

60V N-Channel MOSFET

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | I_D |
|---------------|-----------------|-------|
| 60V | 0.9Ω@10V | 0.34A |
| | 1.1Ω@4.5V | |

Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- ESD Protected
- AEC-Q101 qualified (Automotive grade with suffix "Q")
- Exsemi technology

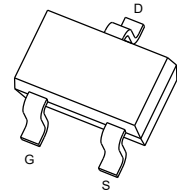
Application

- Load Switch
- DC/DC Converter

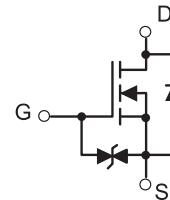
MARKING:



SOT-323



Schematic diagram

ABSOLUTE 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} | ±20 | V |
| Continuous Drain Current ^{1,5} | I_D | 0.34 | A |
| | $T_A = 25^\circ\text{C}$ | | |
| Pulsed Drain Current ² | I_{DM} | 1.0 | A |
| Power Dissipation ^{4,5} | P_D | 0.3 | W |
| | $T_A = 25^\circ\text{C}$ | | |
| Thermal Resistance from Junction to Ambient ⁵ | $R_{\theta JA}$ | 416 | $^\circ\text{C}/\text{W}$ |
| Junction Temperature | T_J | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{STG} | -55~ +150 | $^\circ\text{C}$ |

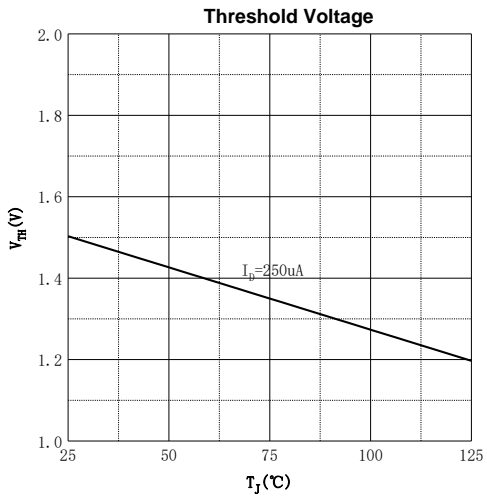
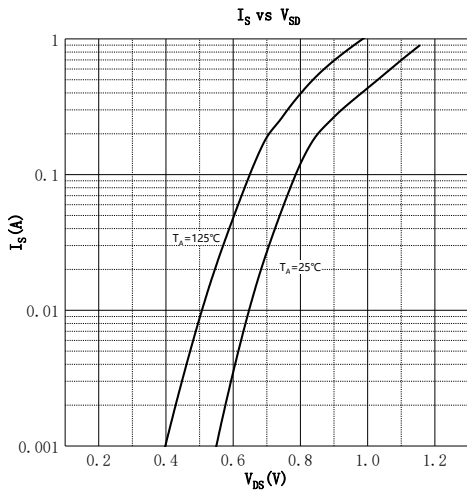
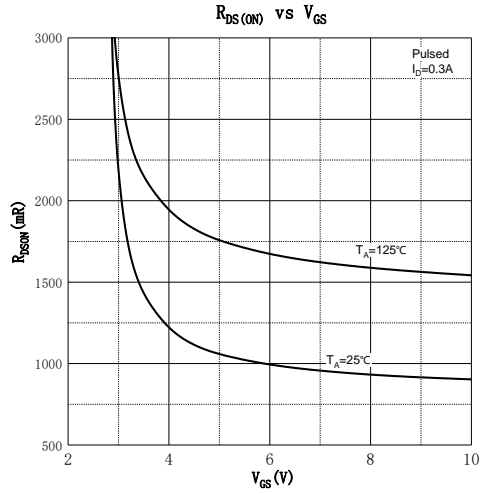
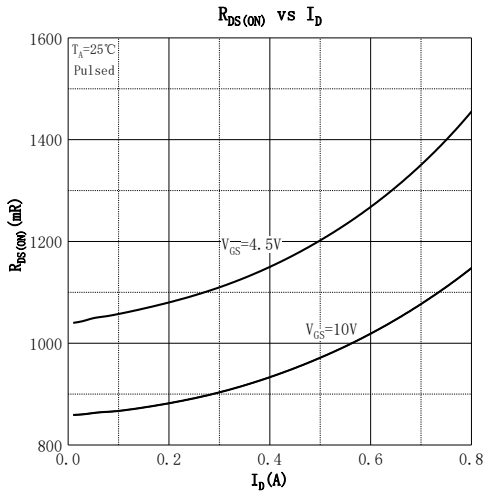
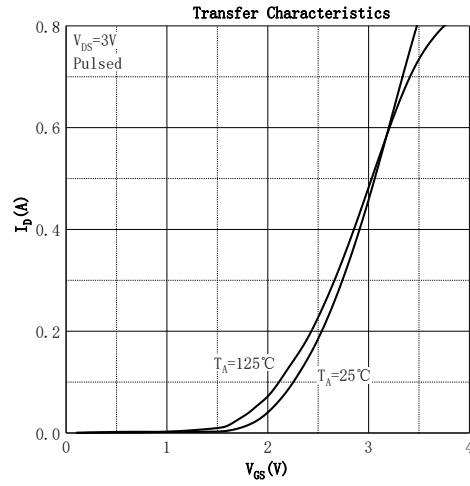
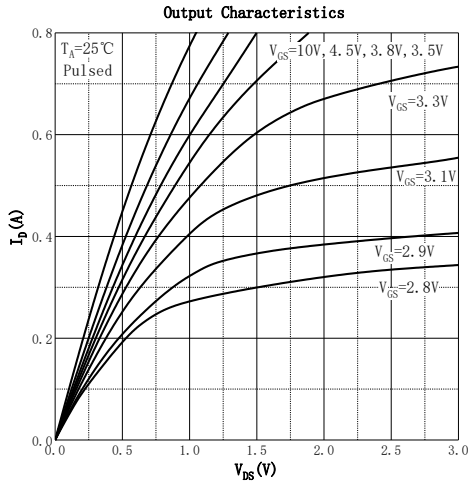
MOSFET ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Type | Max | Unit |
|---|---------------|---|-----|------|---------|----------|
| Off Characteristics | | | | | | |
| Drain - Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$ | 60 | | | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 48V, V_{GS} = 0V$ | | | 1 | μA |
| Gate - Body Leakage Current | I_{GSS} | $V_{GS} = \pm 20V, V_{DS} = 0V$ | | | ± 5 | μA |
| On Characteristics³ | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu A$ | 1 | 1.5 | 2.5 | V |
| Drain-source On-resistance | $R_{DS(on)}$ | $V_{GS} = 10V, I_D = 0.3A$ | | 0.9 | 2.5 | Ω |
| | | $V_{GS} = 4.5V, I_D = 0.2A$ | | 1.1 | 3 | |
| Dynamic Characteristics | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS} = 30V, V_{GS} = 0V, f = 1MHz$ | | 23.7 | | pF |
| Output Capacitance | C_{oss} | | | 5.3 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 2.5 | | |
| Gate Resistance | R_g | $V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$ | | 160 | | Ω |
| Switching Characteristics | | | | | | |
| Total Gate Charge | Q_g | $V_{DS} = 30V, V_{GS} = 10V, I_D = 0.3A$ | | 0.29 | | nC |
| Gate-source Charge | Q_{gs} | | | 0.23 | | |
| Gate-drain Charge | Q_{gd} | | | 0.12 | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD} = 30V, V_{GS} = 10V,$ $R_L = 100\Omega, R_G = 3\Omega$ | | 3.5 | | ns |
| Turn-on Rise Time | t_r | | | 3.2 | | |
| Turn-off Delay Time | $t_{d(off)}$ | | | 12 | | |
| Turn-off Fall Time | t_f | | | 10 | | |
| Source - Drain Diode Characteristics | | | | | | |
| Diode Forward Voltage ³ | V_{SD} | $V_{GS} = 0V, I_S = 0.3A$ | | | 1.2 | V |

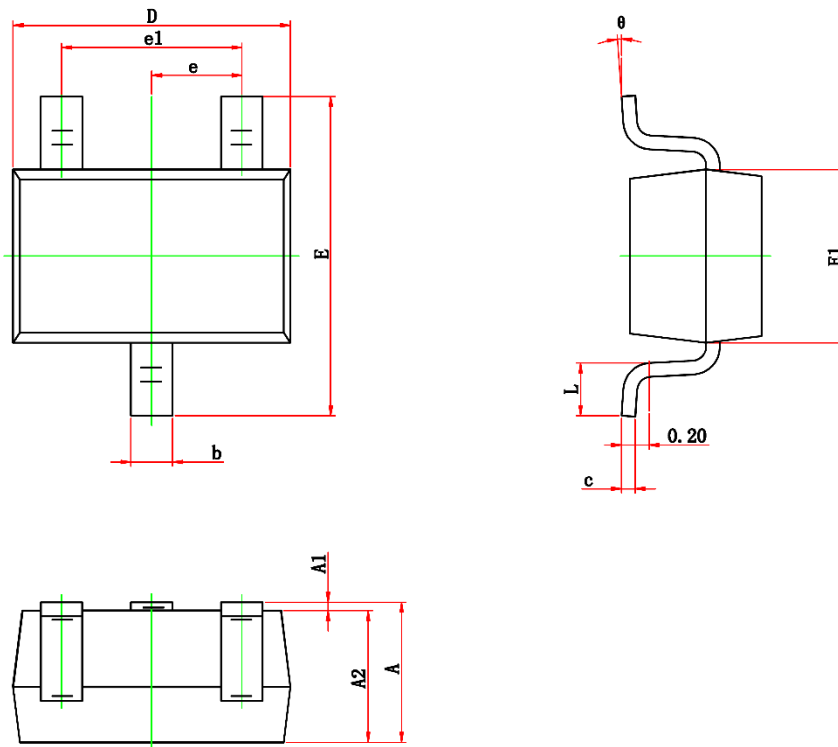
Notes :

- 1.The maximum current rating is limited by package.
- 2.Pulse Test : Pulse Width $\leq 10\mu s$, duty cycle $\leq 1\%$.
- 3.Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 4.The power dissipation P_D is limited by $T_{J(MAX)} = 150^\circ\text{C}$.
- 5.Device mounted on $1in^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

Typical Characteristics



SOT-323 Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.900 | 1.100 | 0.035 | 0.043 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.000 | 0.035 | 0.039 |
| b | 0.200 | 0.400 | 0.008 | 0.016 |
| c | 0.050 | 0.150 | 0.002 | 0.006 |
| D | 1.900 | 2.200 | 0.075 | 0.087 |
| E | 2.000 | 2.450 | 0.079 | 0.096 |
| E1 | 1.150 | 1.350 | 0.045 | 0.053 |
| e | 0.650TYP. | | 0.026TYP. | |
| e1 | 1.200 | 1.400 | 0.047 | 0.055 |
| L | 0.200 | 0.460 | 0.008 | 0.018 |
| θ | 0° | 8° | 0° | 8° |