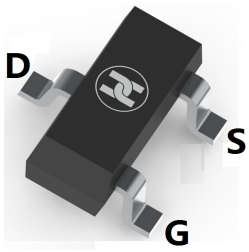
# LOW VOLTAGE MOSFET (N-CHANNEL)

## FEATURES

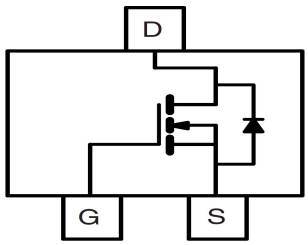
- Low on-resistance:$V_{DS}$=60V,$R_{DS(ON)}$≤105mΩ@$V_{GS}$=10V,$I_D$=3A
- For Low power DC to DC converter application
- For Load switch application
- Surface Mount device




SOT-23

## MECHANICAL DATA

- Case: SOT-23
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Weight: 0.008 grams (approximate)




## MAXIMUM RATINGS ($T_A$ = 25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-source voltage | $V_{DS}$ | 60 | V |
| Gate-source voltage | $V_{GS}$ | ±20 | V |
| Continuous drain current | $I_D$ | 3 | A |
| Pulsed drain current (Note 1) | $I_{DM}$ | 10 | A |
| Power dissipation | $P_D$ | 0.35 | W |
| Thermal resistance from Junction to ambient | $R_{\theta JA}$ | 357 | °C/W |
| Junction temperature | $T_J$ | 150 | °C |
| Storage temperature | $T_{STG}$ | -55 ~+150 | °C |

## ELECTRICAL CHARACTERISTICS ($T_A$ = 25°C unless otherwise specified)

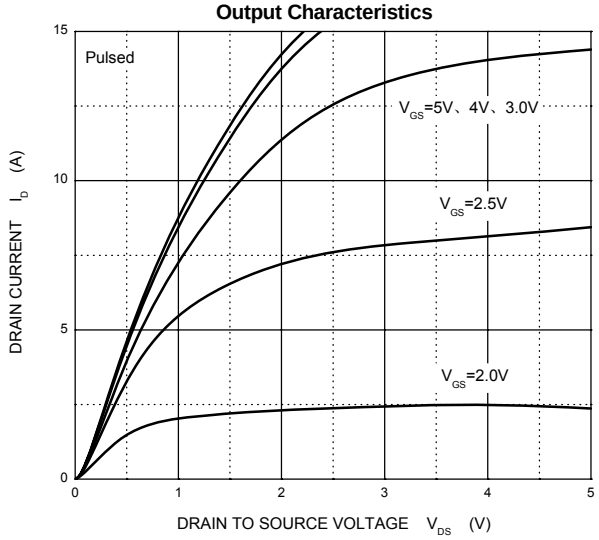
| Parameter | Symbol | Min | Typ | Max | Unit | Conditions |
|---|---|---|---|---|---|---|
| Drain-Source breakdown voltage | $V_{(BR)DSS}$ | 60 | | | V | $V_{GS}$=0V, $I_D$=250μA |
| Zero gate voltage drain current | $I_{DSS}$ | | | 1 | μA | $V_{DS}$=60V, $V_{GS}$=0V |
| Gate-body leakage current | $I_{GSS}$ | | | ±100 | nA | $V_{DS}$=0V, $V_{GS}$=±20V |
| Gate-threshold voltage (note 1) | $V_{GS(th)}$ | 0.5 | | 2 | V | $V_{DS}$=$V_{GS}$, $I_D$=250μA |
| Drain-source on-resistance (note 1) | $R_{DS(ON)}$ | | | 105 | mΩ | $V_{GS}$=10V, $I_D$=3A |
| | | | | 125 | mΩ | $V_{GS}$=4.5V, $I_D$=3A |
| Forward transconductance (note 1) | $g_{FS}$ | 1.4 | | | S | $V_{DS}$=15V, $I_D$=2A |
| Input capacitance | $C_{iss}$ | | 247 | | pF | $V_{DS}$=30V, $V_{GS}$=0V, f=1MHz |
| Output capacitance | $C_{oss}$ | | 34 | | pF | |
| Reverse transfer capacitance | $C_{rss}$ | | 19.5 | | pF | |
| Turn-on delay time | $t_{d(on)}$ | | 6 | | nS | $V_{DD}$=30V, $V_{GS}$=10V, $R_{GEN}$=1Ω, $I_D$=1.5A |
| Turn-on rise time | $t_r$ | | 15 | | nS | |
| Turn-off delay time | $t_{d(off)}$ | | 15 | | nS | |
| Turn-off fall time | $t_f$ | | 10 | | nS | |
| Total gate charge | $Q_g$ | | 6 | | nC | $V_{DS}$=30V,$V_{GS}$=4.5V,$I_D$=3A |
| Gate-source charge | $Q_{gs}$ | | 1 | | nC | |
| Gate-drain charge | $Q_{gd}$ | | 1.3 | | nC | |
| Diode forward voltage (note 1) | $V_{SD}$ | | | 1.2 | V | $I_S$=3A, $V_{GS}$=0V |

Note:1. Pulse test: Pulse width ≤300μs, Duty cycle ≤ 2% .

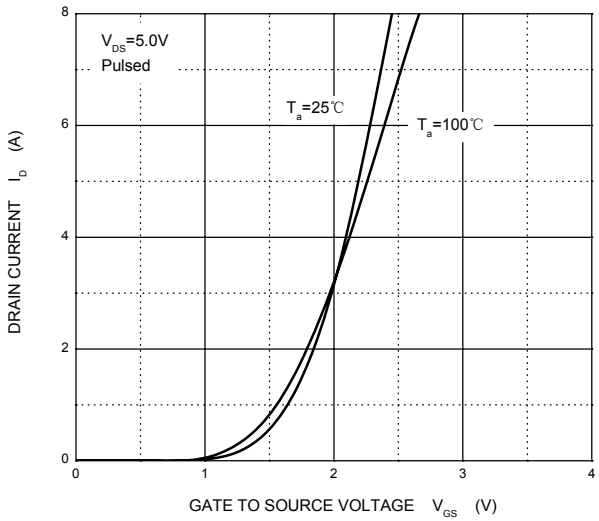
# LOW VOLTAGE MOSFET (N-CHANNEL)

## Typical Characteristics

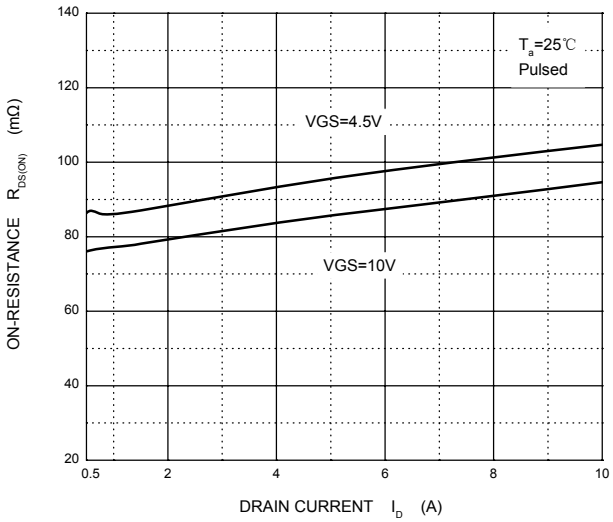
Output Characteristics



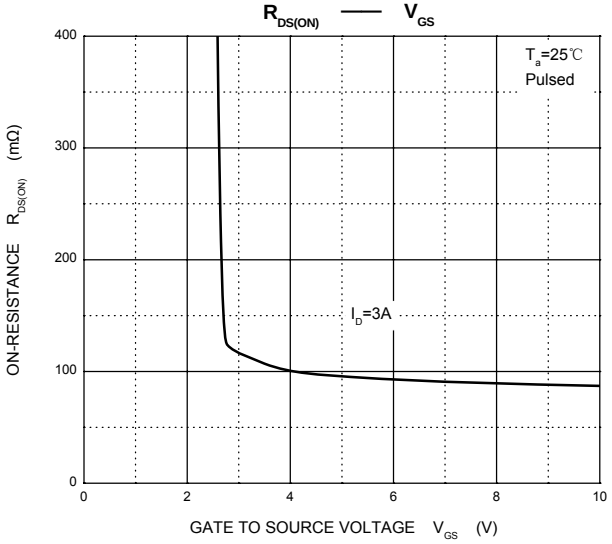

Transfer Characteristics



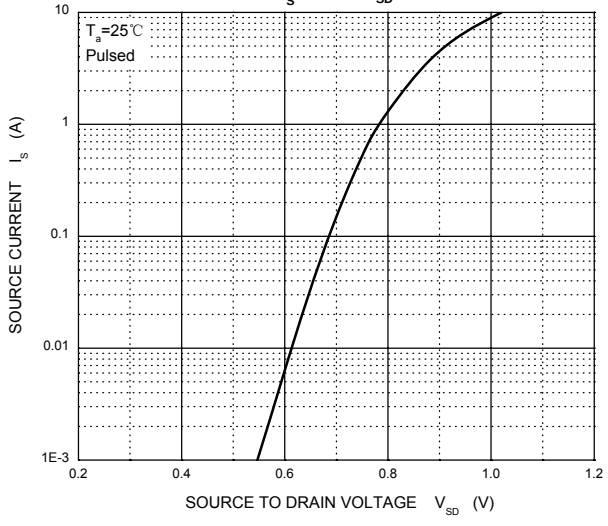

$R_{DS(ON)}$ —— $I_D$



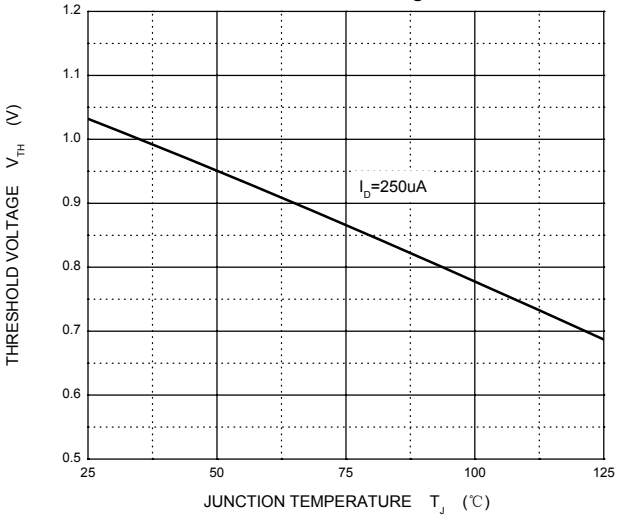

$R_{DS(ON)}$ —— $V_{GS}$




$I_S$ —— $V_{SD}$

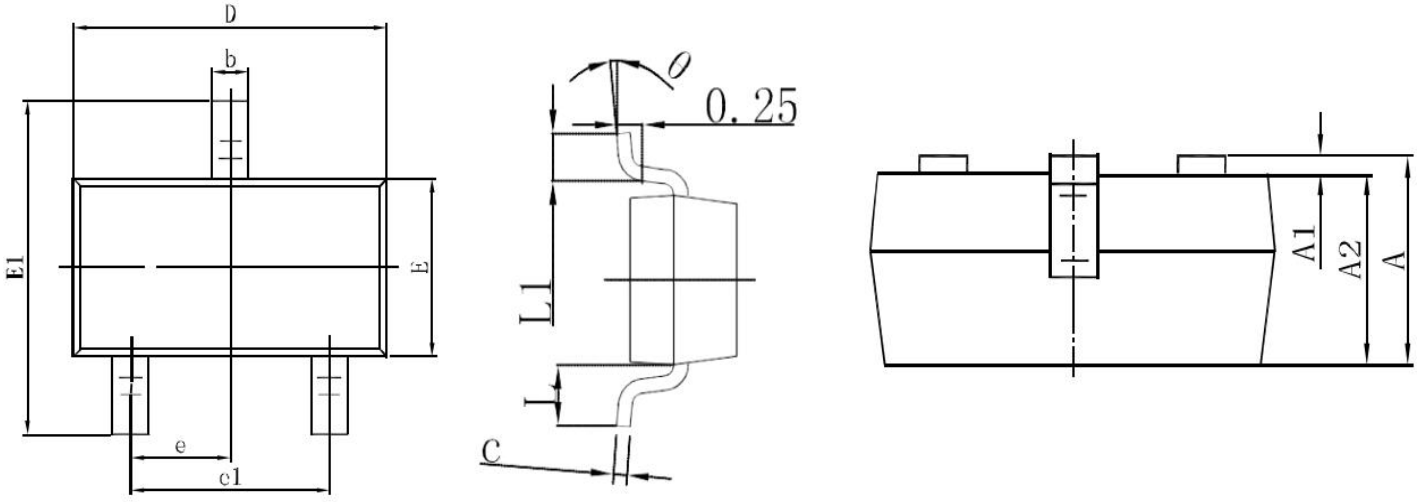



Threshold Voltage



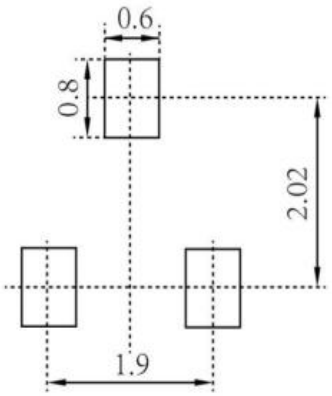
LOW VOLTAGE MOSFET (N-CHANNEL)

# SOT-23 Package Outline Dimensions




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 0.900 | 1.150 | 0.354 | 0.453 |
| A1 | 0.000 | 0.100 | 0.000 | 0.039 |
| A2 | 0.900 | 1.050 | 0.354 | 0.413 |
| b | 0.300 | 0.500 | 0.118 | 0.197 |
| c | 0.080 | 1.150 | 0.031 | 0.453 |
| D | 2.900 | 3.100 | 1.142 | 1.220 |
| E | 1.200 | 1.400 | 0.472 | 0.551 |
| E1 | 2.250 | 2.550 | 0.886 | 1.004 |
| e | 0.95REF | | 0.374REF | |
| e1 | 1.800 | 2.000 | 0.709 | 0.787 |
| L | 0.55REF | | 0.215REF | |
| L1 | 0.300 | 0.500 | 0.118 | 0.197 |

# SOT-23 Suggested Pad Layout



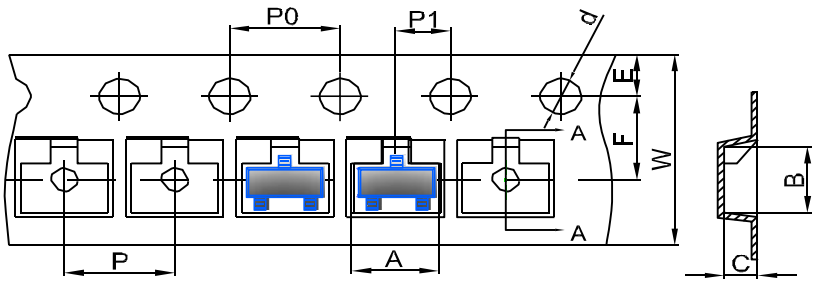

Note:

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

LOW VOLTAGE MOSFET (N-CHANNEL)

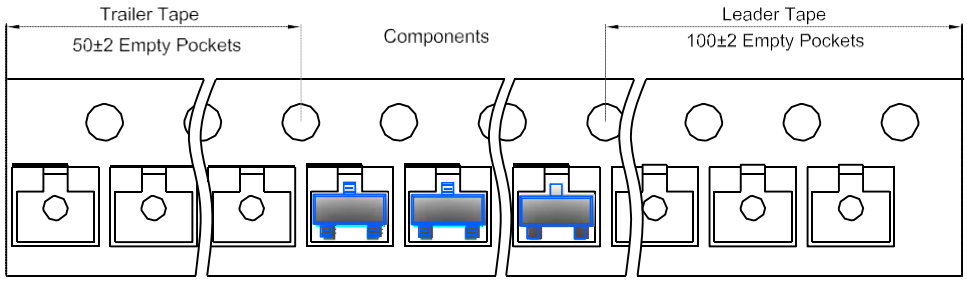
# SOT-23 Tape and Reel

## SOT-23 Embossed Carrier Tape

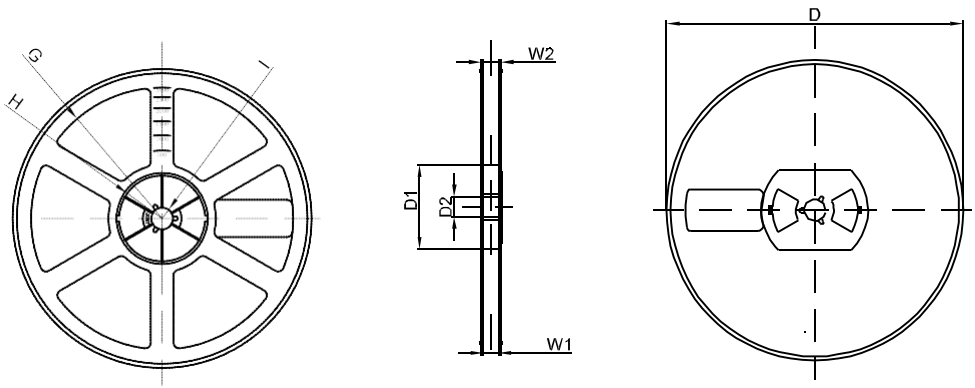



| | DIMENSIONS ARE IN MILLIMETER | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| TYPE | A | B | C | d | E | F | P0 | P | P1 | W |
| SOT-23 | 3.15 | 2.77 | 1.22 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |
| TOLERANCE | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 |

## 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 | 54.40 | 13.00 | R78 | R25.60 | R6.50 | 9.50 | 12.30 |
| TOLERANCE | ±2 | ±1 | ±1 | ±1 | ±1 | ±1 | ±1 | ±1 |