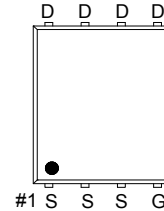
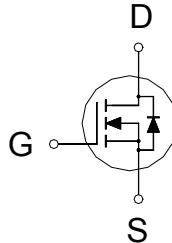




PRODUCT SUMMARY

| | | |
|---------------|--------------|-------|
| $V_{(BR)DSS}$ | $R_{DS(ON)}$ | I_D |
| 40V | 10.5mΩ | 37A |



G. GATE
D. DRAIN
S. 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 | $T_C = 25\text{ °C}$ | I_D | 37 | A |
| | $T_C = 100\text{ °C}$ | | 30 | |
| Pulsed Drain Current ¹ | | I_{DM} | 100 | |
| Continuous Drain Current | $T_A = 25\text{ °C}$ | I_D | 14 | |
| | $T_A = 70\text{ °C}$ | | 11 | |
| Avalanche Current | | I_{AS} | 21 | |
| Avalanche Energy | $L = 0.1\text{mH}$ | E_{AS} | 22 | mJ |
| Power Dissipation | $T_C = 25\text{ °C}$ | P_D | 31 | W |
| | $T_C = 100\text{ °C}$ | | 20 | |
| Power Dissipation ³ | $T_A = 25\text{ °C}$ | P_D | 4 | W |
| | $T_A = 70\text{ °C}$ | | 2.7 | |
| Operating Junction & Storage Temperature Range | | T_j, T_{stg} | -55 to 150 | °C |

THERMAL RESISTANCE RATINGS

| THERMAL RESISTANCE | | SYMBOL | TYPICAL | MAXIMUM | UNITS |
|----------------------------------|---------------------|-----------------|---------|---------|--------|
| Junction-to-Ambient ² | $t \leq 10\text{s}$ | $R_{\theta JA}$ | | 30 | °C / W |
| Junction-to-Ambient ² | Steady-State | $R_{\theta JA}$ | | 57 | |
| Junction-to-Case | Steady-State | $R_{\theta JC}$ | | 4 | |

¹Pulse width limited by maximum junction temperature.

²The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25\text{ °C}$.

³The Power dissipation is based on $R_{\theta JA} t \leq 10\text{s}$ value.

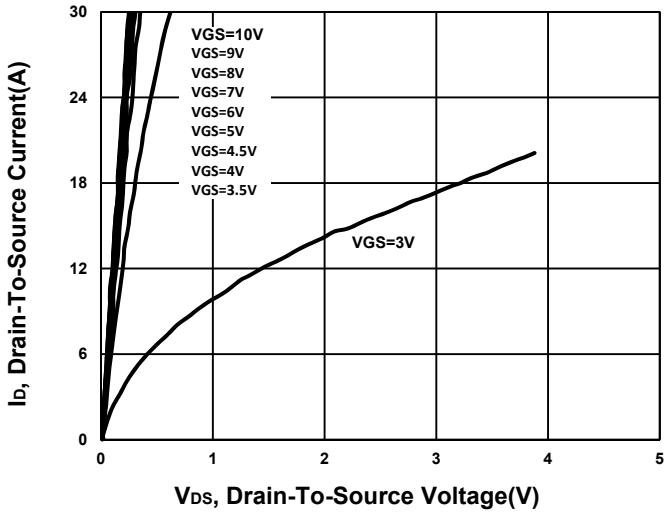
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

| PARAMETER | SYMBOL | TEST CONDITIONS | LIMITS | | | UNIT | |
|---|----------------------|--|---|------|------|------|----|
| | | | MIN | TYP | MAX | | |
| STATIC | | | | | | | |
| Drain-Source Breakdown Voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D = 250μA | 40 | | | V | |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250μA | 1.3 | 1.7 | 2.3 | | |
| Gate-Body Leakage | I _{GSS} | V _{DS} = 0V, V _{GS} = ±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 = 55 °C | | | 10 | | |
| Drain-Source On-State Resistance ¹ | R _{DS(ON)} | V _{GS} = 4.5V, I _D = 10A | | 10 | 14 | mΩ | |
| | | V _{GS} = 10V, I _D = 14A | | 8.6 | 10.5 | | |
| Forward Transconductance ¹ | g _{fs} | V _{DS} = 5V, I _D = 14A | | 56 | | S | |
| DYNAMIC | | | | | | | |
| Input Capacitance | C _{iss} | V _{GS} = 0V, V _{DS} = 20V, f = 1MHz | | 937 | | pF | |
| Output Capacitance | C _{oss} | | | 118 | | | |
| Reverse Transfer Capacitance | C _{rss} | | | 72 | | | |
| Gate Resistance | R _g | V _{GS} = 0V, V _{DS} = 0V, f = 1MHz | | 2.6 | | Ω | |
| Total Gate Charge ² | Q _g | V _{GS} = 10V | V _{DS} = 20V, V _{GS} = 10V, I _D = 14A | 17.6 | | nC | |
| | | V _{GS} = 4.5V | | 9.3 | | | |
| Gate-Source Charge ² | Q _{gs} | 2.3 | | | | | |
| Gate-Drain Charge ² | Q _{gd} | 4.7 | | | | | |
| Turn-On Delay Time ² | t _{d(on)} | V _{DS} = 20V, I _D ≅ 14A, V _{GS} = 10V, R _{GEN} = 6Ω | | 21 | | | nS |
| Rise Time ² | t _r | | | 13 | | | |
| Turn-Off Delay Time ² | t _{d(off)} | | | 33 | | | |
| Fall Time ² | t _f | | 12 | | | | |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C) | | | | | | | |
| Continuous Current | I _S | | | | 23 | A | |
| Forward Voltage ¹ | V _{SD} | I _F = 14A, V _{GS} = 0V | | | 1.3 | V | |
| Reverse Recovery Time | t _{rr} | I _F = 14A, di _F /dt = 100A / μS | | 6.9 | | nS | |
| Reverse Recovery Charge | Q _{rr} | | | 1.1 | | nC | |

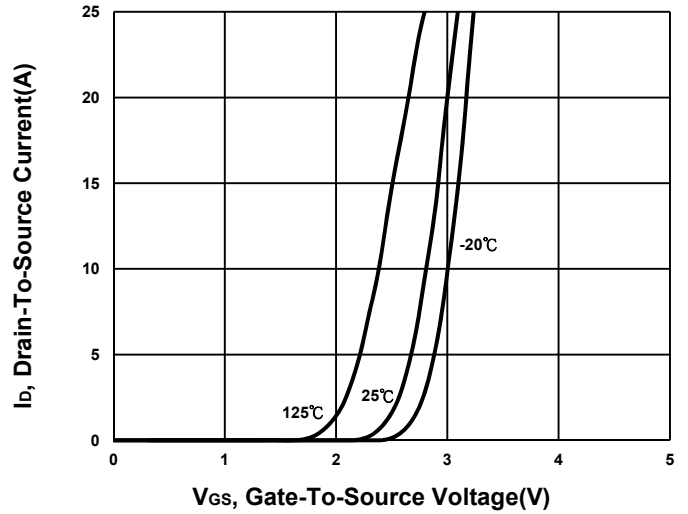
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

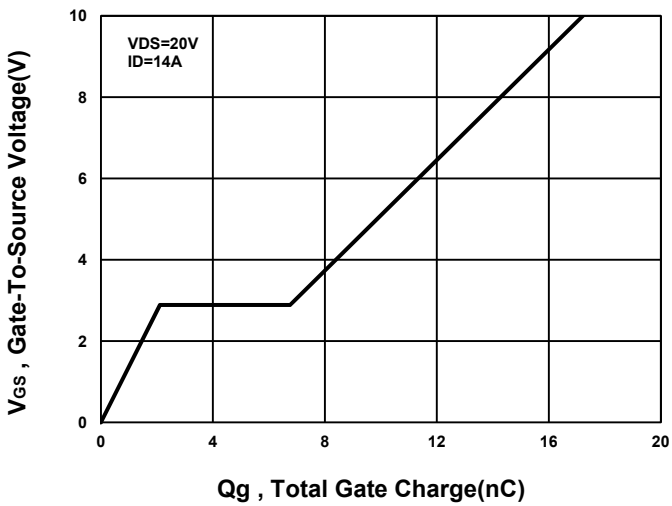
Output Characteristics



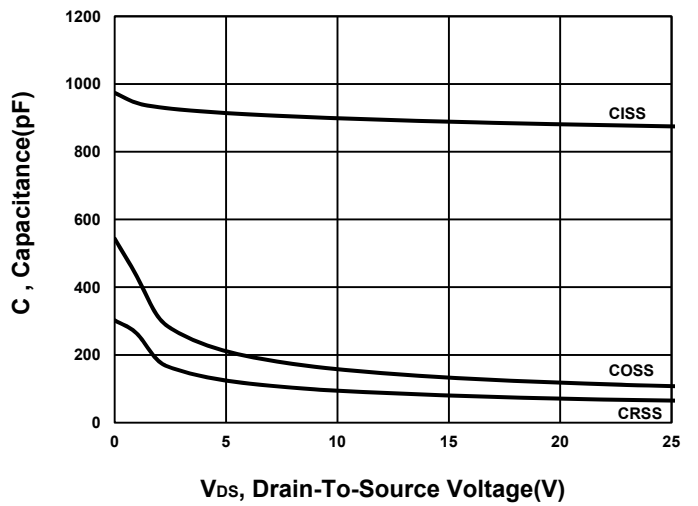
Transfer Characteristics



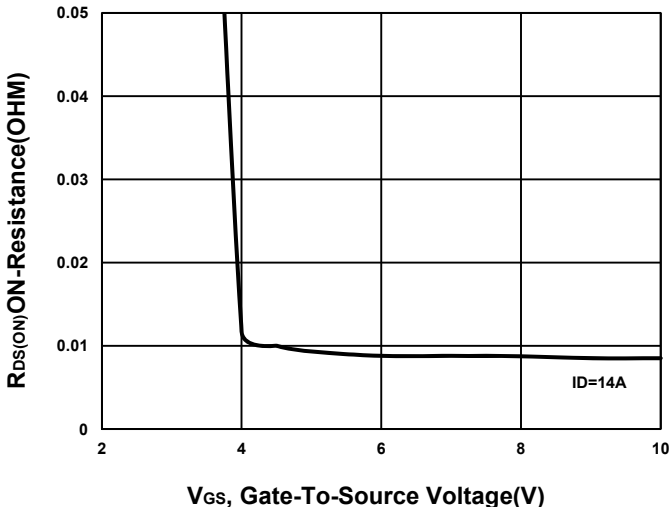
Gate charge Characteristics



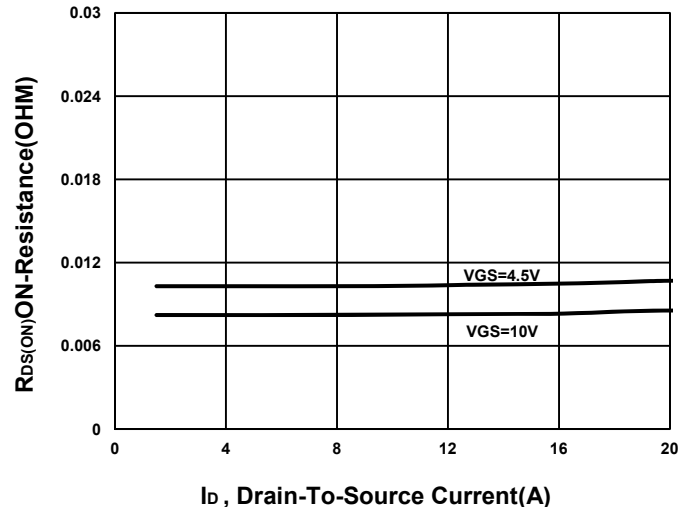
Capacitance Characteristic



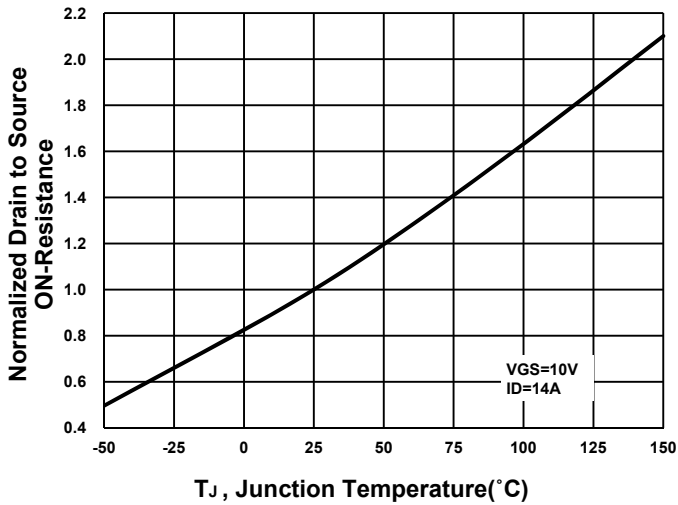
On-Resistance VS Gate-To-Source



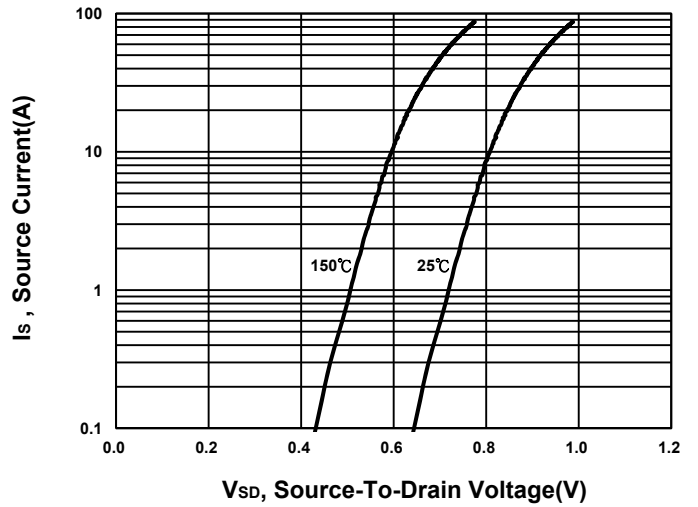
On-Resistance VS Drain Current



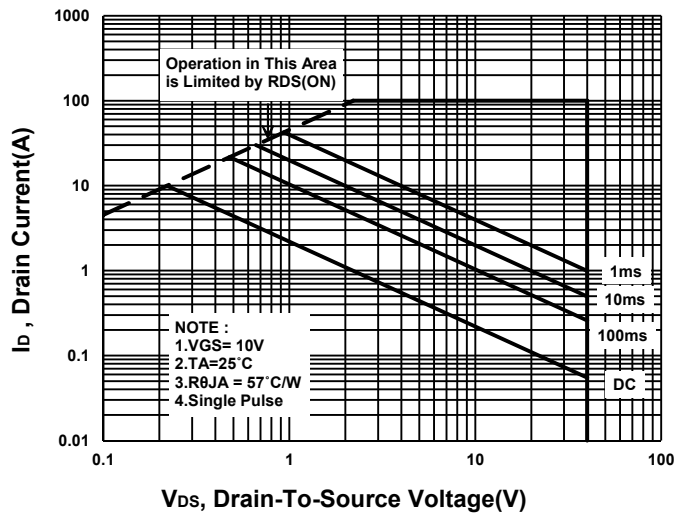
On-Resistance VS Temperature



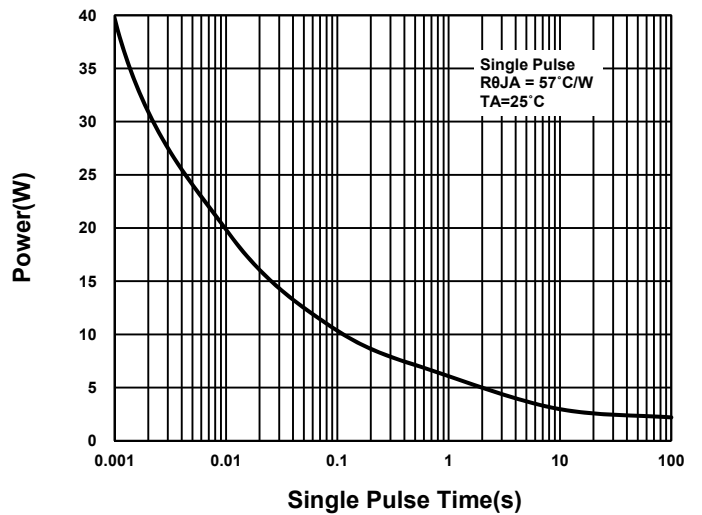
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

