# N12UT1610-H

List

# N12UT1610-H

## 2500W Uni-Directional
## TVS For ESD Protection : 12V

### Features

- Peak pulse current : 100A(Max.) ($t_P$=8/20μs).
- Low clamping voltage.
- Low leakage current.
- Provide transient protection:

  IEC 61000-4-2 (ESD) ±30kV(Air), ±30kV(Contact)
- Lead-free parts meet RoHS requirements.
- Halogen-free (IEC61249-2-21).

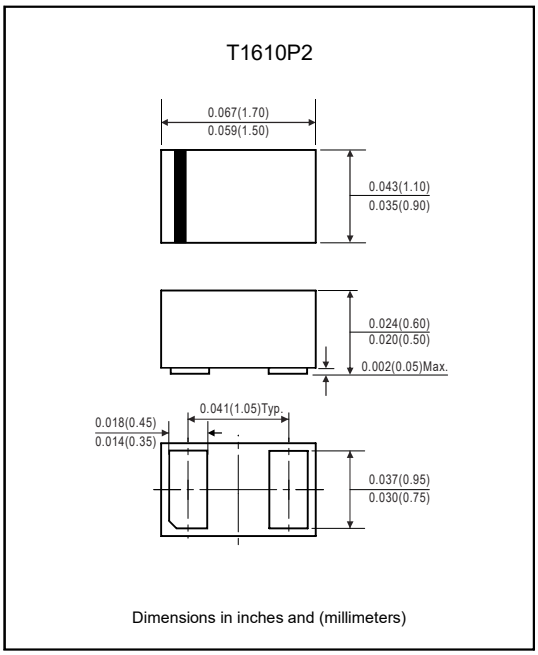
### Applications

- Mobile phone and digital cameras.
- Power line protection and battery protection.
- VBAT pin for mobile devices.
- Hand held portable application.
- PCI express and serial SATA ports.

### Mechanical data

- Case : Molded plastic, DFN1610-2 (T1610P2).
- Epoxy: UL94V-0 rated flame retardant.

### Package outline




Dimensions in inches and (millimeters)

### Maximum ratings (At T=25°C, RH=45%~75%, unless otherwise noted)

| Parameter | Symbol | Ratings | Unit |
|---|---|---|---|
| Peak pulse power ($t_P$=8/20μs) | $P_{PP}$ | 2500 | W |
| Peak pulse current ($t_P$=8/20μs) | $I_{PP}$ | 100 | A |
| ESD per IEC 61000-4-2 (Air) | $V_{ESD}$ | ±30 | kV |
| ESD per IEC 61000-4-2 (Contact) | | ±30 | |
| Operating temperature | $T_J$ | +125 | ℃ |
| Storage temperature range | $T_{STG}$ | -55 to +150 | ℃ |

### Electrical characteristics (At T=25°C, RH=45%~75%, unless otherwise noted)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Reverse stand-off voltage | $V_{RWM}$ | | | | 12 | V |
| Reverse breakdown voltage | $V_{BR}$ | $I_R$ = 1mA | 13.3 | | 17.8 | V |
| Reverse leakage current | $I_R$ | $V_R$ = 12V | | | 0.2 | μA |
| Clamping voltage | $V_C$ | $I_{PP}$ = 10A, $t_P$ =8/20μs | | | 18 | V |
| | | $I_{PP}$ = 100A, $t_P$ =8/20μs | | | 25 | |
| Junction capacitance | $C_J$ | $V_R$=0V, f=1.0MHz | | | 280 | pF |

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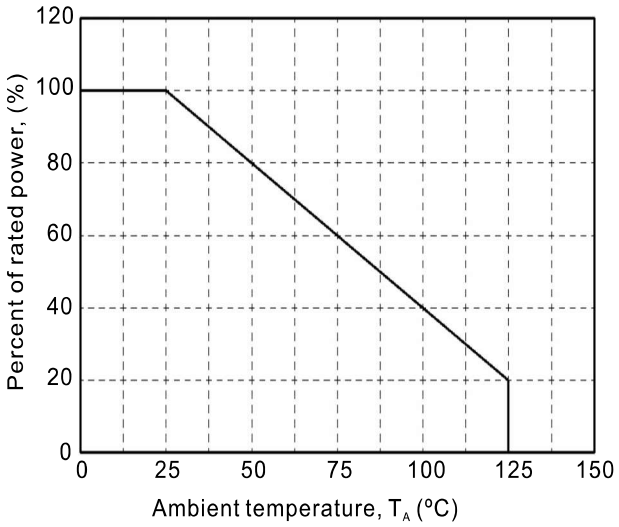
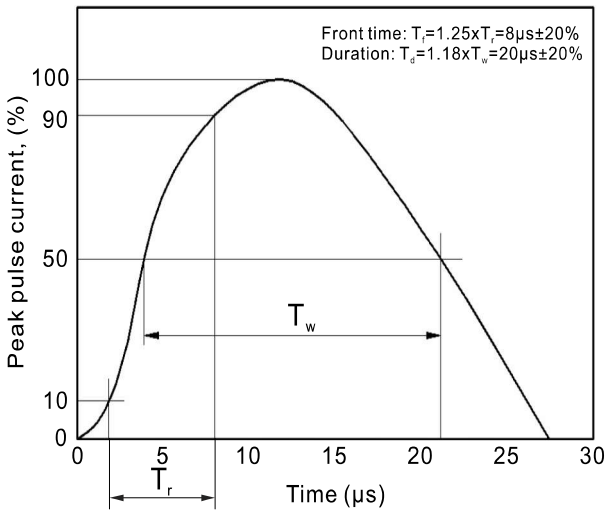
## Rating and characteristic curves

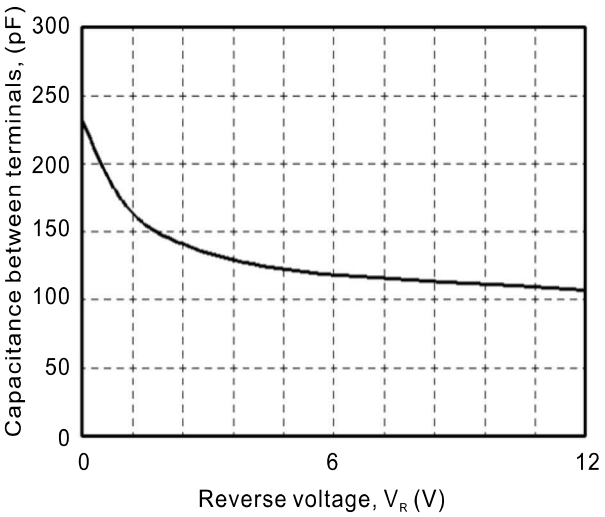
Power rating de-rating curve



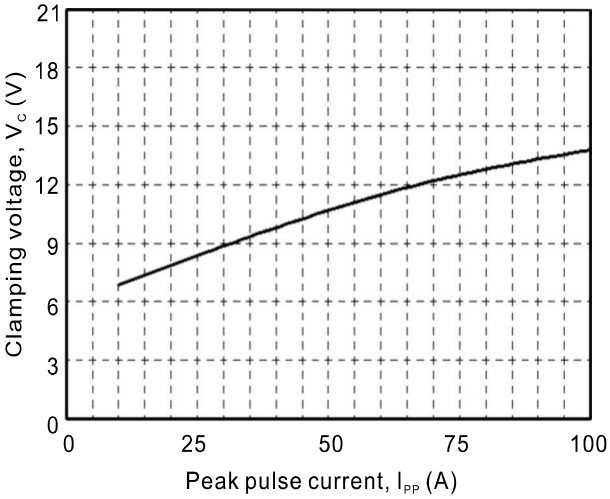

Pulse waveform




Capacitance between terminals characteristics




Clamping voltage vs. Peak pulse current



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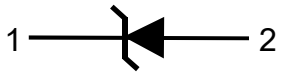
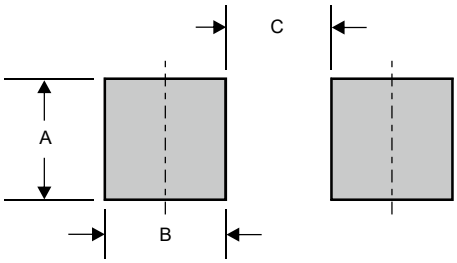
## Pinning information

| Pin | Simplified outline | Symbol |
|---|---|---|
| Pin1 Cathode<br>Pin2 Anode |  |  |

## Marking

| Type number | Marking code |
|---|---|
| N12UT1610-H | H12T |

## Suggested solder pad layout

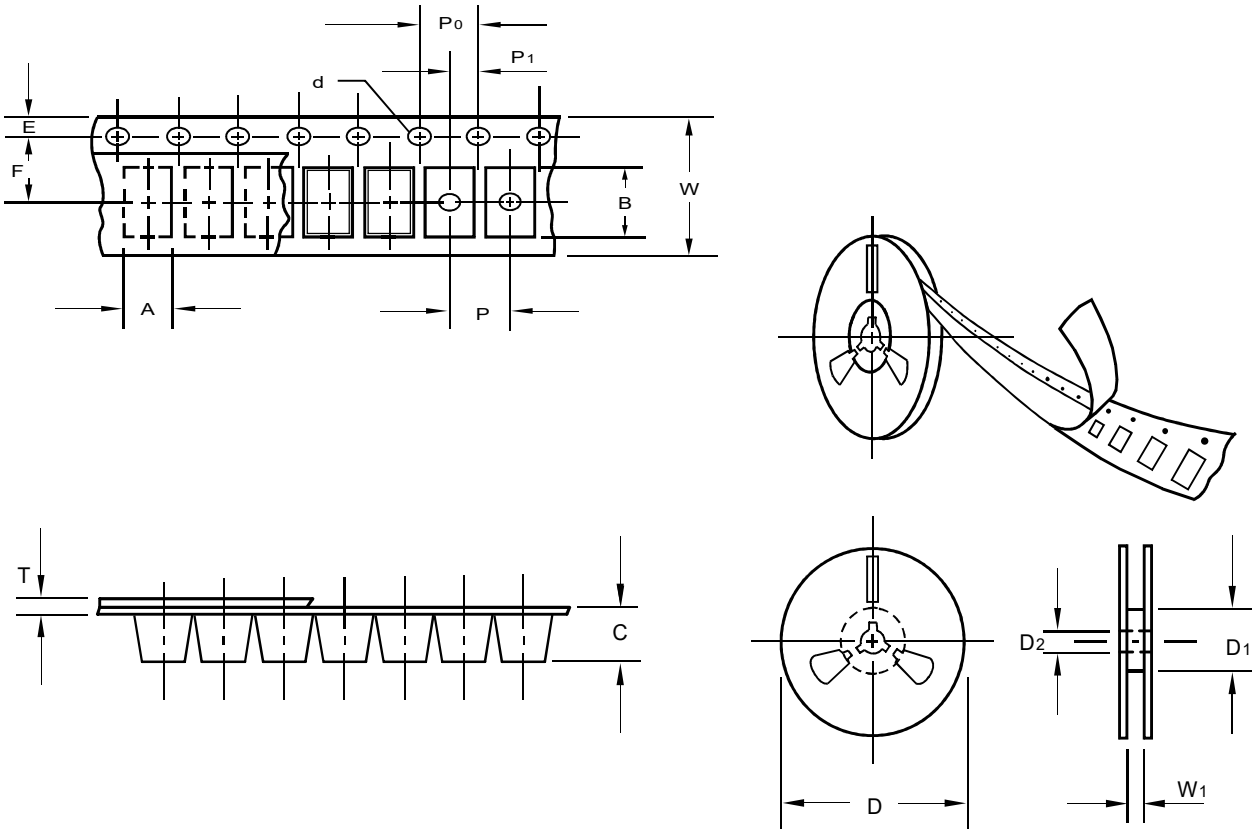



Dimensions in inches and (millimeters)

| PACKAGE | A | B | C |
|---|---|---|---|
| T1610P2 | 0.039 (1.00) | 0.024 (0.62) | 0.023 (0.58) |

# N12UT1610-H

## Packing information




unit:mm

| Item | Symbol | Tolerance | T1610P2 |
|---|---|---|---|
| Carrier width | A | 0.1 | 1.15 |
| Carrier length | B | 0.1 | 1.80 |
| Carrier depth | C | 0.1 | 0.63 |
| Sprocket hole | d | 0.1 | 1.55 |
| 7" Reel outside diameter | D | 2.0 | 178.00 |
| 7" Reel inner diameter | $D_1$ | min | 50.00 |
| Feed hole diameter | $D_2$ | 0.2 | 13.00 |
| Sprocket hole position | E | 0.1 | 1.75 |
| Punch hole position | F | 0.1 | 3.50 |
| Punch hole pitch | P | 0.1 | 4.00 |
| Sprocket hole pitch | $P_0$ | 0.1 | 4.00 |
| Embossment center | $P_1$ | 0.1 | 2.00 |
| Overall tape thickness | T | 0.1 | 0.20 |
| Tape width | W | 0.3 | 8.00 |
| Reel width | $W_1$ | 1.0 | 9.50 |

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

# N12UT1610-H

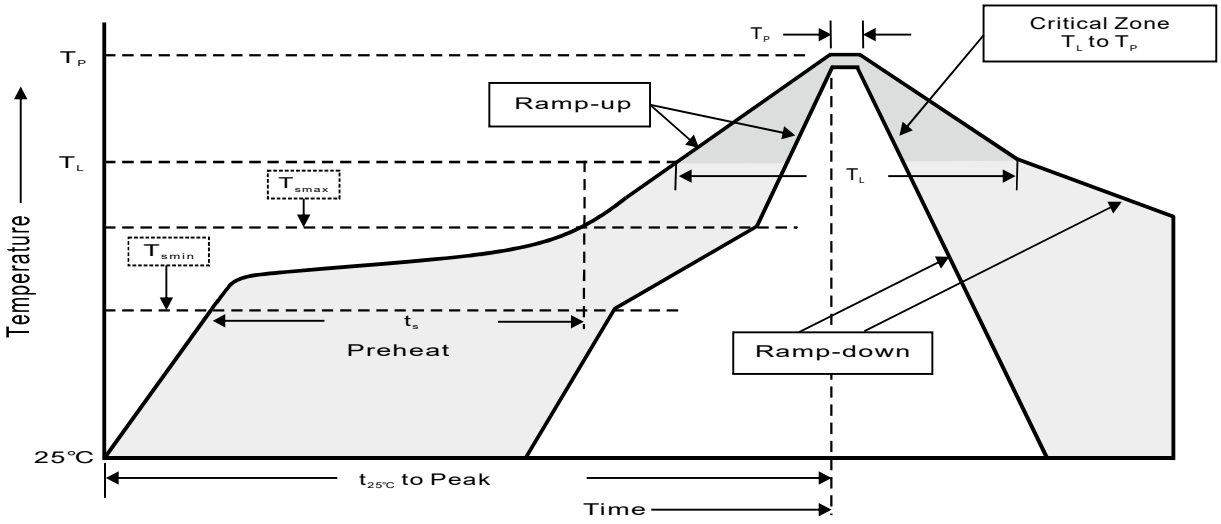
## Reel packing

| PACKAGE | REEL SIZE | REEL (pcs) | COMPONENT SPACING (m/m) | BOX (pcs) | INNER BOX (m/m) | REEL DIA, (m/m) | CARTON SIZE (m/m) | CARTON (pcs) |
|---|---|---|---|---|---|---|---|---|
| T1610P2 | 7" | 3,000 | 4.0 | 30,000 | 183*123*183 | 178 | 382*257*387 | 240,000 |

## Suggested thermal profiles for soldering processes

1.Storage environment: Temperature = 5°C ~ 40°C Humidity = 55%, ±25%

2.Reflow soldering of surface-mount devices




3.Reflow soldering

| Profile feature | Soldering condition |
|---|---|
| Average ramp-up rate ($T_L$ to $T_P$) | < 3 ℃/sec |
| Preheat<br>- Temperature Min ($T_{smin}$)<br>- Temperature Max ($T_{smax}$)<br>- Time (Min to Max) ($t_s$) | <br>150℃<br>200℃<br>60 ~ 120 sec |
| $T_{smax}$ to $T_L$<br>- Ramp-up rate | <br>< 3 ℃/sec |
| Time maintained above :<br>- Temperature ($T_L$)<br>- Time ($T_L$) | <br>217℃<br>60 ~ 260 sec |
| Peak temperature ($T_P$) | 255 ℃ -0/+5℃ |
| Time with 5℃ of actual peak temperature ($T_P$) | 10 ~30 sec |
| Ramp-down rate | < 6 ℃/sec |
| Time 25℃ to peak temperature | < 6 minutes |