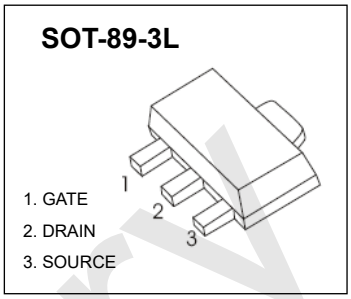
SZCJ

Shenzhen Changji Semiconductor Co., LTD.

# SOT-89-3L Plastic-Encapsulate MOSFETS

## CJA01N65MX N-Channel MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)}$TYP | $I_D$ |
|---|---|---|
| 650V | 26Ω@10V | 0.5A |
| | 27Ω@4.5V | |




### DESCRIPTION

The CJA01N65MX uses advanced trench technology to deliver low gate charge.This device is suitable for use in a wide variety of applications.

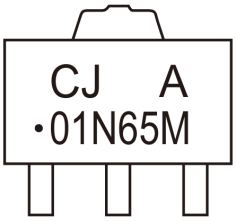
### FEATURES

- Lead free product is acquired
- Special process technology for high ESD capability
- Excellent package for good heat dissipation

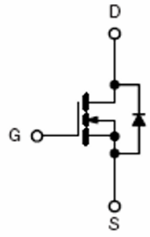
### APPLICATION

- Power switching application
- Hard switching and high frequency circuits
- Uninterruptible power supply

### MARKING




### Equivalent Circuit




### Maximum ratings ($T_a$=25℃ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 650 | V |
| Gate-Source Voltage | $V_{GS}$ | ±30 | V |
| Continuous Drain Current | $I_D$ ① | 0.5 | A |
| Pulsed Drain Current | $I_{DM}$ ② | 3 | A |
| Power Dissipation | $P_D$ ① | 12.5 | W |
| Thermal Resistance from Junction to Case | $R_{\theta JC}$ ① | 10 | ℃/W |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ ⑤ | 81 | ℃/W |
| Storage and Junction Temperature | $T_{STG}$, $T_J$ | -55~+150 | ℃ |

Preliminary

## MOSFET ELECTRICAL CHARACTERISTICS

**$T_J$=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 | | 650 | - | - | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$=650V, $V_{GS}$=0V | $T_J$=25℃ | - | - | 1.0 | μA |
| | | | $T_J$=125℃ | - | - | 100 | |
| Gate-body leakage current | $I_{GSS}$ | $V_{DS}$ =0V, $V_{GS}$ =±30V | | - | - | ±100 | nA |
| **On characteristics** ③ | | | | | | | |
| Gate-threshold voltage | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =250μA | | 0.5 | 1.3 | 1.5 | V |
| Static drain-source on-resistance | $R_{DS(on)}$ | $V_{GS}$ =10V, $I_D$ =0.1A | | - | 26 | 30 | Ω |
| | | $V_{GS}$ =4.5V, $I_D$ =0.08A | | - | 27 | 30 | Ω |
| Forward tranconductance | $g_{FS}$ | $V_{DS}$ =15V, $I_D$ =0.1A | | - | 0.4 | - | S |
| **Dynamic characteristics** ④ | | | | | | | |
| Input capacitance | $C_{iss}$ | $V_{DS}$ =25V,$V_{GS}$ =0V,f =1MHz | | - | 86 | - | pF |
| Output capacitance | $C_{oss}$ | | | - | 11 | - | |
| Reverse transfer capacitance | $C_{rss}$ | | | - | 3 | - | |
| **Switching characteristics** ④ | | | | | | | |
| Total gate charge | $Q_g$ | $V_{DS}$ =350V,$V_{GS}$ =10V,$I_D$ =0.5A | | - | 4.8 | - | nC |
| Gate-source charge | $Q_{gs}$ | | | - | 0.6 | - | |
| Gate-drain charge | $Q_{gd}$ | | | - | 2 | - | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD}$=350V,$V_{GS}$=10V, $R_G$=4.7Ω, $I_D$=0.5A | | - | 6 | - | ns |
| Turn-on rise time | $t_r$ | | | - | 4.8 | - | |
| Turn-off delay time | $t_{d(off)}$ | | | - | 16.8 | - | |
| Turn-off fall time | $t_f$ | | | - | 12.4 | - | |
| **Drain-Source Diode Characteristics** | | | | | | | |
| Drain-source diode forward voltage | $V_{SD}$ ③ | $V_{GS}$ =0V,$I_S$ =0.5A | | - | - | 1.2 | V |
| Maximum continuous drain-source diode forward current | $I_S$ ① | | | - | - | 0.5 | A |
| Maximum pulsed drain-source diode forward current | $I_{SM}$ ①② | | | - | - | 3 | A |

**Notes :**

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

2.$P_W$≤10μs, Duty cycle≤1%.

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

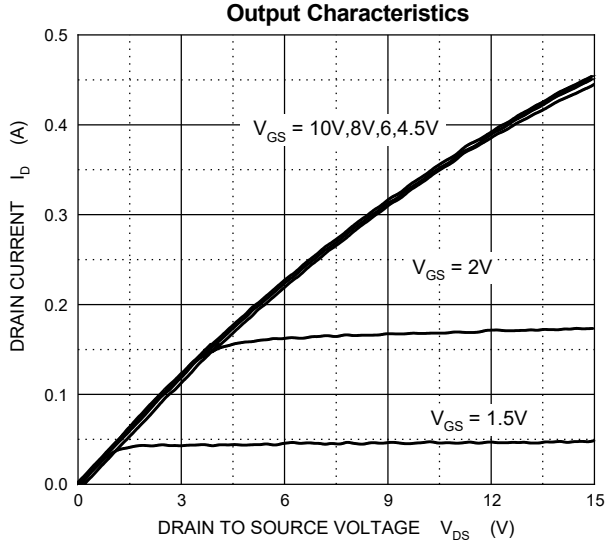
4.Guaranteed by design, not subject to production.

5.Device mounted on 1 $in^2$ FR-4 board with 2oz. double-sided Copper, in a still air environment with $T_A$=25℃.

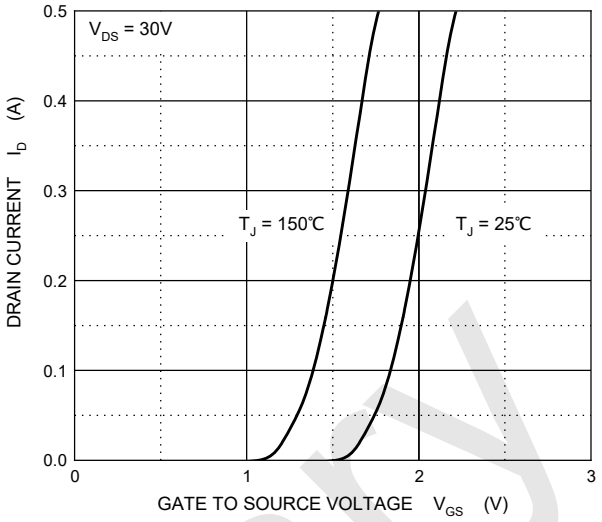
Preliminary

## Typical Characteristics ($T_J$ = 25℃, unless otherwise specified)

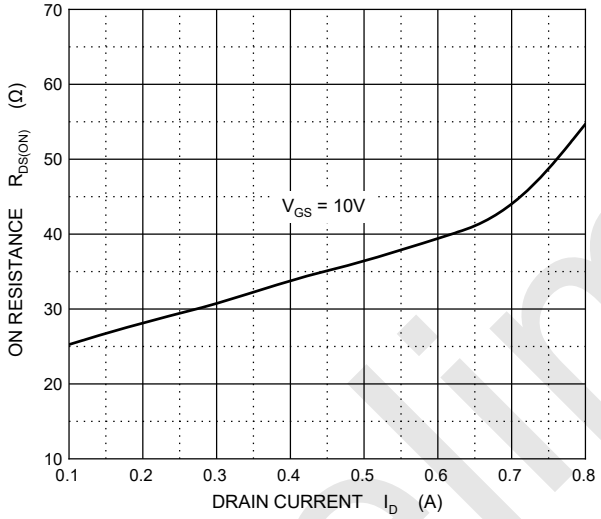
**Output Characteristics**



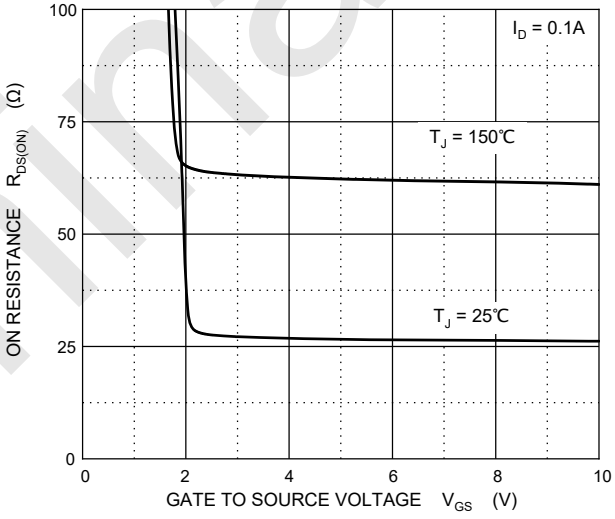

**Transfer Characteristics**



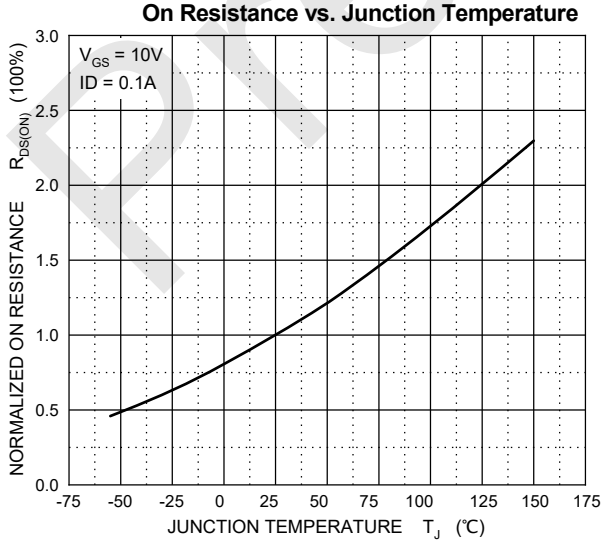

**On Resistance vs. Drain Current**



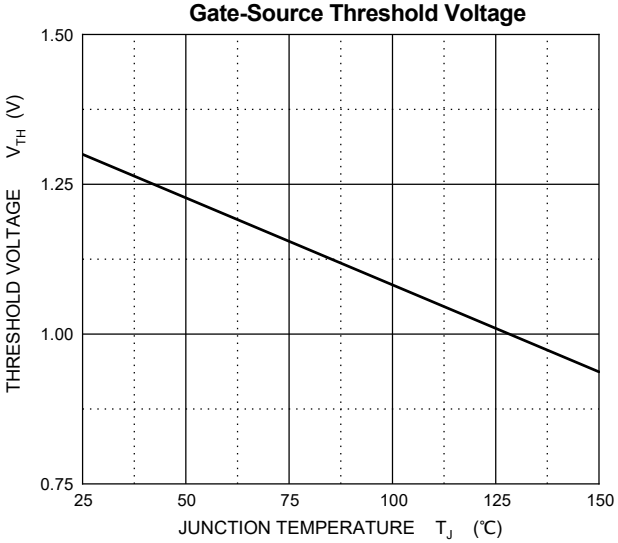

**On Resistance vs. Gate-Source Bias**




**On Resistance vs. Junction Temperature**



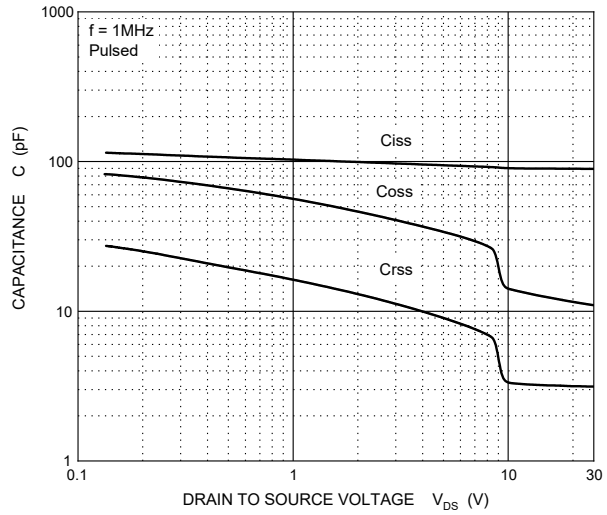

**Gate-Source Threshold Voltage**



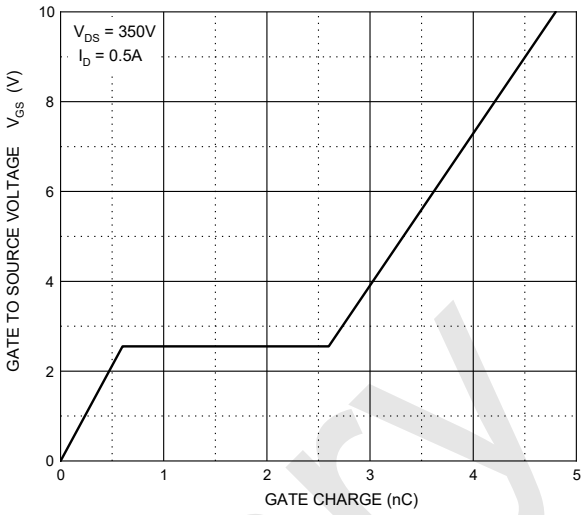

Preliminary

## Typical Characteristics ($T_J$ = 25℃, unless otherwise specified)

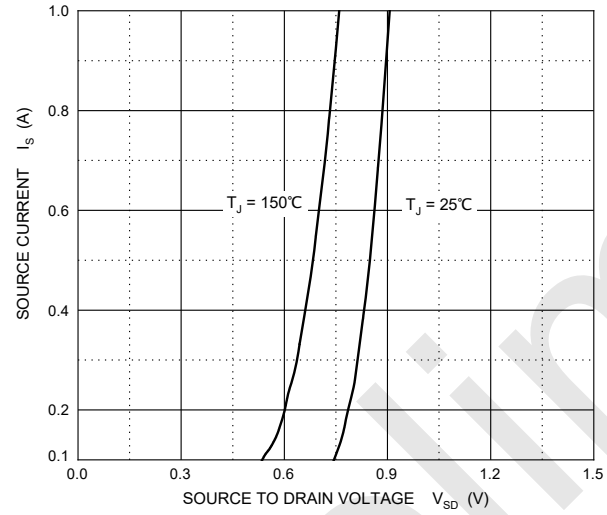
**Typical Capacitances**



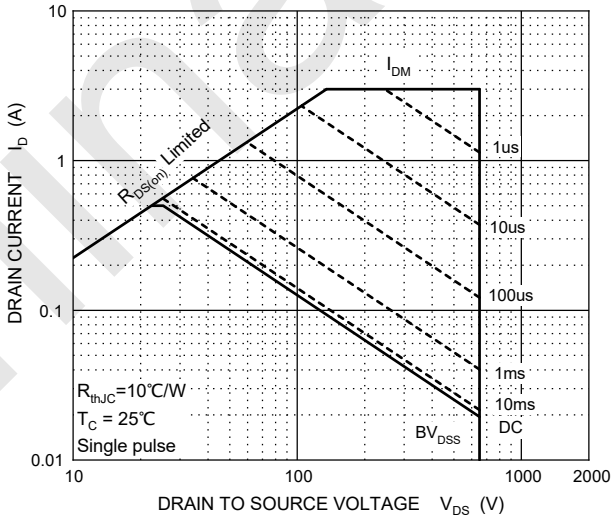

**Gate Charge**



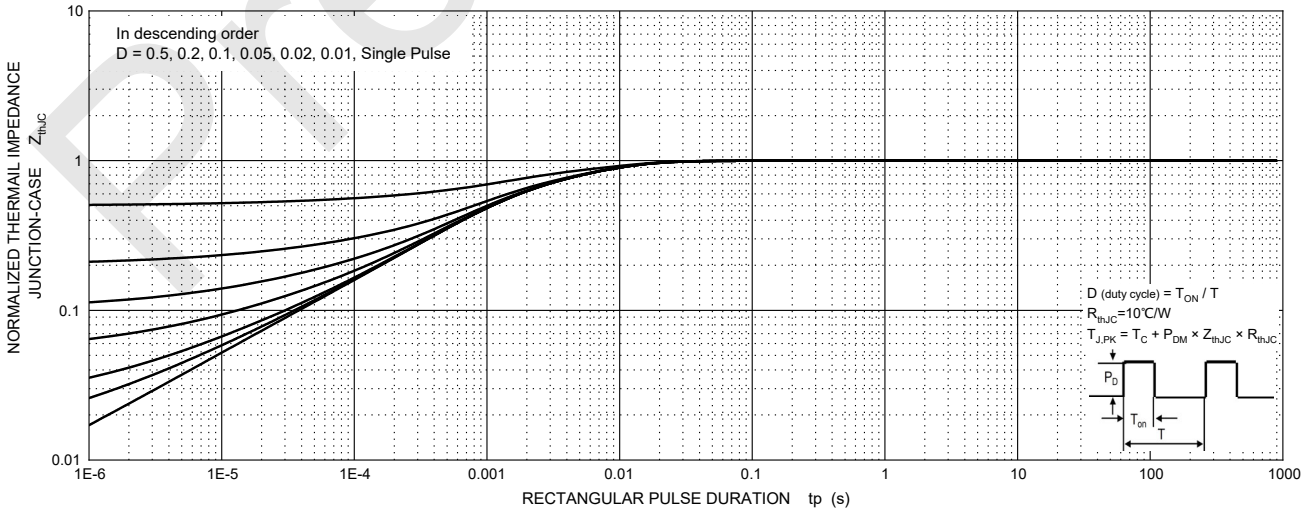

**Source-Drain Diode Forward Characteristics**




**Maximum Safe Operating Area**

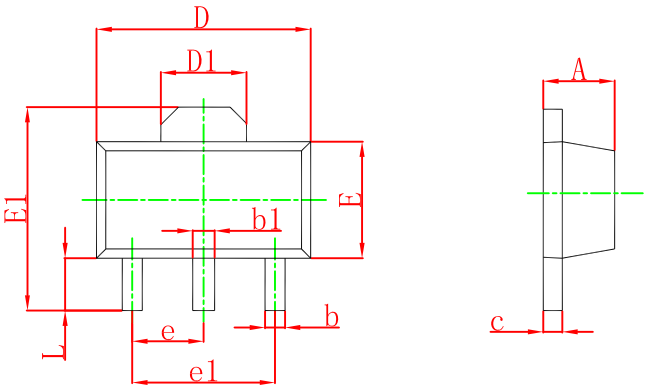



**Transient Thermal Impedance, Junction-Case**



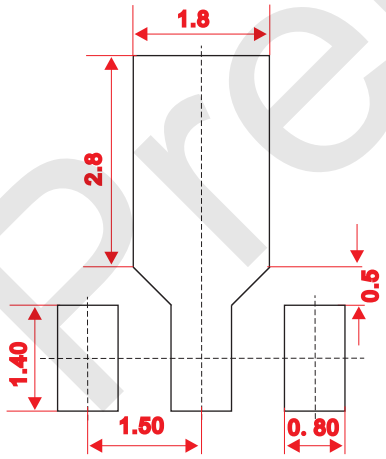

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## SOT-89-3L Package Outline Dimensions




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 1.400 | 1.600 | 0.055 | 0.063 |
| b | 0.320 | 0.520 | 0.013 | 0.020 |
| b1 | 0.400 | 0.580 | 0.016 | 0.023 |
| c | 0.350 | 0.440 | 0.014 | 0.017 |
| D | 4.400 | 4.600 | 0.173 | 0.181 |
| D1 | 1.550 REF. | | 0.061 REF. | |
| E | 2.300 | 2.600 | 0.091 | 0.102 |
| E1 | 3.940 | 4.250 | 0.155 | 0.167 |
| e | 1.500 TYP. | | 0.060 TYP. | |
| e1 | 3.000 TYP. | | 0.118 TYP. | |
| L | 0.900 | 1.200 | 0.035 | 0.047 |

## SOT-89-3L Suggested Pad Layout



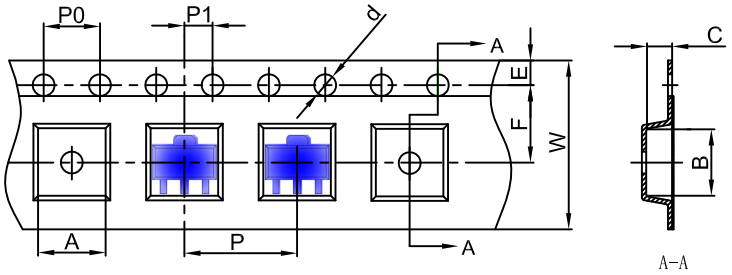

Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.


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

## SOT-89-3L Tape and Reel

### SOT-89-3L Embossed Carrier Tape

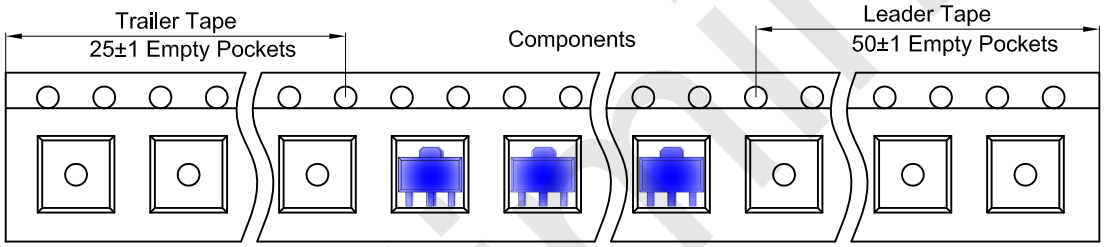



Packaging Description:

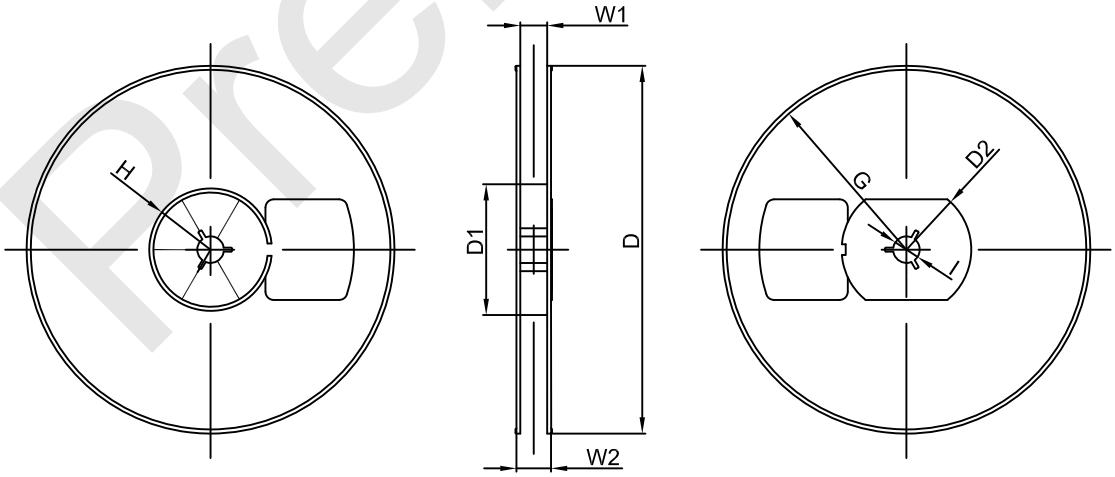
SOT-89-3L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 1,000 units per 7" or 18.0 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 |
| SOT-89-3L | 4.85 | 4.45 | 1.85 | Ø1.50 | 1.75 | 5.50 | 4.00 | 8.00 | 2.00 | 12.00 |

### SOT-89-3L Tape Leader and Trailer




### SOT-89-3L Reel




| Dimensions are in millimeter | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Reel Option | D | D1 | D2 | G | H | I | W1 | W2 |
| 7"Dia | Ø180.00 | 60.00 | R32.00 | R86.50 | R30.00 | Ø13.00 | 13.20 | 16.50 |

| REEL | Reel Size | Box | Box Size(mm) | Carton | Carton Size(mm) | G.W.(kg) |
|---|---|---|---|---|---|---|
| 1000 pcs | 7 inch | 10,000 pcs | 203×203×195 | 40,000 pcs | 438×438×220 | |

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