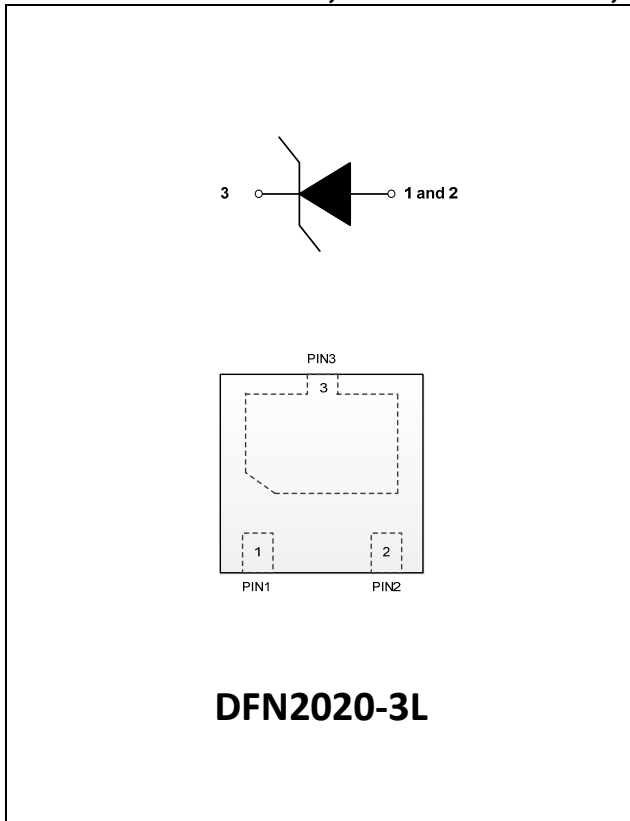


1-Line, Uni-directional, Transient Voltage Suppressor



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

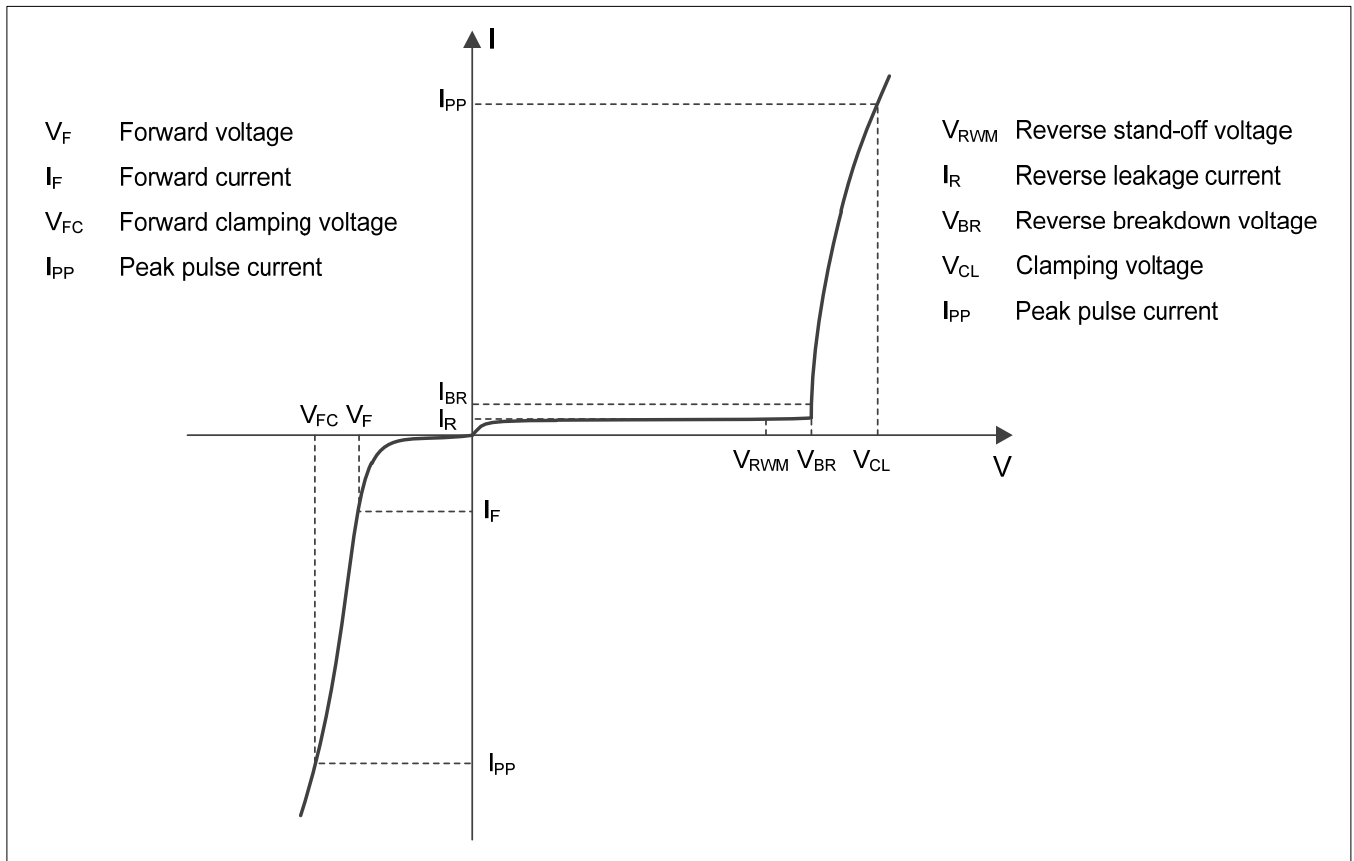
Mechanical Characteristics

- Package: DFN2510-10L
- Case Material: "Green" Molding Compound.
- Marking Information: See Below



Device	Device code
ESD12VP4A2	V12
ESD15VP4A1	V15
ESD18VP4A2	V18
ESD24VP4A3	V24

Definitions of electrical characteristics





ESD12VP4A2-ESD24VP4A3

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

PARAMETER	SYMBOL	Rating	UNIT
Peak pulse power ($t_p = 8/20\mu s$)	P_{pk}	5000	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
ESD12VP4A2	12	12.5	14.5	15.5	-	1000	0.45	1.25	1400	1650
ESD15VP4A1	15	15.5	18	19.0	-	1000	0.45	1.25	1200	1450
ESD18VP4A2	18	18	-	22	-	1000	0.45	1.25	1000	1200
ESD24VP4A3	24	24.5	-	30.0	-	1000	0.45	1.25	750	900

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.
ESD12VP4A2	200	24	27
ESD15VP4A1	180	28	30
ESD18VP4A2	150	35	38
ESD24VP4A3	130	41	43

(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)

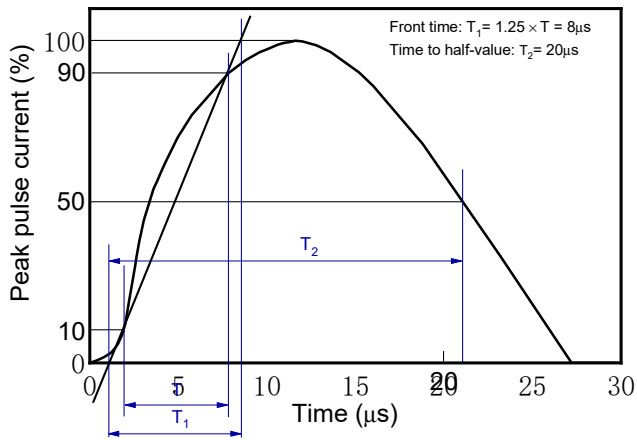
PREFERRED P/N	UNIT WEIGHT(mg)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
ESDULC3304P5	Approximate 10	3000	30000	120000	Tae& reel



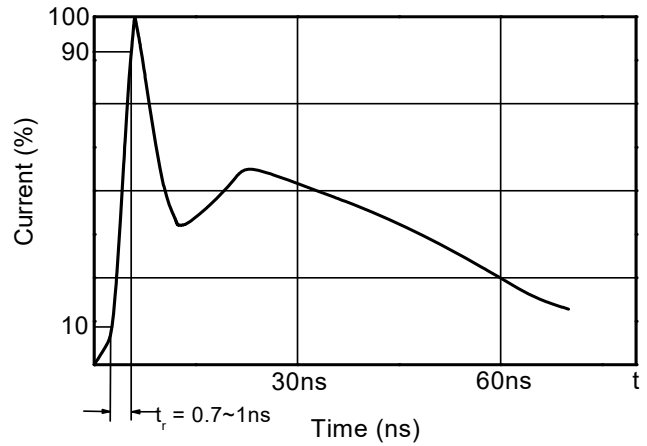
ESD12VP4A2-ESD24VP4A3

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

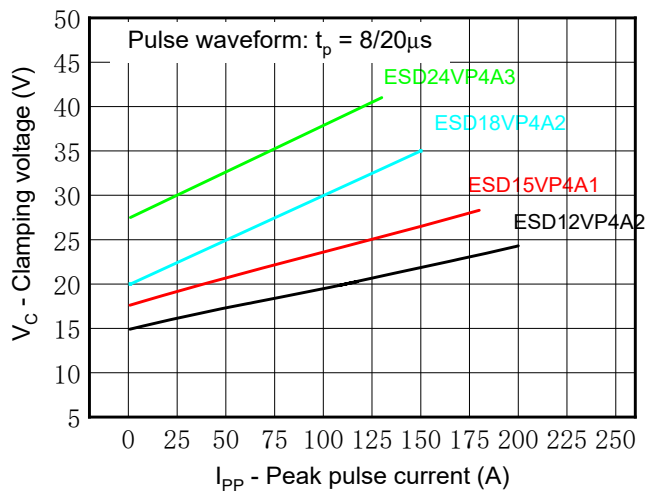
8/20μs waveform per IEC61000-4-5



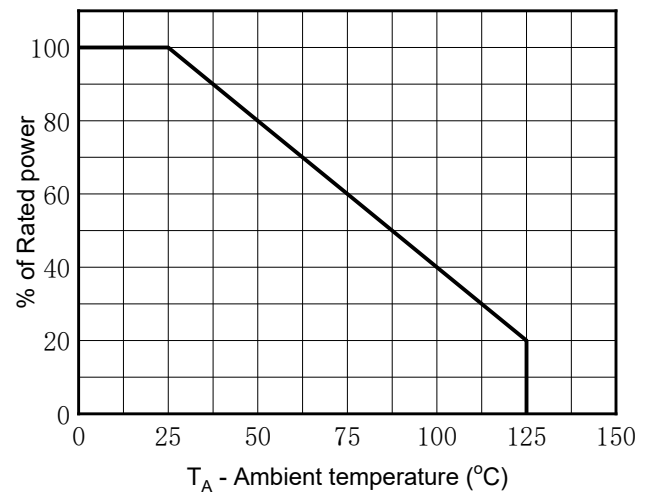
Contact discharge current waveform per IEC61000-4-2



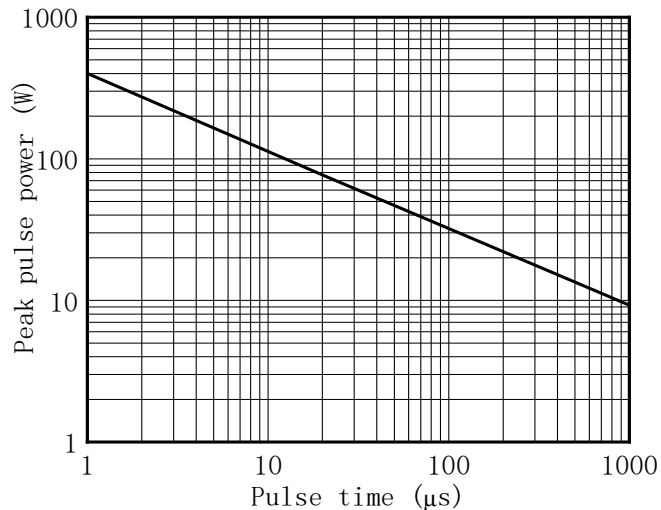
Clamping voltage vs. Peak pulse current



Power derating vs. Ambient temperature



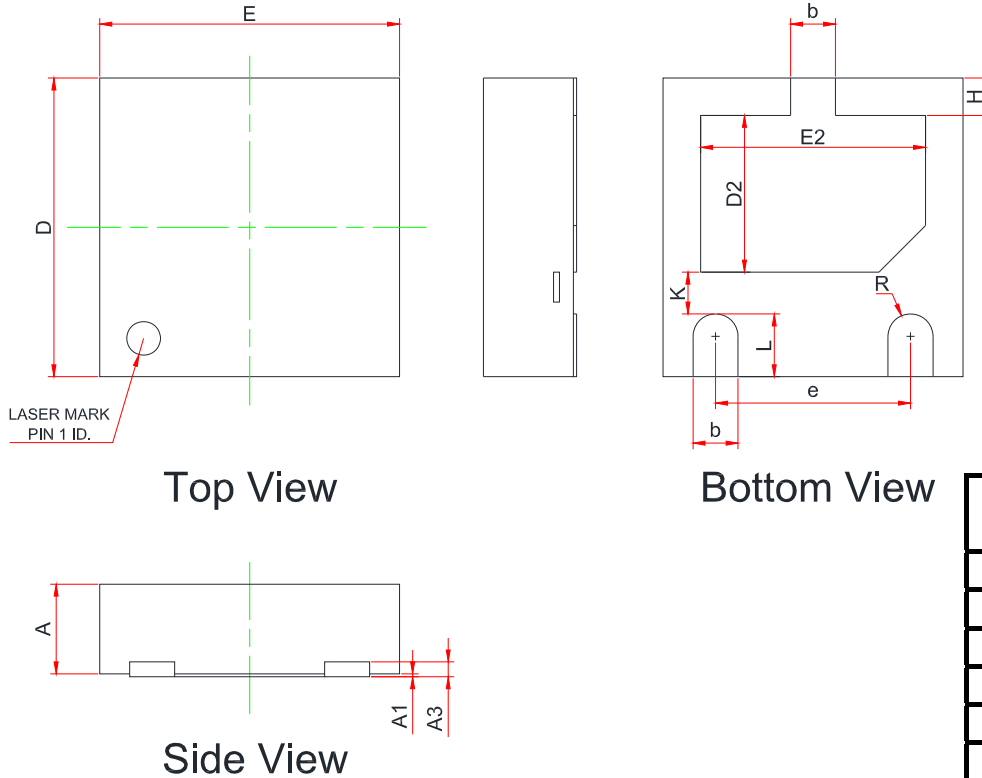
Non-repetitive peak pulse power vs. Pulse time





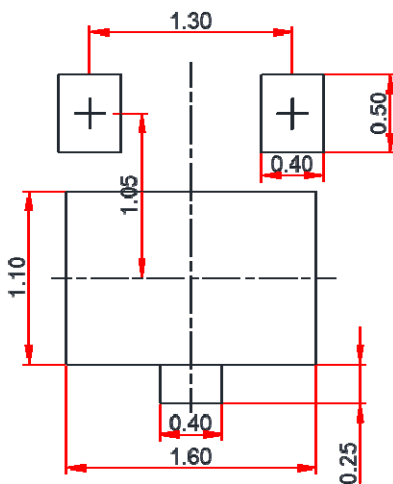
ESD12VP4A2-ESD24VP4A3

■ Outline Dimensions



Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.50	0.60	0.65
A1	0.00	0.02	0.05
A3	0.15 REF.		
b	0.25	0.30	0.35
D	1.90	2.00	2.10
E	1.90	2.00	2.10
D2	0.95	1.05	1.15
E2	1.40	1.50	1.60
e	1.20	1.30	1.40
H	0.20	0.25	0.30
K	0.20	0.30	0.40
L	0.35	0.40	0.45
R	0.13	-	-

■ 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



ESD12VP4A2-ESD24VP4A3

Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website [http:// www.21yangjie.com](http://www.21yangjie.com) , or consult your nearest Yangjie's sales office for further assistance.