



### FEATURES

- ✧ Protects one I/O or power line
- ✧ Low clamping voltage
- ✧ Working voltage: 12.0V
- ✧ Low leakage current
- ✧ RoHS compliant

### MAIN APPLICATIONS

- ✧ Cellular phones
- ✧ Personal digital assistants (PDA's)
- ✧ Laptop computers
- ✧ Digital cameras

### PROTECTION SOLUTION TO MEET

- ✧ IEC61000-4-2 (ESD)  $\pm 30\text{kV}$  (air),  $\pm 30\text{kV}$  (contact)
- ✧ IEC61000-4-4 (EFT) 40A (5/50ns)
- ✧ IEC61000-4-5 (Lightning) 90A (8/20 $\mu\text{s}$ )

### MECHANICAL CHARACTERISTICS

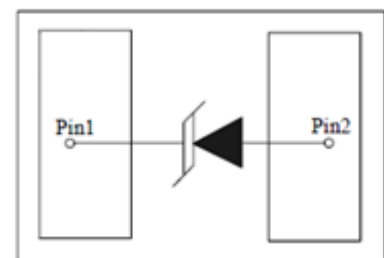
- ✧ DFN1610-2L package
- ✧ Molding compound flammability rating: UL 94V-0
- ✧ Quantity per reel: 3,000pcs
- ✧ Lead finish: lead free
- ✧ Marking code: 12P

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation at 8/20 $\mu\text{s}$ waveform	P <sub>PP</sub>	2000	W
ESD per IEC 61000-4-2 (Air)	V <sub>ESD</sub>	+/- 30	kV
ESD per IEC 61000-4-2 (Contact)		+/- 30	
Lead soldering temperature	T <sub>L</sub>	260 (10 sec.)	°C
Operating junction temperature range	T <sub>J</sub>	-55 to +125	°C
Storage temperature range	T <sub>STG</sub>	-55 to +150	°C



DFN1610-2L



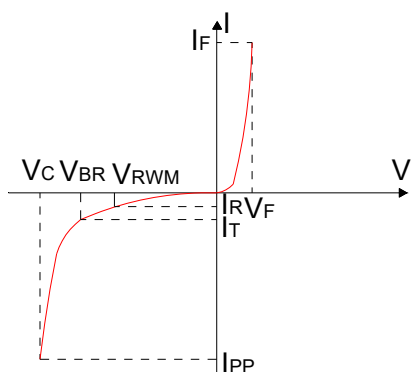
PIN Configuration

**ELECTRICAL CHARACTERISTICS** ( $T_A=25^{\circ}\text{C}$ )

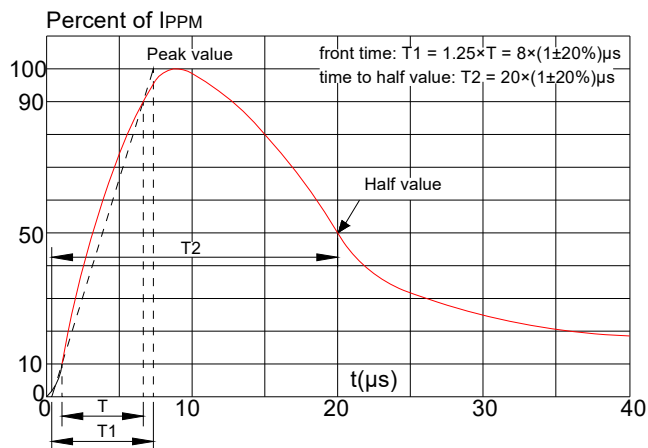
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse working voltage	$V_{RWM}$				12	V
Reverse breakdown voltage	$V_{BR}$	$I_T = 1\text{mA}$	13.3	14.4	17	V
Reverse leakage current	$I_R$	$V_{RWM} = 12\text{V}$			1	$\mu\text{A}$
Peak pulse current	$I_{PP}$	$t_p = 8/20\mu\text{s}$			90	A
Clamping voltage	$V_C$	$I_{PP}=90\text{A}$ , $t_p=8/20\mu\text{s}$		22	25	V
Junction capacitance	$C_J$	$V_{RWM} = 0\text{V}$ , $f = 1\text{MHz}$		450	500	pF

**RATINGS AND V-I CHARACTERISTICS CURVES** ( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

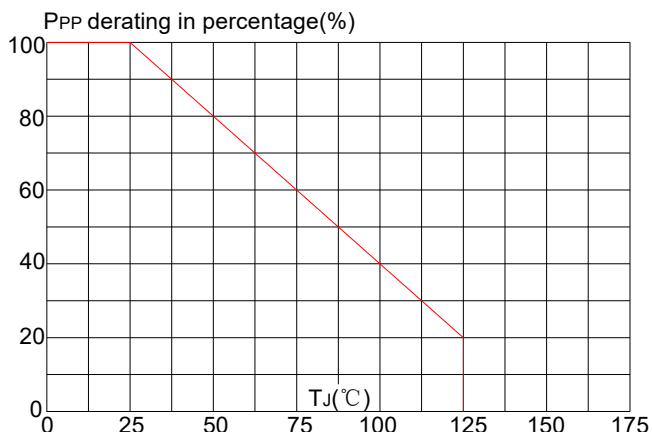
**FIG.1:V- I curve characteristics (Uni-directional)**



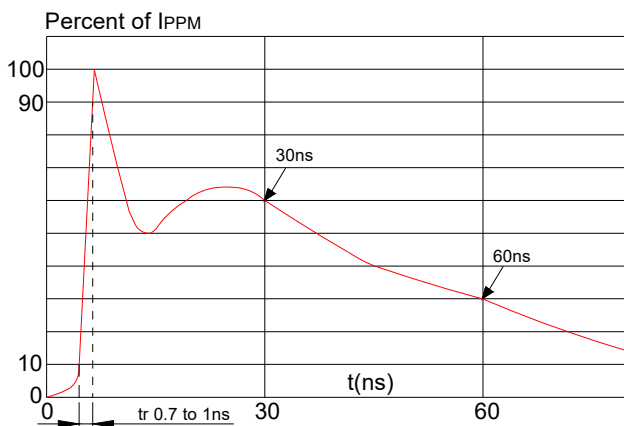
**FIG.2: Pulse waveform (8/20 $\mu\text{s}$ )**



**FIG.3: Pulse derating curve**

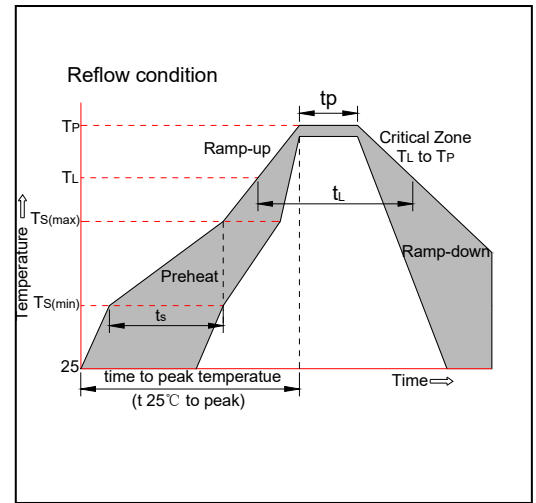


**FIG.4: ESD clamping (30KV contact)**

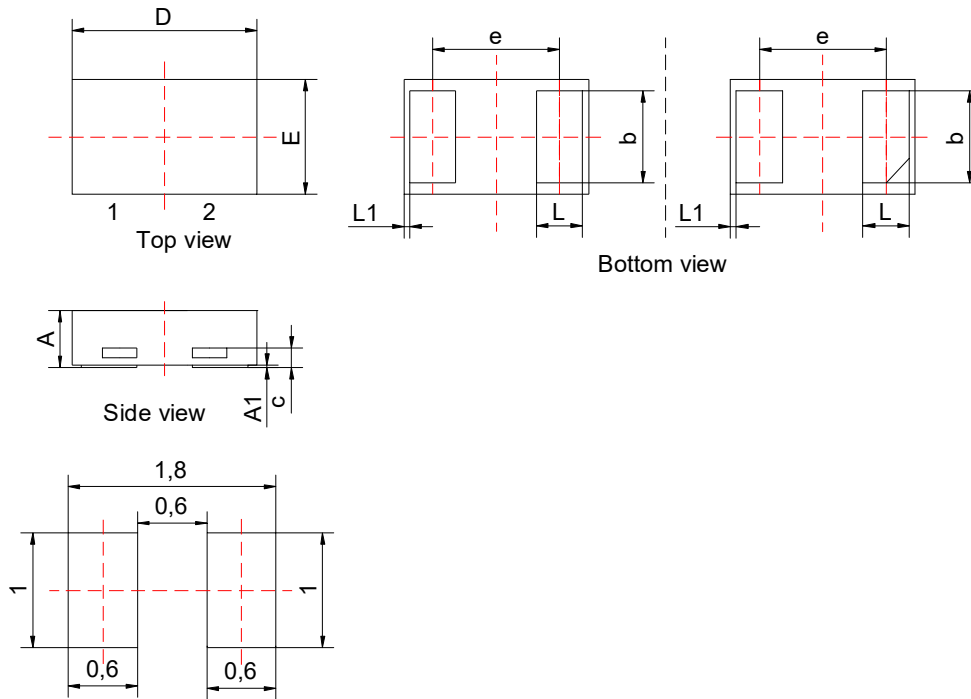


**SOLDERING PARAMETERS**

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150°C
	-Temperature Max( $T_{s(max)}$ )	+200°C
	-Time (Min to Max) ( $t_s$ )	60-180 secs.
Average ramp up rate (Liquidus Temp ( $T_L$ )to peak)		3°C/sec. Max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature( $T_L$ )(Liquidus)	+217°C
	-Temperature( $t_L$ )	60-150 secs.
Peak Temp ( $T_p$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp ( $t_p$ )		20-40secs.
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp ( $T_p$ )		8 min. Max
Do not exceed		+260°C



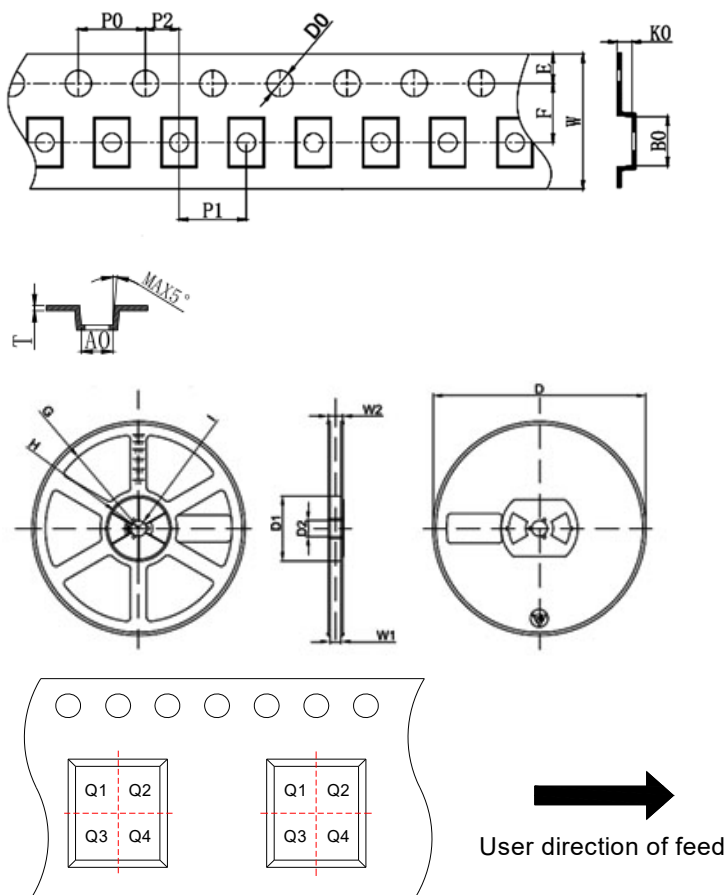
**PACKAGE MECHANICAL DATA**



Recommended Soldering Footprint

Symbol	Millimeter			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
b	0.75	0.85	0.95	0.030	0.033	0.037
c	0.08	0.12	0.18	0.003	0.005	0.007
D	1.55	1.60	1.65	0.061	0.063	0.065
e	1.10BSC			0.043BSC		
E	0.95	1.00	1.05	0.037	0.039	0.041
L	0.35	0.40	0.45	0.014	0.016	0.018
L1	0.06BSC			0.002BSC		

**TAPE AND REEL INFORMATION-DFN1610-2L**



Pin 1 quadrant:Q1&Q2

**Packaging Description:**


DFN1610-2L parts are shipped in tape. The carrier tape is made from a dissipative(carbon filled) polycarbonate resin. The cover tape is a multilayer film(heat activated adhesive in nature)primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000units per 7" or 17.8cm diameter reel. The reels are clear in color and made of polystyrene plastic(anti-static coated).

Symbol	Millimeters	Inches
	Typ.	Typ.
A0	1.15	0.045
B0	1.75	0.069
K0	0.67	0.026
D0	1.55	0.061
P0	4.00	0.157
P1	4.00	0.157
P2	2.00	0.079
E	1.75	0.069
F	3.50	0.138
W	8.00	0.315
D	Φ178	Φ7.008
D1	54.40	2.142
D2	13.00	0.512
G	R78.00	R3.071
H	R25.60	R1.008
I	R6.50	R0.256
W1	9.50	0.374
W2	12.30	0.484

**ORDERING INFORMATION**

OUTLINE	Package	Reel Size	Quantity Per Reel
TAPING	DFN1610-2L	7 Inch	3,000 pcs

**MARKING CODE**

Part Number	Marking Code
JEU12DP-CO	<div style="display: flex; align-items: center; justify-content: center;"> <span data-bbox="735 394 820 439">Pin1</span> <div style="border: 1px solid black; padding: 5px; margin: 0 10px;">  </div> <span data-bbox="1114 394 1203 439">Pin2</span> </div>

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