

FEATURE

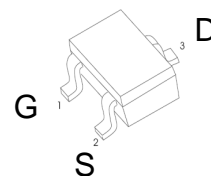
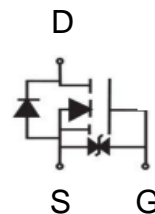
- 20V N-Channel MOSFET High Dense Design.
- $R_{DS(ON)} = 280m\Omega$ (typ.) @ $V_{GS} = 4.5V$
- $R_{DS(ON)} = 360m\Omega$ (typ.) @ $V_{GS} = 2.5V$
- Reliable and Rugged
- ESD Protected

MARKING

- MARKING:X2

APPLICATIONS

- Portable Equipment and Battery Power Systems



SOT-523

ABSOLUTE MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

| Parameter | Symbol | Rating | Unit |
|--|-------------------|------------|------|
| Drain-Source Voltage | V_{DSS} | 20 | V |
| Gate-Source Voltage | V_{GSS} | ±8 | |
| Continue Drain Current | I_D | 0.82 | A |
| Pulsed Drain Current | I_{DM} | 1.9 | |
| Diode Continuous Forward Current | I_S | 0.27 | A |
| Maximum Junction Temperature | T_J | 150 | °C |
| Storage Temperature Range | T_{STG} | -55 to 150 | |
| Thermal Resistance-Junction to Ambient | $R_{\theta JA}^*$ | 350 | °C/W |
| Power Dissipation | P_D | 200 | mW |



Static Electrical Characteristics (T_A =25° C Unless Otherwise Noted)

| Symbol | Parameter | Test Condition | | | | Unit |
|--|----------------------------------|--|------|------|------|------|
| | | | Min. | Typ. | Max. | |
| Static Characteristics* | | | | | | |
| BV _{DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _{DS} =250μA | 20 | - | - | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} =16V, V _{GS} =0V | - | - | 1 | μA |
| | | T _J =85°C | - | - | 30 | |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _{DS} =250μA | 0.45 | 0.75 | 1 | V |
| I _{GSS} | Gate Leakage Current | V _{GS} =±8 V, V _{DS} =0V | - | - | ±10 | μA |
| R _{DS(ON)} | Drain-Source On-state Resistance | V _{GS} =4.5V, I _{DS} =0.5A | - | 280 | 420 | mΩ |
| | | V _{GS} =2.5V, I _{DS} =0.3A | - | 360 | 585 | |
| V _{SD} | Diode Forward Voltage | I _{SD} =0.5A, V _{GS} =0V | - | 0.7 | 1.3 | v |
| Switching Times (These parameters have no way to verify.) | | | | | | |
| Turn-On Delay Time | t _{d(on)} | V _{DD} =10V, I _D =500mA, V _{GS} =4.5V, R _G =10Ω | | 6.7 | | ns |
| Rise Time | t _r | | | 4.8 | | |
| Turn-Off Delay Time | t _{d(off)} | | | 17.3 | | |
| Fall Time | t _f | | | 7.4 | | |

Dynamic Characteristics

| | | | | | | |
|---|------------------|--|--|--|-----|----|
| Input Capacitance | C _{iss} | V _{DS} =16V, V _{GS} =0V, f =1MHz | | | 120 | pF |
| Output Capacitance | C _{oss} | | | | 20 | |
| Reverse Transfer Capacitance | C _{rss} | | | | 15 | |
| Drain-Source Diode Characteristics | | | | | | |
| Drain-Source Diode Forward Voltage | V _{SD} | I _S =0.15A, V _{GS} = 0V | | | 1.2 | V |

*Note:

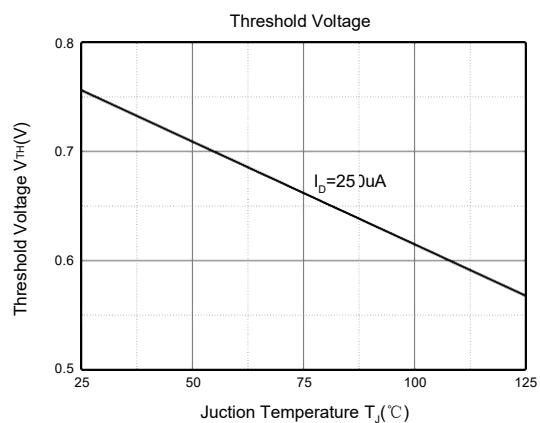
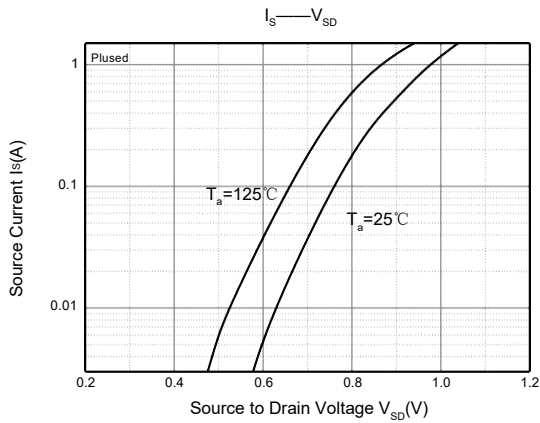
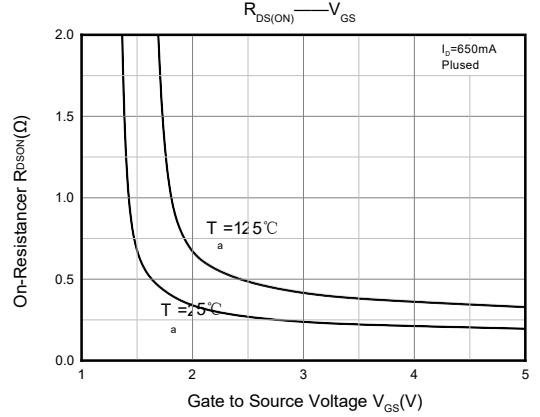
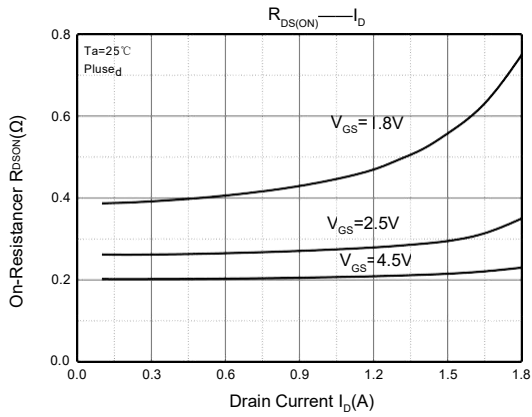
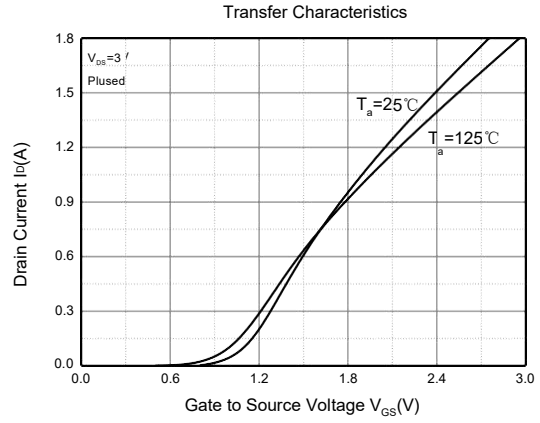
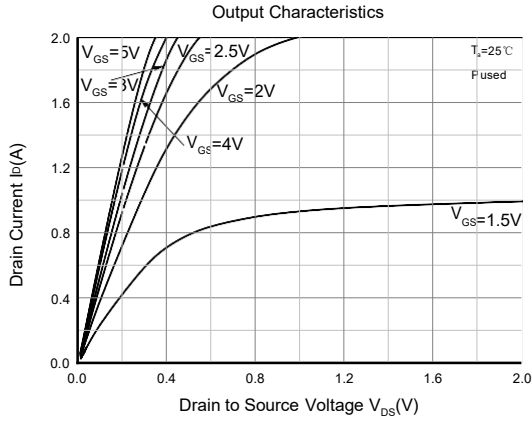
a : Current maybe limit by junction temperature.

b : The R_{θJC} is the sum of the thermal impedance from junction to ambient and depend on package type.

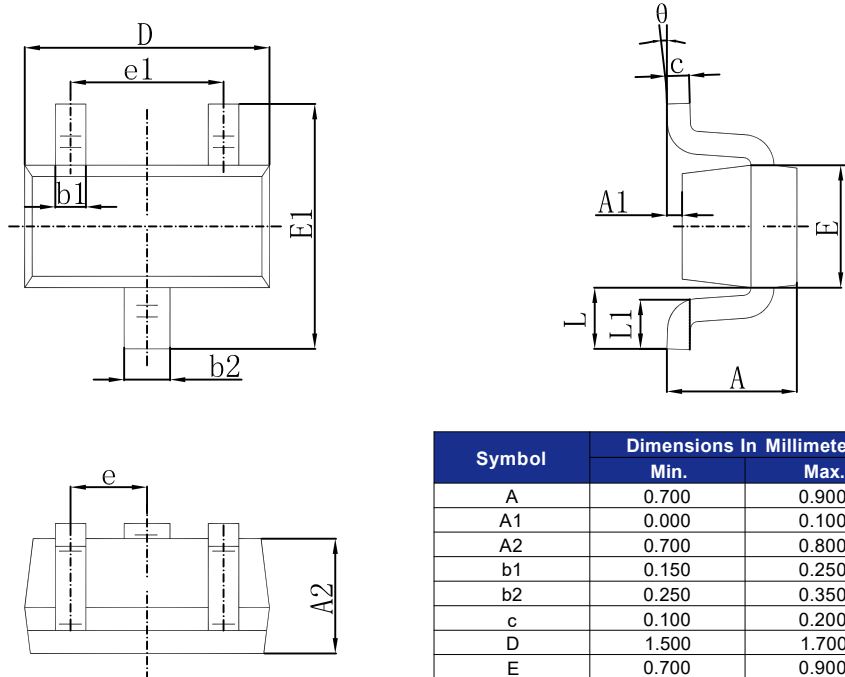
c : MOS static characteristics test by wafer level(CP).



Typical Electrical and Thermal Characteristics

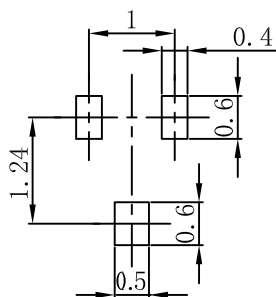


SOT-523 Package Outline Dimensions



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.700 | 0.900 | 0.028 | 0.035 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.700 | 0.800 | 0.028 | 0.031 |
| b1 | 0.150 | 0.250 | 0.006 | 0.010 |
| b2 | 0.250 | 0.350 | 0.010 | 0.014 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 1.500 | 1.700 | 0.059 | 0.067 |
| E | 0.700 | 0.900 | 0.028 | 0.035 |
| E1 | 1.450 | 1.750 | 0.057 | 0.069 |
| e | 0.500 TYP. | | 0.020 TYP. | |
| e1 | 0.900 | 1.100 | 0.035 | 0.043 |
| L | 0.400 REF. | | 0.016 REF. | |
| L1 | 0.260 | 0.460 | 0.010 | 0.018 |
| theta | 0° | 8° | 0° | 8° |

SOT-523 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.