SZCJ

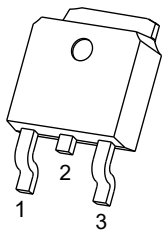
Shenzhen Changji Semiconductor Co., LTD.

# TO-252-2L Plastic-Encapsulate MOSFETS

## CJU15N10 N-Channel Power MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)}$TYP | $I_D$ |
|---|---|---|
| 100V | 70mΩ@10V | 15A |

TO-252-2L




1. GATE
2. DRAIN
3. SOURCE

### DESCRIPTION

The CJU15N10 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications

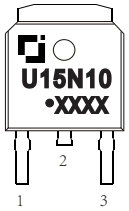
### FEATURE

- Excellent package for good heat dissipation
- Ultra low gate charge
- Low reverse transfer capacitance
- Fast switching capability
- Avalanche energy specified

### APPLICATION

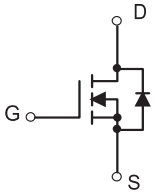
- Power switching application

### MARKING




U15N10 = Device code.
Solid dot = Green molding compound device, if none, the normal device.
XXXX = Code.

### EQUIVALENT CIRCUIT




### MAXIMUM RATINGS ( $T_a$=25℃ unless otherwise noted )

| Parameter | Symbol | Limit | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 100 | V |
| Gate-Source Voltage | $V_{GS}$ | ±20 | V |
| Continuous Drain Current | $I_D$ ① | 15 | A |
| Pulsed Drain Current | $I_{DM}$ ② | 60 | A |
| Single Pulsed Avalanche Energy | $E_{AS}$ ③ | 49 | mJ |
| Power Dissipation | $P_D$ ① | 36 | W |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ ⑥ | 100 | ℃/W |
| Thermal Resistance from Junction to Case | $R_{\theta JC}$ ① | 3.5 | ℃/W |
| Operating Junction and Storage Temperature Range | $T_J$ ,$T_{stg}$ | -55~+150 | ℃ |

## MOSFET ELECTRICAL CHARACTERISTICS

**$T_a$=25℃ unless otherwise specified**

| Parameter | Symbol | Test Condition | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| **Off characteristics** | | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ =250μA | | 100 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =80V, $V_{GS}$ =0V | $T_J$ =25℃ | | | 1.0 | μA |
| | | | $T_J$ =125℃ | | | 100 | |
| Gate-body leakage current | $I_{GSS}$ | $V_{DS}$ =0V, $V_{GS}$ =±20V | | | | ±100 | nA |
| **On characteristics** ④ | | | | | | | |
| Gate-threshold voltage | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =250μA | | 1.0 | 2.5 | 3.0 | V |
| Static drain-source on-sate resistance | $R_{DS(on)}$ | $V_{GS}$ =10V, $I_D$ =8A | | | 70 | 100 | mΩ |
| **Dynamic characteristics** ④⑤ | | | | | | | |
| Input capacitance | $C_{iss}$ | $V_{DS}$ =25V,$V_{GS}$ =0V, f = 100KHz | | | 773 | 1500 | pF |
| Output capacitance | $C_{oss}$ | | | | 46 | 92 | |
| Reverse transfer capacitance | $C_{rss}$ | | | | 43 | 90 | |
| Gate resistance | Rg | f =1MHz | | | 1.5 | | Ω |
| **Switching characteristics** ④⑤ | | | | | | | |
| Total gate charge | $Q_g$ | $V_{GS}$=10V, $V_{DS}$=50V, $I_D$=10A | | | 18 | 36 | nC |
| Gate-source charge | $Q_{gs}$ | | | | 2.8 | 5.6 | |
| Gate-drain charge | $Q_{gd}$ | | | | 7.4 | 14.8 | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD}$=25V,$R_L$=5Ω, $V_{GS}$=10V,$R_G$=1.0Ω | | | 15 | | ns |
| Turn-on rise time | $t_r$ | | | | 33 | | |
| Turn-off delay time | $t_{d(off)}$ | | | | 41 | | |
| Turn-off fall time | $t_f$ | | | | 6 | | |
| **Drain-Source Diode Characteristics** | | | | | | | |
| Drain-source diode forward voltage | $V_{SD}$ ④ | $V_{GS}$ =0V, $I_S$=8A | | | | 1.2 | V |
| Continuous drain-source diode forward current | $I_S$ ① | | | | | 15 | A |
| Pulsed drain-source diode forward current | $I_{SM}$ ② | | | | | 60 | A |

Notes:

1.$T_C$=25℃ Limited only by maximum temperature allowed.

2.$P_W$≤10μs, Duty cycle≤1%.

3.EAS condition: $V_{DD}$=25V,$V_{GS}$=10V, L=0.5mH, Rg=25Ω Starting $T_J$ = 25℃.

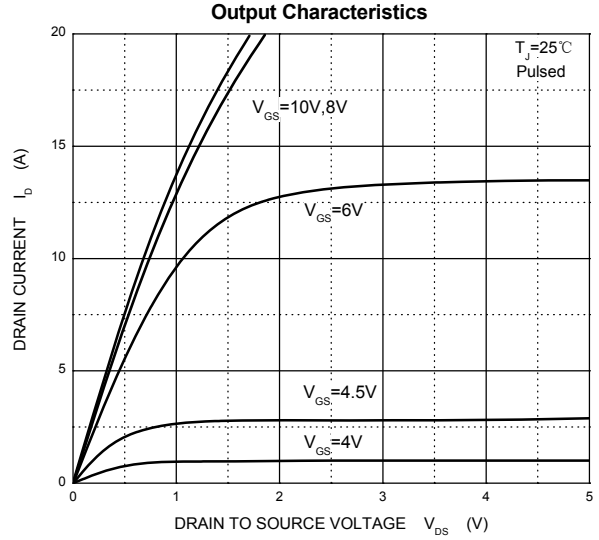
4.Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.

5.Guaranteed by design, not subject to production.

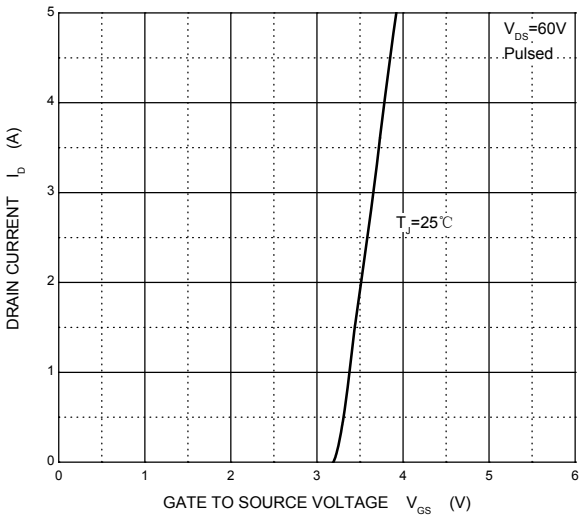
6.The value of $R_{\theta JA}$ is measured with the device mounted on 1 $in^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_a$=25℃.

## Typical Characteristics

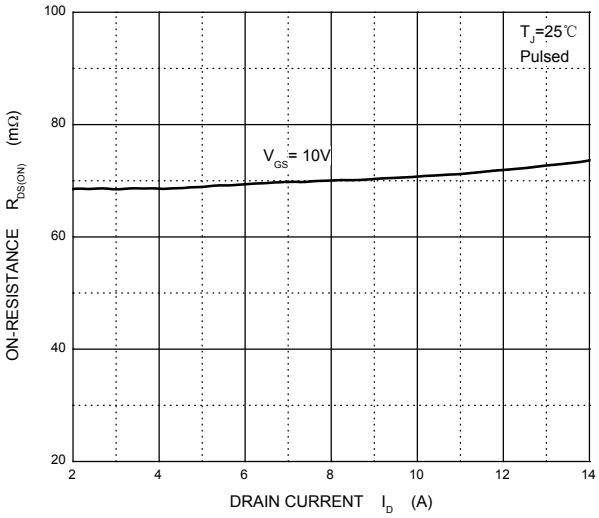
**Output Characteristics**



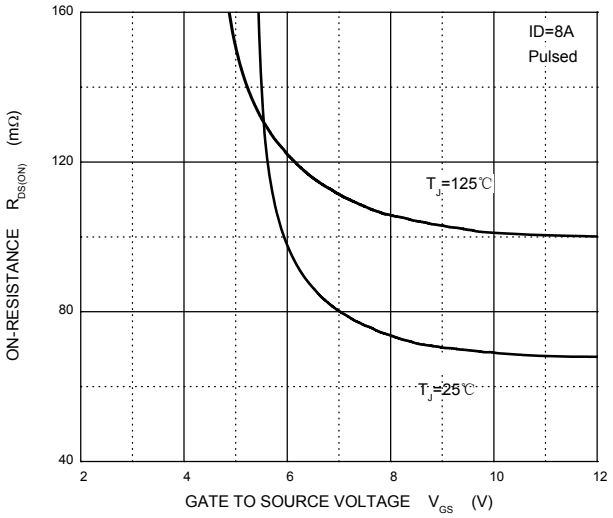

**Transfer Characteristics**



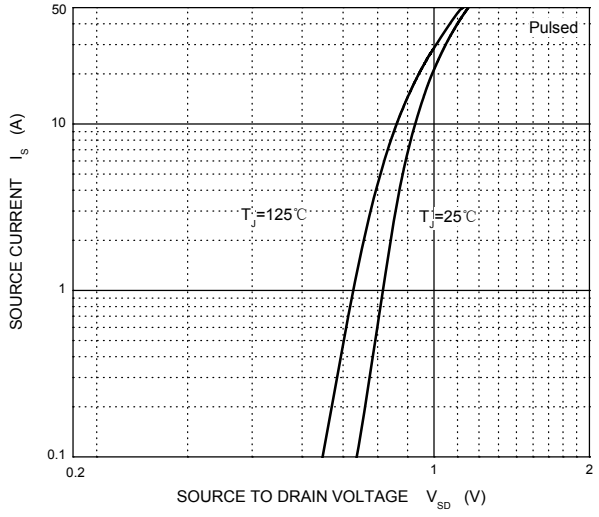

**$R_{DS(ON)}$ —— $I_D$**



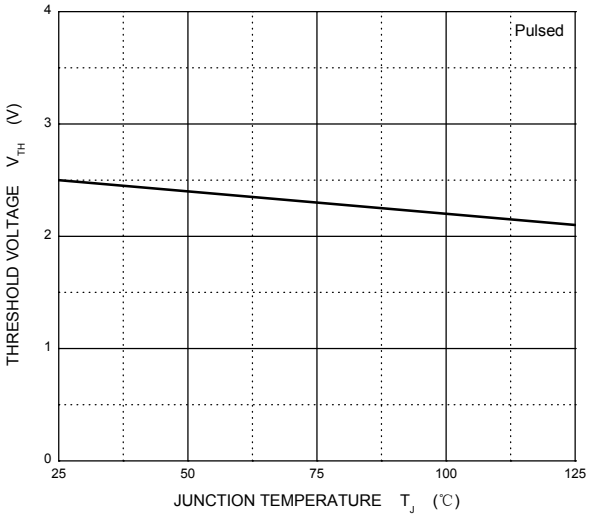

**$R_{DS(ON)}$—— $V_{GS}$**




**$I_S$ —— $V_{SD}$**

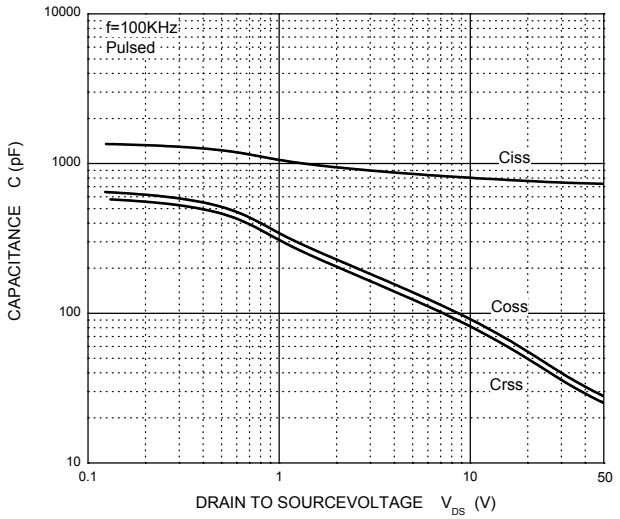



**Threshold Voltage**

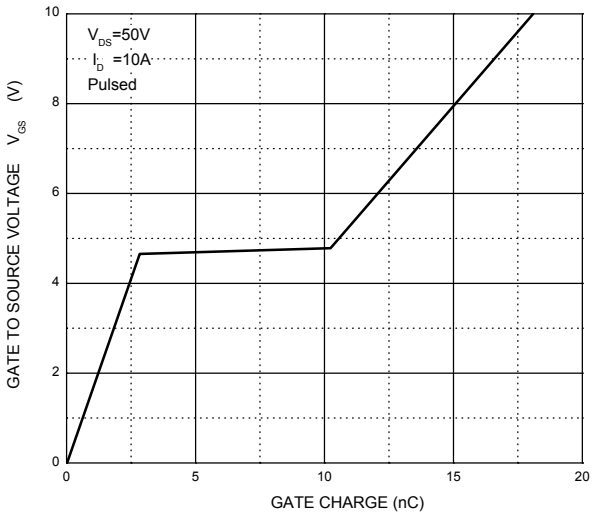


# Typical Characteristics

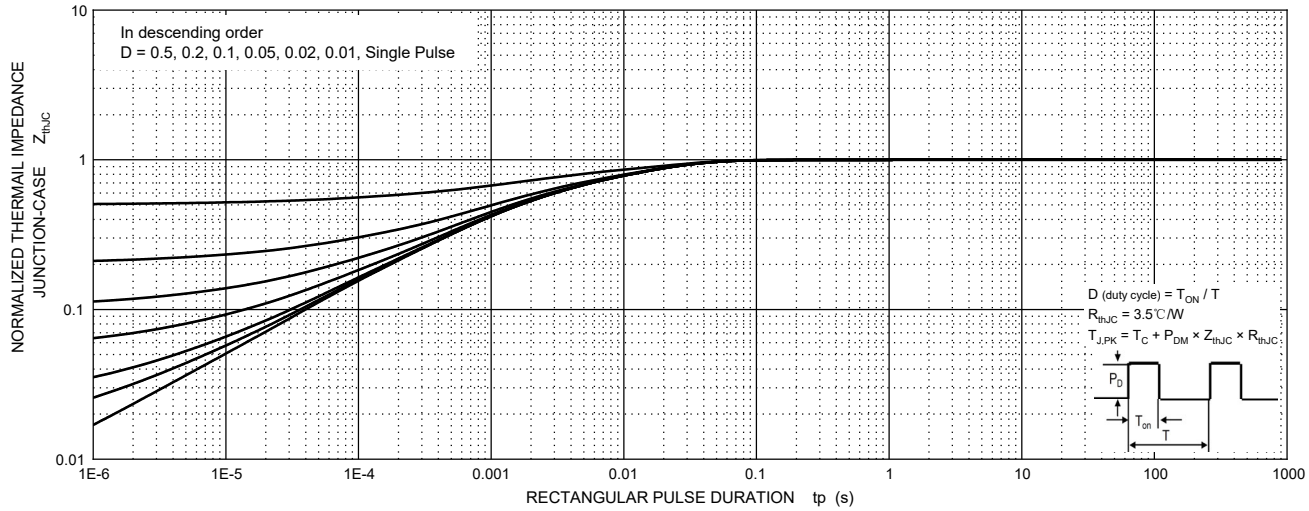
**Capacitances**



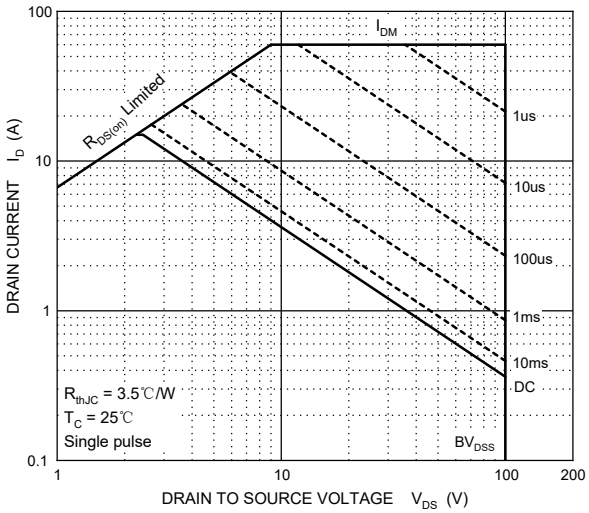

**Gate Charge**



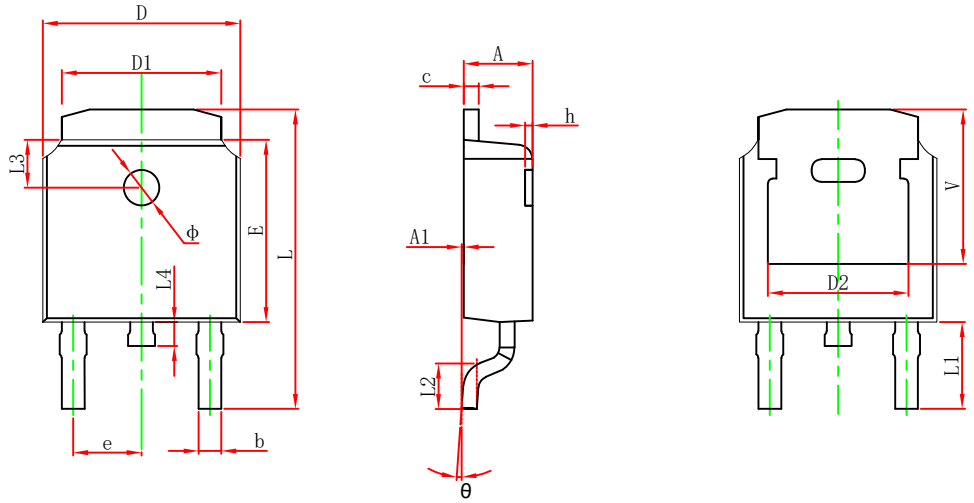

**Transient Thermal Impedance, Junction-Case**




**Maximum Safe Operating Area**

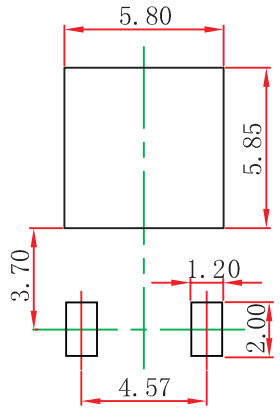


## TO-252-2L Package Outline Dimensions




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 2.200 | 2.400 | 0.087 | 0.094 |
| A1 | 0.000 | 0.127 | 0.000 | 0.005 |
| b | 0.635 | 0.770 | 0.025 | 0.030 |
| c | 0.460 | 0.580 | 0.018 | 0.023 |
| D | 6.500 | 6.700 | 0.256 | 0.264 |
| D1 | 5.100 | 5.460 | 0.201 | 0.215 |
| D2 | 4.830 REF. | | 0.190 REF. | |
| E | 6.000 | 6.200 | 0.236 | 0.244 |
| e | 2.186 | 2.386 | 0.086 | 0.094 |
| L | 9.712 | 10.312 | 0.382 | 0.406 |
| L1 | 2.900 REF. | | 0.114 REF. | |
| L2 | 1.400 | 1.700 | 0.055 | 0.067 |
| L3 | 1.600 REF. | | 0.063 REF. | |
| L4 | 0.600 | 1.000 | 0.024 | 0.039 |
| Φ | 1.100 | 1.300 | 0.043 | 0.051 |
| θ | 0° | 8° | 0° | 8° |
| h | 0.000 | 0.300 | 0.000 | 0.012 |
| V | 5.250 REF. | | 0.207 REF. | |

## TO-252-2L Suggested Pad Layout



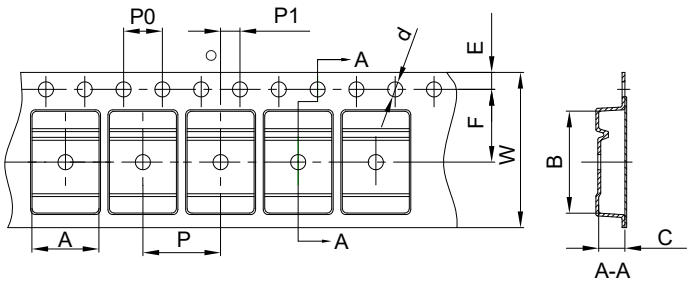

Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

NOTICE

SZCJ reserves the right to make modifications,enhan nts,improvements,corrections or other es without further notice to any product herein. SZCJ does not assume any liability arising out of the application or use of any product described h

# TO-252-2L Tape and Reel

## TO-252-2L Embossed Carrier Tabe

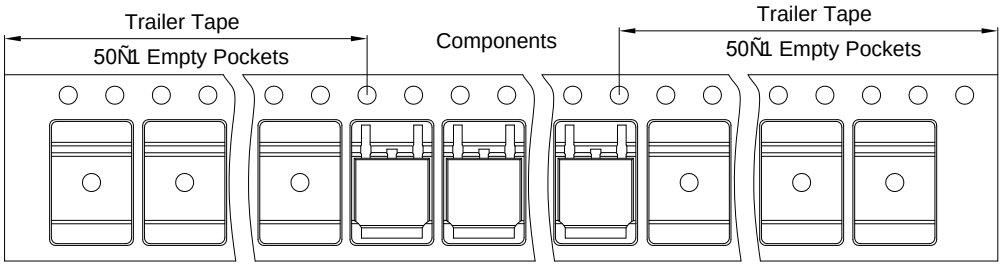



Packaging Description:

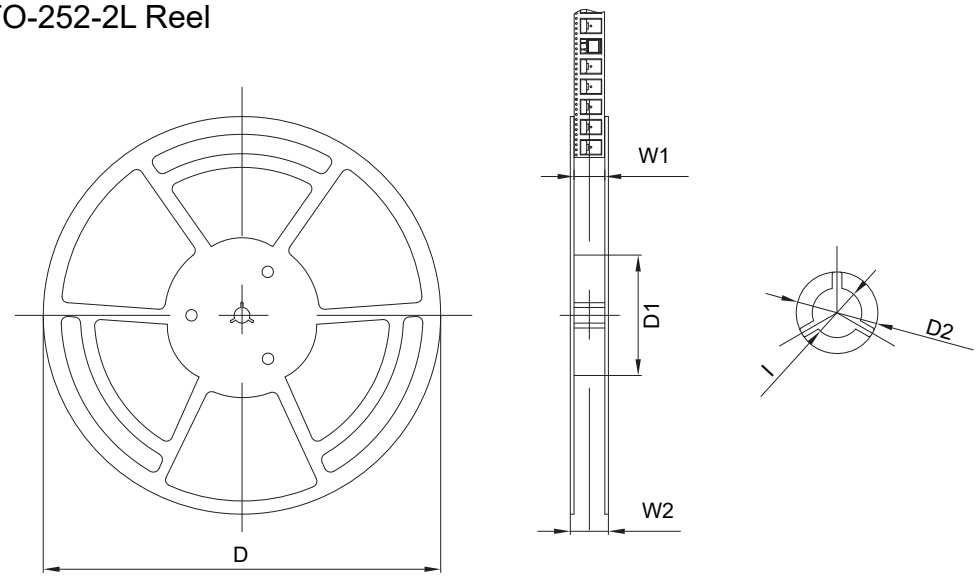
TO-252-2L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Hear Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 2500 units per 13″ or 33.0 cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

| Dimensions are in millimeter | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pkg type | A | B | C | d | E | F | P0 | P | P1 | W |
| TO-252 | 6.90 | 10.50 | 2.70 | Φ1.55 | 1.75 | 7.50 | 4.00 | 8.00 | 2.00 | 16.00 |

## TO-252-2L Tape Leader and Trailer




## TO-252-2L Reel




| Dimensions are in millimeter | | | | | | |
|---|---|---|---|---|---|---|
| Reel | D | D1 | D2 | W1 | W2 | I |
| 13" Dia | 330.00 | 100.00 | Φ21.00 | 16.40 | 21.40 | Φ13.00 |

| Reel | Reel Size | Box | Box Size(mm) | Carton | Carton Size(mm) |
|---|---|---|---|---|---|
| 2500 pcs | 13 inch | 5000 pcs | 360×360×65 | 25000 pcs | 378×358×382 |