

### Key Features

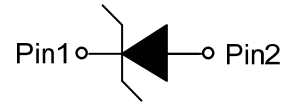
- Ultra small package
- Stand-off voltage: 48V Max
- Ultra-low capacitance:  $C_J = 20\text{pF typ}$
- Low leakage current
- Low clamping voltage
- Compliant to Halogen-free
- Suffix "-Q1" for AEC-Q101

### Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Peripherals
- Pagers Peripherals
- Desktop and Servers



0402(DFN-2L)



PIN Configuration

### Protection Solution to Meet

- IEC 61000-4-2 (ESD Air): +30KV
- IEC 61000-4-2 (ESD Contact): +30KV
- IEC 61000-4-5 (Surge): 4A(8/20 $\mu$ s)

### Package and Marking

- DFN-2L package
- Marking code : 48

Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Rating	Unit
V <sub>ESD</sub>	Electrostatic Discharge Voltage	IEC 61000-4-2; Contact Discharge	±30	kV
		IEC 61000-4-2; Air Discharge	±30	kV
P <sub>PK</sub>	Peak Pulse Power	t <sub>p</sub> = 8/20 $\mu$ s	380	W
I <sub>PP</sub>	Peak Pulse Current	t <sub>p</sub> = 8/20 $\mu$ s	4	A
T <sub>J</sub>	Junction Temperature Range	-	125	°C
T <sub>STG</sub>	Storage Temperature Range	-	-55~150	°C

### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ.	Max	Unit
V <sub>RWM</sub>	Reverse Working Voltage		-	-	48	V
V <sub>BR</sub>	Breakdown Voltage	I <sub>BR</sub> = 1mA	50		61	V
I <sub>R</sub>	Reverse Leakage Current	V <sub>RWM</sub> = 48V	-	-	0.5	μA
V <sub>C</sub>	Clamping Voltage <sup>3)</sup>	I <sub>PP</sub> =1A, t <sub>p</sub> =8/20μs	-		75	V
		I <sub>PP</sub> =4A, t <sub>p</sub> =8/20μs	-		95	V
C <sub>J</sub>	Junction Capacitance	V <sub>R</sub> = 0V, f = 1 MHz	-	20	25	pF

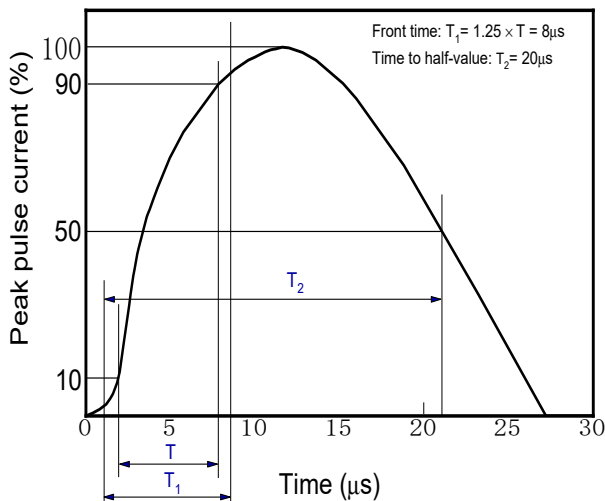
1) TLP parameter: Z<sub>0</sub> = 50Ω, T<sub>F</sub> = 100ns, T<sub>R</sub> = 2ns, averaging window from 60ns to 80ns. R<sub>DYN</sub> is calculated from 4A to 16A.

2) Contact discharge mode, according to IEC61000-4-2.

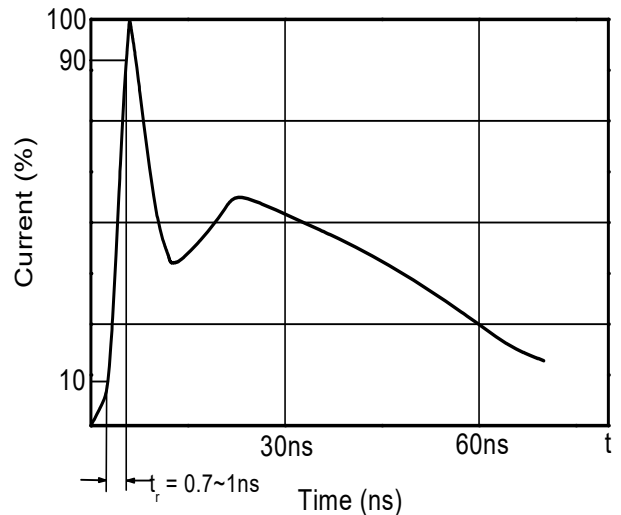
3) Non-repetitive current pulse, according to IEC61000-4-5.

### Typical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

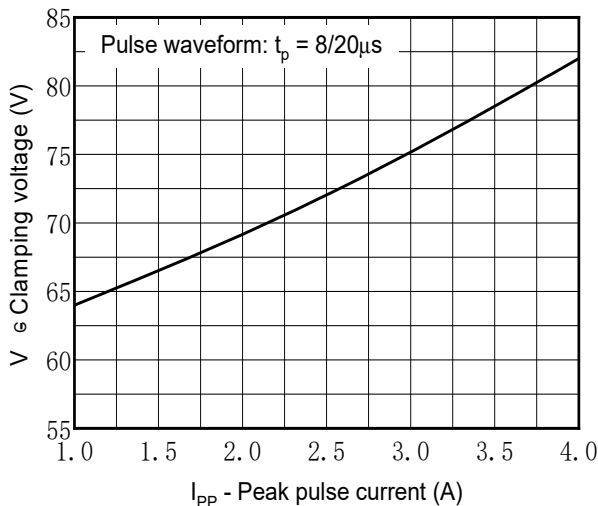
8/20μs waveform per IEC61000-4-5



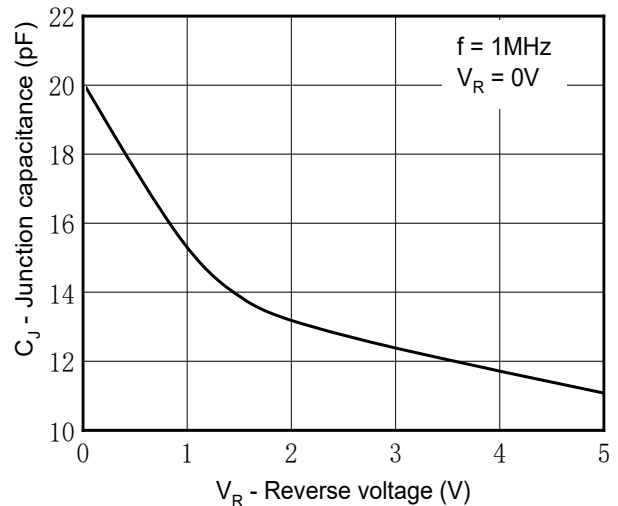
Contact discharge current waveform per IEC61000-4-2



Clamping voltage vs. Peak pulse current

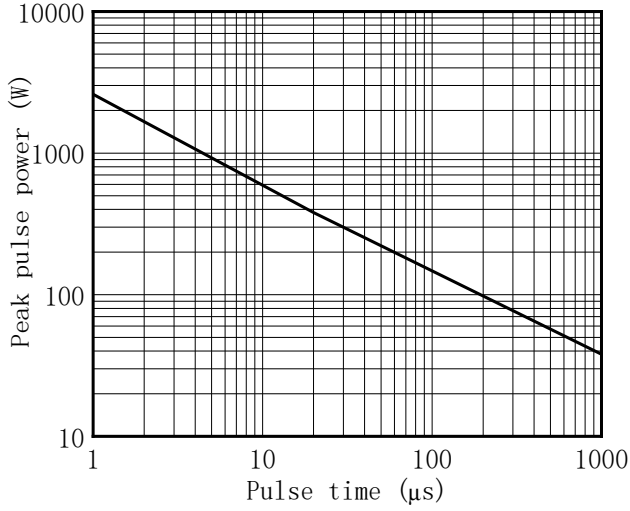


Capacitance vs. Reverse voltage

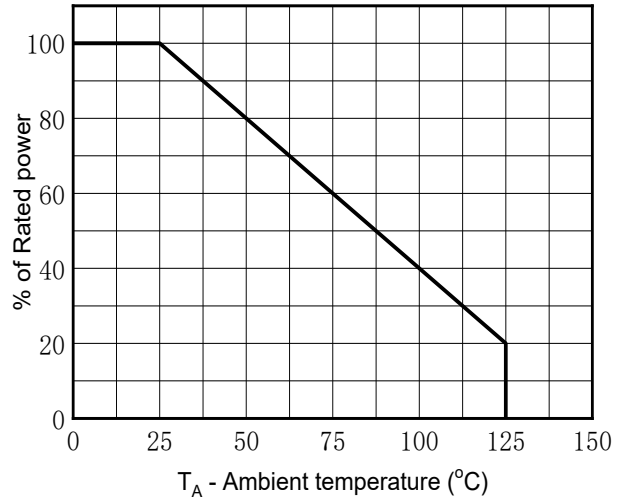


**Typical Characteristics** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

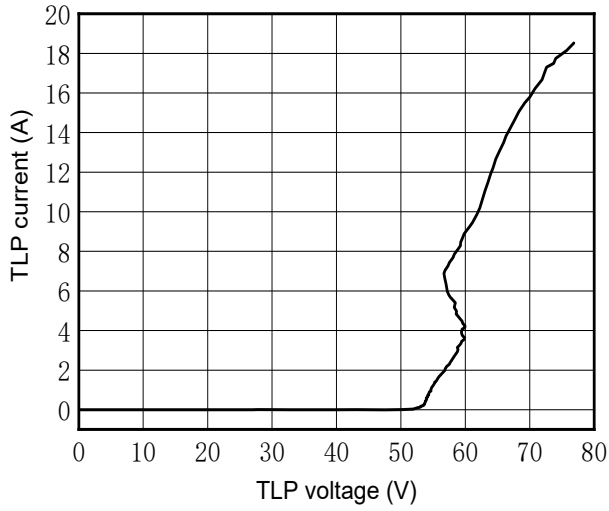
**Non-repetitive peak pulse power vs. Pulse time**



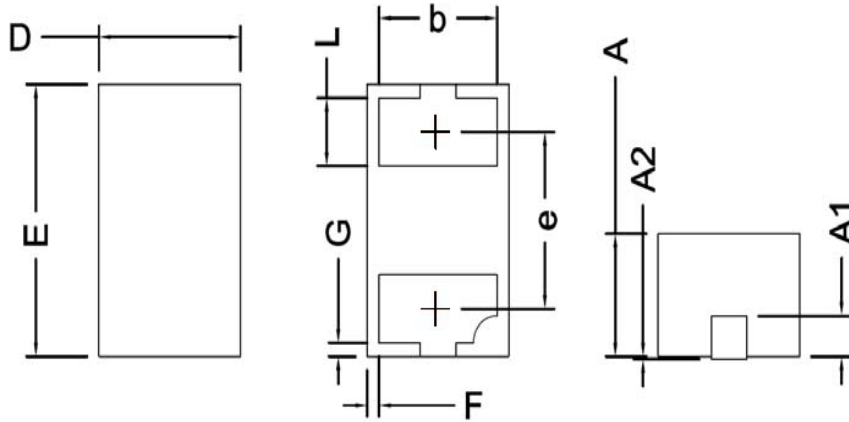
**Power derating vs. Ambient temperature**



**TLP Measurement**

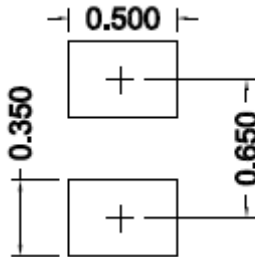


## DFN-2L Outline Dimensions



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
D	0.50	0.60	0.70
E	0.90	1.00	1.10
A	0.35	0.45	0.55
A1	0.15 BSC		
A2			0.10
F	0.005		
G	0.005		
L	0.15	0.25	0.35
b	0.41	0.50	0.59
e	0.65 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