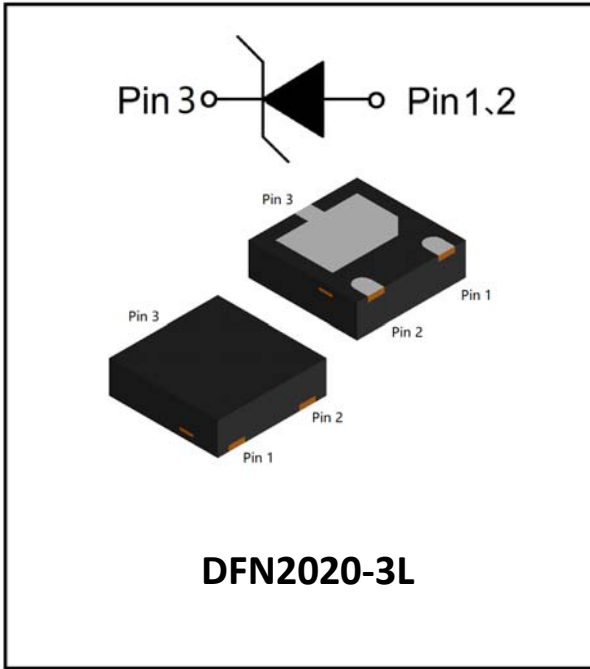


1-Line , Uni-directional , Transient Voltage Suppressor



Features

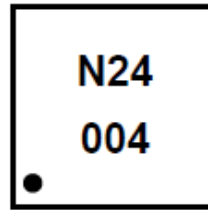
- Ultra small package
- Stand-off voltage: 24V
- Transient protection for each line according to
IEC61000-4-2(ESD): $\pm 30\text{kV}$ (contact)
IEC61000-4-4 (EFT): 180A (8/20 μs)
- Low clamping voltage
- RoHS Compliant

Applications

- Power supply protection
- Power management
- Battery Contacts

Mechanical Characteristics

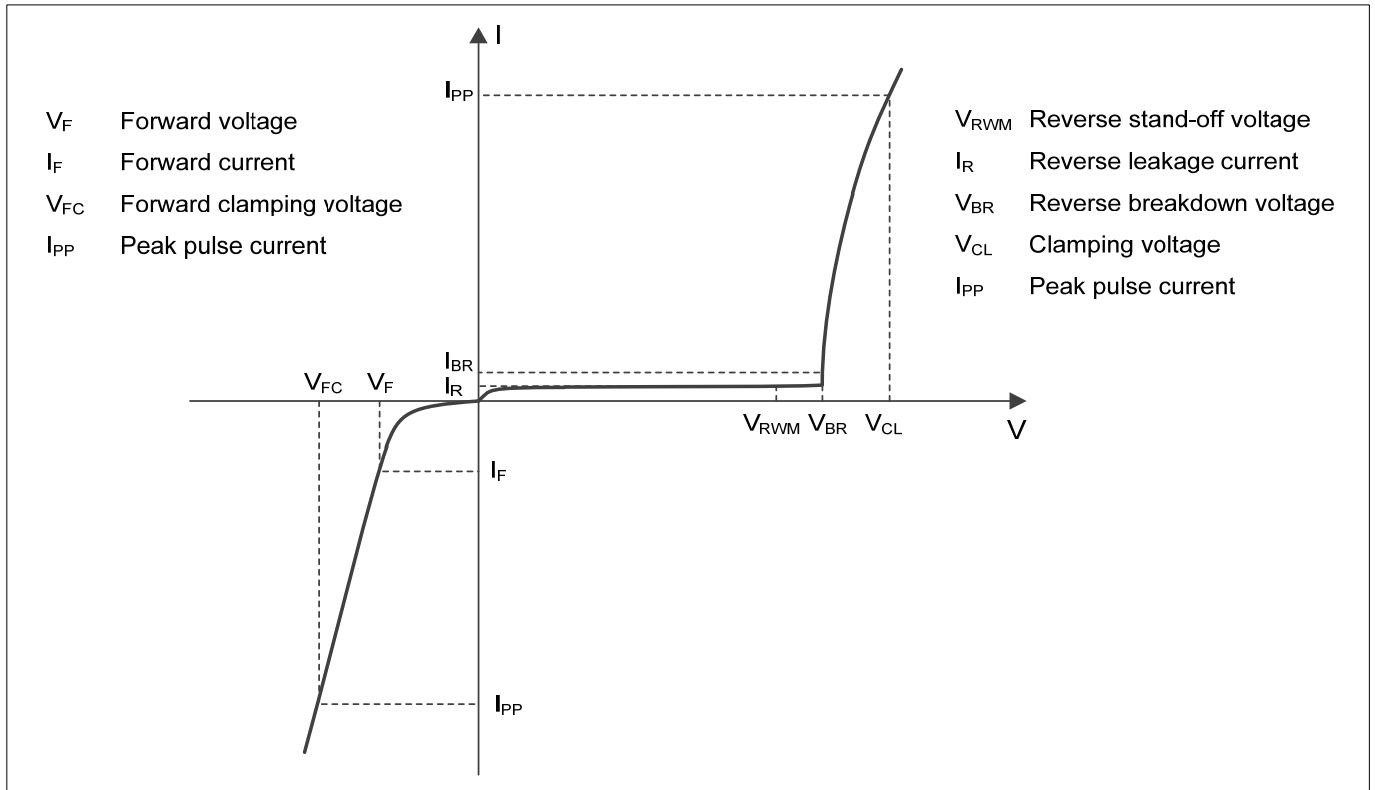
- Package: DFN2020-3L
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Marking Information: See Below



Marking Code:N24/004

Dot denotes Pin1

■Definitions of electrical characteristics





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

PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power ($t_p = 8/20\mu s$)	P_{pk}	6120	W
Peak pulse current ($t_p = 8/20\mu s$)	I_{PP}	180	A
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	-55~125	°C
Operating temperature	T_{OP}	-40~85	°C
Storage Temperature Range	T_{STG}	-55~150	°C

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

PARAMETER	Symbol	UNIT	Conditions	Min	Typ	Max
Reverse maximum working voltage	V_{RWM}	V			24	
Reverse leakage current	I_R	μA	$V_{RWM} = 24V$			1
Reverse breakdown voltage	V_{BR}	V	$I_T = 1mA$	24.8		
Clamping voltage ¹⁾	V_{CL}	V	$I_{PP} = 50A, t_p = 8/20\mu s$			31
		V	$I_{PP} = 180A, t_p = 8/20\mu s$			34
Junction capacitance	C_J	pF	$V_R = 0V, f = 1MHz$		700	

Notes:

(1). Non-repetitive current pulse, according to IEC61000-4-5. (8/20 μs current waveform).

■Ordering Information (Example)

PREFERRED P/N	PACKING CODE	UNIT WEIGHT(mg)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
ESD24VP4A1	F1	Approximate 10	3000	30000	120000	7" reel



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■ Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise Specified)

Fig.1 8/20 μs waveform per IEC61000-4-5

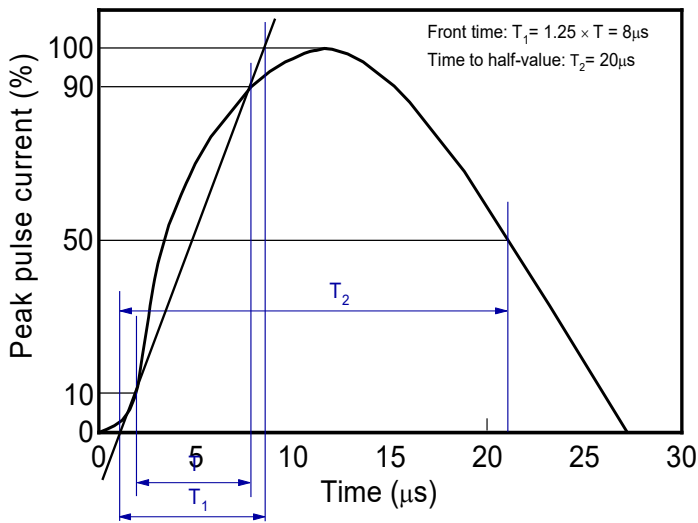


Fig.2 Contact discharge current waveform per IEC61000-4-2

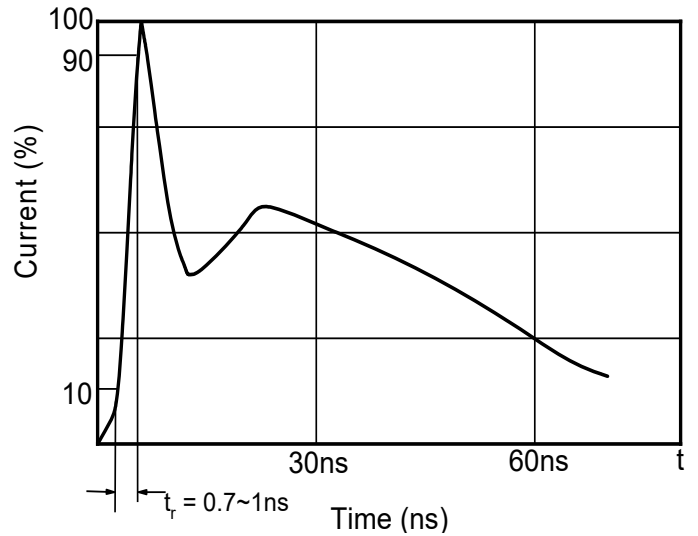


Fig.3 Clamping voltage vs. Peak pulse current

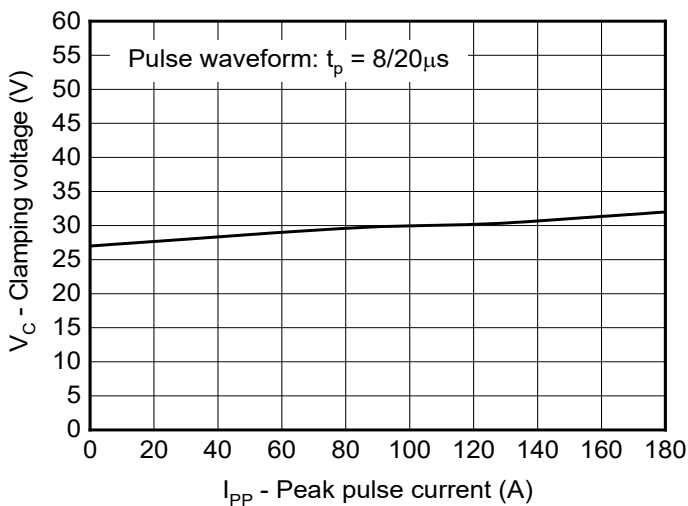


Fig.4 Capacitance vs. Reverse voltage

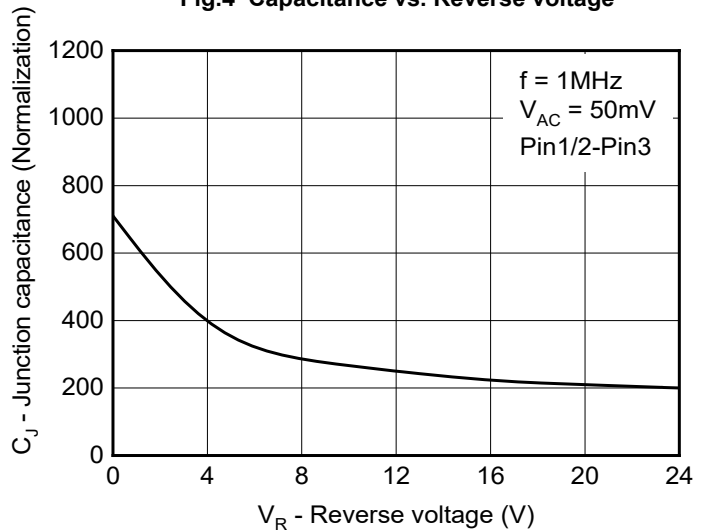


Fig.5 Non-repetitive peak pulse power vs. Pulse time

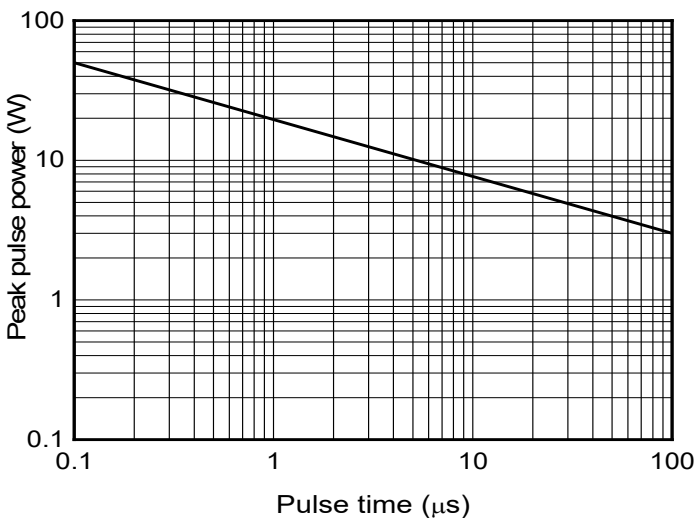
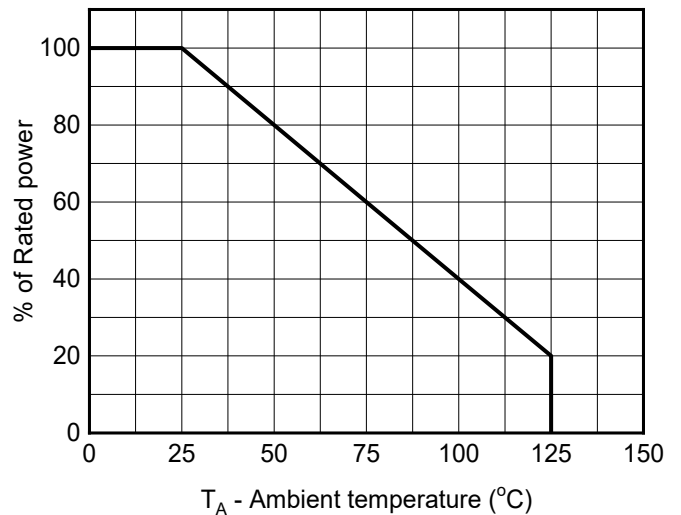


Fig.6 Power derating vs. Ambient temperature





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Fig.7 TLP Measurement

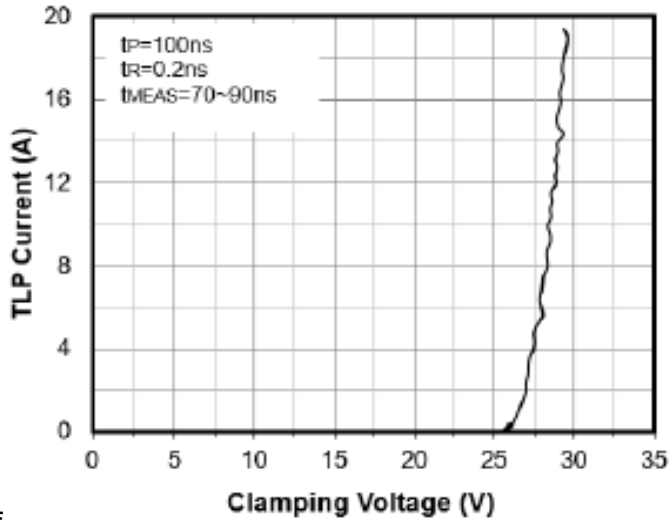
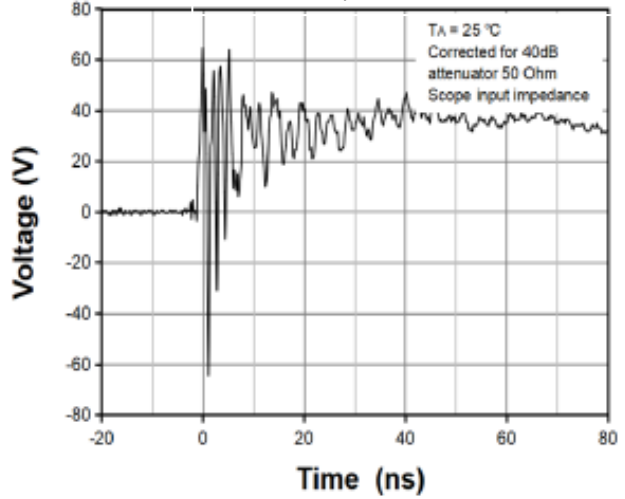
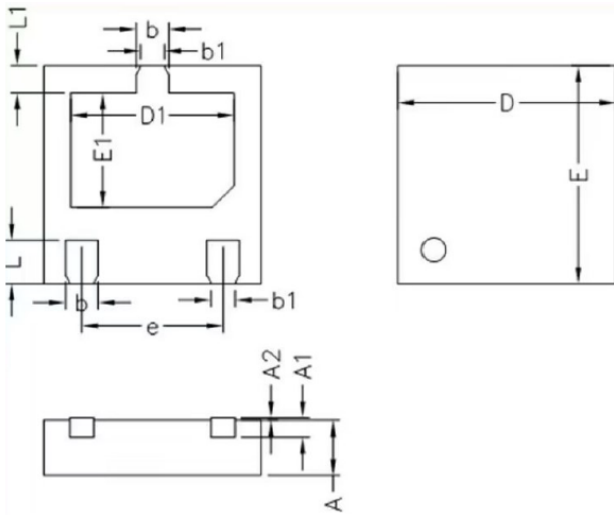


Fig.8 ESD clamping
8 kV Contact per IEC61000-4-2



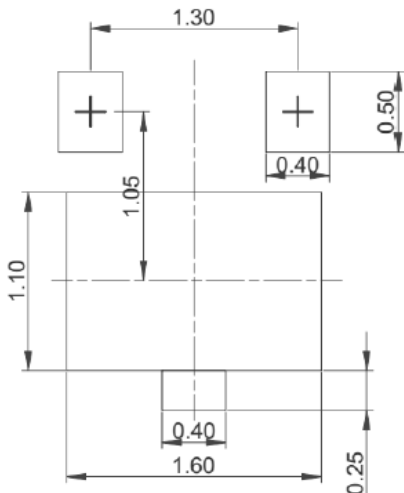
F

■Outline Dimensions



SYM	MILLIMETERS		
	MIN	NOM	MAX
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D1	1.45	1.50	1.55
E1	1.00	1.05	1.10
L1	0.20	0.25	0.30
L	0.35	0.40	0.45
b1	0.22REF		
b	0.25	0.30	0.35
e	1.30BSC		
A1	0.15REF		
A2	0.00	0.02	0.05
A	0.45	-	0.60

■Recommend land pattern (Unit:mm)



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.



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