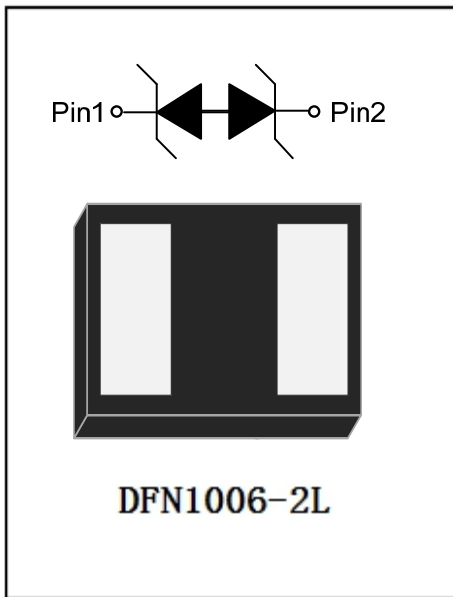


1-Line, Bi-directional, Transient Voltage Suppressor



Features

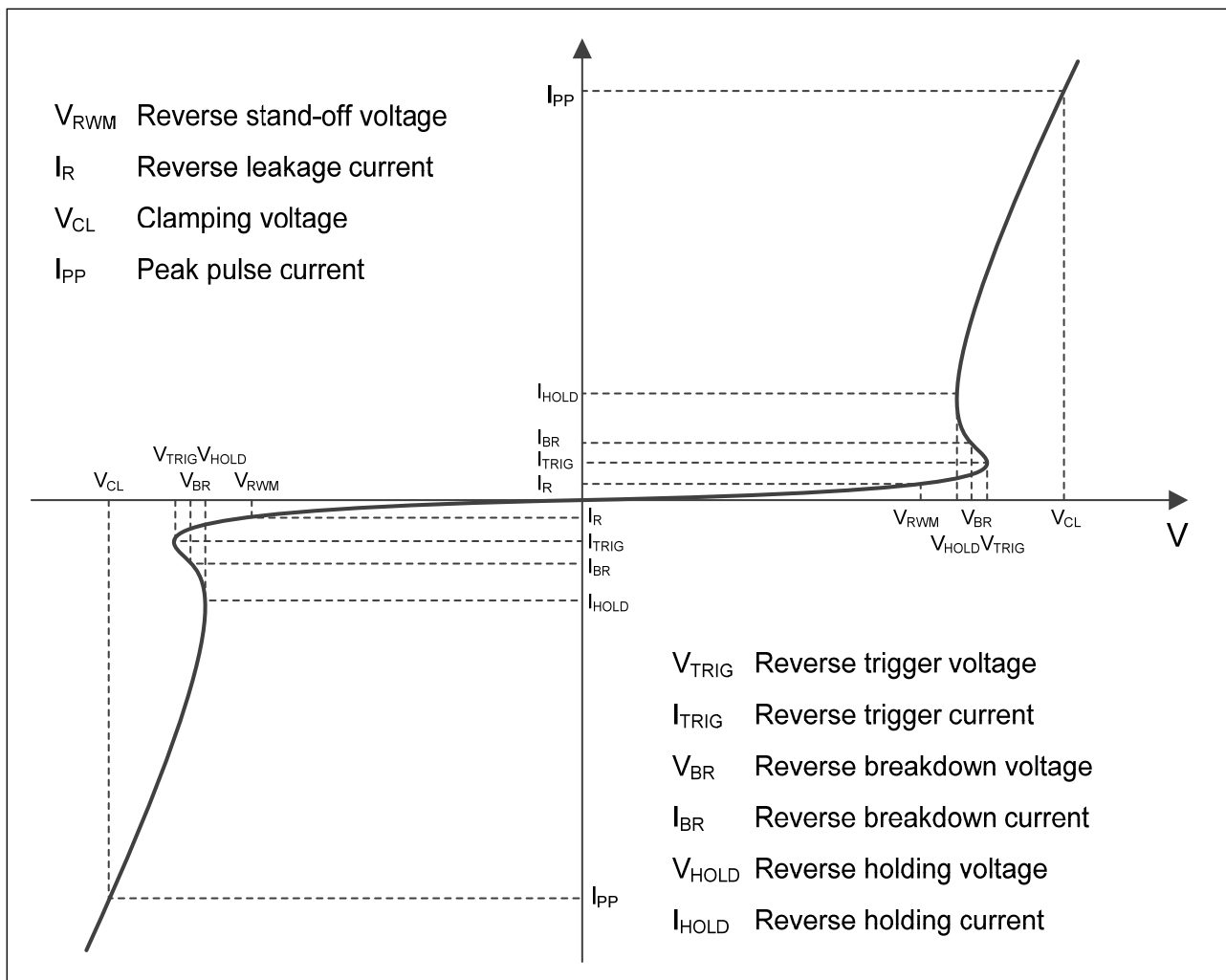
- Stand-off voltage: $\pm 4.5V$ Max
- Transient protection for each line according to IEC61000-4-2(ESD): $\pm 30kV$ (contact)
IEC61000-4-4 (EFT): 80A (5/50ns)
IEC61000-4-5(surge): 90A (8/20 μs)
- Ultra-low capacitance: $C_J = 180pF$ typ
- Low leakage current
- Low clamping voltage: $V_{CL} = 6V$ typ. @ $I_{PP} = 16A$ (TLP)
- Solid-state silicon technology

Mechanical Data

- **Package:** DFN1006-2L
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** No marking on bi-directional types
- **Marking:**



■ Definitions of electrical characteristics





ESD4V5LBA2

■Maximum Ratings

PARAMETER	SYMBOL	Rating	UNIT
Peak pulse power ($t_p = 8/20\mu s$)	P_{pk}	900	W
Peak pulse current ($t_p = 8/20\mu s$)	I_{PP}	90	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	125	$^{\circ}C$
Operating temperature	T_{OP}	-40~85	$^{\circ}C$
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				± 4.5
Reverse leakage current	I_R	μA	$V_{RWM} = \pm 4.5V$			1
Reverse breakdown voltage	V_{BR}	V	$I_{BR} = 1mA$	4.6		
Clamping voltage ¹⁾	V_{CL}	V	$I_{PP} = 16A, t_p = 100ns$		6	
Dynamic resistance ¹⁾	R_{DYN}	Ω			0.04	
Clamping voltage ²⁾	V_{CL}	V	$V_{ESD} = 8kV$		7	
Clamping voltage ³⁾	V_{CL}	V	$I_{PP} = 1A, t_p = 8/20\mu s$		4.9	6
		V	$I_{PP} = 40A, t_p = 8/20\mu s$		6.5	8
		V	$I_{PP} = 90A, t_p = 8/20\mu s$		9	10
Junction capacitance	C_J	pF	$V_R = 0V, f = 1MHz$		180	200

(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)

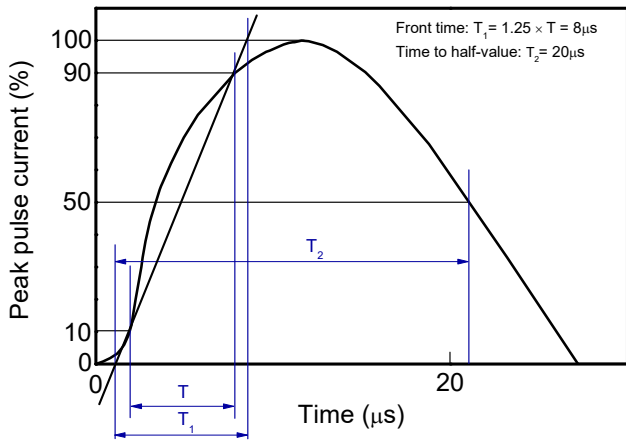
PREFERED P/N	UNIT WEIGHT(mg)	MINIMUM PACKAGE (pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
ESD4V5LBA2	Approximate 0.9	10000	100000	400000	Tape & reel



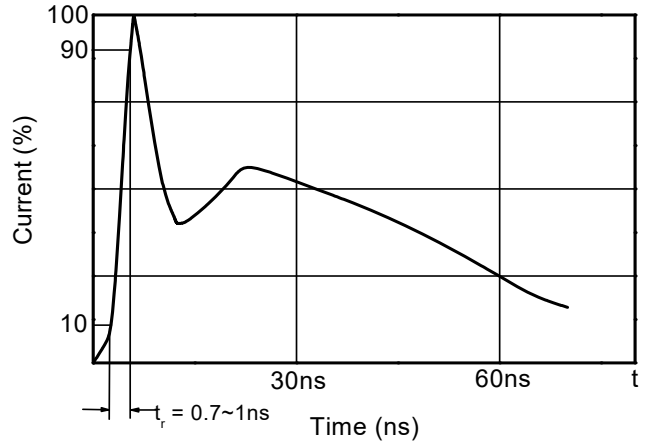
ESD4V5LBA2

■ Characteristics (Typical)

8/20 μ s waveform per IEC61000-4-5

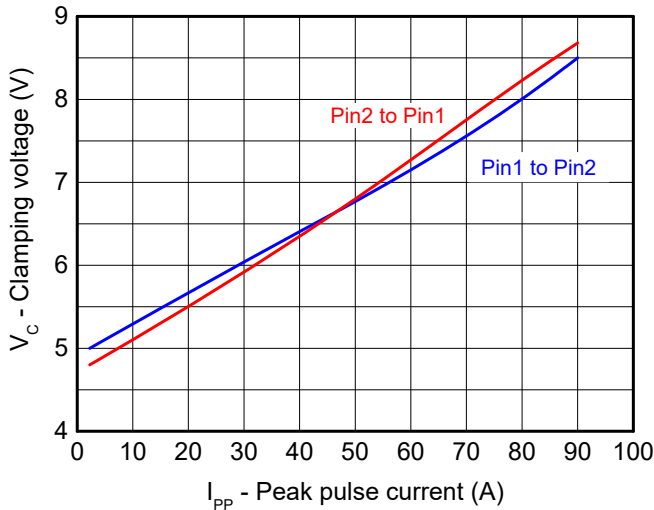


Contact discharge current waveform per IEC61000-4-2

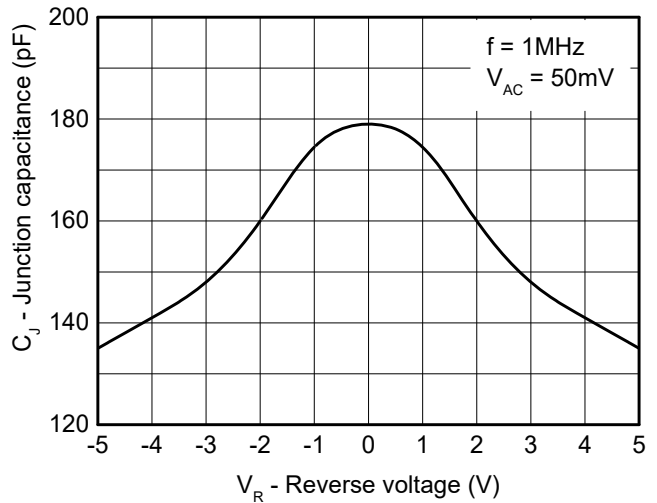


Clamping voltage vs. Peak pulse current

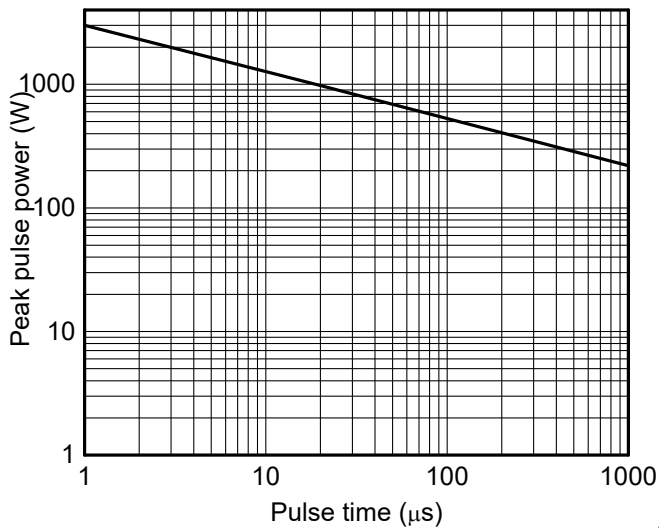
Pulse waveform: $t_p = 8/20 \mu$ s



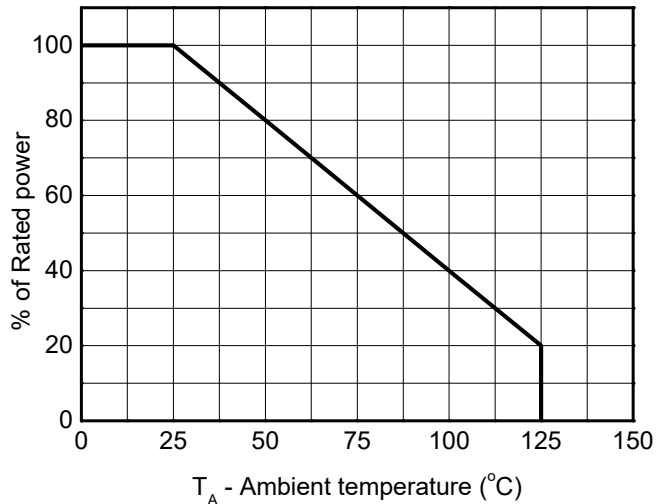
Capacitance vs. Reverse voltage



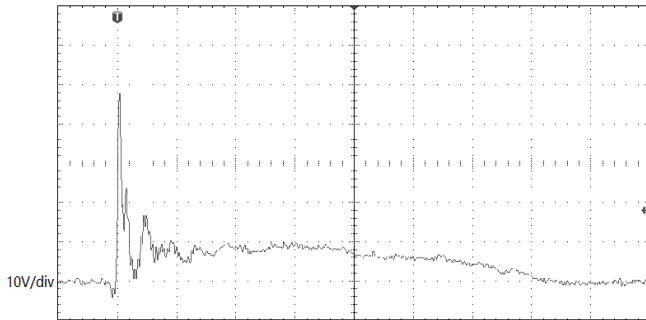
Non-repetitive peak pulse power vs. Pulse time



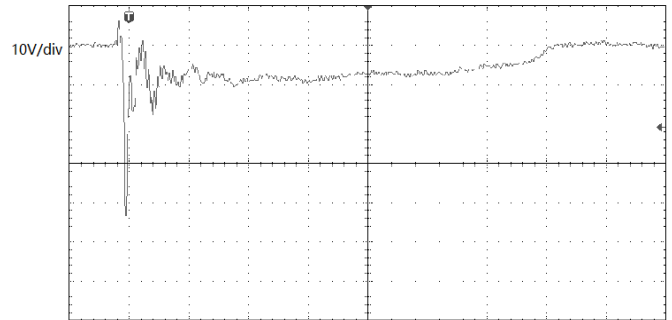
Power derating vs. Ambient temperature



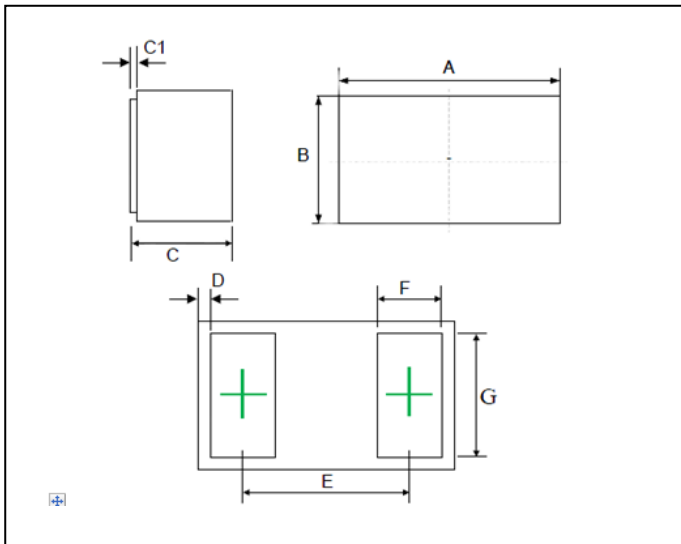
ESD clamping
(+8kV contact discharge per IEC61000-4-2)



ESD clamping
(-8kV contact discharge per IEC61000-4-2)

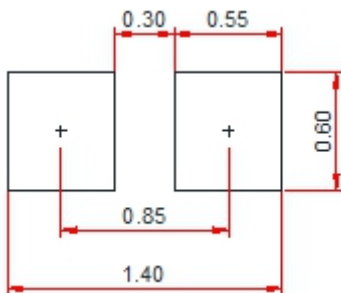


■ Outline Dimensions



Symbol	min. (mm)	Max. (mm)
A	0.95	1.05
B	0.55	0.65
C	0.4	0.5
C1		0.05
D	0.01	0.08
E		0.65
F	0.2	0.3
G	0.45	0.55

■ 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



ESD4V5LBA2

Disclaimer

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