CTK®

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DongGuan Tongke Electronic Co.,LTD

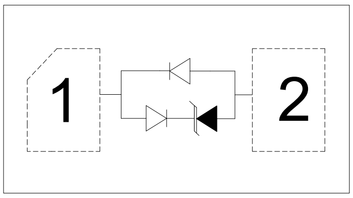
# TESD05UCDF

**Uni-directional TVS Diode for ESD Protection**

## FEATURES

- Protects one line I/O or power line
- Low clamping voltage
- Low leakage current
- Ultra low capacitance: 0.65pF(max)
- RoHS compliant

DFN1006-2L(Bottom view)



Pin Configuration(Top view)

## MAIN APPLICATIONS

- Cellular phones
- High speed data line
- Digital cameras
- Digital visual interface (DVI)
- Personal digital assistants (PDAs)

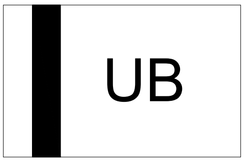
## PROTECTION SOLUTION TO MEET

- IEC61000-4-2 (ESD) ±20kV (air), ±20kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning) 4.5A (8/20μs)

## MECHANICAL CHARACTERISTICS

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

## MARKING CODE



## ORDERING INFORMATION

| PART No. | PACKAGE TYPE | QUANTITY(PCS) REEL | DESCIPTION |
|---|---|---|---|
| TESD05UCDF | DFN1006-2L | 10,000 | 7 inch reel pack |

## ABSOLUTE MAXIMUM RATINGS (T$_A$=25ºC, RH=45%-75%, unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Peak pulse power dissipation at 8/20μs waveform | $P_{PP}$ | 75 | W |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | $V_{ESD}$ | +/-20<br>+/-20 | kV |
| Lead soldering temperature | $T_L$ | 260 (10 sec.) | ℃ |
| Operating junction temperature range | $T_J$ | -55 to +125 | ℃ |
| Storage temperature range | $T_{STG}$ | -55 to +150 | ℃ |

## ELECTRICAL CHARACTERISTICS (T$_A$=25℃)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Reverse working voltage | $V_{RWM}$ | Pin2 to 1 | | | 5.0 | V |
| Reverse breakdown voltage | $V_{BR}$ | $I_T$=1mA | 6.0 | | | V |
| Reverse leakage current | $I_R$ | $V_{RWM}$=5V | | | 1.0 | μA |
| Peak pulse current | $I_{PP}$ | $t_P$=8/20μs | | | 4.5 | A |
| Clamping voltage | $V_C$ | $I_{PP}$=1A, $t_P$=8/20μs | | 8.5 | 12.5 | V |
| | | $I_{PP}$=4.5A, $t_P$=8/20μs | | 13 | 15 | V |
| Junction capacitance | $C_J$ | $V_{RWM}$=0V, f=1MHz | | 0.5 | 0.65 | pF |

## RATINGS AND V-I CHARACTERISTICS CURVES (T$_A$=25ºC, unless otherwise noted)

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

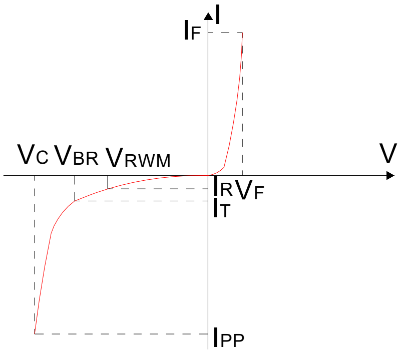


**FIG.2: Pulse waveform** (8/20μs)

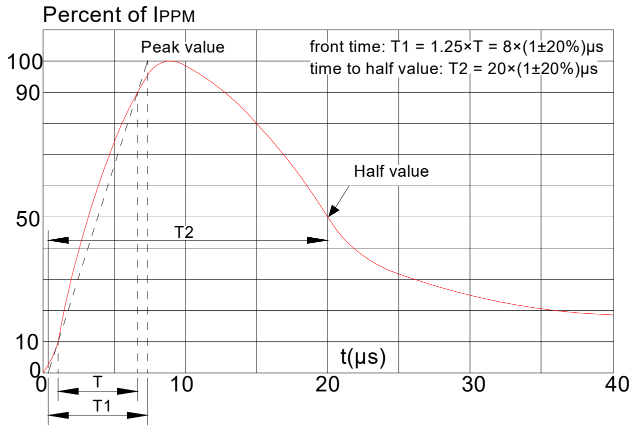


**FIG.3: Pulse derating curve**

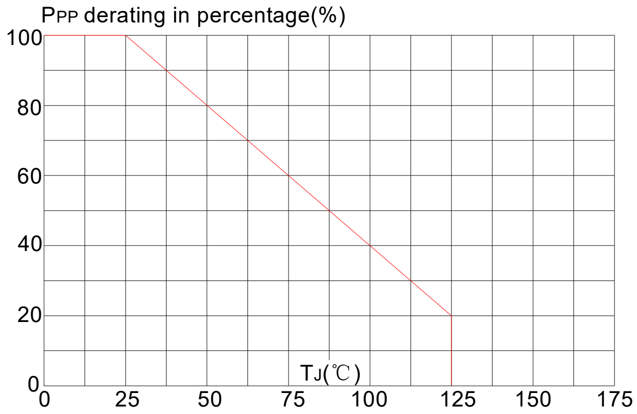
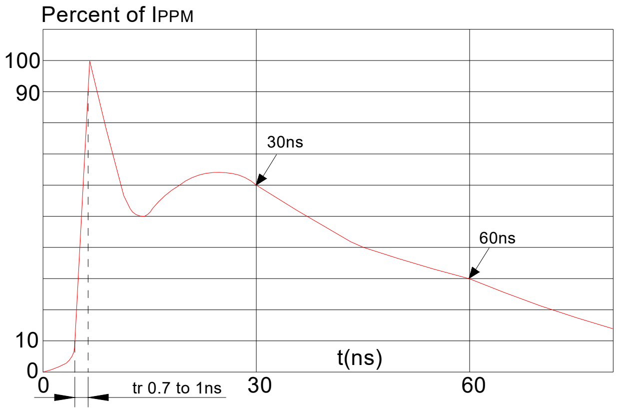
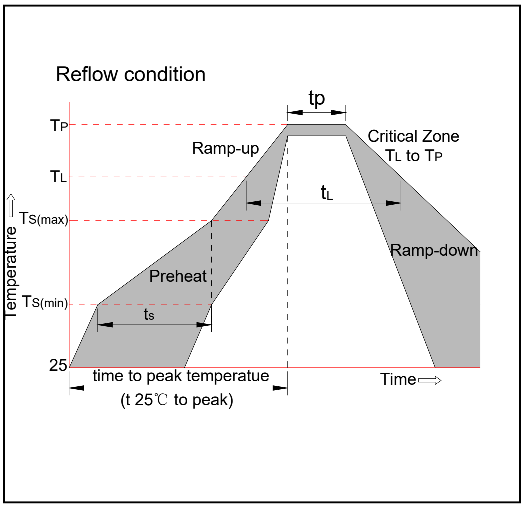


**FIG.4: ESD clamping** (20kV contact)

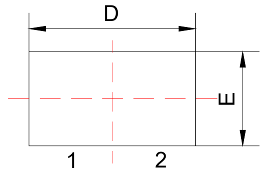


## SOLDERING PARAMETERS

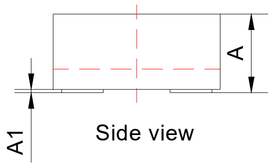
| Reflow Condition | | Pb-Free assembly<br>(see figure at right) |
|---|---|---|
| Pre Heat | -Temperature Min ($T_{s(min)}$) | +150℃ |
| | -Temperature Max($T_{s(max)}$) | +200℃ |
| | -Time (Min to Max) (ts) | 60-180 secs. |
| Average ramp up rate (Liquidus Temp ($T_L$)to peak) | | 3℃/sec. Max |
| $T_{s(max)}$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



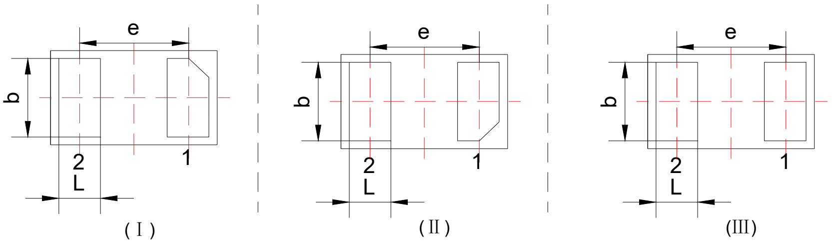
## PACKAGE MECHANICAL DATA



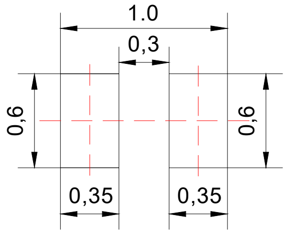
Top view



Side view



Bottom view



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 |