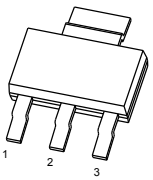
JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

# SOT-223 Plastic-Encapsulate MOSFETS

## CJT03P10 P-Channel Power MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)}$MAX | $I_D$ |
|---|---|---|
| -100V | 190mΩ@-10V | -3A |
| | 210mΩ@-4.5V | |

**SOT-223**




1. GATE
2. DRAIN
3. SOURCE

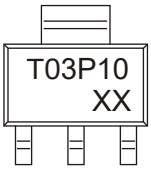
### GENERAL DESCRIPTION

This CJT03P10 use 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

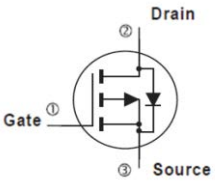
- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

### MARKING




T03P10= Device code
XX= C o d e

### EQUIVALENT CIRCUIT




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

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | -100 | V |
| Gate-Source Voltage | $V_{GS}$ | ±20 | |
| Continuous Drain Current | $I_D$ | -3 | A |
| Pulsed Drain Current(note1) | $I_{DM}$ | -10 | |
| Power Dissipation(note3) | $P_D$ | 3.1 | W |
| Thermal Resistance from Junction to Ambient(note3) | $R_{\theta JA}$ | 40 | ℃/W |
| Operation Junction and Storage Temperature Range | $T_J$,$T_{STG}$ | -55 ~+150 | ℃ |

## MOSFET ELECTRICAL CHARACTERISTICS

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

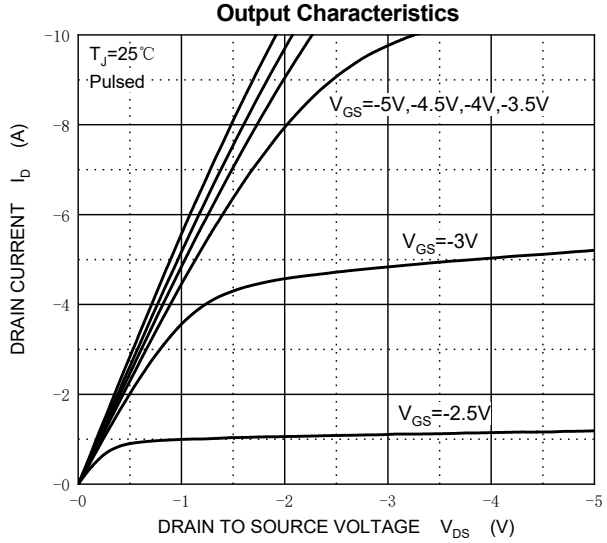
| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)\,DSS}$ | $V_{GS}$ = 0V, $I_D$ =-250μA | -100 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =-100V,$V_{GS}$ = 0V,$T_J$=25℃ | | | -1 | μA |
| | | $V_{DS}$ =-100V,$V_{GS}$ = 0V,$T_J$=125℃ | | | -1 | mA |
| Gate-source leakage current | $I_{GSS}$ | $V_{GS}$ =±20V, $V_{DS}$ = 0V | | | ±100 | nA |
| **On characteristics** | | | | | | |
| Drain-source on-resistance (note 3) | $R_{DS(on)}$ | $V_{GS}$ =-10V, $I_D$ =-3A | | 153 | 190 | mΩ |
| | | $V_{GS}$ =-4.5V, $I_D$ =-1A | | 166 | 210 | mΩ |
| Forward transconductance | $g_{FS}$ | $V_{DS}$ =-5V, $I_D$ =-3A | | 7 | | S |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =-250μA | -1 | -1.75 | -3 | V |
| **Dynamic Characteristics** (note 4) | | | | | | |
| Input capacitance | $C_{iss}$ | $V_{DS}$ =-25V,$V_{GS}$ =0V,f =1MHz | | 1419 | 2500 | pF |
| Output capacitance | $C_{oss}$ | | | 89 | 170 | pF |
| Reverse transfer capacitance | $C_{rss}$ | | | 45 | 90 | pF |
| Gate resistance | $R_g$ | $V_{DS}$ =0V,$V_{GS}$ =0V,f =1MHz | | 16 | | pF |
| **Switching Characteristics** (note 4) | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{GS}$=-10V,$V_{DS}$=-50V, ID=-2.6A,$R_{GEN}$=25Ω (note 1,2) | | 18 | 36 | ns |
| Turn-on rise time | $t_r$ | | | 8 | 16 | ns |
| Turn-off delay time | $t_{d(off)}$ | | | 100 | 200 | ns |
| Turn-off fall time | $t_f$ | | | 30 | 60 | ns |
| Total Gate Charge | $Q_g$ | $V_{DS}$=-25V,$I_D$=-2.6A, $V_{GS}$=4.5V (note 1,2) | | 20 | 40 | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 3.5 | 7 | nC |
| Gate-Drain Charge | $Q_{gd}$ | | | 4.6 | 9 | nC |
| **Drain-source diode characteristics and maximum ratings** | | | | | | |
| Diode forward voltage (note 3) | $V_{SD}$ | $I_S$=-1A,$V_{GS}$=0V | | -0.75 | -1.2 | V |
| Continuous drain-source diode forward current | $I_S$ | | | | -3 | A |
| Pulsed drain-source diode forward current(note 1) | $I_{SM}$ | | | | -10 | A |

**Note :**

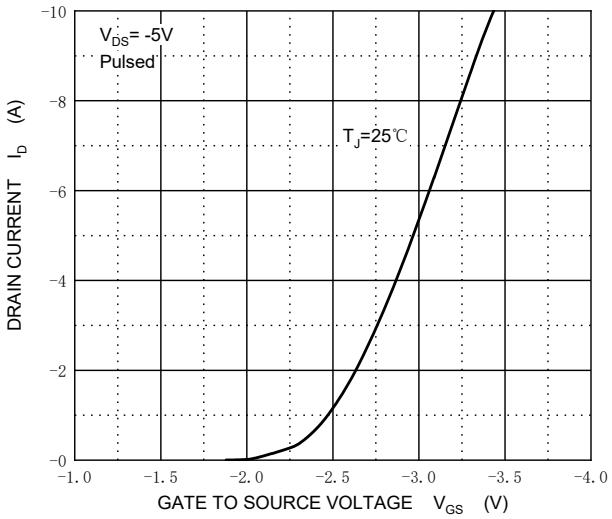
1. Pulse width<300us, Duty cycle<2%.
2. Essentially independent of operating temperature typical characteristics.
3. RθJA is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a 1 inch2 with 2oz.square pad of copper.
4. Guaranteed by design, not subject to production testing.

## Typical Characteristics

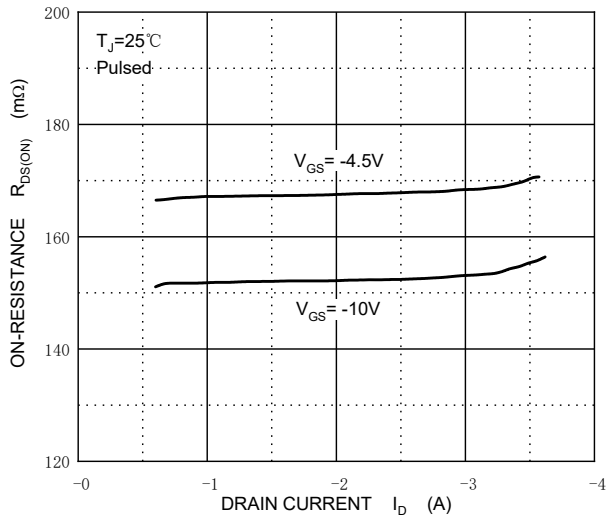
**Output Characteristics**



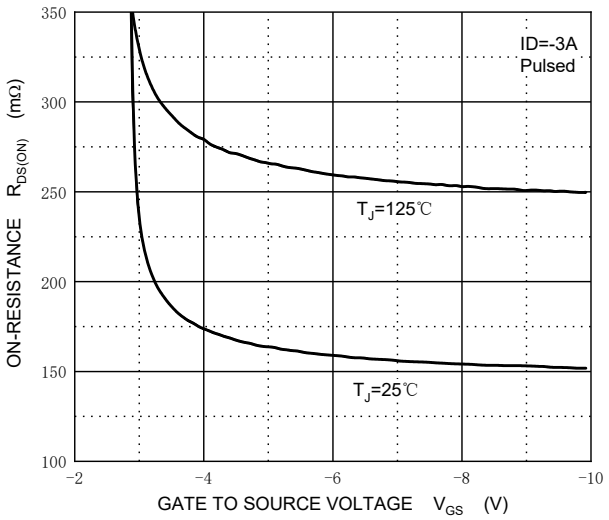

**Transfer Characteristics**



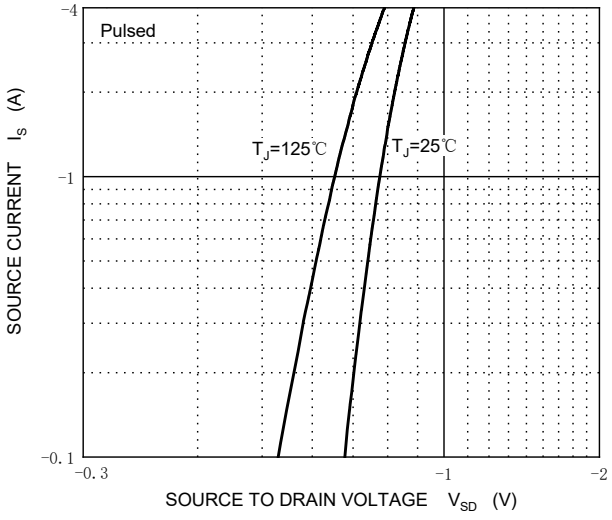

**$R_{DS(ON)}$—— $I_D$**



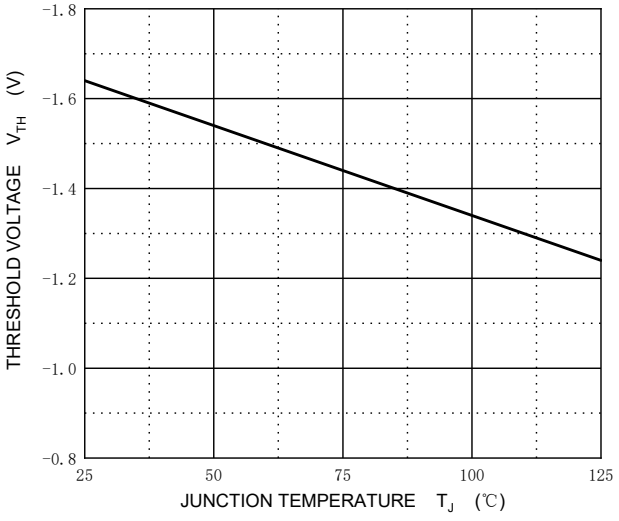

**$R_{DS(ON)}$—— $V_{GS}$**



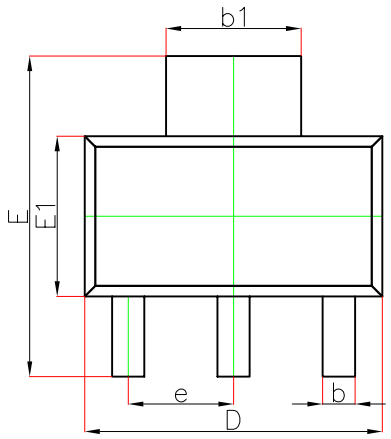

**$I_S$ —— $V_{SD}$**

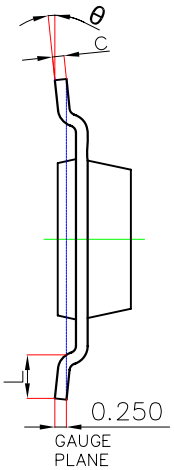


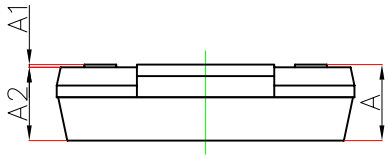

**Threshold Voltage**



## SOT-223 Package Outline Dimensions

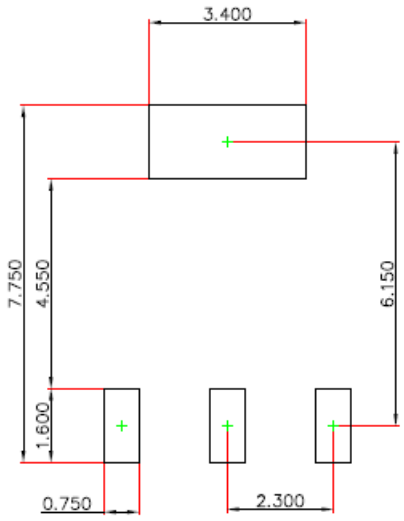



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | —— | 1.800 | —— | 0.071 |
| A1 | 0.020 | 0.100 | 0.001 | 0.004 |
| A2 | 1.500 | 1.700 | 0.059 | 0.067 |
| b | 0.660 | 0.840 | 0.026 | 0.033 |
| b1 | 2.900 | 3.100 | 0.114 | 0.122 |
| c | 0.230 | 0.350 | 0.009 | 0.014 |
| D | 6.300 | 6.700 | 0.248 | 0.264 |
| E | 6.700 | 7.300 | 0.264 | 0.287 |
| E1 | 3.300 | 3.700 | 0.130 | 0.146 |
| e | 2.300(BSC) | | 0.091(BSC) | |
| L | 0.750 | —— | 0.030 | —— |
| θ | 0° | 10° | 0° | 10° |

## SOT-223 Suggested Pad Layout



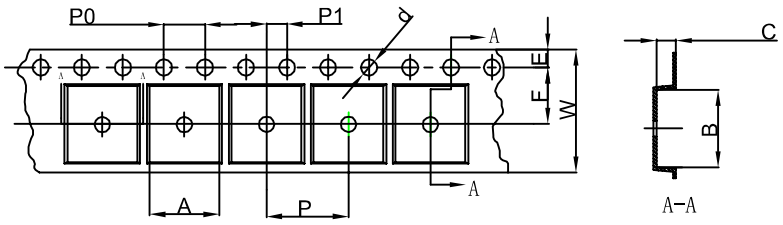

**Note:**
1.Controlling dimension:in millimeters.
2.General tolerance:±0.050mm.
3.The pad layout is for reference purposes only.

NOTICE

JSCJ reserves the right to make modifications,enhancements,improvements,corrections or other changes without further notice to any product herein. JSCJ does not assume any liability arising out of the application or use of any product described herein.

# SOT-223 Tape and Reel

## SOT-223 Embossed Carrier Tape

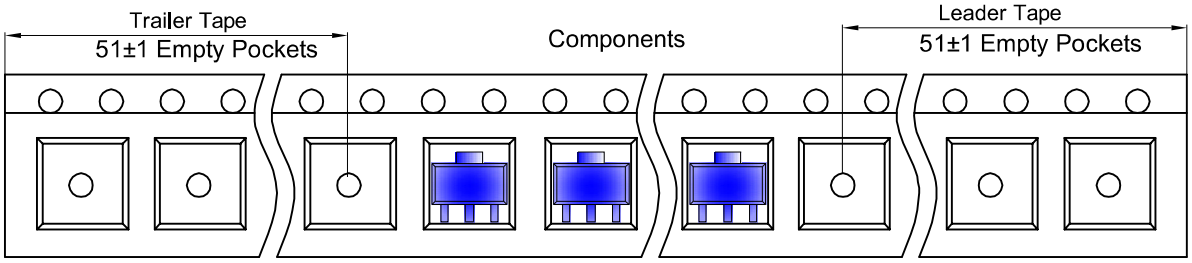



Packaging Description:

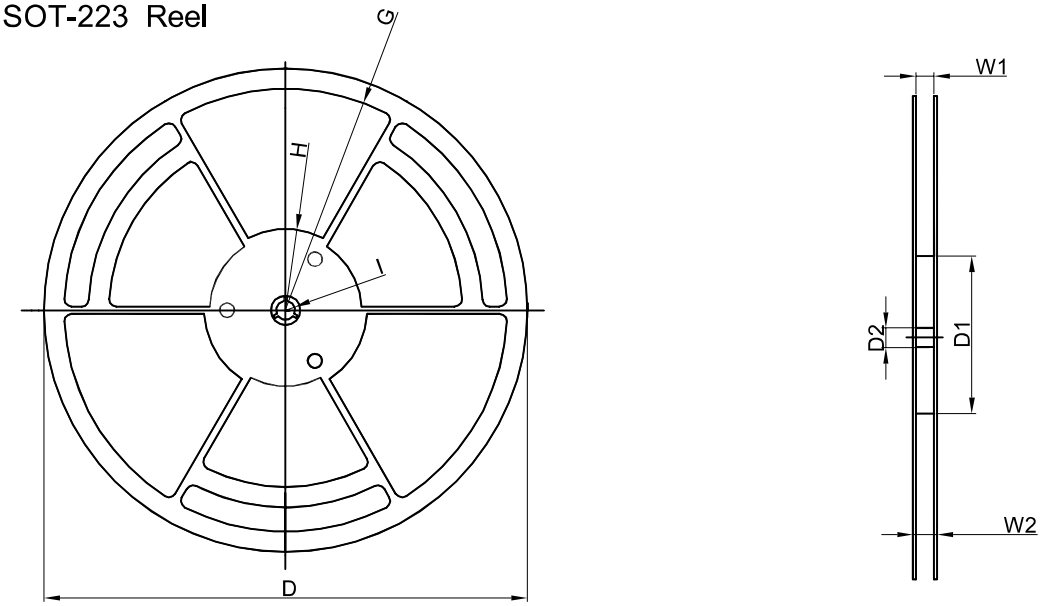
SOT-223 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 2,500 units per 13" or 33.0cm 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-223 | 6.765 | 7.335 | 1.88 | Ø1.50 | 1.75 | 5.50 | 4.00 | 8.00 | 2.00 | 12.00 |

## SOT-223 Tape Leader and Trailer




## SOT-223 Reel




| Dimensions are in millimeter | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Reel Option** | **D** | **D1** | **D2** | **G** | **H** | **I** | **W1** | **W2** |
| 13" Dia | φ330.00 | 100.00 | 13.00 | R151.00 | R56.00 | R6.50 | 12.40 | 17.60 |

| **Reel** | **Reel Size** | **Box** | **Box Size (mm)** | **Carton** | **Carton Size (mm)** |
|---|---|---|---|---|---|
| 2,500 pcs | 13 inch | 5,000 pcs | 360×360×65 | 25,000 pcs | 378×358×382 |