



### FEATURES

- ✧ Protects one bi-directional I/O line
- ✧ Low clamping voltage
- ✧ Low operating voltage: 15V
- ✧ RoHS compliant

### MAIN APPLICATIONS

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

### PROTECTION SOLUTION TO MEET

- ✧ IEC61000-4-2 (ESD)  $\pm 30\text{kV}$  (air),  $\pm 20\text{kV}$  (contact)
- ✧ IEC61000-4-4 (EFT) 40A (5/50ns)
- ✧ IEC61000-4-5 (Lightning) 9.8A (8/20 $\mu\text{s}$ )

### MECHANICAL CHARACTERISTICS

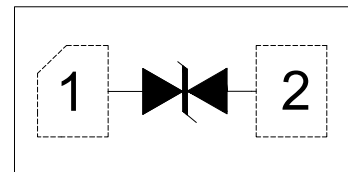
- ✧ DFN1006-2L package
- ✧ Molding compound flammability rating : UL 94V-0
- ✧ Quantity per reel : 10,000 pcs
- ✧ Lead finish : lead free
- ✧ Marking code: 15PB

### ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ , RH=45%-75%, unless otherwise noted)

| Parameter                                                      | Symbol    | Value            | Unit             |
|----------------------------------------------------------------|-----------|------------------|------------------|
| Peak pulse power dissipation at 8/20 $\mu\text{s}$ waveform    | $P_{PP}$  | 325              | W                |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | $V_{ESD}$ | +/- 30<br>+/- 20 | kV               |
| Lead soldering temperature                                     | $T_L$     | 260 (10 sec.)    | $^\circ\text{C}$ |
| Operating junction temperature range                           | $T_J$     | -55 to +125      | $^\circ\text{C}$ |
| Storage temperature range                                      | $T_{STG}$ | -55 to +150      | $^\circ\text{C}$ |



DFN1006-2L(Bottom view)



Pin Configuration(Top view)

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

| Parameter                 | Symbol           | Conditions                                                  | Min  | Typ | Max | Unit          |
|---------------------------|------------------|-------------------------------------------------------------|------|-----|-----|---------------|
| Reverse working voltage   | $V_{\text{RWM}}$ |                                                             |      |     | 15  | V             |
| Reverse breakdown voltage | $V_{\text{BR}}$  | $I_{\text{T}} = 1\text{mA}$                                 | 16.7 |     |     | V             |
| Reverse leakage current   | $I_{\text{R}}$   | $V_{\text{RWM}} = 15\text{V}$                               |      |     | 1   | $\mu\text{A}$ |
| Peak pulse current        | $I_{\text{pp}}$  | $t_{\text{p}} = 8/20\mu\text{s}$                            |      |     | 9.8 | A             |
| Clamping voltage          | $V_{\text{C}}$   | $I_{\text{PP}}=2\text{A}, t_{\text{p}} = 8/20\mu\text{s}$   |      |     | 23  | V             |
|                           |                  | $I_{\text{PP}}=9.8\text{A}, t_{\text{p}} = 8/20\mu\text{s}$ |      |     | 33  | V             |
| Junction capacitance      | $C_{\text{J}}$   | $V_{\text{RWM}} = 0\text{V}, f = 1\text{MHz}$               |      | 20  |     | pF            |

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

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

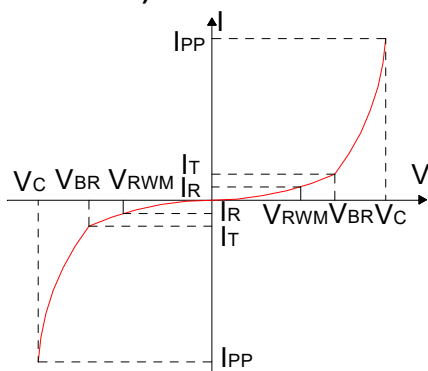
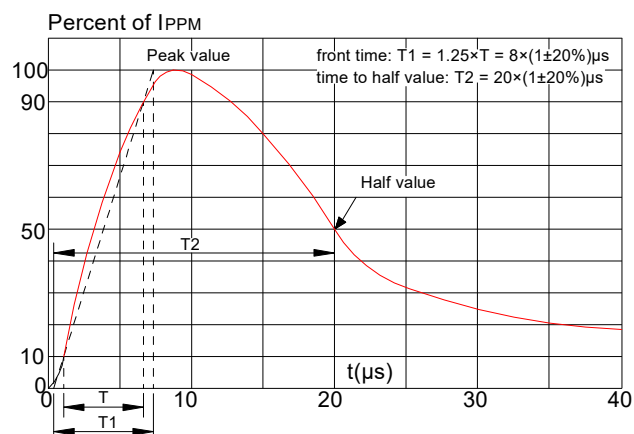
FIG.2: Pulse waveform (8/20 $\mu\text{s}$ )

FIG.3: Pulse derating curve

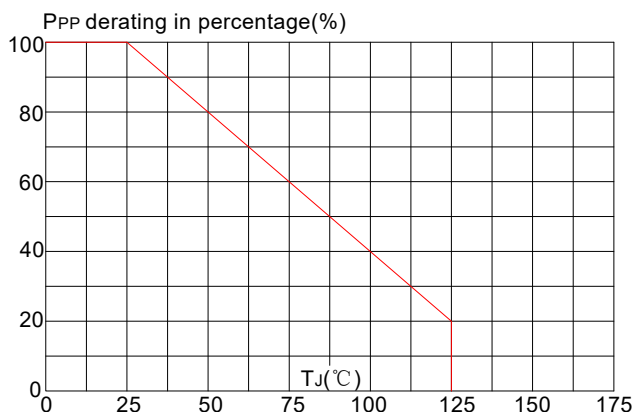
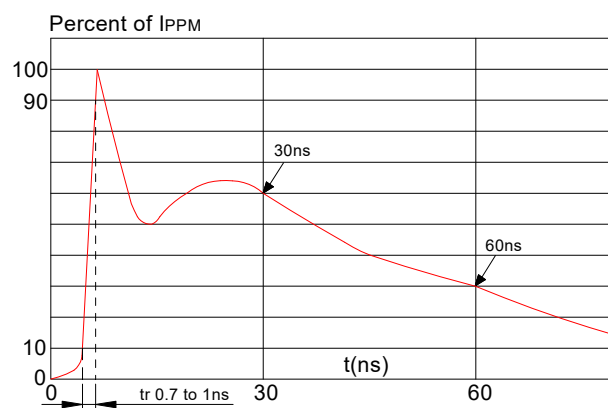
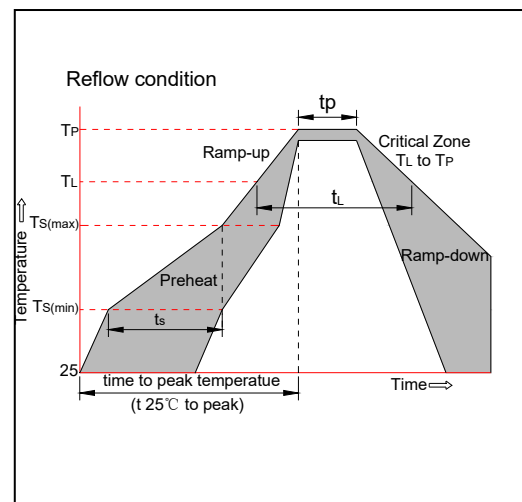


FIG.4: ESD clamping (20kV contact)

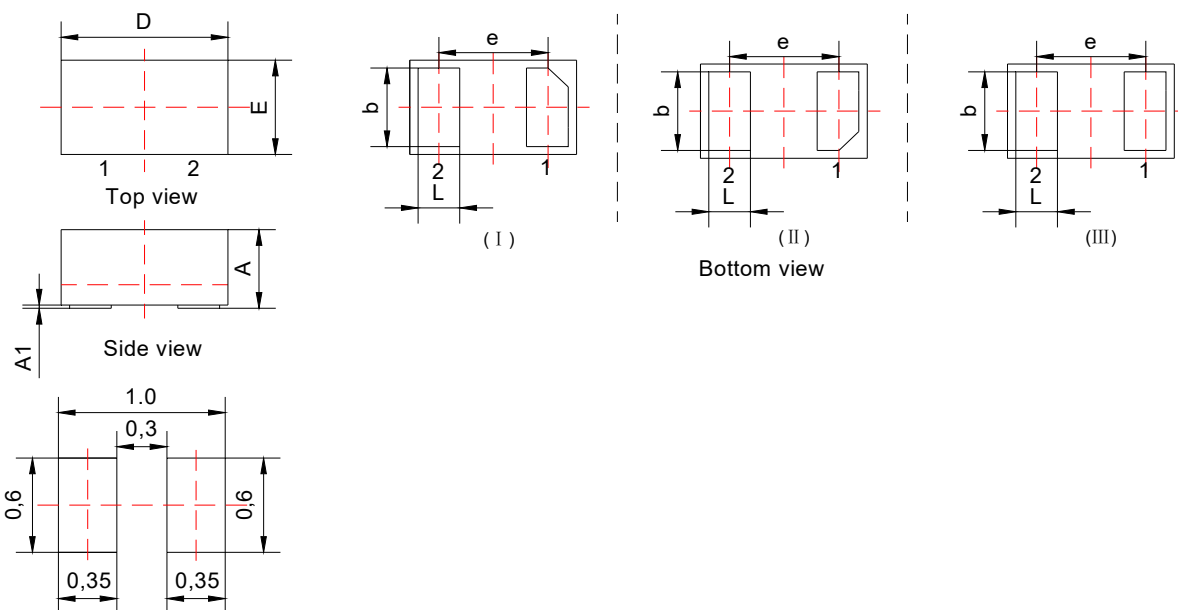


## SOLDERING PARAMETERS

|                                                        |                                   |                                           |
|--------------------------------------------------------|-----------------------------------|-------------------------------------------|
| Reflow Condition                                       |                                   | Pb-Free assembly<br>(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                                    |



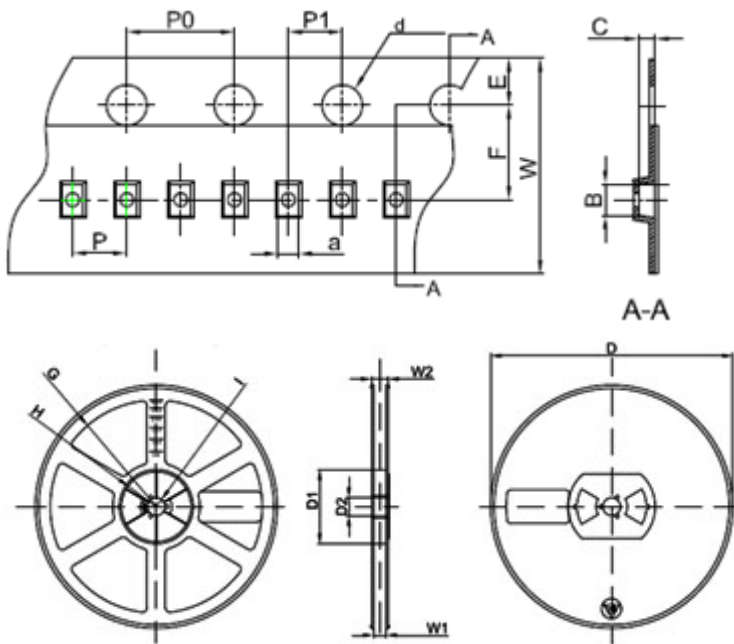
## PACKAGE MECHANICAL DATA



Recommended soldering footprint(mm)

| Symbol | Millimeters |      |      | Inches   |       |       |
|--------|-------------|------|------|----------|-------|-------|
|        | Min.        | Typ. | Max. | Min.     | Typ.  | Max.  |
| A      | 0.40        | 0.50 | 0.55 | 0.016    | 0.020 | 0.022 |
| A1     | 0.00        | 0.02 | 0.05 | 0.000    | 0.001 | 0.002 |
| b      | 0.45        | 0.50 | 0.55 | 0.018    | 0.020 | 0.022 |
| D      | 0.95        | 1.00 | 1.05 | 0.037    | 0.039 | 0.041 |
| e      | 0.65BSC     |      |      | 0.026BSC |       |       |
| E      | 0.55        | 0.60 | 0.65 | 0.022    | 0.024 | 0.026 |
| L      | 0.20        | 0.25 | 0.30 | 0.008    | 0.010 | 0.012 |

## TAPE AND REEL INFORMATION-DFN1006-2L



## Packaging Description:

DFN1006-2L 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 10,000units per 7" or 17.8cm diameter reel. The reels are clear in color and made of polystyrene plastic(anti-static coated).

| Symbol | Millimeter | Inches |
|--------|------------|--------|
|        | Typ.       | Typ.   |
| a      | 0.66       | 0.026  |
| B      | 1.15       | 0.045  |
| C      | 0.66       | 0.026  |
| d      | Φ1.50      | Φ0.059 |
| E      | 1.75       | 0.069  |
| F      | 3.50       | 0.138  |
| P0     | 4.00       | 0.157  |
| P      | 2.00       | 0.079  |
| P1     | 2.00       | 0.079  |
| 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  | DFN1006-2L | 7 Inch    | 10,000 pcs        |

## MARKING CODE

| Part Number | Marking Code |
|-------------|--------------|
| JEB15DF     | 15PB         |

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