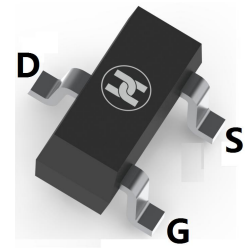
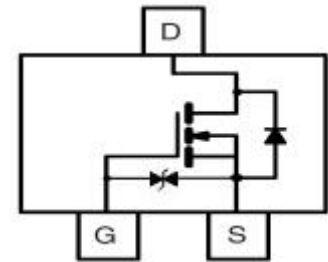


MOSFET (N-CHANNEL)
FEATURES

- Low On-Resistance: $R_{DS(ON)}$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage


SOT-23

MECHANICAL DATA

- Case: SOT-23
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Weight: 0.008 grams (approximate)
- Marking: 72K

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

| Parameter | Symbol | Value | Unit |
|---|-----------------|------------------|--------------------|
| Drain-source voltage | V_{DS} | 60 | V |
| Gate-source voltage | V_{GS} | $\pm 20\text{V}$ | V |
| Continuous drain current | I_D | 340 | mA |
| Pulsed drain current (Note 1) | I_{DM} | 800 | mA |
| Power dissipation | P_D | 0.35 | W |
| Thermal resistance from Junction to ambient | $R_{\theta JA}$ | 357 | $^\circ\text{C/W}$ |
| Junction And Storage temperature Range | T_J, T_{STG} | -65 ~ +150 | $^\circ\text{C}$ |

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

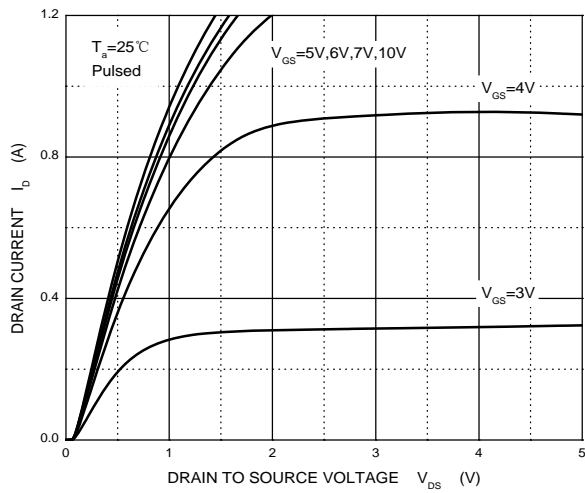
| Parameter | Symb | Min | Typ | Max | Unit | Conditions |
|-------------------------------------|------------------|------------|-----|-----------|---------------|---|
| Static Characteristics | | | | | | |
| Drain-Source breakdown voltage | $V_{(BR)DSS}$ | 60 | | | V | $V_{GS}=0\text{V}, I_D=250\mu\text{A}$ |
| Gate-threshold voltage (note 1) | $V_{GS(\theta)}$ | 1 | 1.5 | 2.0 | V | $V_{DS}=V_{GS}, I_D=250\mu\text{A}$ |
| Zero gate voltage drain current | I_{DSS} | | | 1 | μA | $V_{DS}=60\text{V}, V_{GS}=0\text{V}$ |
| Gate-body leakage current | I_{GSS} | | | ± 10 | μA | $V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$ |
| | | | | ± 200 | nA | $V_{DS}=0\text{V}, V_{GS}=\pm 10\text{V}$ |
| | | | | ± 100 | nA | $V_{DS}=0\text{V}, V_{GS}=\pm 5\text{V}$ |
| Drain-source on-resistance (note 1) | $R_{DS(ON)}$ | | 1.0 | 1.7 | Ω | $V_{GS}=10\text{V}, I_D=0.3\text{A}$ |
| | | | 1.3 | 2.6 | Ω | $V_{GS}=4.5\text{V}, I_D=0.2\text{A}$ |
| Diode forward voltage (note 1) | V_{SD} | | | 1.5 | V | $I_S=0.3\text{A}, V_{GS}=0\text{V}$ |
| Gate-Source Breakdown Voltage | BV_{GSO} | ± 21.5 | | ± 30 | V | $I_{GS}=\pm 1\text{mA}$ (Open Drain) |
| Recovered charge | Q_r | | 30 | | nC | $V_{GS}=0\text{V}, I_S=0.3\text{A}, V_R=25\text{V}, dI_S/dt=-100\text{A}/\mu\text{S}$ |
| Dynamic Characteristics | | | | | | |
| Input capacitance | C_{iss} | | | 40 | pF | $V_{DS}=10\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$ |
| Output capacitance | C_{oss} | | | 30 | pF | |
| Reverse transfer capacitance | C_{rss} | | | 10 | pF | |
| Switching Characteristics | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | | 3 | | nS | $V_{DD}=50\text{V}, V_{GS}=10\text{V}, R_G=50\Omega, R_{GS}=50\Omega, R_L=250\Omega$ |
| Turn-off delay time | $t_{d(off)}$ | | 15 | | nS | |
| Reverse recovery time | t_{rr} | | 26 | | nS | $V_{GS}=0\text{V}, I_S=0.3\text{A}, V_R=25\text{V}, dI_S/dt=-100\text{A}/\mu\text{S}$ |

Note:1. Pulse test ; Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

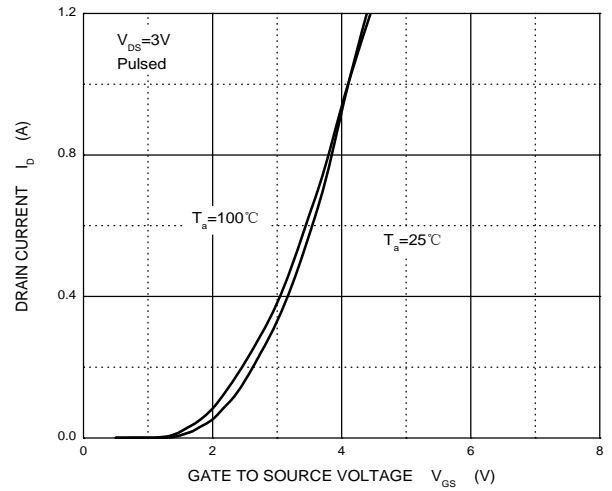
MOSFET (N-CHANNEL)

Typical Characteristics

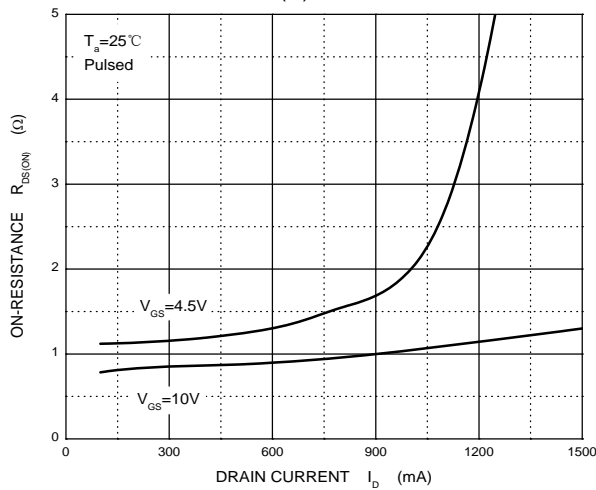
Output Characteristics



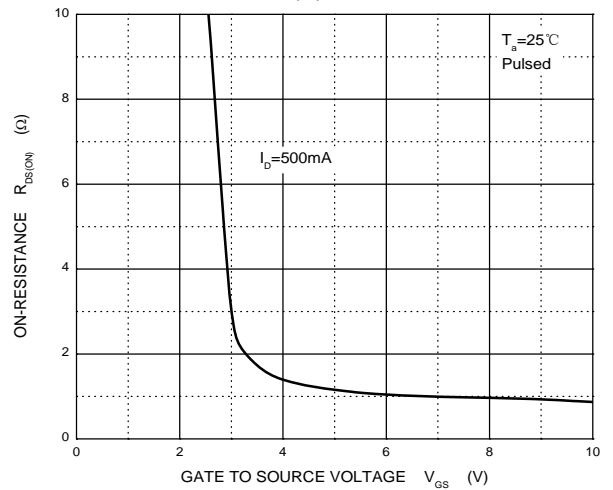
Transfer Characteristics



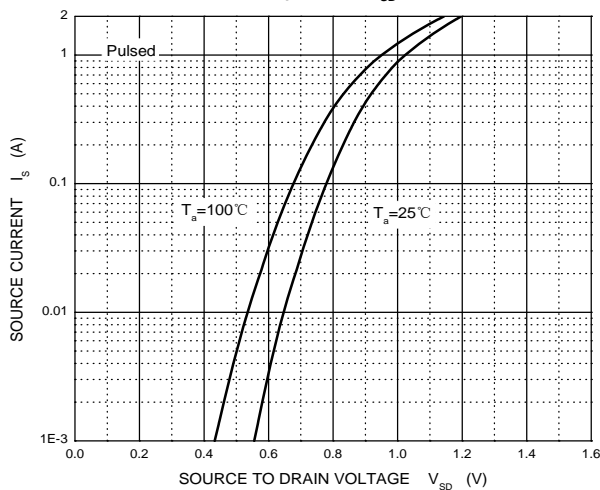
$R_{DS(ON)}$ — I_D



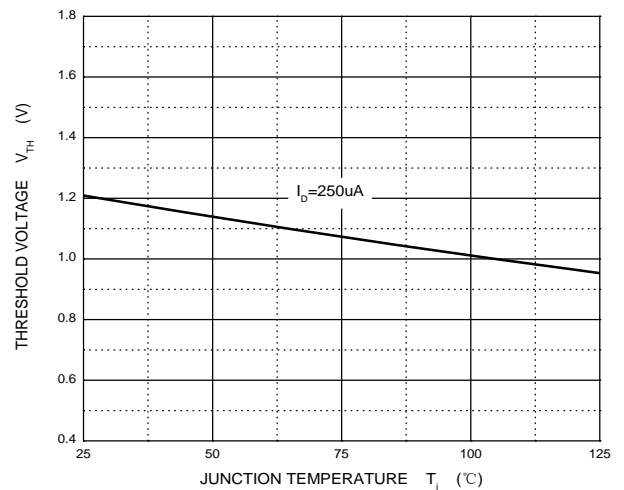
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}

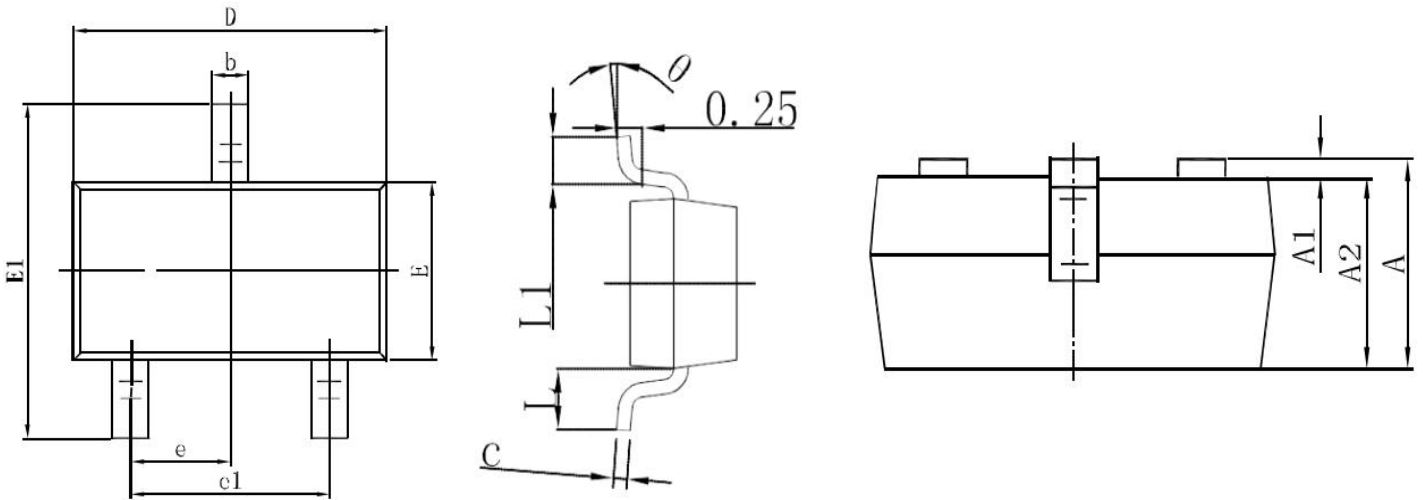


Threshold Voltage



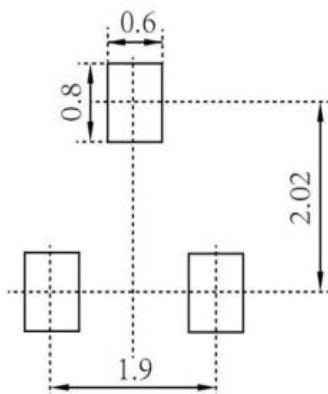
MOSFET (N-CHANNEL)

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



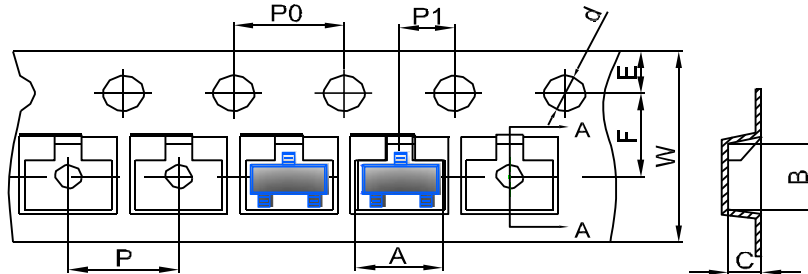
Note:

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

MOSFET (N-CHANNEL)

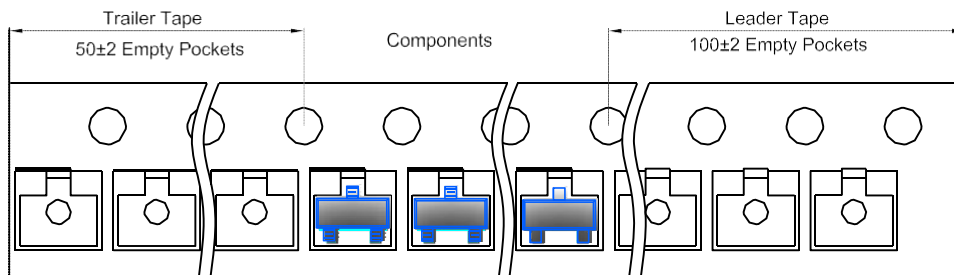
SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape

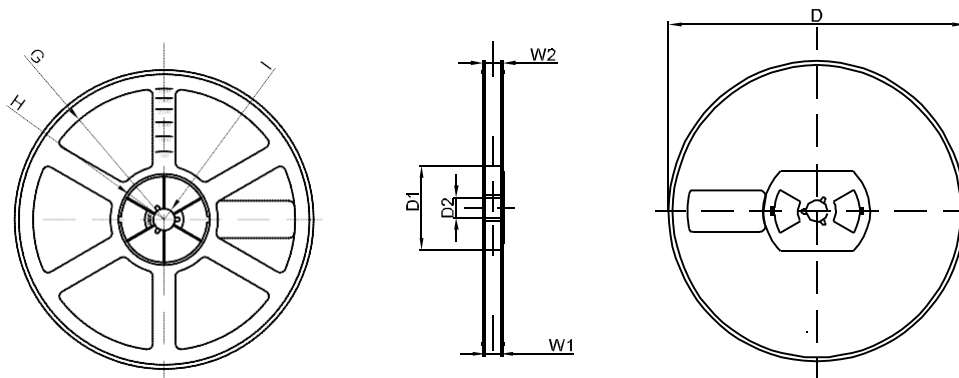


| DIMENSIONS ARE IN MILLIMETER | | | | | | | | | | |
|------------------------------|------|------|------|-------|------|------|------|------|------|------|
| TYPE | A | B | C | d | E | F | P0 | P | P1 | W |
| SOT-23 | 3.15 | 2.77 | 1.22 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |
| TOLERANCE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