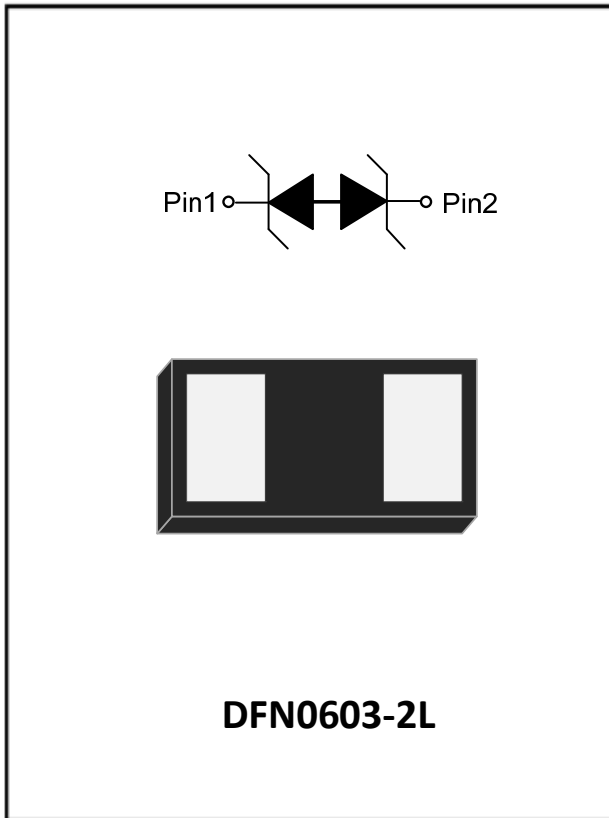


## 1-Line, Bi-directional, Transient Voltage Suppressor



### Features

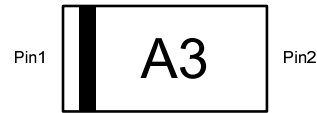
- Stand-off voltage: 3.3V Max
- Transient protection for each line according to
  - IEC61000-4-2(ESD):  $\pm 30\text{kV}$  (contact)
  - IEC61000-4-4 (EFT): 40A (5/50ns)
  - IEC61000-4-5(surge): 9A (8/20 $\mu\text{s}$ )
- Low leakage current
- Low clamping voltage
- Low clamping voltage:  
 $V_{CL} = 9\text{V typ. @ IPP} = 16\text{A (TLP)}$
- RoHS Compliant

### Applications

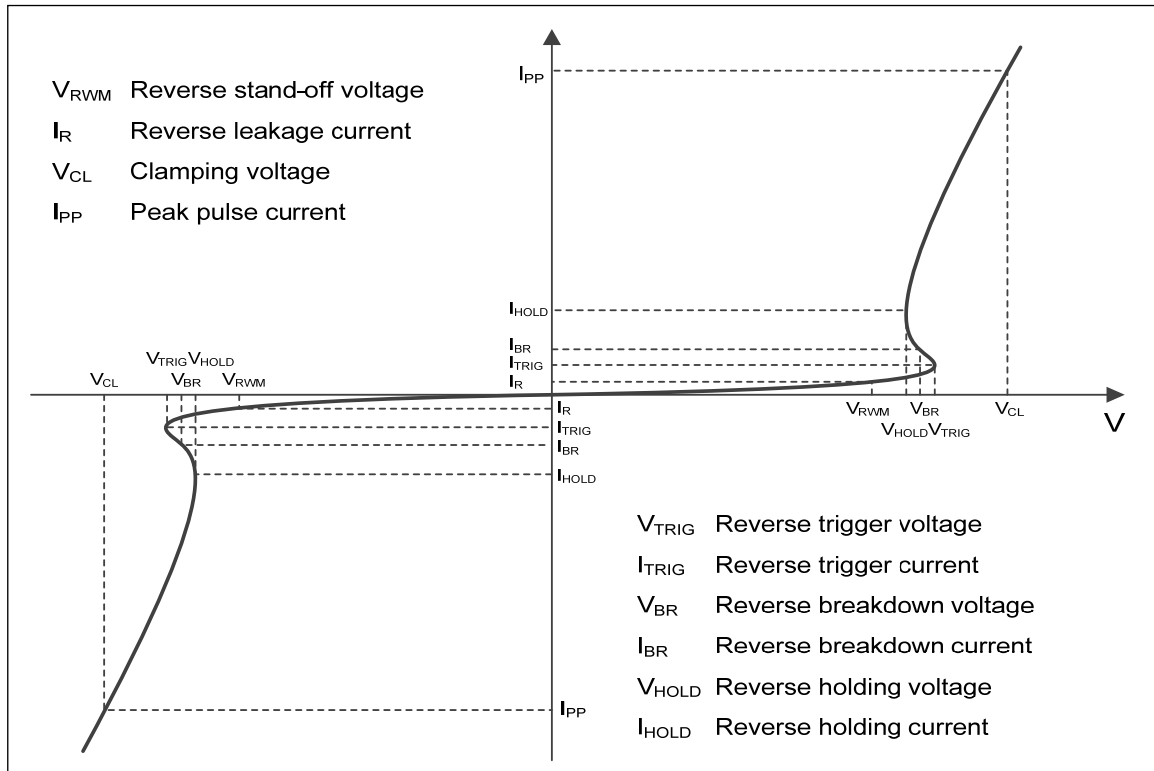
- Cellular handsets
- Tablets
- Laptops
- Network communication devices
- Other portable devices

### Mechanical Data

- Package: DFN0603-2L
- Case Material: "Green" Molding Compound
- Marking Information: See Below



### Definitions of electrical characteristics





# ESD3V3LZB

## ■Maximum Ratings

PARAMETER	SYMBOL	Rating	UNIT
Peak pulse power ( $t_p = 8/20\mu s$ )	$P_{pk}$	90	W
Peak pulse current ( $t_p = 8/20\mu s$ )	$I_{pp}$	9	A
ESD according to IEC61000-4-2 air discharge	$V_{ESD}$	$\pm 30$	KV
ESD according to IEC61000-4-2 contact discharge		$\pm 30$	KV
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				$\pm 3.3$
Reverse leakage current	$I_R$	nA	$V_{RWM} = 3.3V$			100
Reverse breakdown voltage	$V_{BR}$	V	$I_{BR} = 1mA$	3.5	4	
Reverse holding voltage	$V_{HOLD}$	V	$I_{HOLD} = 50mA$	3.5	4	
Clamping voltage <sup>1)</sup>	$V_{CL}$	V	$I_{PP} = 16A, t_p = 100ns$		9.0	
Dynamic resistance <sup>1)</sup>	$R_{DYN}$	$\Omega$			0.2	
Clamping voltage <sup>2)</sup>	$V_{CL}$	V	$V_{ESD} = 8kV$		9.0	
Clamping voltage <sup>3)</sup>	$V_{CL}$	V	$I_{PP} = 1A, t_p = 8/20\mu s$			6
		V	$I_{PP} = 9A, t_p = 8/20\mu s$			10
Junction capacitance	$C_J$	pF	$V_R = 0V, f = 1MHz$		10	13
		pF	$V_R = 2.5V, f = 1MHz$		8	11

(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
ESD3V3LZB	Approximate 0.18	10000	100000	400000	Tae& reel



## ■ Characteristics (Typical)

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

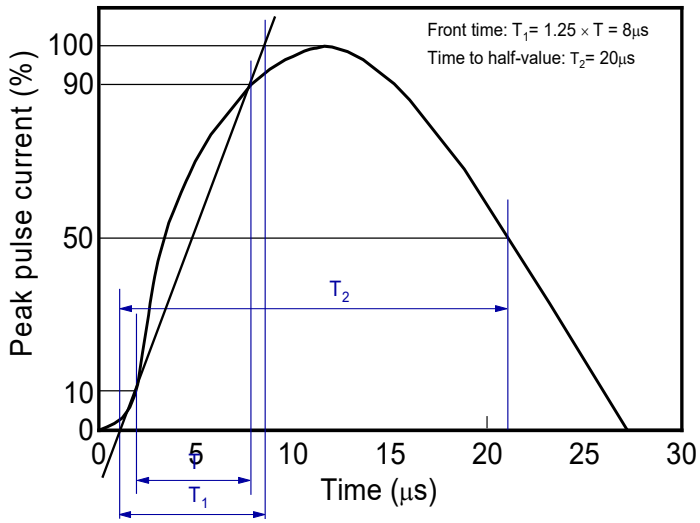


Fig.2 Contact discharge current waveform per IEC61000-4-2

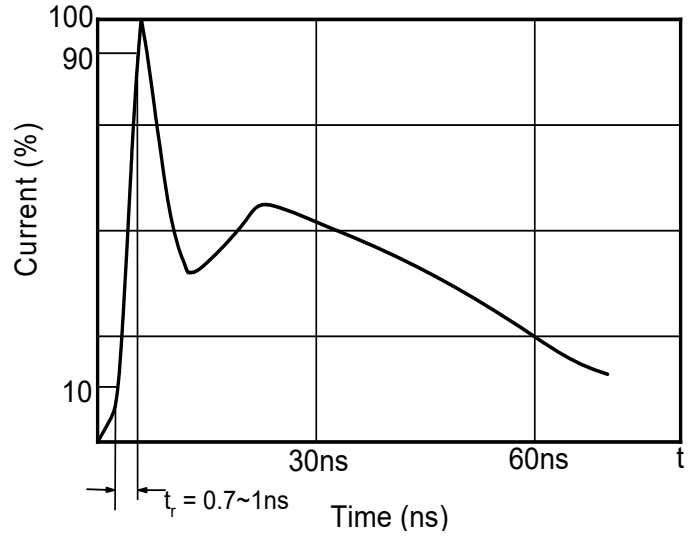


Fig.3 Clamping voltage vs. Peak pulse current

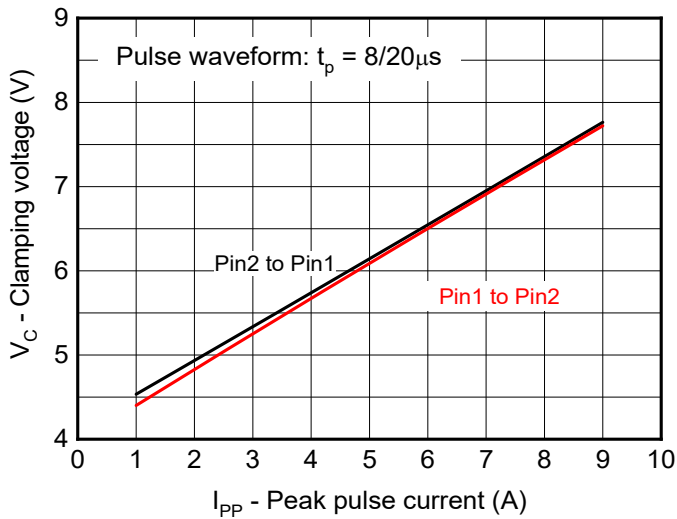


Fig.4 Capacitance vs. Reverse voltage

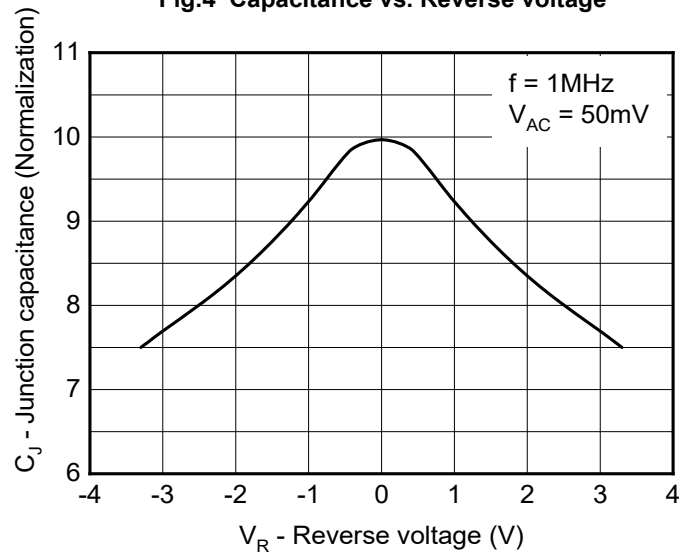


Fig.5 Non-repetitive peak pulse power vs. Pulse time

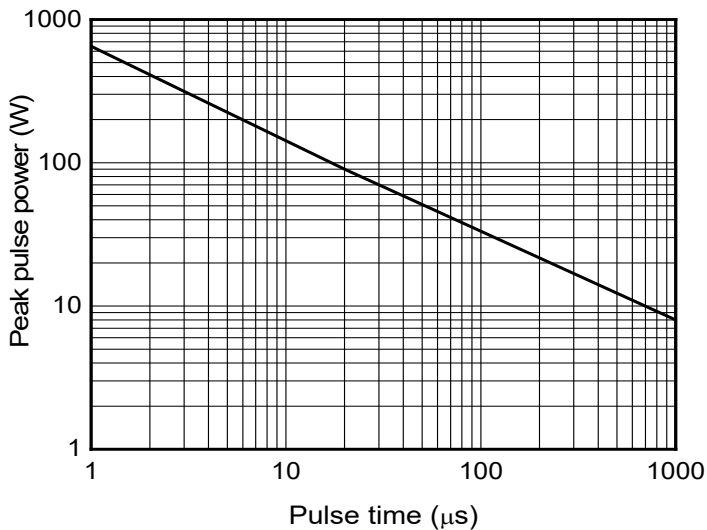
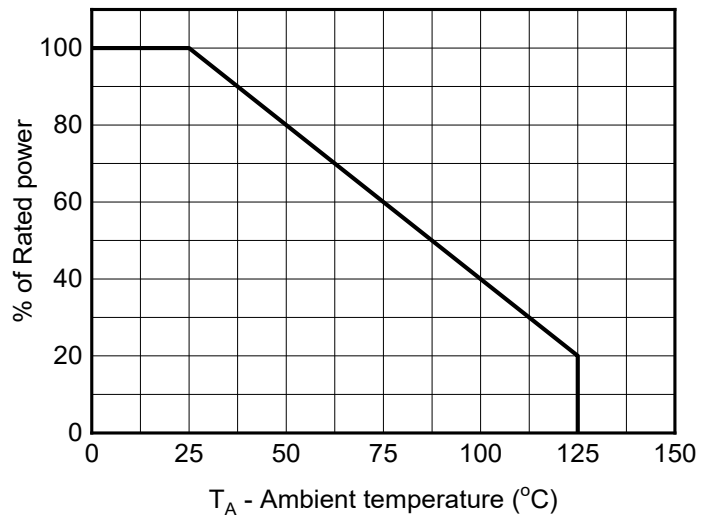
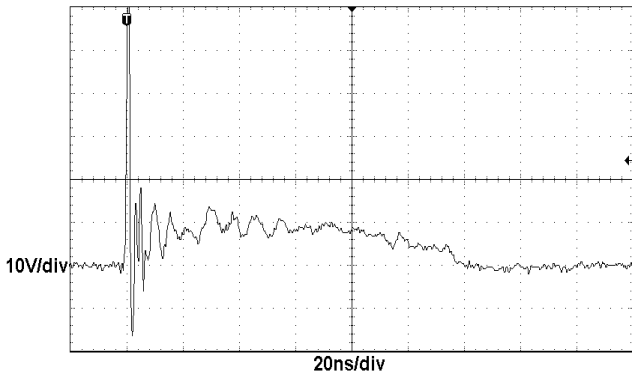


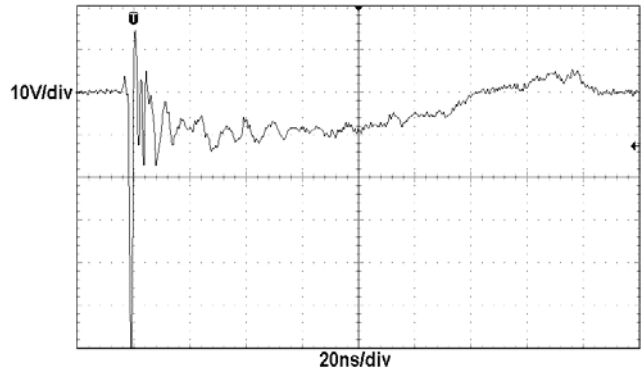
Fig.6 Power derating vs. Ambient temperature



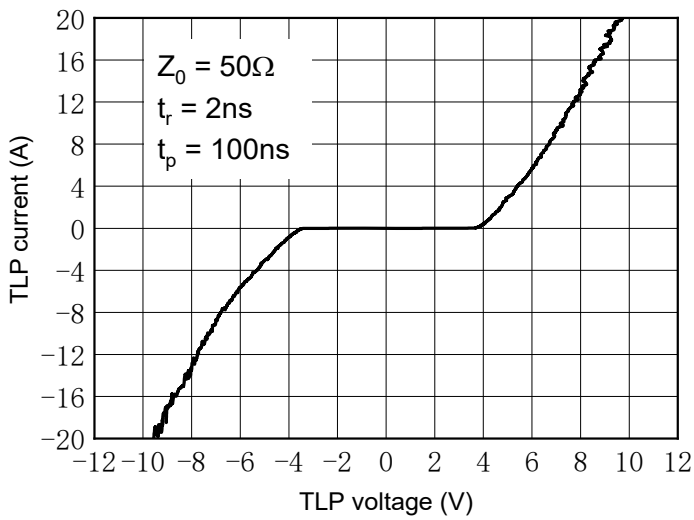
**Fig.7 ESD clamping**  
(+8kV contact discharge per IEC61000-4-2)



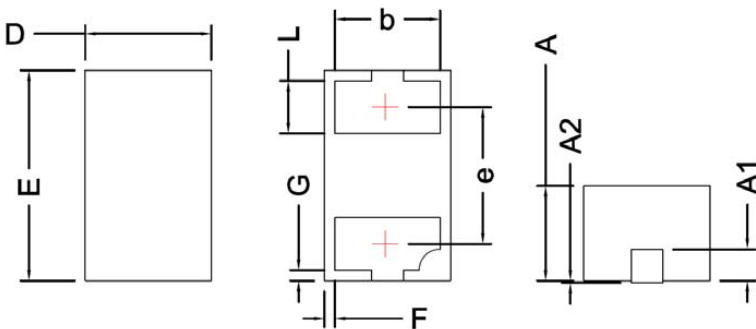
**Fig.8 ESD clamping**  
(-8kV contact discharge per IEC61000-4-2)



**Fig.9 TLP Measurement**



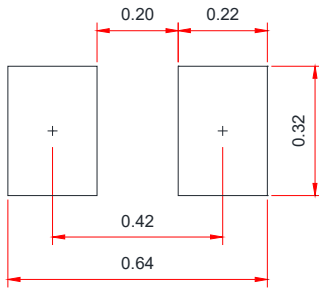
## ■ Outline Dimensions



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
D	0.25	0.30	0.35
E	0.55	0.60	0.67
A	0.28	0.30	0.32
A1	0.102 BSC		
A2			0.05
F	0.005		
G	0.005		
L	0.10	0.17	0.21
b	0.20	0.24	0.23
e	0.36 BSC		



## ■ 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



## ESD3V3LZB

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