



#### Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$  |
|---------------|-----------------|--------|
| -20V          | 450mΩ@-4.5V     | -0.66A |
|               | 650mΩ@-2.5V     |        |
|               | 950mΩ@-1.8V     |        |

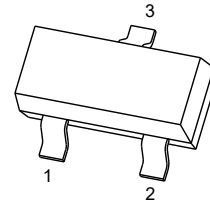
#### Feature

- Surface Mount Package
- P-Channel Switch with Low RDS(on)
- Operated at Low Logic Level Gate Drive
- ESD Protected

#### Application

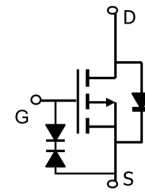
- Load/Power Switching
- Interfacing, Logic Switching
- Battery Management for Ultra Small Portable Electronics

#### SOT-23

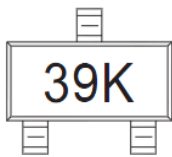


1. GATE
2. SOURCE
3. DRAIN

#### Schematic diagram



#### MARKING:



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

| Parameter   | Symbol          | Value     | Unit                        |
|---|-----------------|-----------|-----------------------------|
| Drain-Source Voltage  | $V_{DS}$        | -20       | V                           |
| Gate-Source Voltage   | $V_{GS}$        | ±12       | V                           |
| Continuous Drain Current <sup>(1)</sup>                         | $I_D$           | -0.66     | A                           |
| Pulsed Drain Current ( $t_p=10\mu\text{s}$ )                    | $I_{DM}$        | -1.2      | A                           |
| Power Dissipation <sup>(1)</sup>                                | $P_D$           | 350       | mW                          |
| Thermal Resistance from Junction to Ambient <sup>(1)</sup>      | $R_{\theta JA}$ | 357       | $^{\circ}\text{C}/\text{W}$ |
| Junction Temperature  | $T_J$           | 150       | $^{\circ}\text{C}$          |
| Storage Temperature   | $T_{STG}$       | -55~ +150 |                             |
| Lead Temperature for Soldering Purposes(1/8" from case for 10s) | $T_L$           | 260       |                             |

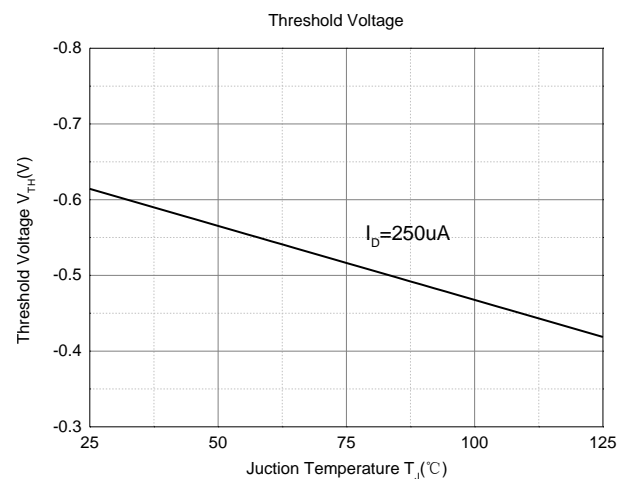
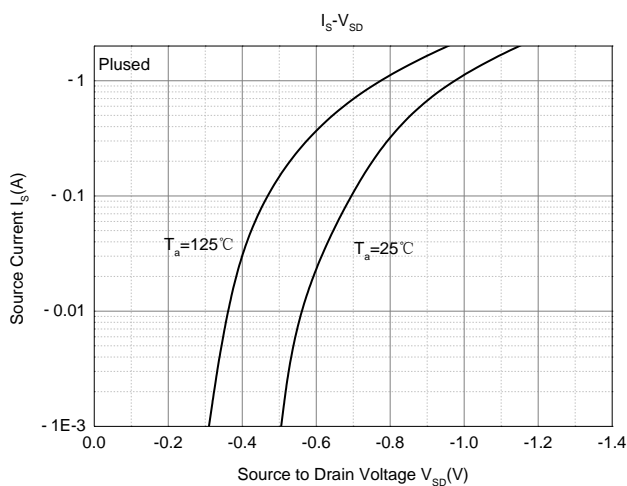
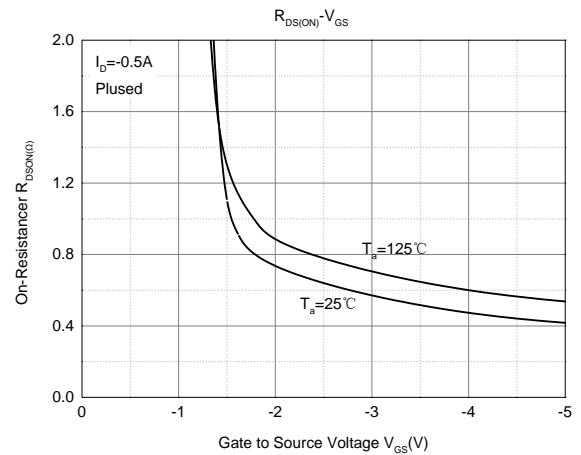
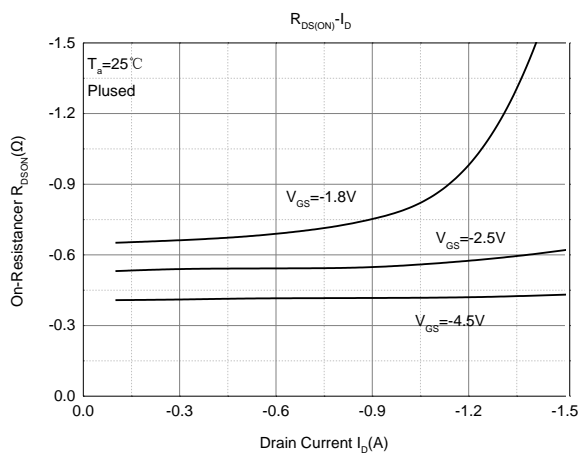
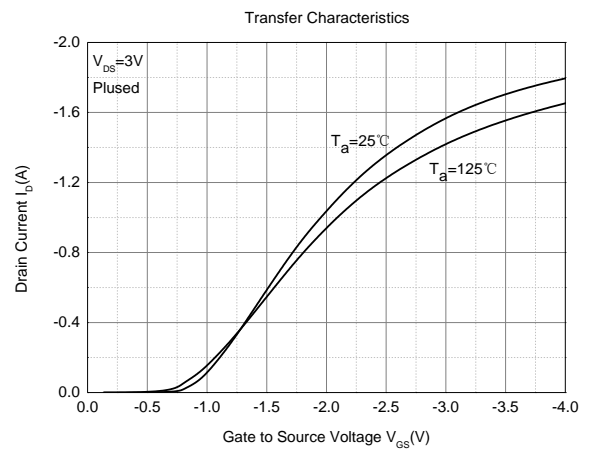
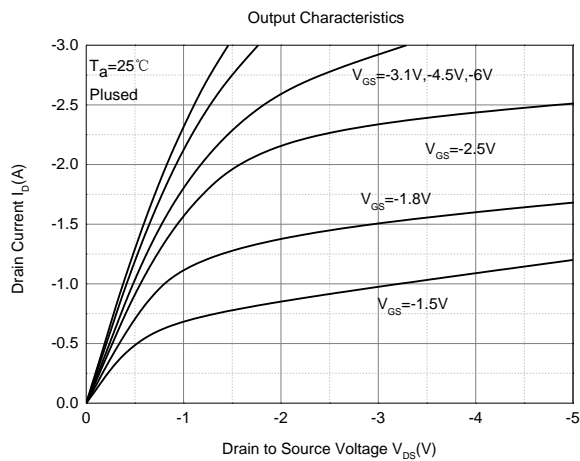
## MOSFET ELECTRICAL CHARACTERISTICS( $T_a=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter                                      | Symbol        | Test Condition   | Min   | Type  | Max      | Unit       |
|--|---------------|--|-------|-------|----------|------------|
| <b>Static Characteristics</b>                  |               |  |       |       |          |            |
| Drain-source breakdown voltage                 | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = -250\mu A$                                     | -20   |       |          | V          |
| Zero gate voltage drain current                | $I_{DSS}$     | $V_{DS} = -20V, V_{GS} = 0V$                                       |       |       | -1       | $\mu A$    |
| Gate-body leakage current                      | $I_{GSS}$     | $V_{GS} = \pm 10V, V_{DS} = 0V$                                    |       |       | $\pm 20$ | $\mu A$    |
| Gate threshold voltage <sup>(2)</sup>          | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = -250\mu A$                                 | -0.35 | -0.45 | -1.1     | V          |
| Drain-source on-resistance <sup>(2)</sup>      | $R_{DS(on)}$  | $V_{GS} = -4.5V, I_D = -1A$  |       | 450   | 580      | m $\Omega$ |
|  |               | $V_{GS} = -2.5V, I_D = -0.8A$                                      |       | 650   | 840      |            |
|  |               | $V_{GS} = -1.8V, I_D = -0.5A$                                      |       | 950   |          |            |
| Forward tranconductance <sup>(2)</sup>         | $g_{FS}$      | $V_{DS} = -10V, I_D = -0.54A$                                      |       | 1.2   |          | S          |
| <b>Dynamic characteristics<sup>(4)</sup></b>   |               |  |       |       |          |            |
| Input Capacitance                              | $C_{iss}$     | $V_{DS} = -16V, V_{GS} = 0V, f = 1MHz$                             |       | 113   |          | pF         |
| Output Capacitance                             | $C_{oss}$     |  |       | 15    |          |            |
| Reverse Transfer Capacitance                   | $C_{rss}$     |  |       | 9     |          |            |
| <b>Switching Characteristics<sup>(4)</sup></b> |               |  |       |       |          |            |
| Turn-on delay time <sup>(3)</sup>              | $t_{d(on)}$   | $V_{DS} = -10V, I_D = -200mA,$<br>$V_{GS} = -4.5V, R_G = 10\Omega$ |       | 9     |          | ns         |
| Turn-on rise time <sup>(3)</sup>               | $t_r$         |  |       | 5.7   |          |            |
| Turn-off delay time <sup>(3)</sup>             | $t_{d(off)}$  |  |       | 32.6  |          |            |
| Turn-off fall time <sup>(3)</sup>              | $t_f$         |  |       | 20.3  |          |            |
| <b>Source-Drain Diode characteristics</b>      |               |  |       |       |          |            |
| Diode forward voltage                          | $V_{DS}$      | $I_S = -0.5A, V_{GS} = 0V$   |       |       | -1.2     | V          |

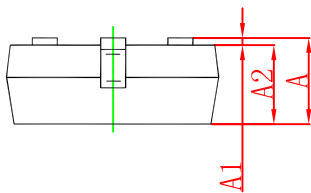
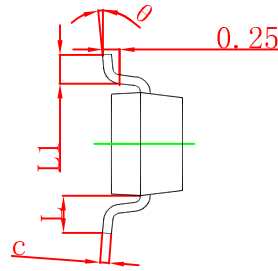
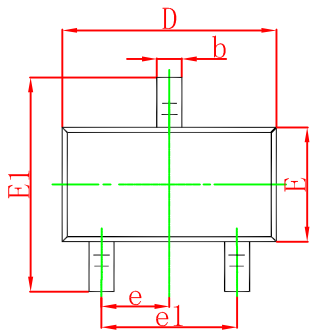
### Notes:

- 1.Surface mounted on FR4 board using the minimum recommended pad size.
- 2.Pulse Test : Pulse Width=300 $\mu s$ , Duty Cycle=2%.
- 3.Switching characteristics are independent of operating junction temperatures.
- 4.Guaranteed by design, not subject to producing.

Typical Electrical and Thermal Characteristics



**SOT-23 Package Information**

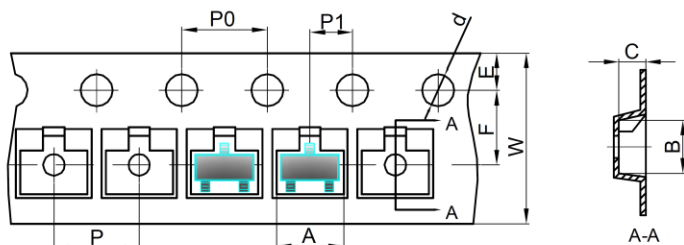


| Symbol   | Dimensions In Millimeters |       | Dimensions In Inches |       |
|----------|---------------------------|-------|----------------------|-------|
|          | Min                       | Max   | Min                  | Max   |
| A        | 0.900                     | 1.150 | 0.035                | 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 |
| $\theta$ | 0°                        | 8°    | 0°                   | 8°    |

## SOT-23 Tape and Reel

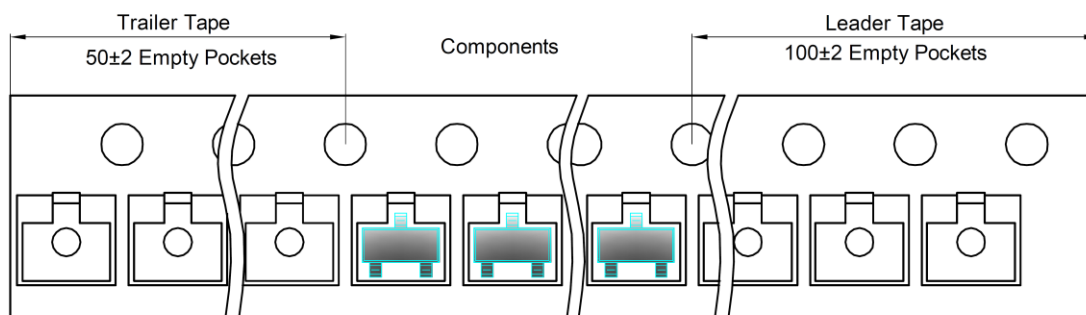
### SOT-23 Tape and reel

SOT-23 Embossed Carrier Tape

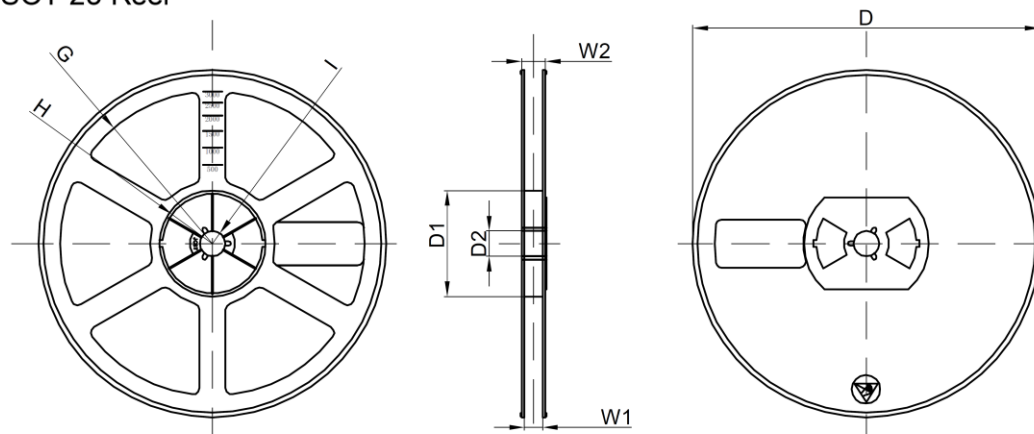


| Dimensions are in millimeter |      |      |      |       |      |      |      |      |      |      |
|------------------------------|------|------|------|-------|------|------|------|------|------|------|
| Pkg type                     | A    | B    | C    | d     | E    | F    | P0   | P    | P1   | 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 | 203×203×195  | 120,000 pcs | 438×438×220     |          |

单击下面可查看定价，库存，交付和生命周期等信息

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