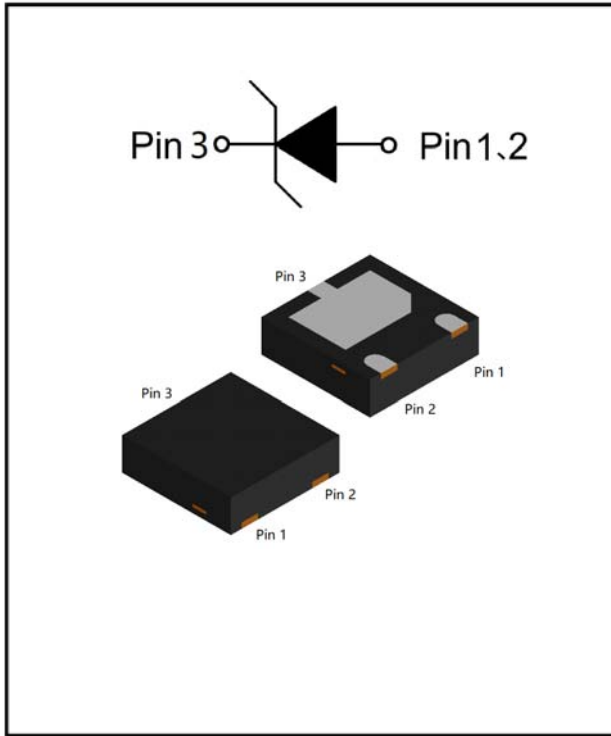


## 1-Line, Uni-directional, Transient Voltage Suppressor



### Features

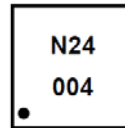
- Stand-off voltage: 24V Max
- Transient protection for each line according to  
IEC61000-4-2(ESD):  $\pm 30\text{kV}$  (contact)  
IEC61000-4-5(surge): 180A (8/20 $\mu\text{s}$ )
- Low leakage current
- Low clamping voltage
- Low clamping voltage:
- RoHS Compliant

### Applications

- Power Management
- Industrial Application
- Power Supply Protection

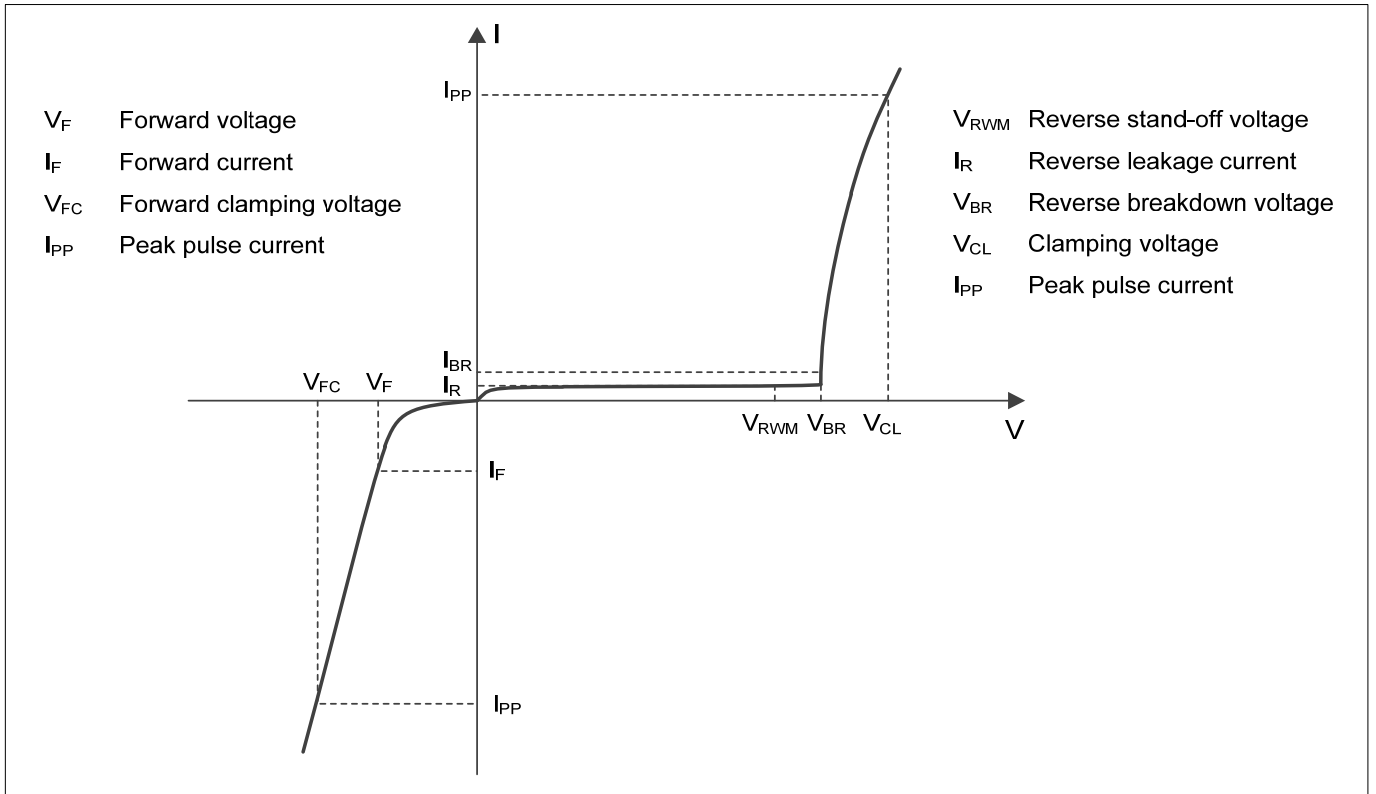
### Mechanical Data

- Package: DFN2020-3L
- Case Material: "Green" Molding Compound
- Marking Information: See Below



Marking Code: N24004  
Dot denotes Pin1

### ■ Definitions of electrical characteristics





# ESD24VP4A1

## ■Maximum Ratings

PARAMETER	SYMBOL	LIMITS	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	$V_{ESD}$	$\pm 30$	kV
ESD according to IEC61000-4-2 contact discharge		$\pm 30$	
Junction temperature	$T_J$	125	$^{\circ}C$
Storage temperature	$T_{STG}$	-55~150	$^{\circ}C$

## ■Electrical Characteristics ( $T_a=25^{\circ}C$ Unless otherwise specified)

PARAMETER	Symbol	UNIT	Conditions	Min	Typ	Max
Reverse maximum working voltage	$V_{RWM}$	V				24
Reverse leakage current	$I_R$	$\mu A$	$V_{RWM} = 24V$			1
Reverse breakdown voltage	$V_{BR}$	V	$I_{BR} = 1mA$	24.8		30
Clamping voltage <sup>1)</sup>	$V_{CL}$	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	$V_R = 0V, f = 1MHz$		410	

Notes:

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

## ■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



# ESD24VP4A1

## ■ Characteristics (Typical)

Fig.1 8/20 $\mu$ s waveform per IEC61000-4-5

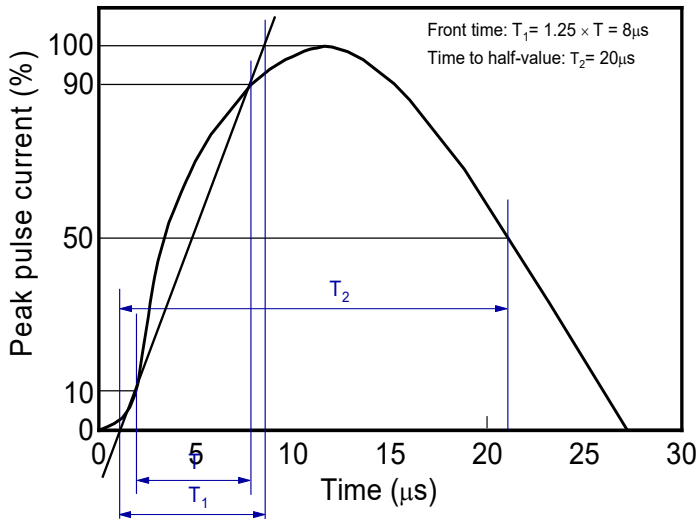


Fig.2 Contact discharge current waveform per IEC61000-4-2

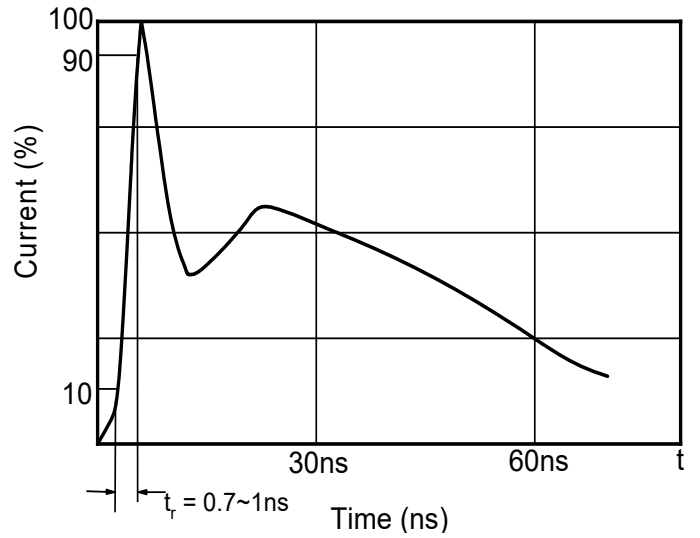


Fig.3 Clamping voltage vs. Peak pulse current

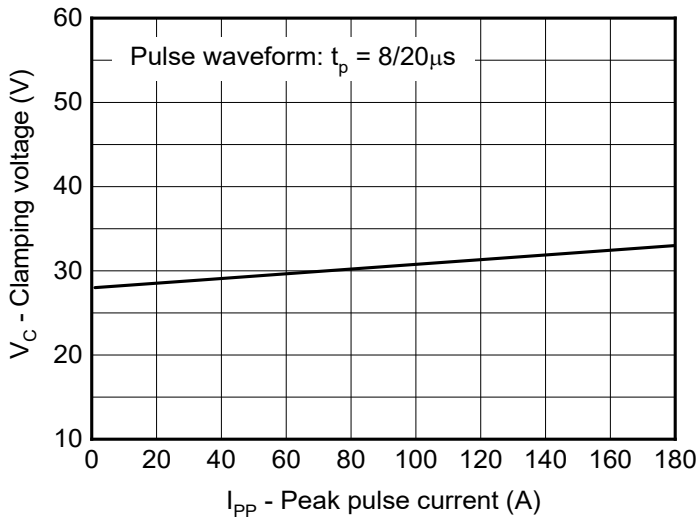


Fig.4 Capacitance vs. Reverse voltage

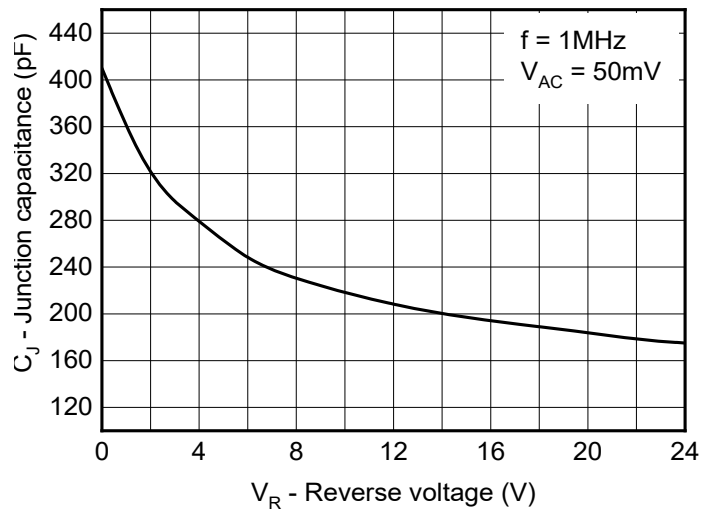


Fig.5 Non-repetitive peak pulse power vs. Pulse time

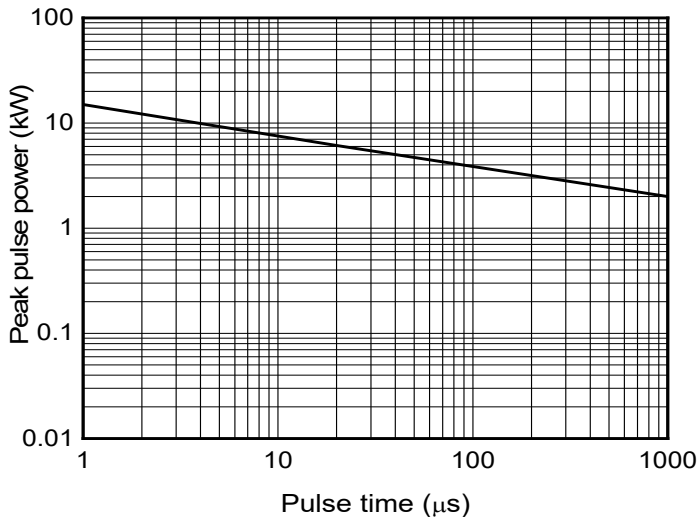
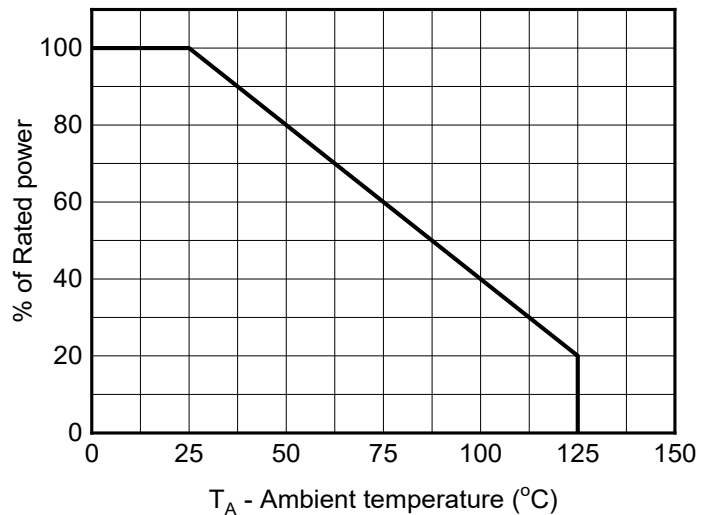


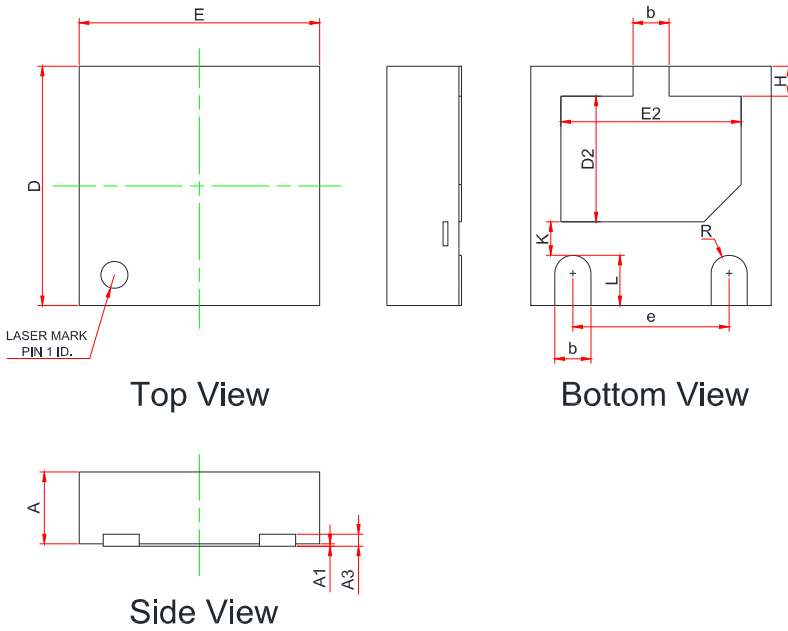
Fig.6 Power derating vs. Ambient temperature





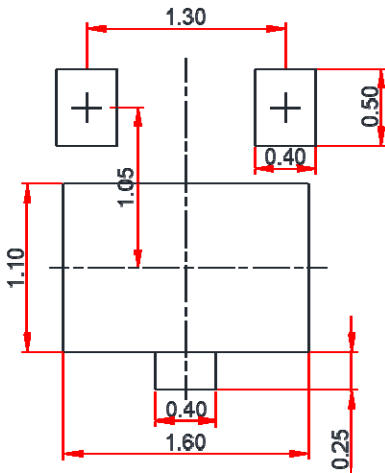
# ESD24VP4A1

## ■ Outline Dimensions



Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A3	0.20 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	-	-

## ■ Recommended PCB Layout



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



# ESD24VP4A1

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