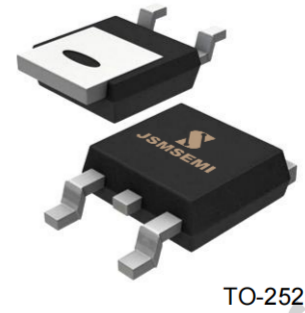


Description:

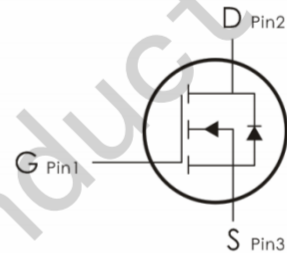
This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge. It can be used in a wide variety of applications.



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Features:

- 1) $V_{DS}=100V, I_D=15A, R_{DS(ON)} < 100m\Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



Absolute Maximum Ratings: ($T_C=25^\circ C$ unless otherwise noted)

| Symbol | Parameter | Ratings | Units |
|----------------|--|-------------|------------|
| V_{DS} | Drain-Source Voltage | 100 | V |
| V_{GS} | Gate-Source Voltage | ± 20 | V |
| I_D | Continuous Drain Current- $T_C=25^\circ C$ | 15 | A |
| | Continuous Drain Current- $T_C=70^\circ C$ | 12 | |
| | Pulsed Drain Current ¹ | 60 | |
| E_{AS} | Single Pulse Avalanche Energy | 16 | mJ |
| P_D | Power Dissipation, $T_C=25^\circ C$ | 50 | W |
| T_J, T_{STG} | Operating and Storage Junction Temperature Range | -55 to +150 | $^\circ C$ |

Thermal Characteristics:

| Symbol | Parameter | Max | Units |
|-----------------|---|-----|--------------|
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 3 | $^\circ C/W$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | --- | |

Electrical Characteristics: ($T_C=25^\circ\text{C}$ unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|---|---|--|-----|------|-----------|---------------|
| Off Characteristics | | | | | | |
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_D=250\ \mu\text{A}$ | 100 | --- | --- | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{GS}=0V, V_{DS}=80V$ | --- | --- | 1 | μA |
| I_{GSS} | Gate-Source Leakage Current | $V_{GS}=\pm 20V, V_{DS}=0A$ | --- | --- | ± 100 | nA |
| On Characteristics | | | | | | |
| $V_{GS(th)}$ | GATE-Source Threshold Voltage | $V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$ | 1 | 2 | 3 | V |
| $R_{DS(on)}$ | Drain-Source On Resistance ³ | $V_{GS}=10V, I_D=10A$ | --- | 75 | 100 | m Ω |
| | | $V_{GS}=4.5V, I_D=8A$ | --- | 100 | 115 | |
| G_{FS} | Forward Transconductance | $V_{DS}=0V, I_D=0A$ | --- | --- | --- | S |
| Dynamic Characteristics | | | | | | |
| C_{iss} | Input Capacitance | $V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$ | --- | 890 | --- | pF |
| C_{oss} | Output Capacitance | | --- | 60 | --- | |
| C_{rss} | Reverse Transfer Capacitance | | --- | 25 | --- | |
| Switching Characteristics | | | | | | |
| $t_{d(on)}$ | Turn-On Delay Time ³ | $V_{DD}=25V, I_D=8A,$ $V_{GS}=10V, R_{GEN}=1\Omega$ | --- | 14.2 | --- | ns |
| t_r | Rise Time ^{2,3} | | --- | 34 | --- | ns |
| $t_{d(off)}$ | Turn-Off Delay Time | | --- | 40.4 | --- | ns |
| t_f | Fall Time ^{2,3} | | --- | 6 | --- | ns |
| Q_g | Total Gate Charge ³ | $V_{GS}=10V, V_{DS}=80V,$ $I_D=10A$ | --- | 24 | --- | nC |
| Q_{gs} | Gate-Source Charge | | --- | 5 | --- | nC |
| Q_{gd} | Gate-Drain "Miller" Charge | | --- | 8 | --- | nC |
| Drain-Source Diode Characteristics | | | | | | |
| V_{SD} | Source-Drain Diode Forward Voltage ³ | $V_{GS}=0V, I_S=8A$ | --- | 0.8 | 1.2 | V |

| | | | | | | |
|------------|-------------------------|---------------------------------|-----|-----|-----|----|
| Trr | Reverse Recovery Time | ISD=8A, VGS=0V di/dt=100A/μs | --- | 35 | --- | Ns |
| qrr | Reverse Recovery Charge | | --- | 121 | --- | nc |

Notes:

- ① Pulse width limited by maximum allowable junction temperature
- ② Limited by TJmax, starting TJ = 25°C, L = 0.1mH, RG = 25Ω, IAS = 18A, VGS = 10V. Part not recommended for use above this value
- ③ Pulse width ≤ 300μs; duty cycle ≤ 2%.

Typical Characteristics: (Tc=25°C unless otherwise noted)

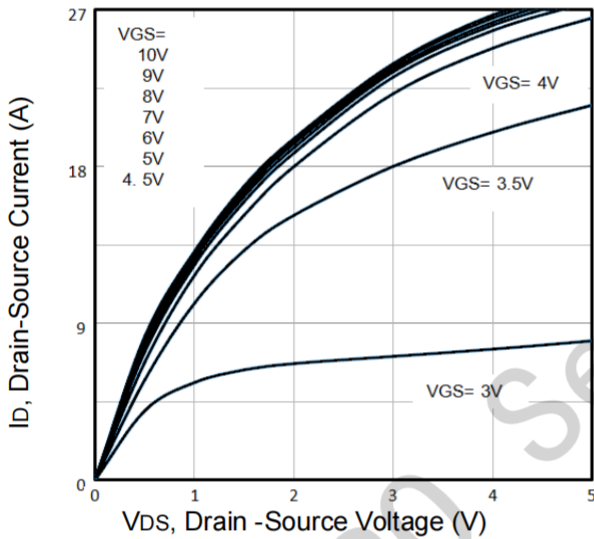


Fig1. Typical Output Characteristics

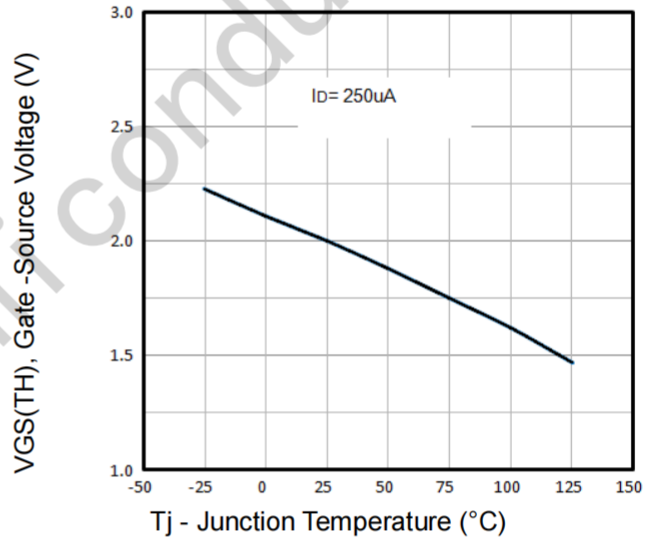


Fig2. VGS(TH) Voltage Vs. Temperature

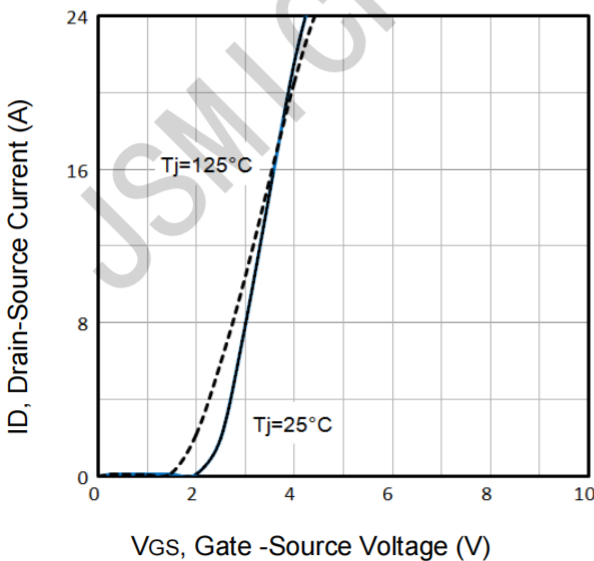


Fig3. Typical Transfer Characteristics

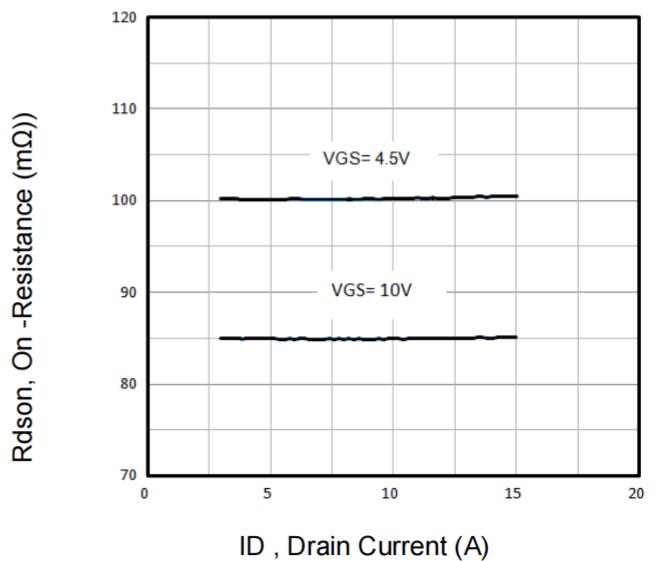


Fig4. On-Resistance vs. Drain Current and Gate Voltage

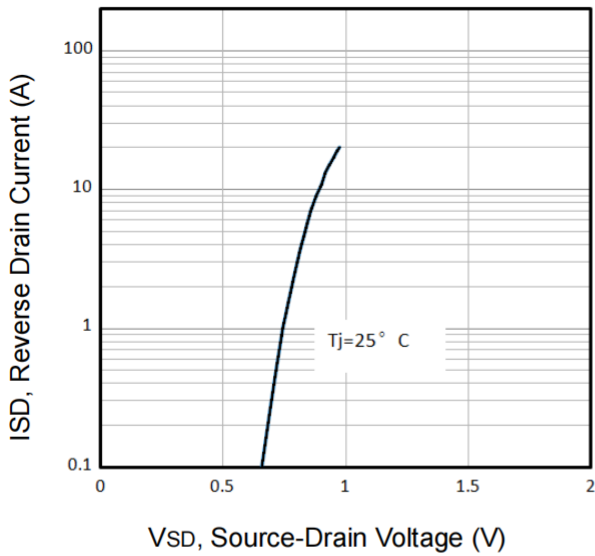


Fig5. Typical Source-Drain Diode Forward Voltage

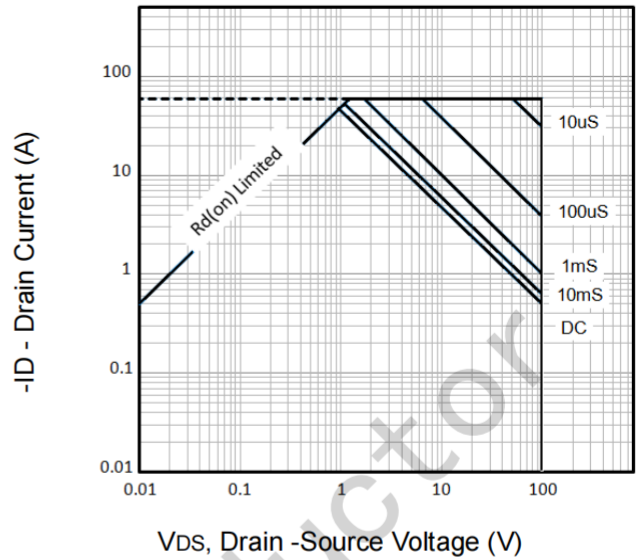


Fig6. Maximum Safe Operating Area

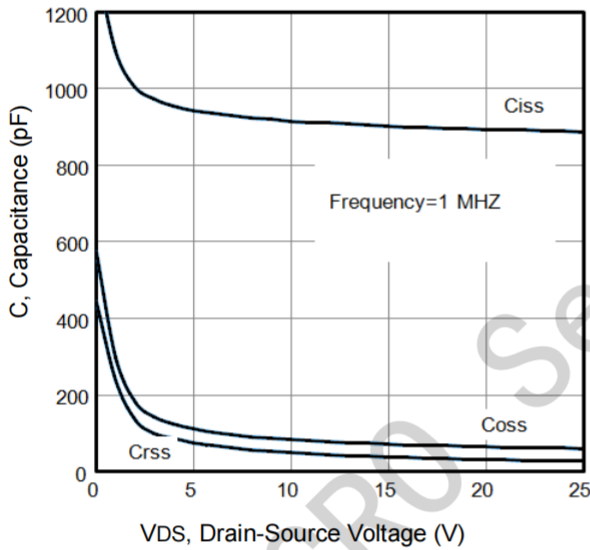


Fig7. Typical Capacitance Vs. Drain-Source Voltage

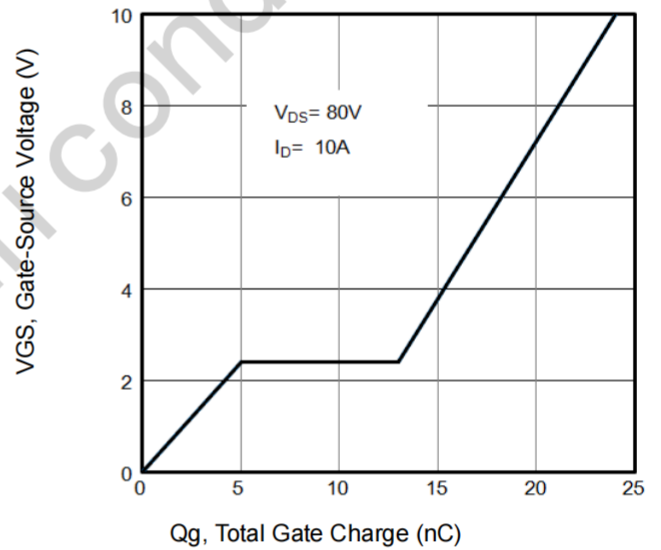


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

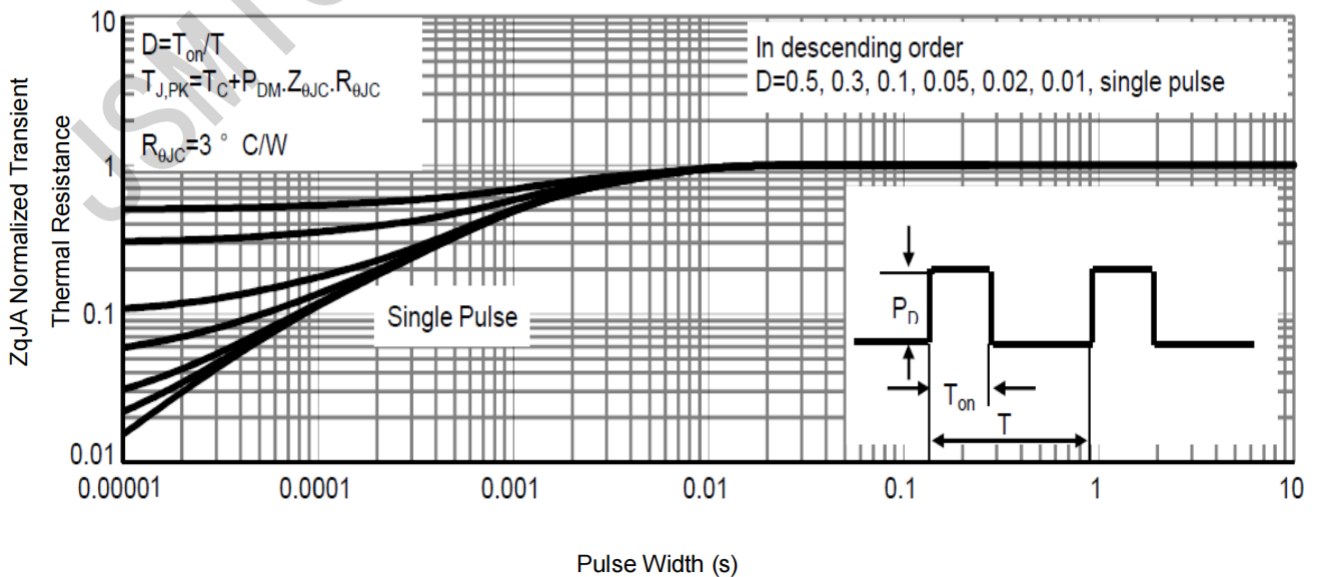
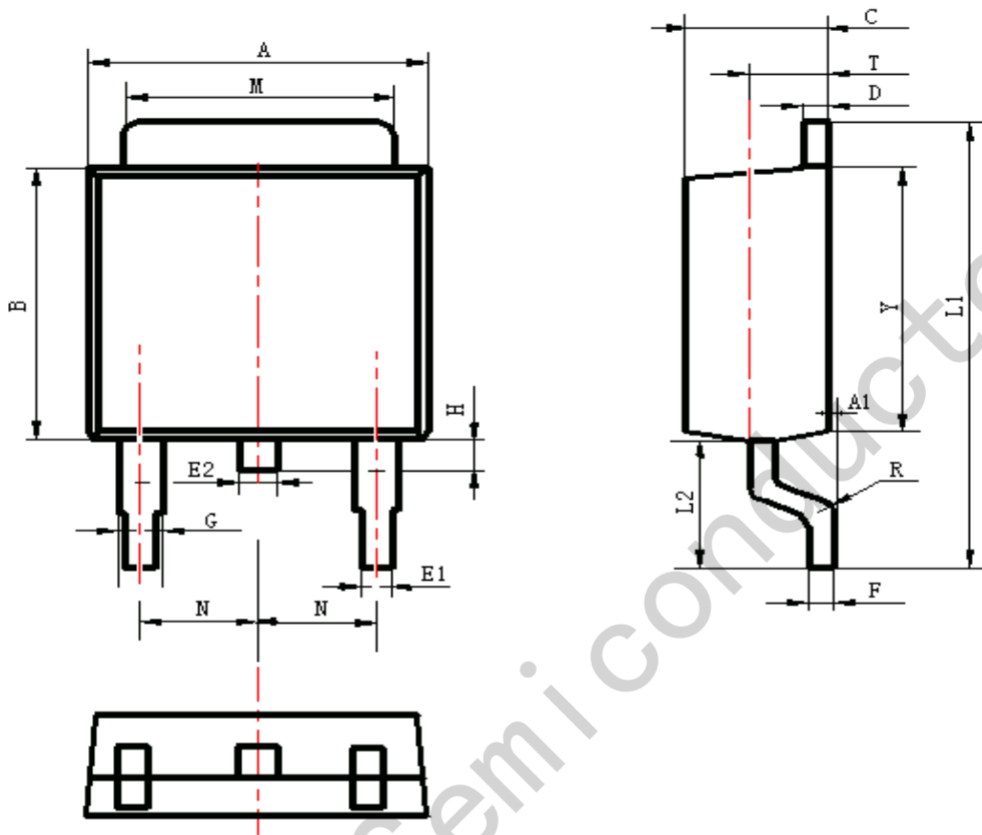


Fig9. Normalized Maximum Transient Thermal Impedance

Package Information

TO-252



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 6.30 | 6.90 | 0.248 | 0.272 |
| A1 | 0.00 | 0.16 | 0.000 | 0.006 |
| B | 5.70 | 6.30 | 0.224 | 0.248 |
| C | 2.10 | 2.50 | 0.083 | 0.098 |
| D | 0.30 | 0.70 | 0.012 | 0.028 |
| E1 | 0.60 | 0.90 | 0.024 | 0.035 |
| E2 | 0.70 | 1.00 | 0.028 | 0.039 |
| F | 0.30 | 0.60 | 0.012 | 0.024 |
| G | 0.70 | 1.20 | 0.028 | 0.047 |
| L1 | 9.60 | 10.50 | 0.378 | 0.413 |
| L2 | 2.70 | 3.10 | 0.106 | 0.122 |
| H | 0.40 | 1.00 | 0.016 | 0.039 |
| M | 5.10 | 5.50 | 0.201 | 0.217 |
| N | 2.09 | 2.49 | 0.082 | 0.098 |
| R | 0.30 | | 0.012 | |
| T | 1.40 | 1.60 | 0.055 | 0.063 |
| Y | 5.10 | 6.30 | 0.201 | 0.248 |