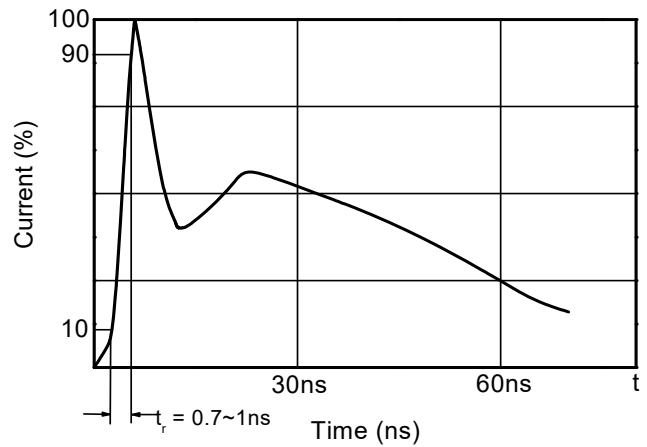
ESD12VP6A1 THRU ESD24VP6A1

■ Typical Performance Characteristics (Ta=25°C unless otherwise Specified)

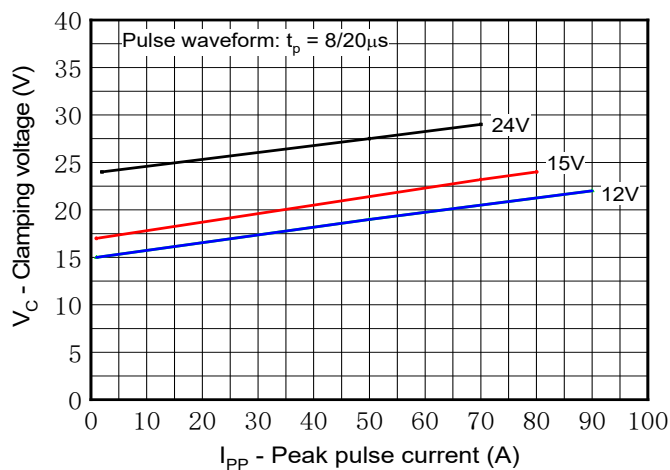
8/20μs waveform per IEC61000-4-5



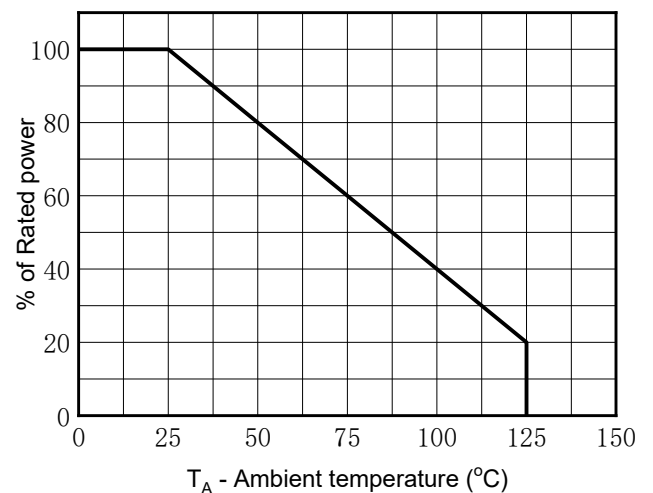
Contact discharge current waveform per IEC61000-4-2



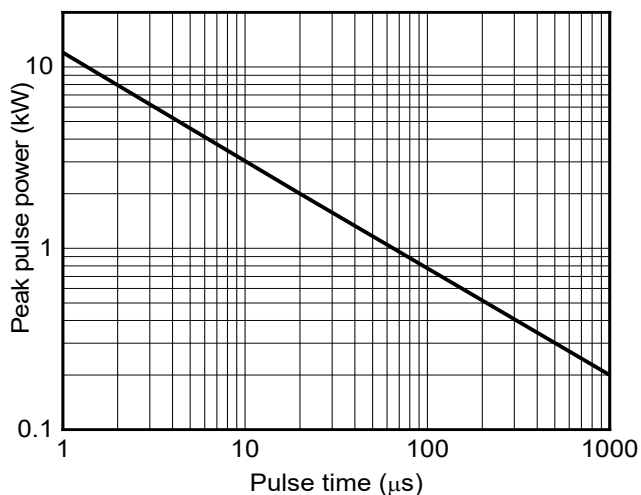
Clamping voltage vs. Peak pulse current



Power derating vs. Ambient temperature



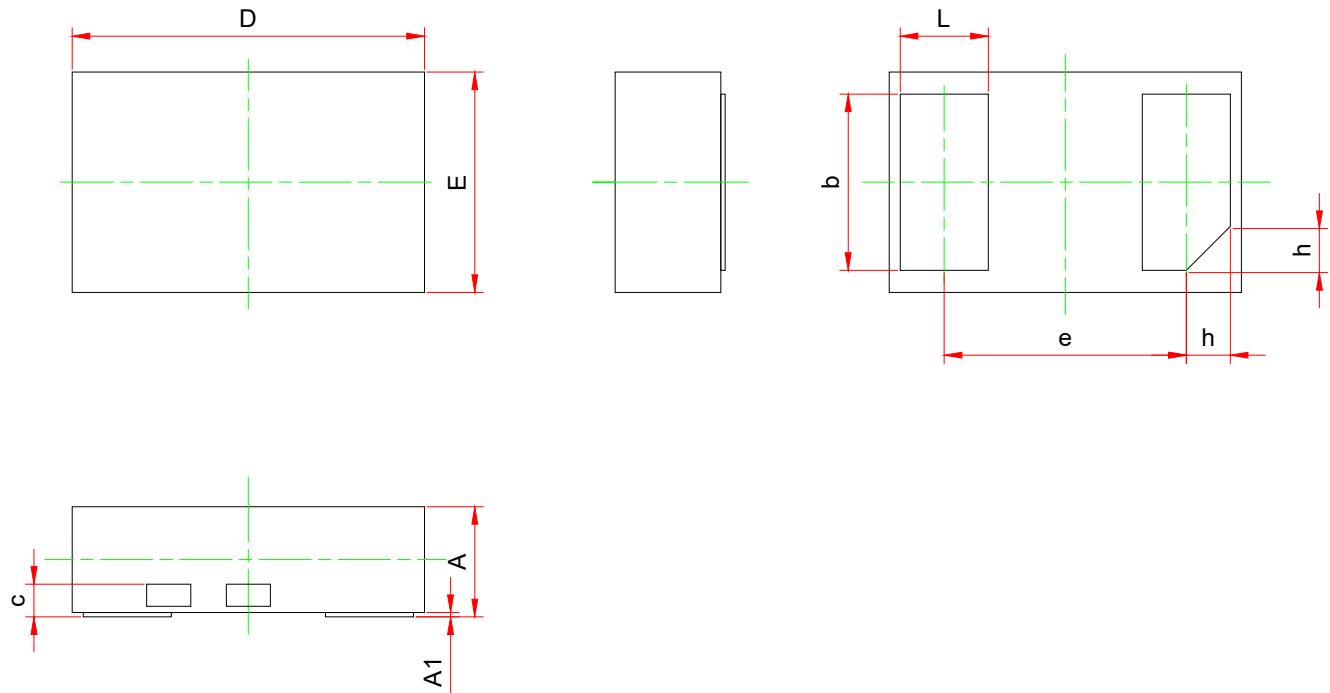
Non-repetitive peak pulse power vs. Pulse time





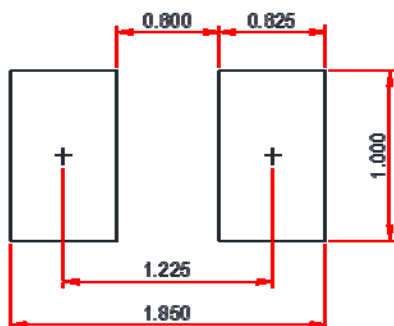
ESD12VP6A1 THRU ESD24VP6A1

■ Outline Dimensions



Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.45	0.50	0.55
A1	0.00	0.02	0.05
c	0.15 Ref.		
b	0.75	0.80	0.85
L	0.35	0.40	0.45
D	1.55	1.60	1.65
E	0.95	1.00	1.05
e	1.10 BSC		
h	0.20 Ref.		

■ Recommend land pattern (Unit:mm)



Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met



ESD12VP6A1 THRU ESD24VP6A1

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