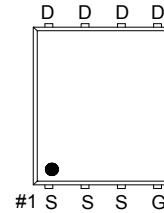
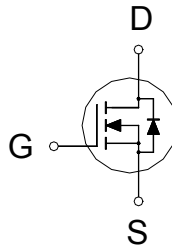




PRODUCT SUMMARY

| | | |
|---------------|--------------|-------|
| $V_{(BR)DSS}$ | $R_{DS(ON)}$ | I_D |
| 40V | 8mΩ | 42A |



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 | 42 | A |
| | $T_C = 100\text{ °C}$ | | 26.6 | |
| Pulsed Drain Current ¹ | | I_{DM} | 100 | |
| Continuous Drain Current | $T_A = 25\text{ °C}$ | I_D | 11 | |
| | $T_A = 70\text{ °C}$ | | 9 | |
| Avalanche Current | | I_{AS} | 33.7 | |
| Avalanche Energy | $L = 0.1\text{mH}$ | E_{AS} | 56.8 | mJ |
| Power Dissipation | $T_C = 25\text{ °C}$ | P_D | 31 | W |
| | $T_C = 100\text{ °C}$ | | 12.5 | |
| Power Dissipation | $T_A = 25\text{ °C}$ | P_D | 2.3 | W |
| | $T_A = 70\text{ °C}$ | | 1.5 | |
| 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 | $R_{\theta JA}$ | | 54 | °C / W |
| Junction-to-Case | $R_{\theta JC}$ | | 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 $T_A = 25\text{ °C}$.

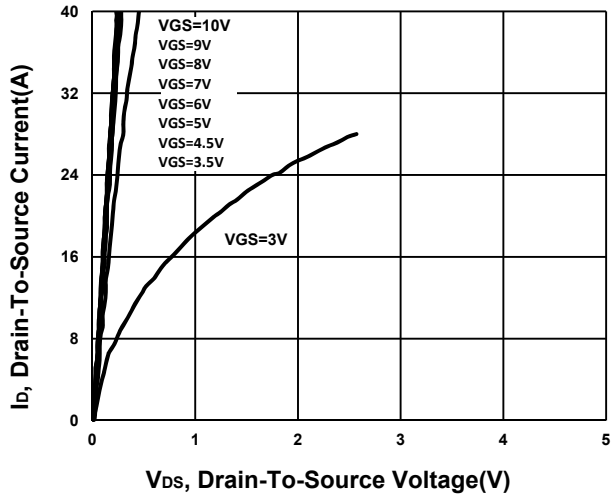
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

| 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 | 1.8 | 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 = 11A | | 6.4 | 12 | mΩ |
| | | V _{GS} = 10V, I _D = 11A | | 5.5 | 8 | |
| Forward Transconductance ¹ | g _{fs} | V _{DS} = 5V, I _D = 11A | | 55 | | S |
| DYNAMIC | | | | | | |
| Input Capacitance | C _{iss} | V _{GS} = 0V, V _{DS} = 15V, f = 1MHz | | 1672 | | pF |
| Output Capacitance | C _{oss} | | | 206 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 124 | | |
| Gate Resistance | R _g | V _{GS} = 0V, V _{DS} = 0V, f = 1MHz | | 1.3 | | Ω |
| Total Gate Charge ² | Q _g | V _{GS} = 10V | V _{DS} = 15V, V _{GS} = 10V, I _D = 11A | | 34 | nC |
| | | V _{GS} = 4.5V | | | 18 | |
| Gate-Source Charge ² | Q _{gs} | | | 5.1 | | |
| Gate-Drain Charge ² | Q _{gd} | | | 8.3 | | |
| Turn-On Delay Time ² | t _{d(on)} | V _{DS} = 15V, I _D ≅ 11A, V _{GS} = 10V, R _{GEN} = 6Ω | | | 25 | |
| Rise Time ² | t _r | | | 11 | | |
| Turn-Off Delay Time ² | t _{d(off)} | | | 41 | | |
| Fall Time ² | t _f | | | 12 | | |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C) | | | | | | |
| Continuous Current | I _S | | | | 24 | A |
| Forward Voltage ¹ | V _{SD} | I _F = 11A, V _{GS} = 0V | | | 1.3 | V |
| Reverse Recovery Time | t _{rr} | I _F = 11A, dI _F /dt = 100A / μS | | 19.5 | | nS |
| Reverse Recovery Charge | Q _{rr} | | | 9.4 | | nC |

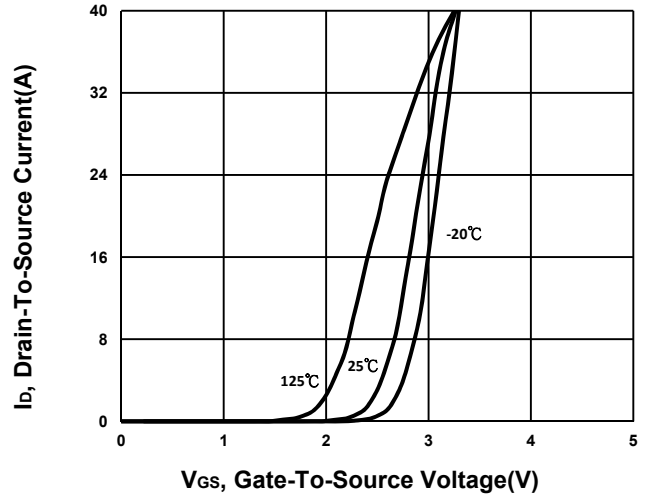
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

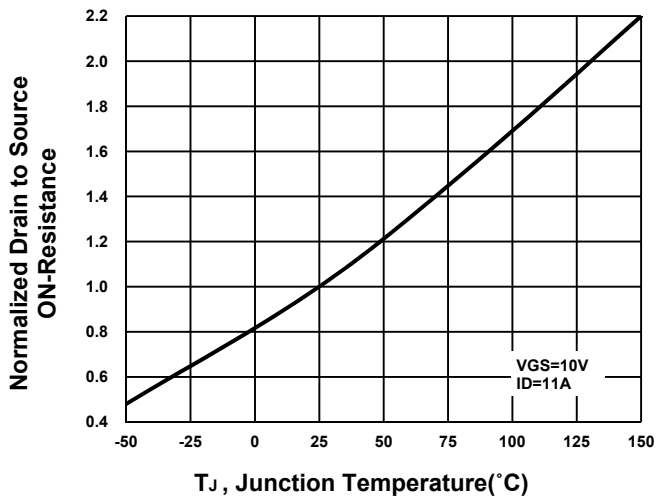
Output Characteristics



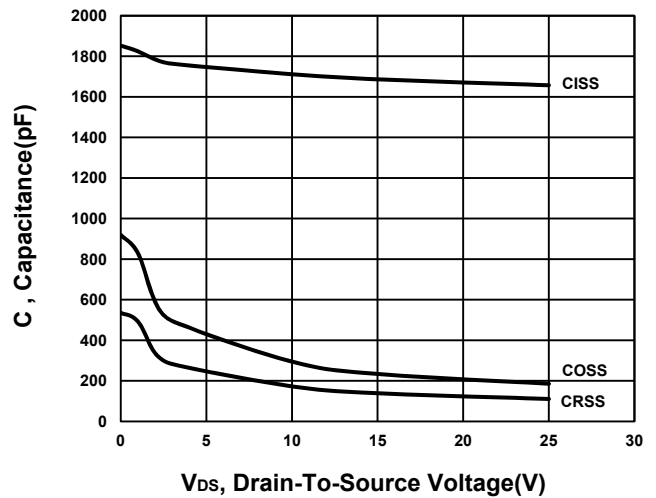
Transfer Characteristics



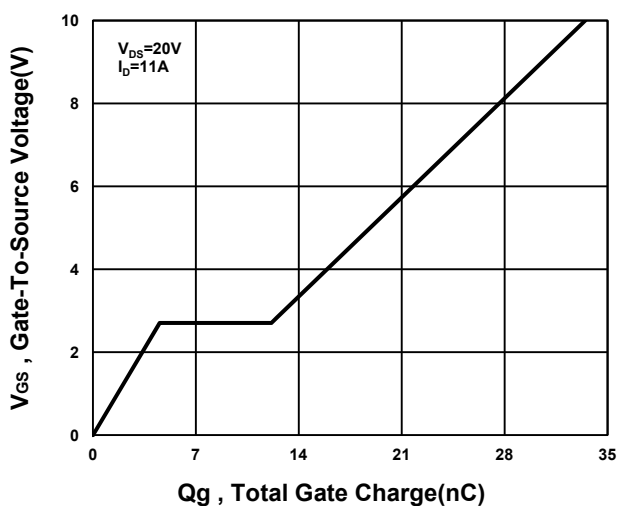
On-Resistance VS Temperature



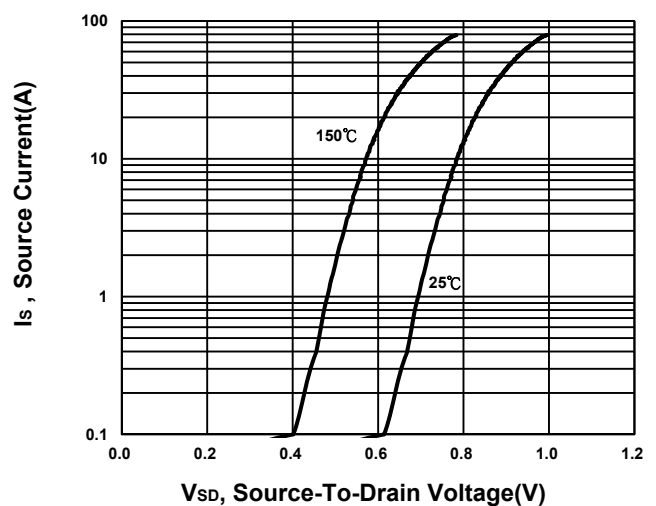
Capacitance Characteristic



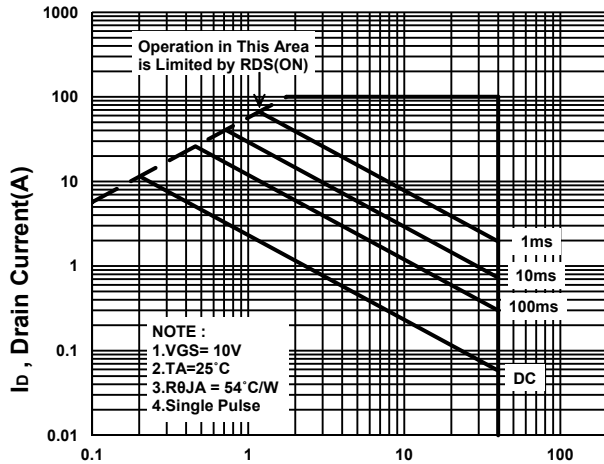
Gate charge Characteristics



Source-Drain Diode Forward Voltage

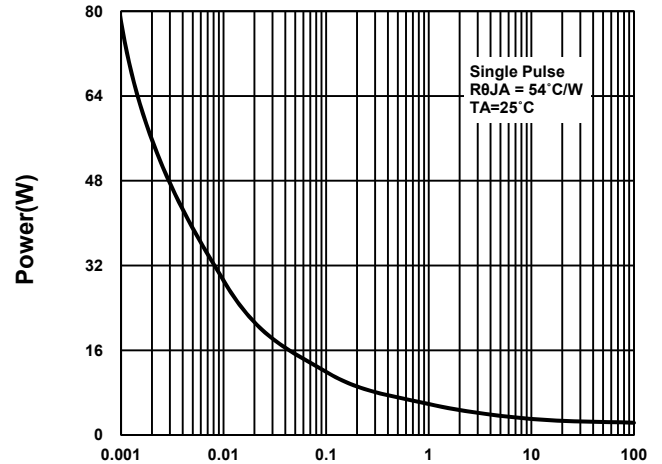


Safe Operating Area



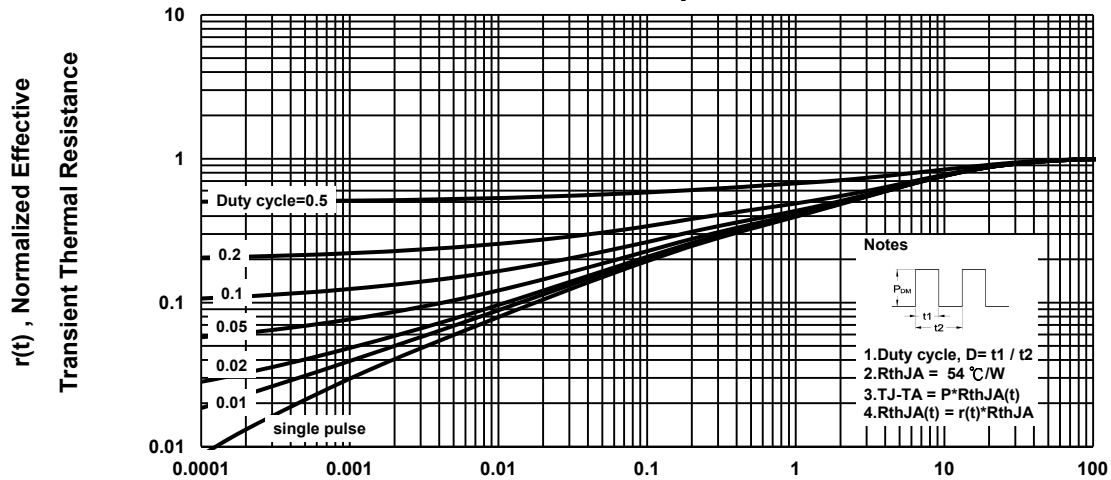
V_{DS}, Drain-To-Source Voltage(V)

Single Pulse Maximum Power Dissipation



Single Pulse Time(s)

Transient Thermal Response Curve



T₁, Square Wave Pulse Duration[sec]