

SOT-23 Plastic-Encapsulate MOSFETS

Features:

- High dense cell design for extremely low $R_{DS(ON)}$.
- Exceptional on-resistance and maximum DC current capability

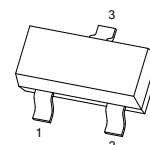
Application:

- Load/Power Switching
- Interfacing Switching

P-Channel Enhancement Mode Field Effect Transistor

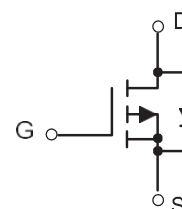
| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | I_D |
|---------------|-----------------|-------|
| -30V | 65mΩ@-10V | -4.2A |
| | 75mΩ@-4.5V | |
| | 90mΩ@-2.5V | |

SOT-23

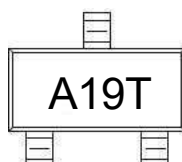


1. GATE
2. SOURCE
3. DRAIN

Equivalent Circuit



MARKING



Maximum ratings ($T_a=25^{\circ}C$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|-----------------|----------|---------------|
| Drain-Source Voltage | V_{DS} | -30 | V |
| Gate-Source Voltage | V_{GS} | ±12 | V |
| Continuous Drain Current | I_D | -4.2 | A |
| Pulsed Drain Current * | I_{DM} | -16.8 | A |
| Power Dissipation | P_D | 1250 | mW |
| Thermal Resistance from Junction to Ambient (t<5s) | $R_{\theta JA}$ | 175 | $^{\circ}C/W$ |
| Operation Junction and Storage Temperature Range | T_J, T_{STG} | -55~+150 | $^{\circ}C$ |

* $T_C=25^{\circ}C, P_w \leq 10\mu s$, Duty cycles ≤ 1%.

MOSFET ELECTRICAL CHARACTERISTICS

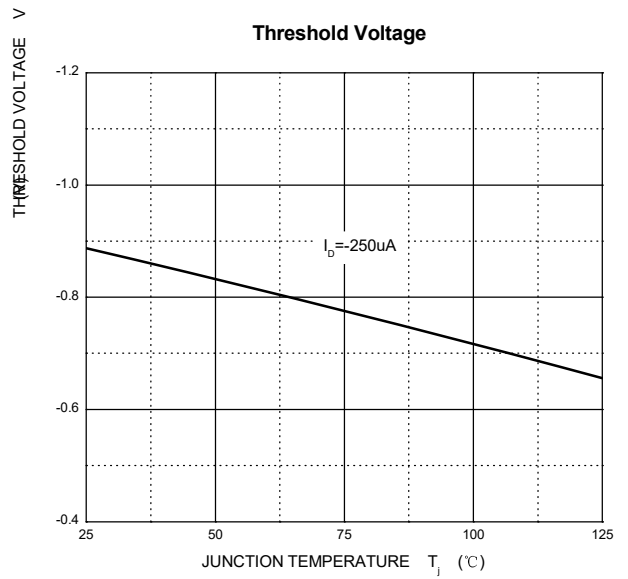
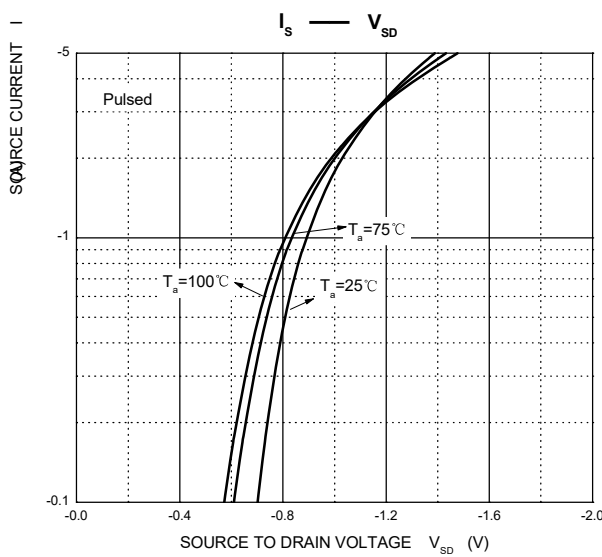
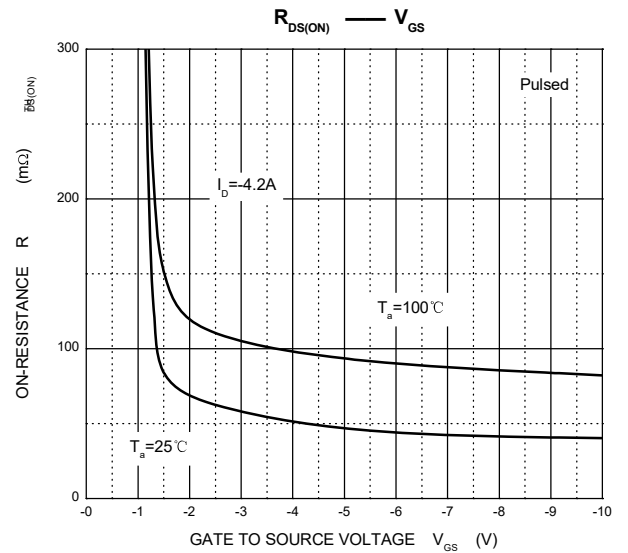
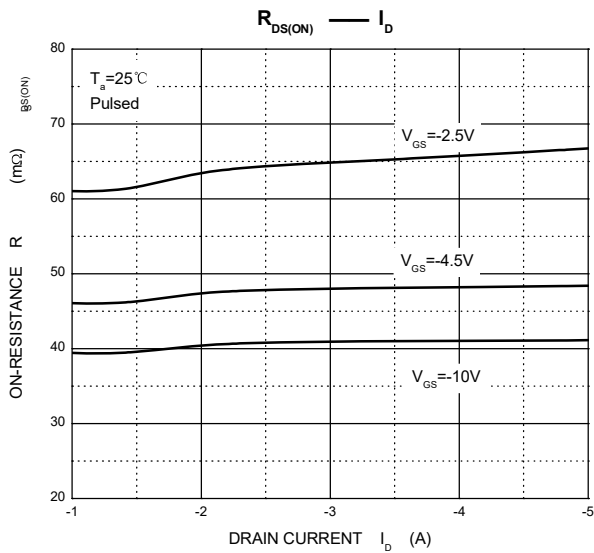
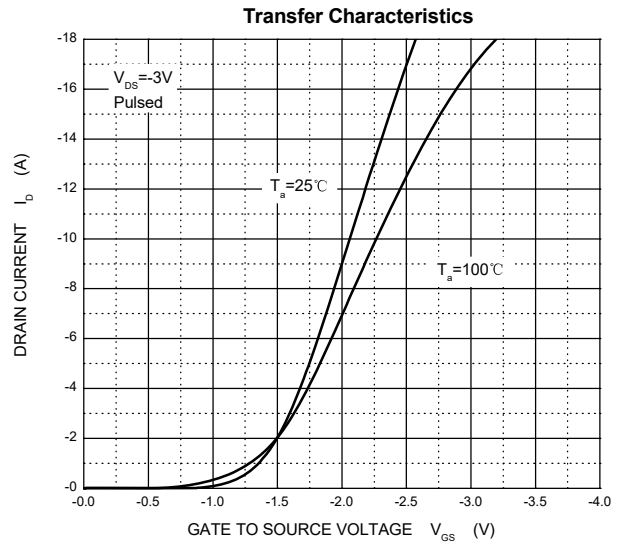
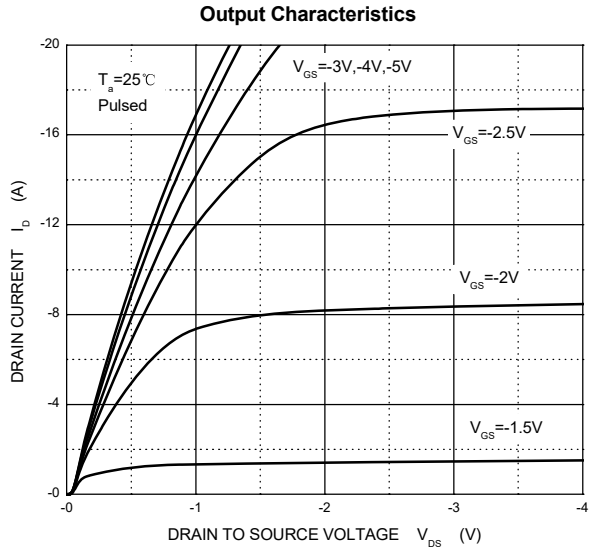
$T_a=25\text{ }^\circ\text{C}$ unless otherwise specified

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---------------|---|------|------|-----------|------------|
| Off characteristics | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = -250\mu A$ | -30 | | | V |
| Zero gate voltage drain current | I_{DSS} | $V_{DS} = -24V, V_{GS} = 0V$ | | | -1 | μA |
| Gate-source leakage current | I_{GSS} | $V_{GS} = \pm 12V, V_{DS} = 0V$ | | | ± 100 | nA |
| On characteristics | | | | | | |
| Drain-source on-resistance (note 1) | $R_{DS(on)}$ | $V_{GS} = -10V, I_D = -4.2A$ | | 50 | 65 | m Ω |
| | | $V_{GS} = -4.5V, I_D = -4A$ | | 60 | 75 | m Ω |
| | | $V_{GS} = -2.5V, I_D = -1A$ | | 75 | 90 | m Ω |
| Forward transconductance (note 1) | g_{FS} | $V_{DS} = -5V, I_D = -5A$ | 7 | | | S |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250\mu A$ | -0.7 | -0.9 | -1.3 | V |
| Dynamic characteristics (note 2) | | | | | | |
| Input capacitance | C_{iss} | $V_{DS} = -15V, V_{GS} = 0V, f = 1MHz$ | | 954 | | pF |
| Output capacitance | C_{oss} | | | 115 | | pF |
| Reverse transfer capacitance | C_{rss} | | | 77 | | pF |
| Switching characteristics (note 2) | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{GS} = -10V, V_{DS} = -15V,$ $R_L = 3.6\Omega, R_{GEN} = 6\Omega$ | | | 6.3 | ns |
| Turn-on rise time | t_r | | | | 3.2 | ns |
| Turn-off delay time | $t_{d(off)}$ | | | | 38.2 | ns |
| Turn-off fall Time | t_f | | | | 12 | ns |
| Drain-source diode characteristics and maximum ratings | | | | | | |
| Diode forward voltage (note 1) | V_{SD} | $I_S = -1A, V_{GS} = 0V$ | | | -1 | V |

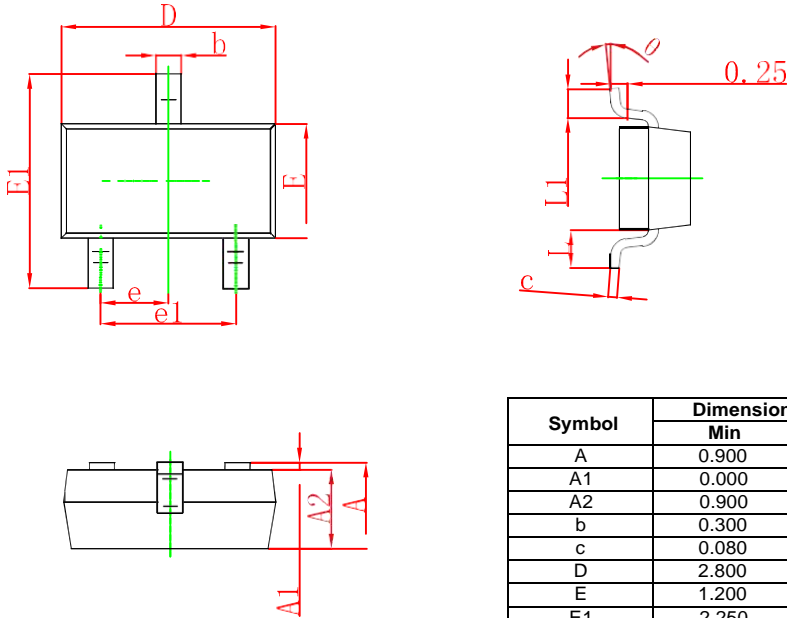
Note :

1. Pulse Test : Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
2. These parameters have no way to verify.

Typical Characteristics

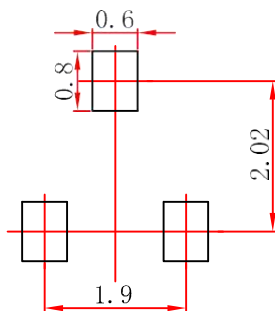


SOT-23 Package Outline Dimensions



| 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

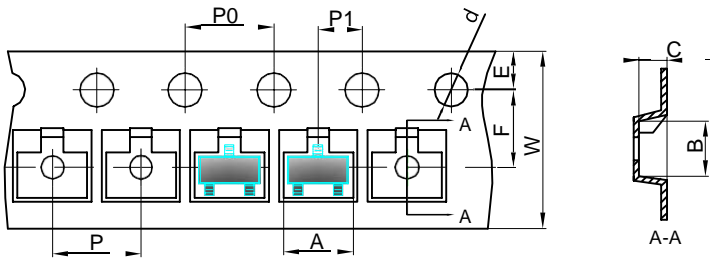


- Note:
1. Controlling dimension: In millimeters.
 2. General tolerance: ±0.05mm.
 3. The pad layout is for reference purposes only.

SOT-23 Tape and Reel

SOT-23 Tape and reel

SOT-23 Embossed Carrier Tape

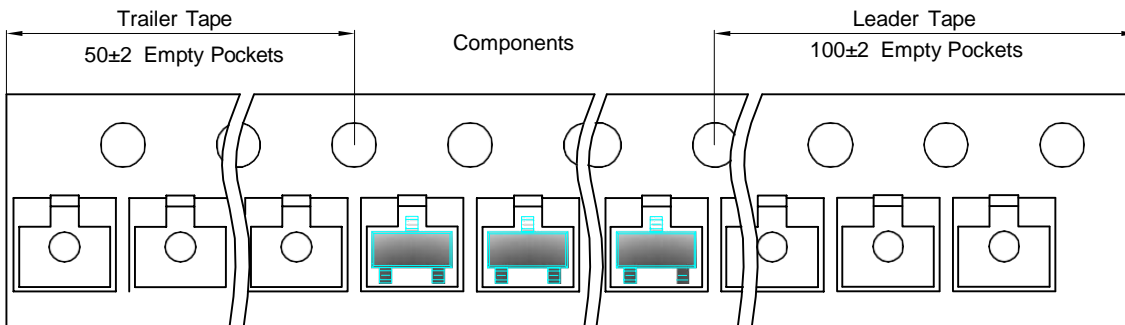


Packaging Description:

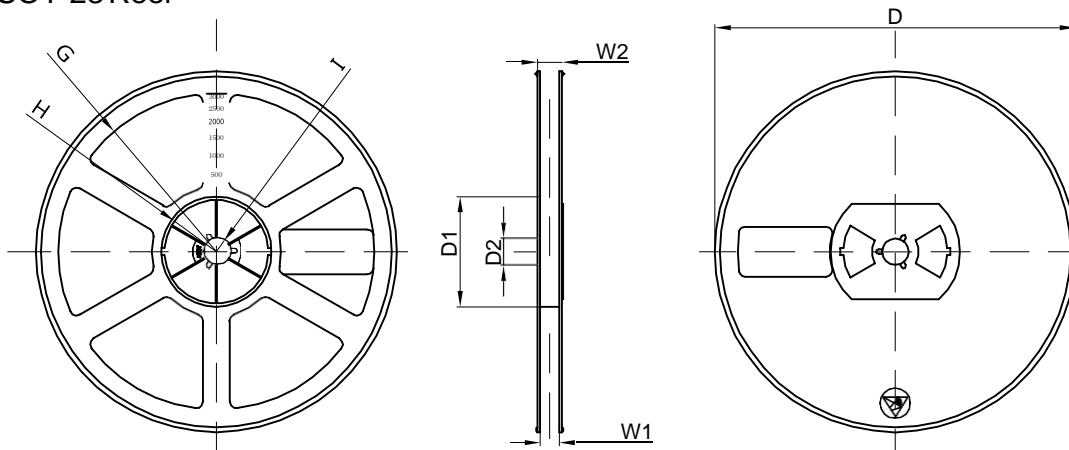
SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in 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 | 30,000 pcs | 203x203x195 | 120,000 pcs | 438x438x220 | |