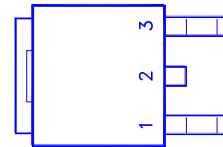
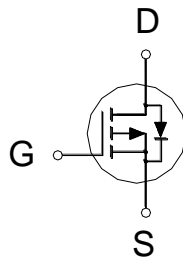


PRODUCT SUMMARY

| | | |
|---------------|--------------|-------|
| $V_{(BR)DSS}$ | $R_{DS(ON)}$ | I_D |
| -40V | 14mΩ | -51A |



- 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} | ±25 | V |
| Continuous Drain Current ² | $T_C = 25\text{ °C}$ | I_D | -51 | A |
| | $T_C = 100\text{ °C}$ | | -40 | |
| Pulsed Drain Current ¹ | | I_{DM} | -150 | |
| Avalanche Current | | I_{AS} | -38 | |
| Avalanche Energy | $L = 0.1\text{mH}$ | E_{AS} | 72.2 | mJ |
| Power Dissipation | $T_C = 25\text{ °C}$ | P_D | 65 | W |
| | $T_C = 100\text{ °C}$ | | 42 | |
| Junction & Storage Temperature Range | | T_J, T_{stg} | -55 to 150 | °C |

THERMAL RESISTANCE RATINGS

| THERMAL RESISTANCE | SYMBOL | TYPICAL | MAXIMUM | UNITS |
|---------------------|-----------------|---------|---------|--------|
| Junction-to-Case | $R_{\theta JC}$ | | 1.9 | °C / W |
| Junction-to-Ambient | $R_{\theta JA}$ | | 62.5 | |

¹Pulse width limited by maximum junction temperature.

²Package limitation current is -40A.

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 | -1.8 | -3 | |
| Gate-Body Leakage | I_{GSS} | $V_{DS} = 0V, V_{GS} = \pm 25V$ | | | ±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 | |

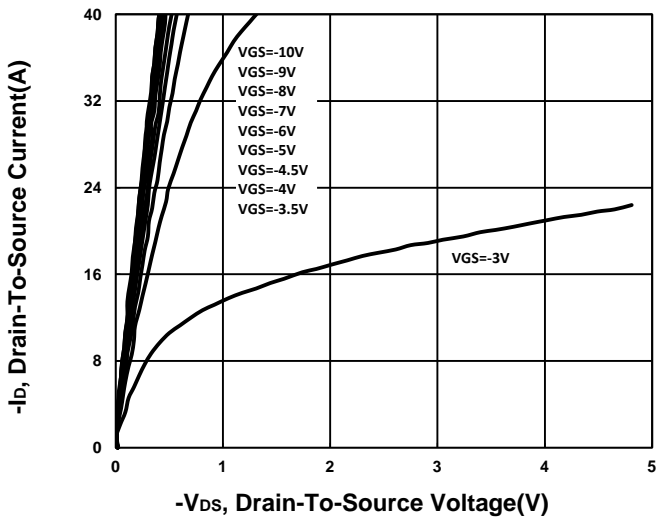
| | | | | | |
|---|---------------------|--|---|------|----|
| Drain-Source On-State Resistance ¹ | $R_{DS(ON)}$ | $V_{GS} = -4.5V, I_D = -15A$ | 14 | 20 | mΩ |
| | | $V_{GS} = -10V, I_D = -20A$ | 10 | 14 | |
| Forward Transconductance ¹ | g_{fs} | $V_{DS} = -5V, I_D = -20A$ | 50 | | S |
| DYNAMIC | | | | | |
| Input Capacitance | C_{iss} | $V_{GS} = 0V, V_{DS} = -20V, f = 1MHz$ | 2670 | | pF |
| Output Capacitance | C_{oss} | | 313 | | |
| Reverse Transfer Capacitance | C_{rss} | | 222 | | |
| Gate Resistance | R_g | $V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$ | 4.5 | | Ω |
| Total Gate Charge ² | $Q_g(V_{GS}=-10V)$ | $V_{DS} = -20V, I_D = -20A$ | 58 | | nC |
| | $Q_g(V_{GS}=-4.5V)$ | | 29 | | |
| Gate-Source Charge ² | Q_{gs} | | 9 | | |
| Gate-Drain Charge ² | Q_{gd} | | 14 | | |
| Turn-On Delay Time ² | $t_{d(on)}$ | | $V_{DS} = -20V, I_D \cong -20A, V_{GS} = -10V, R_{GEN} = 6\Omega$ | 29 | |
| Rise Time ² | t_r | 20 | | | |
| Turn-Off Delay Time ² | $t_{d(off)}$ | 90 | | | |
| Fall Time ² | t_f | 41 | | | |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25\text{ }^\circ\text{C}$) | | | | | |
| Continuous Current ³ | I_S | | | -50 | A |
| Forward Voltage ¹ | V_{SD} | $I_F = -20A, V_{GS} = 0V$ | | -1.3 | V |
| Reverse Recovery Time | t_{rr} | $I_F = -20A, di_F/dt = 100A / \mu S$ | 17 | | nS |
| Reverse Recovery Charge | Q_{rr} | | 6 | | nC |

¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

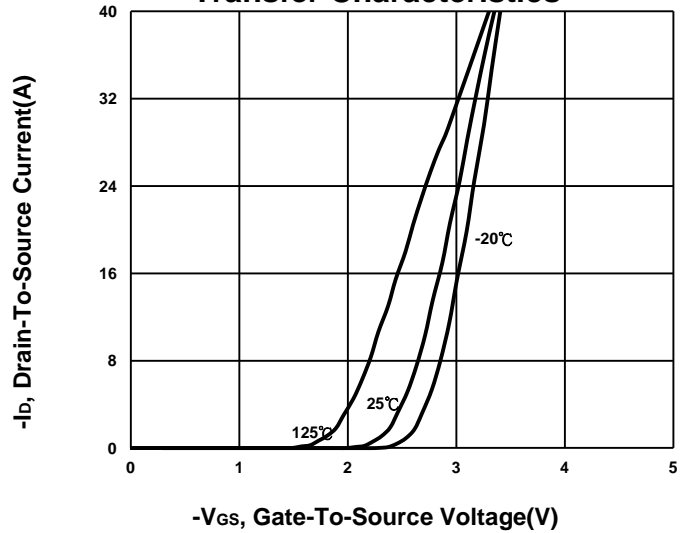
²Independent of operating temperature.

³Package limitation current is -40A.

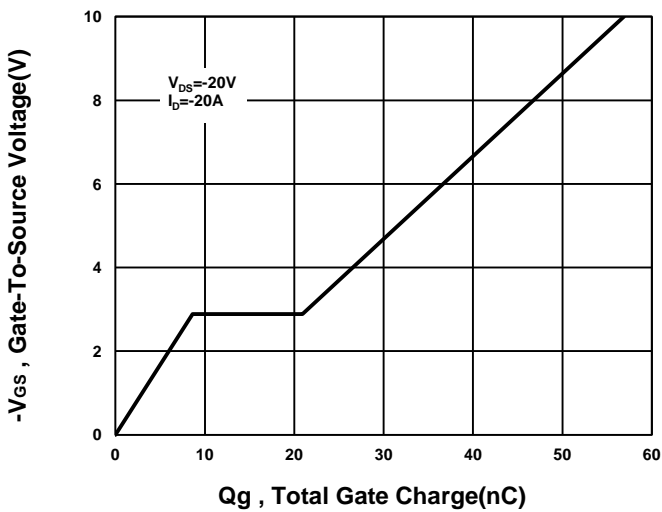
Output Characteristics



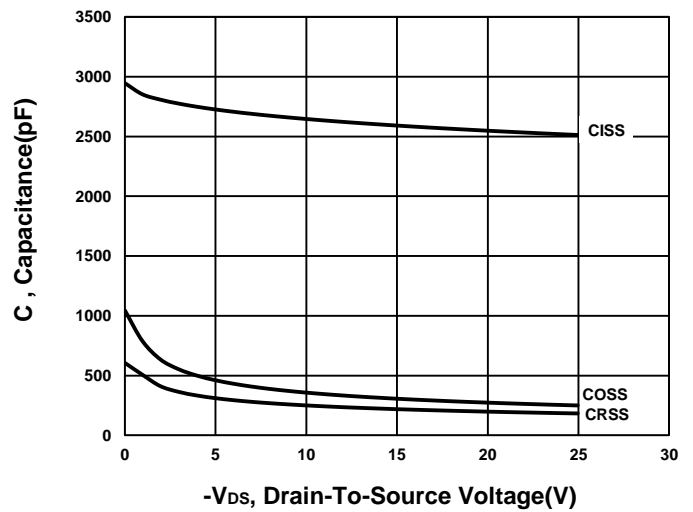
Transfer Characteristics



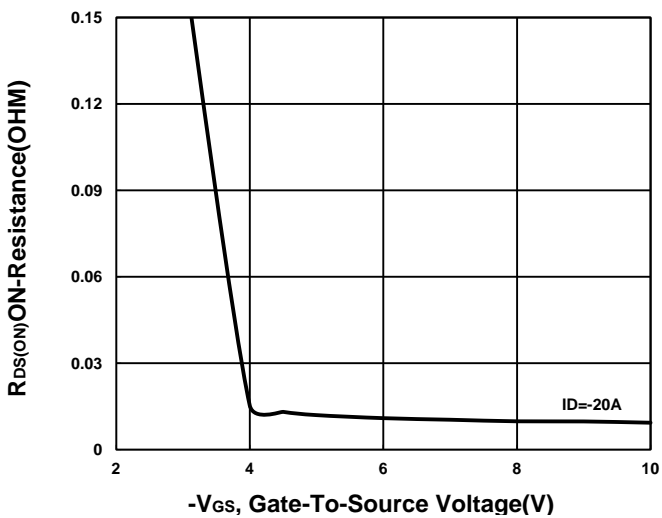
Gate charge Characteristics



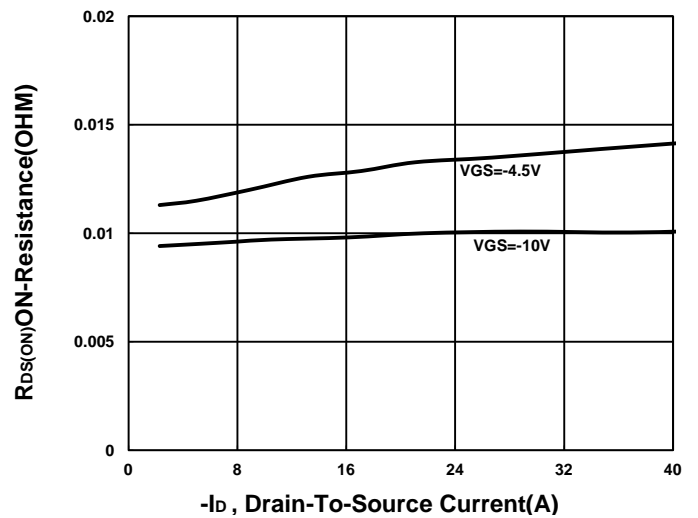
Capacitance Characteristic



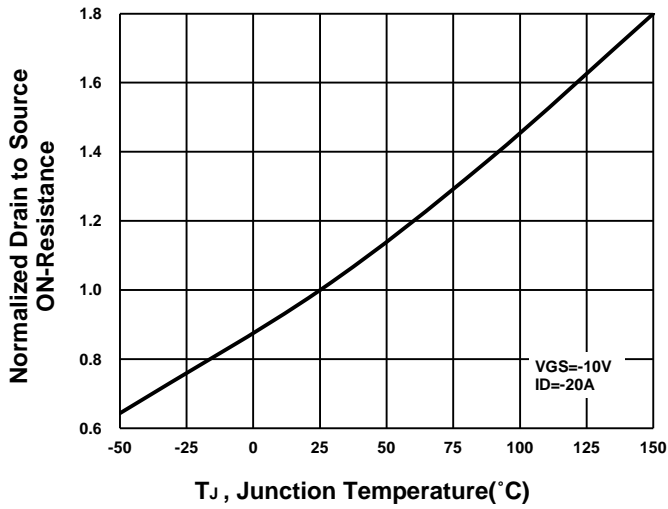
On-Resistance VS Gate-To-Source



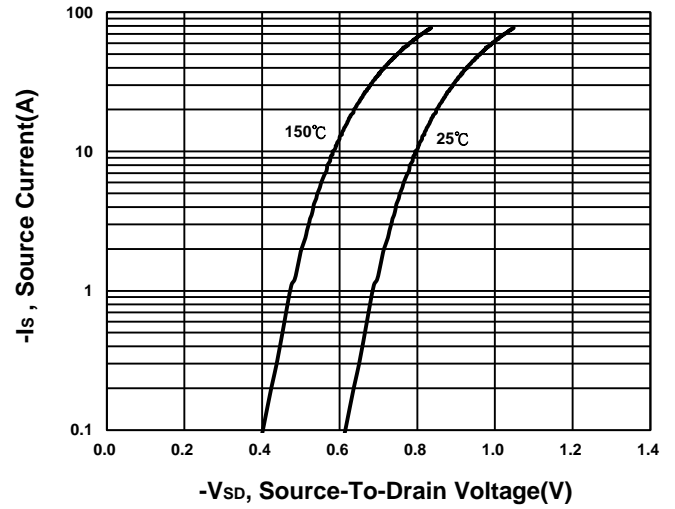
On-Resistance VS Drain Current



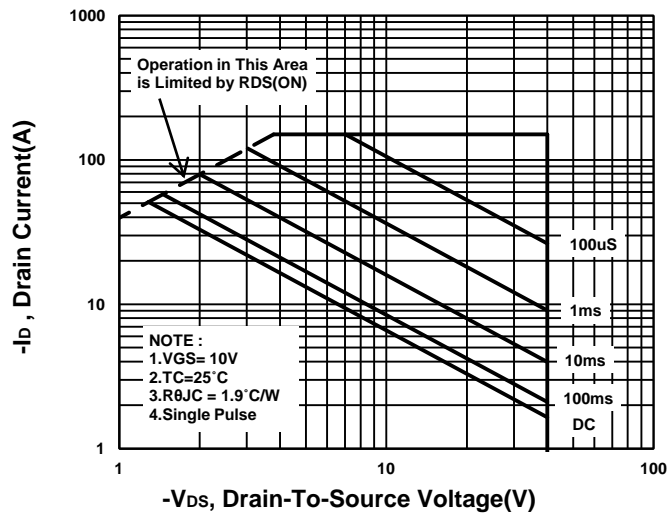
On-Resistance VS Temperature



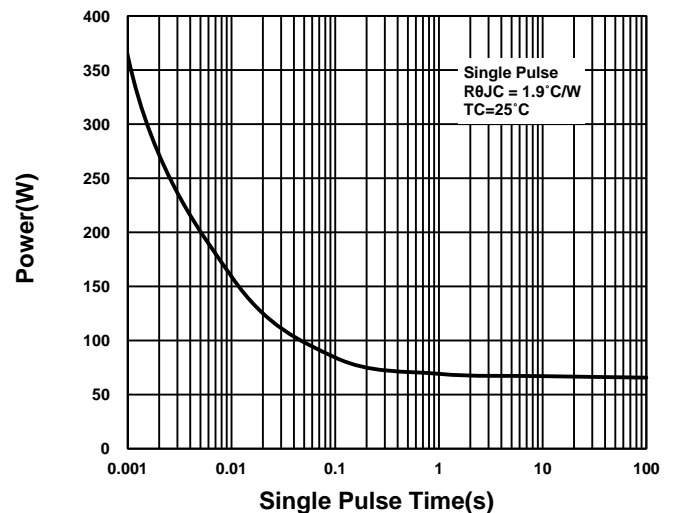
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

