| TLC Electronic | ESD Protection Diode | DOC.NO.: ISS-CLAMP1211P |
|---|---|---|

# INDIVIDUAL SPECIFICATION SHEET

**Product Name:** ESD Protection Diode

**Part Number:**CLAMP1211P

**Revision:** A


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| Rev. | Effective Date | Changed Contents |
|---|---|---|
| A | 2021-10-20 | New Release |
| | | |
| | | |



| PREPEARED BY | APPROVED BY |
|---|---|
| 杨婷 | |

# CLAMP1211P

## Low-Capacitance Bidirectional Micro Packaged TVS Diodes for ESD Protection

The CLAMP1211P is designed with Jksemi Punch-Through process TVS technology to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD. Because of its small size, it is suited for use in cellular phones, MP3 players, digital cameras and many other portable applications where board space comes at a premium. Also because of its low capacitance, it is suited for use in high frequency designs such as USB 2.0 high speed, VGA, DVI, SDI and other high speed line applications.

It has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD(electrostatic discharge), and EFT (electrical fast transients).

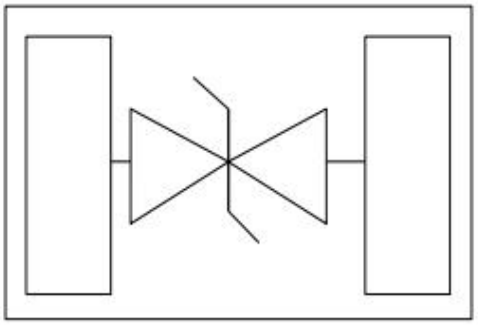
## Features

- ✧ Peak Power Dissipation −250 W (8 x 20 us Waveform)
- ✧ Stand-off Voltage: 12 V
- ✧ Low capacitance (<35.0pF) for high-speed interfaces
- ✧ Replacement for MLV (0402)
- ✧ Protects I/O Port
- ✧ Low Clamping Voltage
- ✧ Low Leakage
- ✧ Low Capacitance
- ✧ Response Time is < 1 ns
- ✧ Meets MSL 1 Requirements
- ✧ ROHS compliant
- ✧ Solid-state Punch-Through TVS Process technology
- ✧ WeiPan technology

**DFN1006**

## Main applications

- ✧ Serial and Parallel Ports
- ✧ Notebooks, Desktops, Servers
- ✧ Projection TV
- ✧ Cellular handsets and accessories
- ✧ Portable instrumentation
- ✧ Peripherals
- ✧ MP3 Players



## Protection solution to meet

- ✧ IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- ✧ IEC61000-4-5 (Lightning) 10A (8/20μs)

### Ordering Information

| Device | Qty per Reel | Reel Size |
|---|---|---|
| CLAMP1211P | 5000/10000 | 7 Inch |

| Maximum ratings (Tamb=25℃ Unless Otherwise Specified) | | | |
|---|---|---|---|
| **Parameter** | **Symbol** | **Value** | **Unit** |
| Peak Pulse Power (tp=8/20μs waveform) | $P_{PPP}$ | 250 | Watts |
| ESD Rating per IEC61000-4-2： Contact<br>Air | | 8<br>15 | KV |
| Lead Soldering Temperature | $T_L$ | 260 (10 sec.) | ℃ |
| Operating Temperature Range | $T_J$ | -55 ~ 150 | ℃ |
| Storage Temperature Range | $T_{STG}$ | -55 ~ 150 | ℃ |
| Lead Solder Temperature − Maximum (10 Second Duration) | $T_L$ | 260 | ℃ |

*Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.*

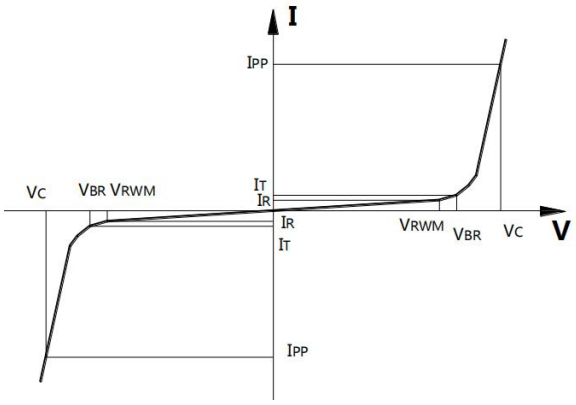
**Other voltages may be available upon request.*

*1. Non-repetitive current pulse, per Figure 1.*

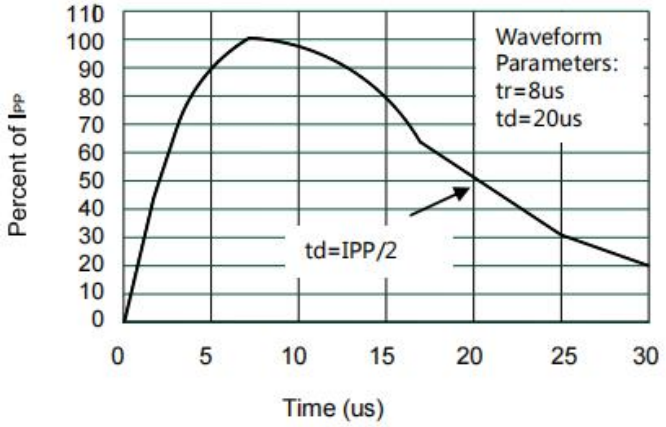
*Junction capacitance is measured in VR=0V,F=1MHz*

| Electrical characteristics ( Tamb=25℃ Unless Otherwise Specified) | | | | | | |
|---|---|---|---|---|---|---|
| **Symbol** | **Parameter** | **Conditions** | **Min.** | **Typ.** | **Max.** | **Units** |
| $V_{RWM}$ | Reverse Working Voltage | | | | 12 | V |
| $V_{BR}$ | Reverse Breakdown Voltage | IT = 1mA | 13.3 | | | V |
| $I_R$ | Reverse Leakage Current | $V_{RWM}$ = 12V | | 0.01 | 0.2 | μA |
| $V_C$ | Clamping Voltage | $I_{PP}$ = 1A, tp =8/20μs | | 15 | 19 | V |
| | | $I_{PP}$ = 10A, tp=8/20μs | | 21 | 25 | V |
| $C_J$ | Junction Capacitance | $V_R$ = 0V, f = 1MHz | | | 35 | pF |

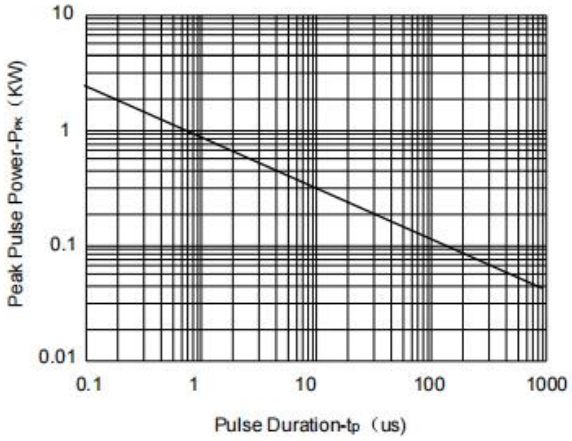
| Symbol | Parameter |
|---|---|
| $V_{RWM}$ | Working Peak Reverse Voltage |
| $V_{BR}$ | Breakdown Voltage @ $I_T$ |
| $V_C$ | Clamping Voltage @ $I_{PP}$ |
| $I_T$ | Test Current |
| $I_{RM}$ | Leakage current at $V_{RWM}$ |
| $I_{PP}$ | Peak pulse current |
| $C_O$ | Off-state Capacitance |
| $C_J$ | Junction Capacitance |



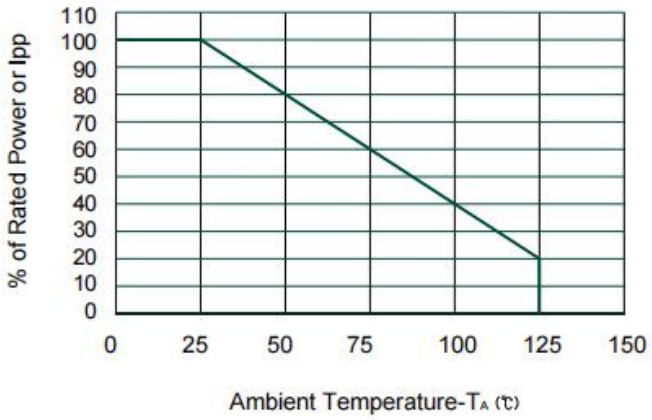
## Typical electrical characterist applications




**Pulse Waveform**




**Non-Repetitive Peak Pulse Power vs. Pulse Time**




**Power Derating Curve**

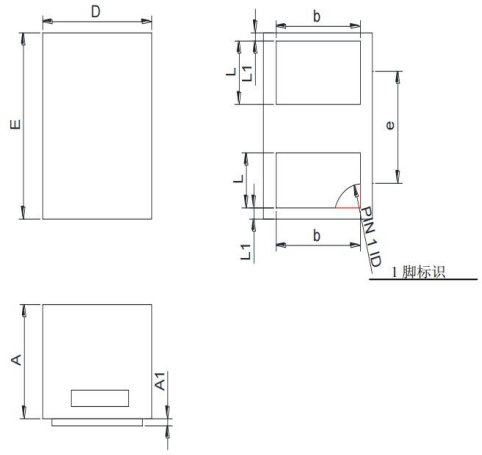
# DFN-1006

## Package Information

### Mechanical Data

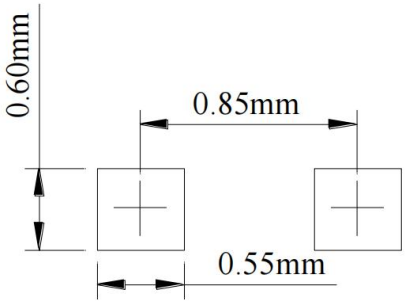
Case:DFN1006

Case Material: Molded Plastic. UL Flammability

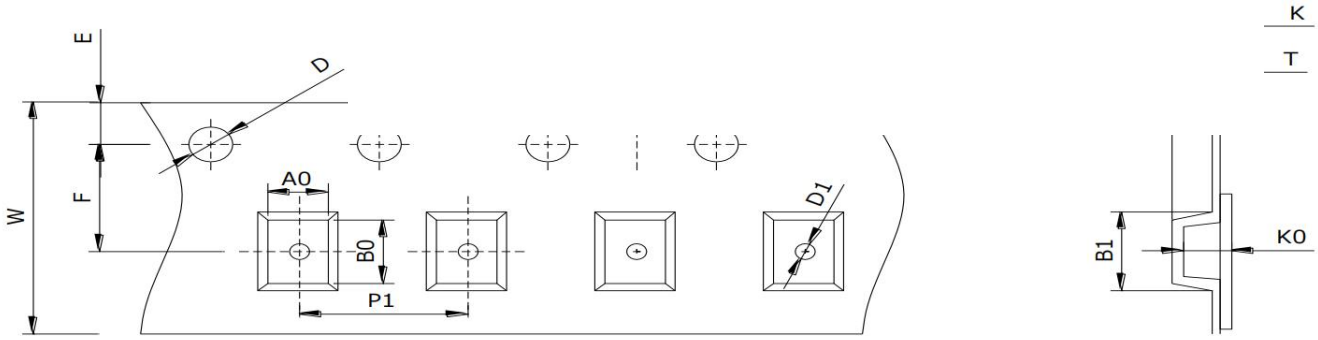



| DIM | Millimeters | | Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 0.30 | 0.50 | 0.012 | 0.020 |
| A1 | 0.00 | 0.05 | 0.000 | 0.002 |
| D | 0.55 | 0.65 | 0.022 | 0.026 |
| E | 0.95 | 1.05 | 0.037 | 0.041 |
| b | 0.25 | 0.60 | 0.010 | 0.024 |
| e | 0.65TYP | | 0.026TYP | |
| L | 0.15 | 0.35 | 0.006 | 0.014 |
| L1 | 0.05REF | | 0.002REF | |

## Recommended Pad outline




## DFN1006 Reel Dim




| Package | Chip Size (mm) | Pocket Size B0×A0×K0(mm) | Tape Width | Reel Diameter | Quantity Per Reel | P0 | P1 |
|---|---|---|---|---|---|---|---|
| DFN1006 | 1.0×0.6×0.50 | 1.10×0.70×0.60 | 8mm | 178mm(7") | 5000/10000 | 4mm | 4/2mm |
| D0 | D1 | E | F | K | T | W | |
| 1.5mm | 0.5mm | 1.75mm | 3.5mm | 0.55mm | 0.2mm | 8mm | |