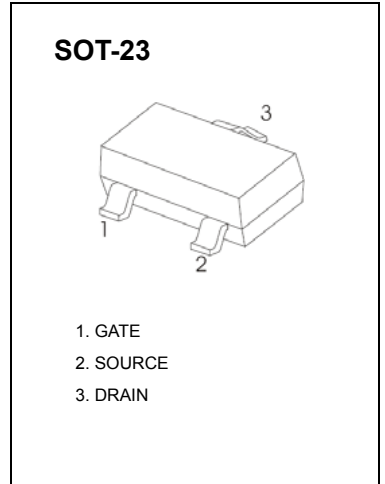


## SOT-23 Plastic-Encapsulate MOSFETs

### BSS84 P-CHANNEL MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | $I_D$  |
|---------------|-----------------|--------|
| -50V          | 8Ω@-10V         | -0.13A |
|               | 10Ω@-5V         |        |



#### DESCRIPTION

These miniature surface mount MOSFETs reduce power loss conserve energy, making this device ideal for use in small power management circuitry.

#### FEATURE

- Energy Efficient
- Low Threshold Voltage
- High-speed Switching
- Miniature Surface Mount Package Saves Board Space

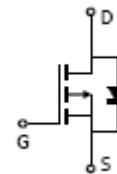
#### APPLICATION

- DC-DC converters, load switching, power management in portable and battery-powered products such as computers, printers, cellular and cordless telephones.

#### MARKING



#### Equivalent Circuit



#### MAXIMUM RATINGS ( $T_a=25^{\circ}C$ unless otherwise noted)

| Parameter  | Symbol          | Value    | Unit |
|--|-----------------|----------|------|
| Drain-Source Voltage   | $V_{DS}$        | -50      | V    |
| Gate-Source Voltage  | $V_{GS}$        | ±20      | V    |
| Continuous Drain Current   | $I_D$           | -0.13    | A    |
| Pulsed Drain Current (note 1) @tp <10 μs                                 | $I_{DM}$        | -0.52    | A    |
| Power Dissipation  | $P_D$           | 225      | mW   |
| Thermal Resistance from Junction to Ambient (note 2)                     | $R_{\theta JA}$ | 556      | °C/W |
| Junction Temperature   | $T_J$           | 150      | °C   |
| Storage Temperature  | $T_{STG}$       | -55~+150 | °C   |
| Maximum Lead Temperature for Soldering Purposes , Duration for 5 Seconds | $T_L$           | 260      | °C   |

## MOSFET ELECTRICAL CHARACTERISTICS

$T_a=25^\circ\text{C}$  unless otherwise specified

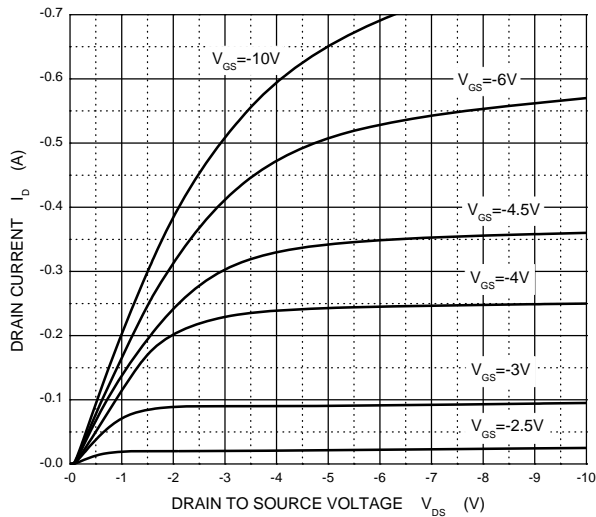
| Parameter                                 | Symbol        | Test Condition                                    | Min  | Typ | Max     | Unit     |
|---|---------------|---|------|-----|---------|----------|
| <b>STATIC CHARACTERISTICS</b>             |               |   |      |     |         |          |
| Drain-source breakdown voltage            | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = -250\mu A$                    | -50  |     |         | V        |
| Zero gate voltage drain current           | $I_{DSS}$     | $V_{DS} = -50V, V_{GS} = 0V$                      |      |     | -15     | $\mu A$  |
|   |               | $V_{DS} = -25V, V_{GS} = 0V$                      |      |     | -0.1    | $\mu A$  |
| Gate-body leakage current                 | $I_{GSS}$     | $V_{GS} = \pm 20V, V_{DS} = 0V$                   |      |     | $\pm 5$ | $\mu A$  |
| Gate threshold voltage (note 3)           | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = -250\mu A$                | -0.9 |     | -2      | V        |
| Drain-source on-resistance (note 3)       | $R_{DS(on)}$  | $V_{GS} = -5V, I_D = -0.1A$                       |      |     | 10      | $\Omega$ |
|   |               | $V_{GS} = -10V, I_D = -0.1A$                      |      |     | 8       | $\Omega$ |
| Forward transconductance (note 1)         | $g_{FS}$      | $V_{DS} = -25V; I_D = -100mA$                     | 50   |     |         | mS       |
| <b>DYNAMIC CHARACTERISTICS (note 4)</b>   |               |   |      |     |         |          |
| Input capacitance                         | $C_{iss}$     | $V_{DS} = 5V, V_{GS} = 0V, f = 1MHz$              |      | 30  |         | pF       |
| Output capacitance                        | $C_{oss}$     |   |      | 10  |         | pF       |
| Reverse transfer capacitance              | $C_{rss}$     |   |      | 5   |         | pF       |
| <b>SWITCHING CHARACTERISTICS (note 4)</b> |               |   |      |     |         |          |
| Turn-on delay time                        | $t_{d(on)}$   | $V_{DD} = -15V,$<br>$R_L = 50\Omega, I_D = -2.5A$ |      | 2.5 |         | ns       |
| Turn-on rise time                         | $t_r$         |   |      | 1   |         | ns       |
| Turn-off delay time                       | $t_{d(off)}$  |   |      | 16  |         | ns       |
| Turn-off fall time                        | $t_f$         |   |      | 8   |         | ns       |
| <b>SOURCE-DRAIN DIODE CHARACTERISTICS</b> |               |   |      |     |         |          |
| Continuous Current                        | $I_S$         |   |      |     | -0.13   | A        |
| Pulsed Current                            | $I_{SM}$      |   |      |     | -0.52   | A        |
| Diode forward voltage (note 3)            | $V_{SD}$      | $I_S = -0.13A, V_{GS} = 0V$                       |      |     | -2.2    | V        |

### Notes :

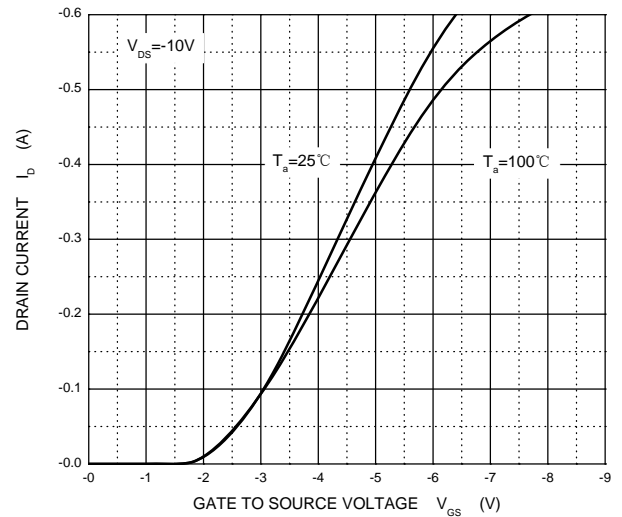
1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board ,  $t \leq 10s$ .
3. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to producing.

# Typical Characteristics

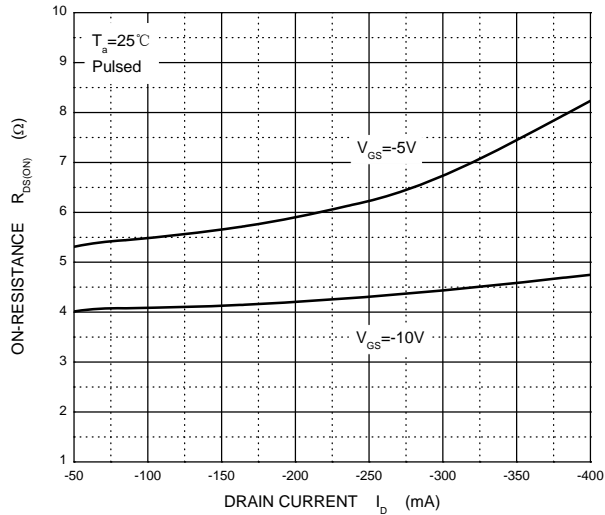
Output Characteristics



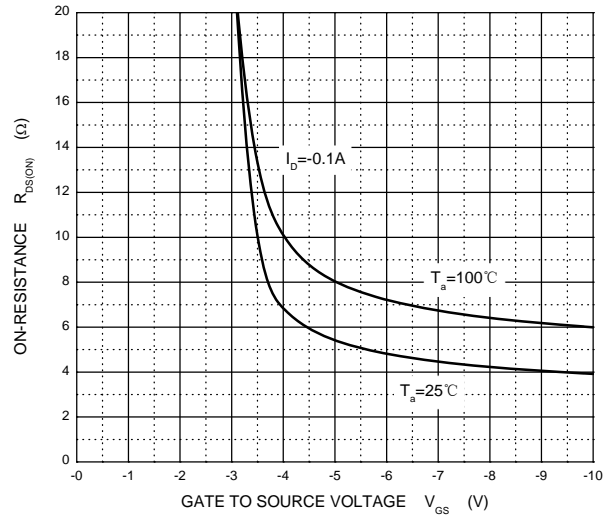
Transfer Characteristics



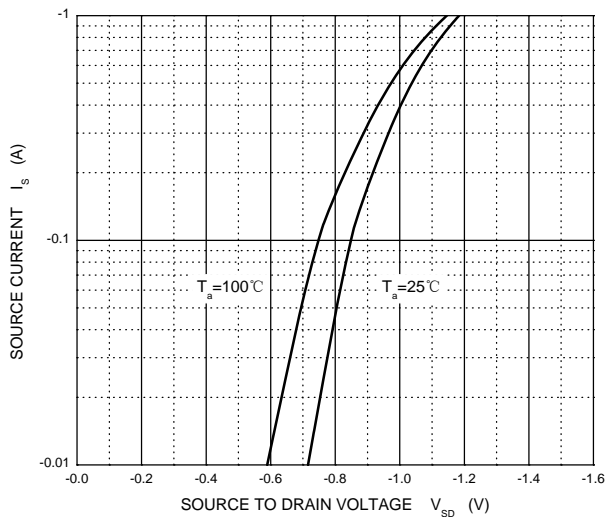
$R_{DS(ON)}$  —  $I_D$



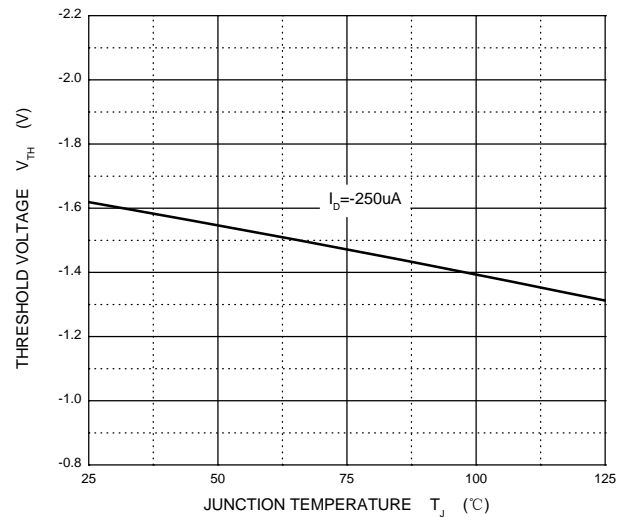
$R_{DS(ON)}$  —  $V_{GS}$



$I_S$  —  $V_{SD}$



Threshold Voltage



## SOT-23 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 0.900                     | 1.150 | 0.035                | 0.045 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.900                     | 1.050 | 0.035                | 0.041 |
| b      | 0.300                     | 0.500 | 0.012                | 0.020 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 2.800                     | 3.000 | 0.110                | 0.118 |
| E      | 1.200                     | 1.400 | 0.047                | 0.055 |
| E1     | 2.250                     | 2.550 | 0.089                | 0.100 |
| e      | 0.950 TYP                 |       | 0.037 TYP            |       |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.550 REF                 |       | 0.022 REF            |       |
| L1     | 0.300                     | 0.500 | 0.012                | 0.020 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

## SOT-23 Suggested Pad Layout



**Note:**

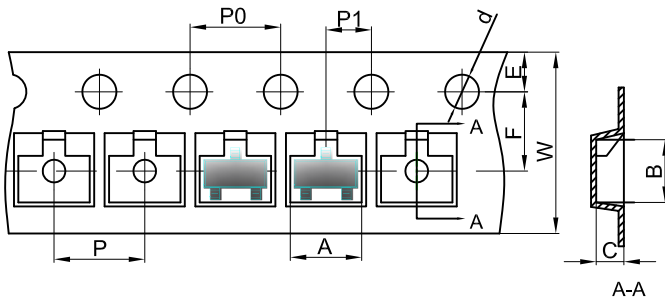
1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

### NOTICE

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

# SOT-23 Tape and Reel

## SOT-23 Embossed Carrier Tape



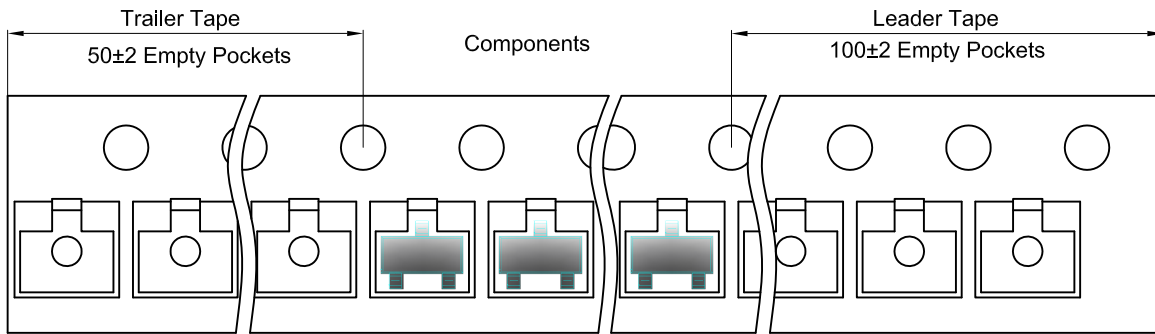
### Packaging Description:

SOT-23 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 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

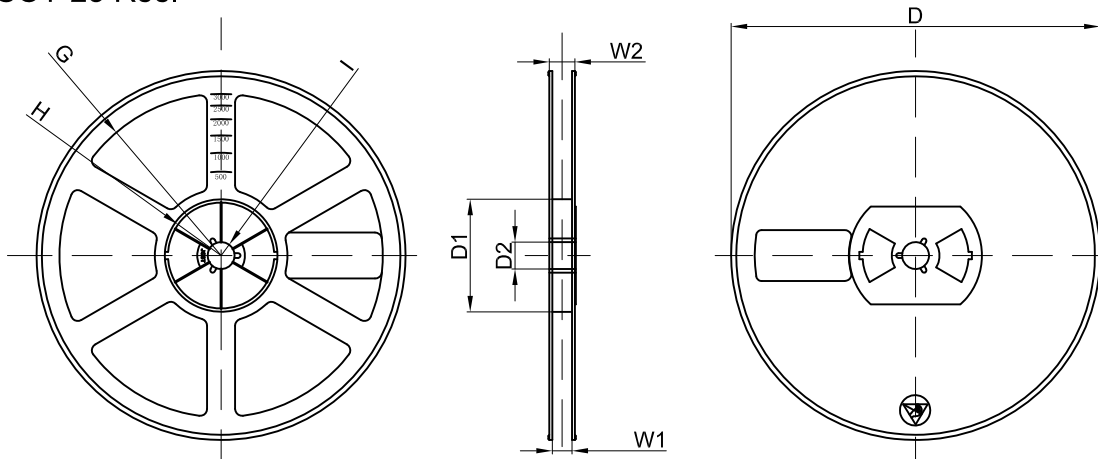
Dimensions are in millimeter

| Pkg type | A    | B    | C    | d     | E    | F    | P0   | P    | P1   | W    |
|----------|------|------|------|-------|------|------|------|------|------|------|
| SOT-23   | 3.15 | 2.77 | 1.22 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |

## SOT-23 Tape Leader and Trailer



## SOT-23 Reel



Dimensions are in millimeter

| Reel Option | D       | D1    | D2    | G      | H      | I     | W1   | W2    |
|-------------|---------|-------|-------|--------|--------|-------|------|-------|
| 7" Dia      | Ø178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |

| REEL     | Reel Size | Box        | Box Size(mm) | Carton      | Carton Size(mm) | G.W.(kg) |
|----------|-----------|------------|--------------|-------------|-----------------|----------|
| 3000 pcs | 7 inch    | 45,000 pcs | 203×203×195  | 180,000 pcs | 438×438×220     |          |