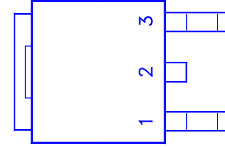
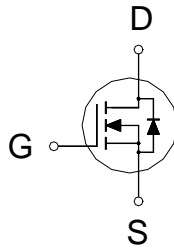




PRODUCT SUMMARY

| | | |
|---------------|--------------|-------|
| $V_{(BR)DSS}$ | $R_{DS(ON)}$ | I_D |
| 40V | 8mΩ | 60A |



- 1. GATE
- 2. DRAIN
- 3. SOURCE

ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ °C}$ Unless Otherwise Noted)

| PARAMETERS/TEST CONDITIONS | | SYMBOL | LIMITS | UNITS |
|---------------------------------------|-----------------------|----------------|------------|-------|
| Drain-Source Voltage | | V_{DS} | 40 | V |
| Gate-Source Voltage | | V_{GS} | ±20 | V |
| Continuous Drain Current ² | $T_C = 25\text{ °C}$ | I_D | 60 | A |
| | $T_C = 100\text{ °C}$ | | 38 | |
| Pulsed Drain Current ¹ | | I_{DM} | 110 | |
| Avalanche Current | | I_{AS} | 30.5 | |
| Avalanche Energy | $L = 0.1\text{mH}$ | E_{AS} | 46.7 | mJ |
| Power Dissipation | $T_C = 25\text{ °C}$ | P_D | 62 | W |
| | $T_C = 100\text{ °C}$ | | 25 | |
| Junction & Storage Temperature Range | | T_J, T_{stg} | -55 to 150 | °C |

THERMAL RESISTANCE RATINGS

| THERMAL RESISTANCE | SYMBOL | TYPICAL | MAXIMUM | UNITS |
|---------------------|-----------------|---------|---------|--------|
| Junction-to-Case | $R_{\theta JC}$ | | 2 | °C / W |
| Junction-to-Ambient | $R_{\theta JA}$ | | 62.5 | |

¹Pulse width limited by maximum junction temperature.

²Package limitation current is 39A

ELECTRICAL CHARACTERISTICS ($T_J = 25\text{ °C}$, Unless Otherwise Noted)

| PARAMETER | SYMBOL | TEST CONDITIONS | LIMITS | | | UNIT |
|---|---------------|--|--------|-----|------|------|
| | | | MIN | TYP | MAX | |
| STATIC | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$ | 40 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu A$ | 1.3 | 1.6 | 2.3 | |
| Gate-Body Leakage | I_{GSS} | $V_{DS} = 0V, V_{GS} = \pm 20V$ | | | ±100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 32V, V_{GS} = 0V$ | | | 1 | μA |
| | | $V_{DS} = 30V, V_{GS} = 0V, T_J = 125\text{ °C}$ | | | 10 | |
| Drain-Source On-State Resistance ¹ | $R_{DS(ON)}$ | $V_{GS} = 4.5V, I_D = 16A$ | | 6.3 | 12 | mΩ |
| | | $V_{GS} = 10V, I_D = 20A$ | | 5.5 | 8 | |

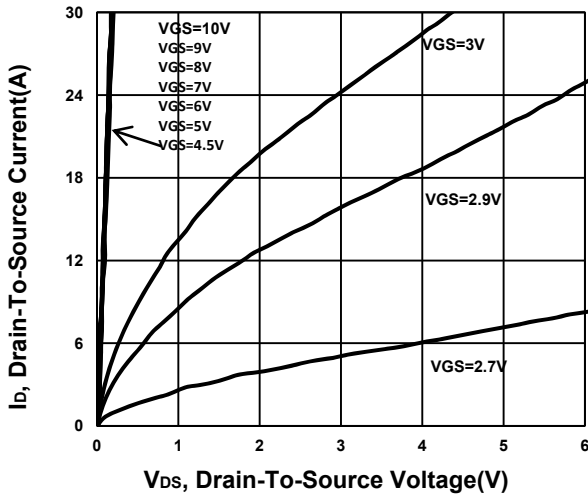
| | | | | | | |
|---|-------------------|---------------------------------------|--|------|----|----------|
| Forward Transconductance ¹ | g_{fs} | $V_{DS} = 5V, I_D = 20A$ | | 80 | | S |
| DYNAMIC | | | | | | |
| Input Capacitance | C_{iss} | $V_{GS} = 0V, V_{DS} = 20V, f = 1MHz$ | | 1704 | | pF |
| Output Capacitance | C_{oss} | | | 216 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 131 | | |
| Gate Resistance | R_g | $V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$ | | 1.3 | | Ω |
| Total Gate Charge ² | $Q_{g(VGS=10V)}$ | $V_{DS} = 20V, I_D = 20A$ | | 34 | | nC |
| | $Q_{g(VGS=4.5V)}$ | | | 18 | | |
| Gate-Source Charge ² | Q_{gs} | | | 4.5 | | |
| Gate-Drain Charge ² | Q_{gd} | | | 8.4 | | |
| Turn-On Delay Time ² | $t_{d(on)}$ | | $V_{DS} = 20V$ $I_D \cong 20A, V_{GS} = 10V, R_{GEN} = 6\Omega$ | | 17 | |
| Rise Time ² | t_r | | | 11.5 | | |
| Turn-Off Delay Time ² | $t_{d(off)}$ | | | 55 | | |
| Fall Time ² | t_f | | | 10 | | |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25^\circ C$) | | | | | | |
| Continuous Current ³ | I_S | | | 47 | | A |
| Forward Voltage ¹ | V_{SD} | $I_F = 20A, V_{GS} = 0V$ | | 1.3 | | V |
| Reverse Recovery Time | t_{rr} | $I_F = 20A, di_F/dt = 100A / \mu S$ | | 19.5 | | nS |
| Reverse Recovery Charge | Q_{rr} | | | 9.3 | | nC |

¹Pulse test : Pulse Width $\leq 300 \mu sec$, Duty Cycle $\leq 2\%$.

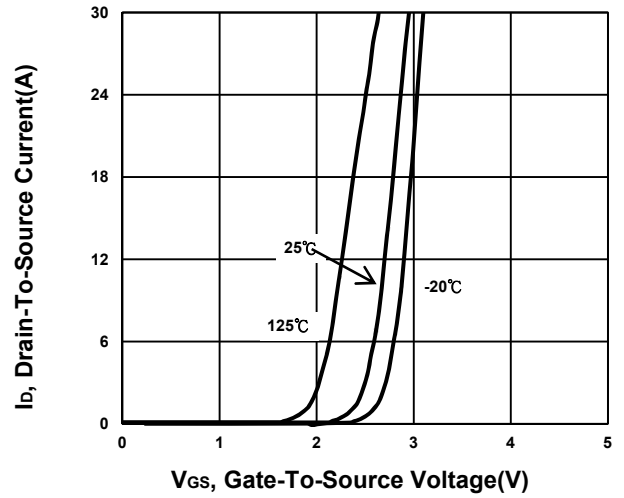
²Independent of operating temperature.

³Package limitation current is 39A

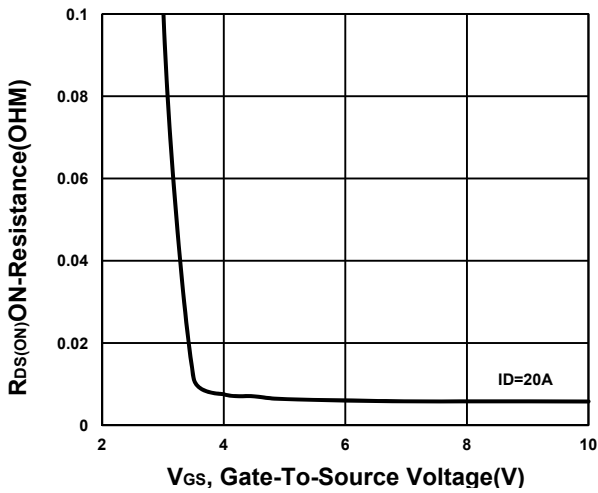
Output Characteristics



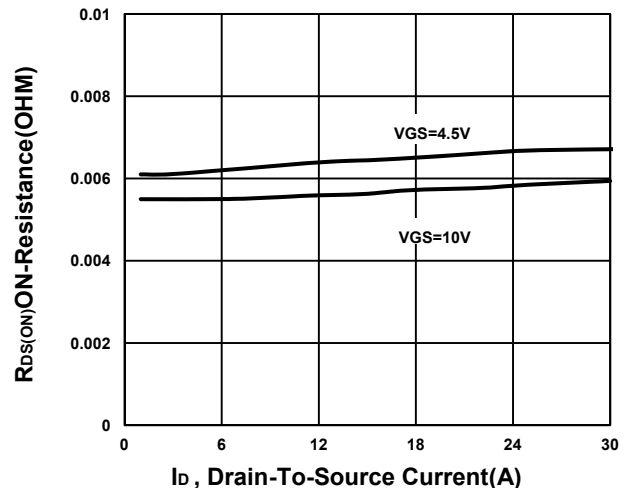
Transfer Characteristics



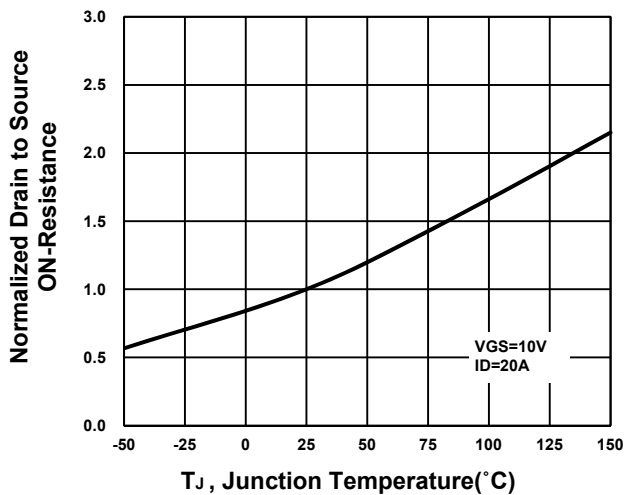
On-Resistance VS Gate-To-Source



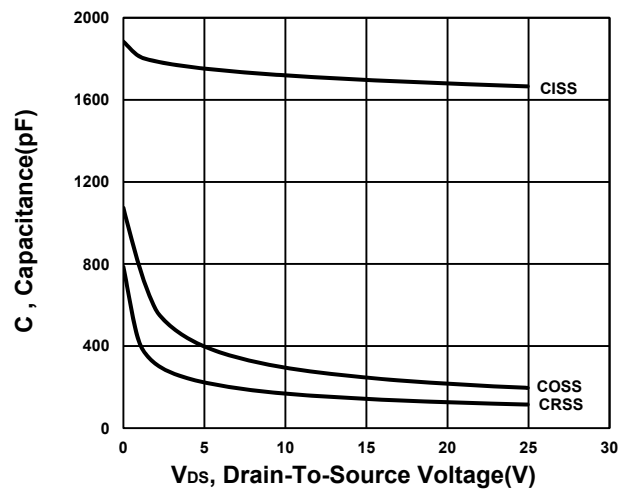
On-Resistance VS Drain Current



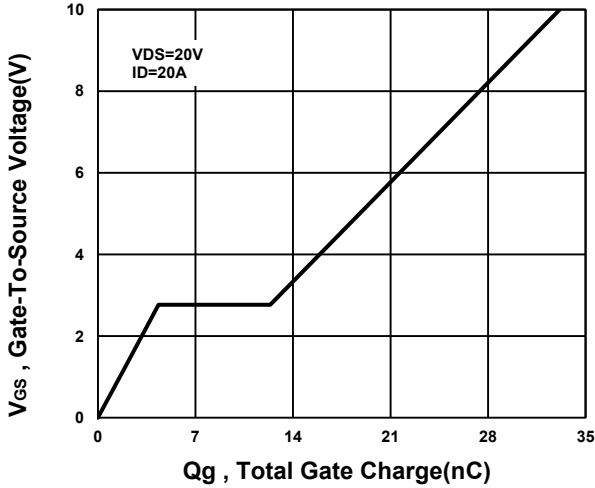
On-Resistance VS Temperature



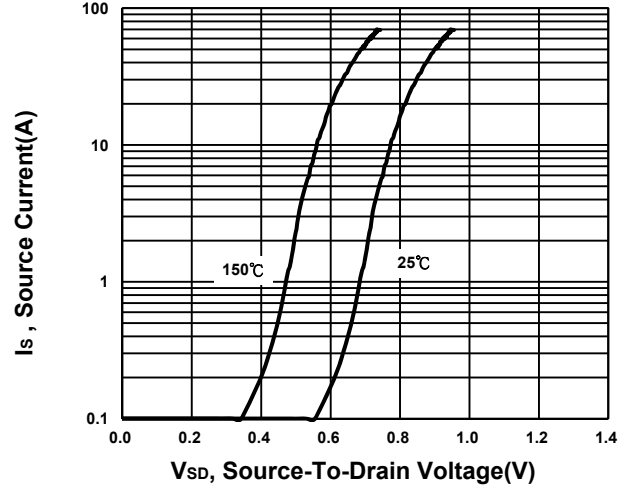
Capacitance Characteristic



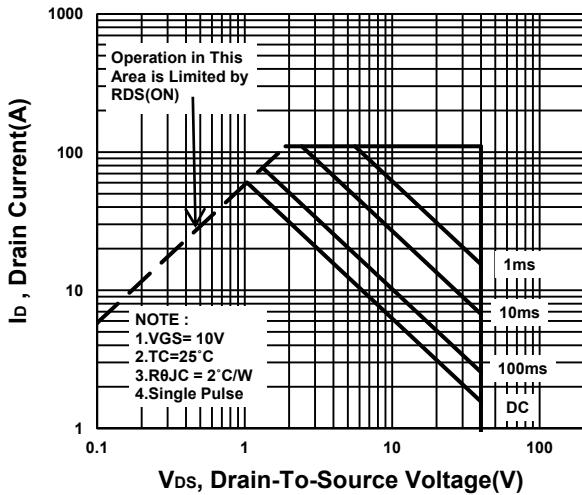
Gate charge Characteristics



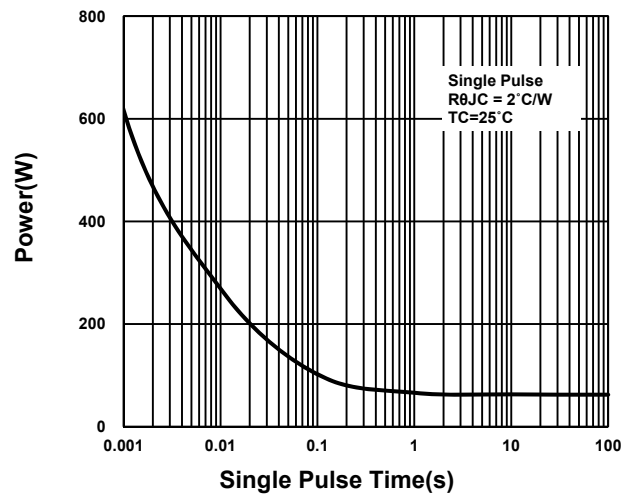
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

