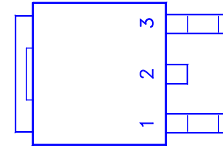
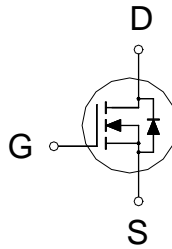




**PRODUCT SUMMARY**

|               |              |       |
|---------------|--------------|-------|
| $V_{(BR)DSS}$ | $R_{DS(ON)}$ | $I_D$ |
| 30V           | 3.7mΩ        | 105A  |



- 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                  |                       | $V_{DS}$       | 30         | V     |
| Gate-Source Voltage                   |                       | $V_{GS}$       | ±20        | V     |
| Continuous Drain Current <sup>2</sup> | $T_C = 25\text{ °C}$  | $I_D$          | 105        | A     |
|                                       | $T_C = 100\text{ °C}$ |                | 66         |       |
| Pulsed Drain Current <sup>1</sup>     |                       | $I_{DM}$       | 200        |       |
| Avalanche Current                     |                       | $I_{AS}$       | 40         |       |
| Avalanche Energy                      | $L = 0.1\text{mH}$    | $E_{AS}$       | 80         | mJ    |
| Power Dissipation                     | $T_C = 25\text{ °C}$  | $P_D$          | 73         | W     |
|                                       | $T_C = 100\text{ °C}$ |                | 29         |       |
| Junction & Storage Temperature Range  |                       | $T_J, T_{stg}$ | -55 to 150 | °C    |

**THERMAL RESISTANCE RATINGS**

| THERMAL RESISTANCE  | SYMBOL          | TYPICAL | MAXIMUM | UNITS  |
|---------------------|-----------------|---------|---------|--------|
| Junction-to-Case    | $R_{\theta JC}$ |         | 1.7     | °C / W |
| Junction-to-Ambient | $R_{\theta JA}$ |         | 62.5    |        |

<sup>1</sup>Pulse width limited by maximum junction temperature.

<sup>2</sup>Package limitation current is 55A

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

| PARAMETER                                     | SYMBOL        | TEST CONDITIONS                                  | LIMITS |     |      | UNIT |
|---|---------------|--|--------|-----|------|------|
|   |               |  | MIN    | TYP | MAX  |      |
| <b>STATIC</b>                                 |               |  |        |     |      |      |
| Drain-Source Breakdown Voltage                | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$                    | 30     |     |      | V    |
| Gate Threshold Voltage                        | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\mu A$                | 1.3    | 1.7 | 2.3  |      |
| Gate-Body Leakage                             | $I_{GSS}$     | $V_{DS} = 0V, V_{GS} = \pm 20V$                  |        |     | ±100 | nA   |
| Zero Gate Voltage Drain Current               | $I_{DSS}$     | $V_{DS} = 24V, V_{GS} = 0V$                      |        |     | 1    | μA   |
|   |               | $V_{DS} = 20V, V_{GS} = 0V, T_J = 125\text{ °C}$ |        |     | 10   |      |
| Drain-Source On-State Resistance <sub>1</sub> | $R_{DS(ON)}$  | $V_{GS} = 4.5V, I_D = 30A$                       |        | 3.4 | 4.8  | mΩ   |
|   |               | $V_{GS} = 10V, I_D = 40A$                        |        | 2.8 | 3.7  |      |

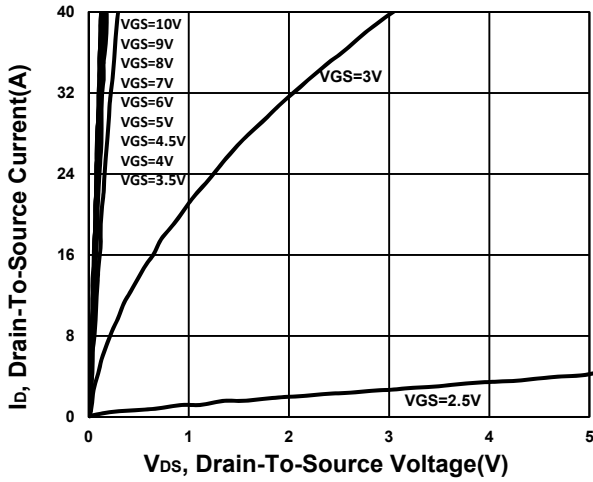
|   |                   |                                       |  |      |    |          |
|---|-------------------|---------------------------------------|--|------|----|----------|
| Forward Transconductance <sup>1</sup>   | $g_{fs}$          | $V_{DS} = 5V, I_D = 40A$              |  | 70   |    | S        |
| <b>DYNAMIC</b>  |                   |                                       |  |      |    |          |
| Input Capacitance   | $C_{iss}$         | $V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$ |  | 2189 |    | pF       |
| Output Capacitance  | $C_{oss}$         |                                       |  | 390  |    |          |
| Reverse Transfer Capacitance  | $C_{rss}$         |                                       |  | 234  |    |          |
| Gate Resistance   | $R_g$             | $V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$  |  | 1.4  |    | $\Omega$ |
| Total Gate Charge <sup>2</sup>  | $Q_{g(VGS=10V)}$  | $V_{DS} = 15V, I_D = 20A$             |  | 44.2 |    | nC       |
|   | $Q_{g(VGS=4.5V)}$ |                                       |  | 23.1 |    |          |
| Gate-Source Charge <sup>2</sup>   | $Q_{gs}$          |                                       |  | 5.6  |    |          |
| Gate-Drain Charge <sup>2</sup>  | $Q_{gd}$          |                                       |  | 10.7 |    |          |
| Turn-On Delay Time <sup>2</sup>   | $t_{d(on)}$       |                                       | $V_{DS} = 15V$<br>$I_D \cong 20A, V_{GS} = 10V, R_{GEN} = 6\Omega$ |      | 25 |          |
| Rise Time <sup>2</sup>  | $t_r$             |                                       |  | 15   |    |          |
| Turn-Off Delay Time <sup>2</sup>  | $t_{d(off)}$      |                                       |  | 54   |    |          |
| Fall Time <sup>2</sup>  | $t_f$             |                                       |  | 17   |    |          |
| <b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (<math>T_J = 25^\circ C</math>)</b> |                   |                                       |  |      |    |          |
| Continuous Current <sup>3</sup>   | $I_S$             |                                       |  | 105  |    | A        |
| Forward Voltage <sup>1</sup>  | $V_{SD}$          | $I_F = 40A, V_{GS} = 0V$              |  | 1    |    | V        |
| Reverse Recovery Time   | $t_{rr}$          | $I_F = 20A, di_F/dt = 100A / \mu S$   |  | 25   |    | nS       |
| Reverse Recovery Charge   | $Q_{rr}$          |                                       |  | 11   |    | nC       |

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

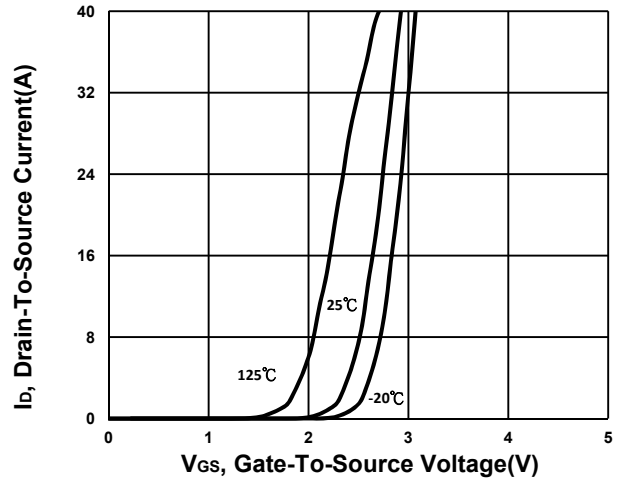
<sup>2</sup>Independent of operating temperature.

<sup>3</sup>Package limitation current is 55A

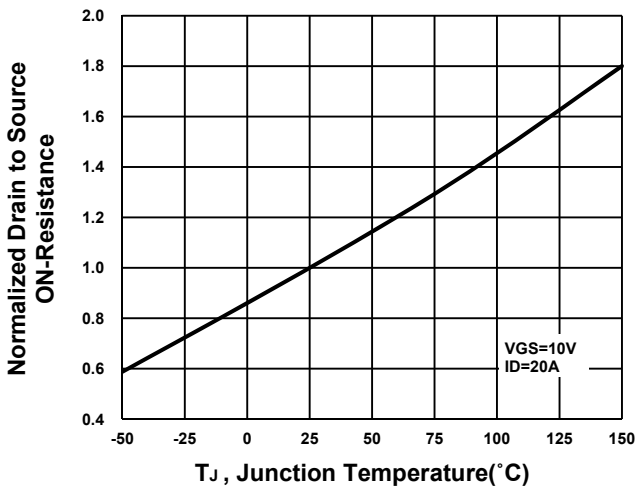
**Output Characteristics**



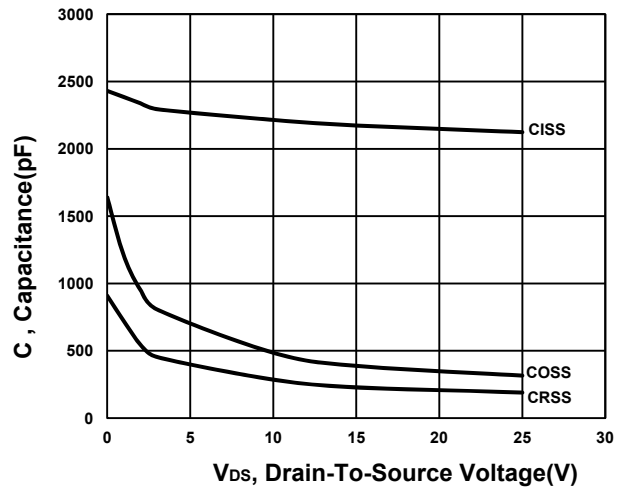
**Transfer Characteristics**



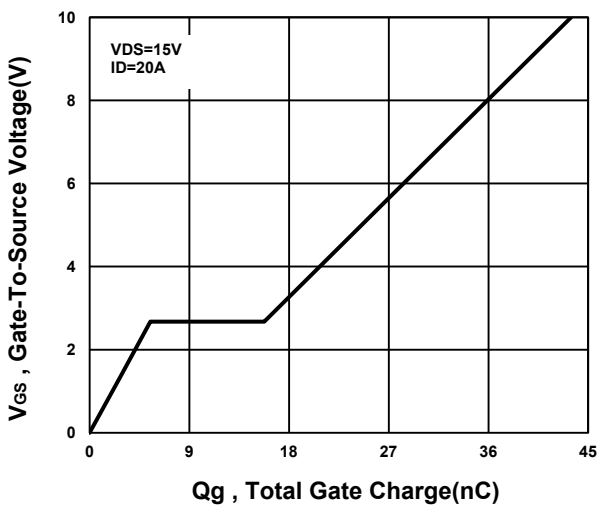
**On-Resistance VS Temperature**



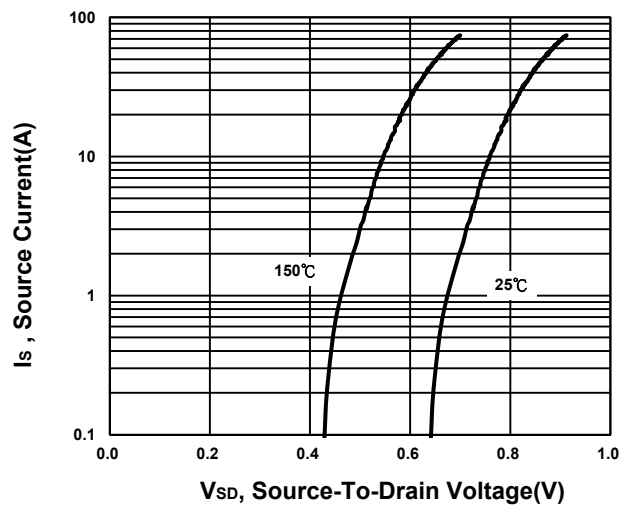
**Capacitance Characteristic**



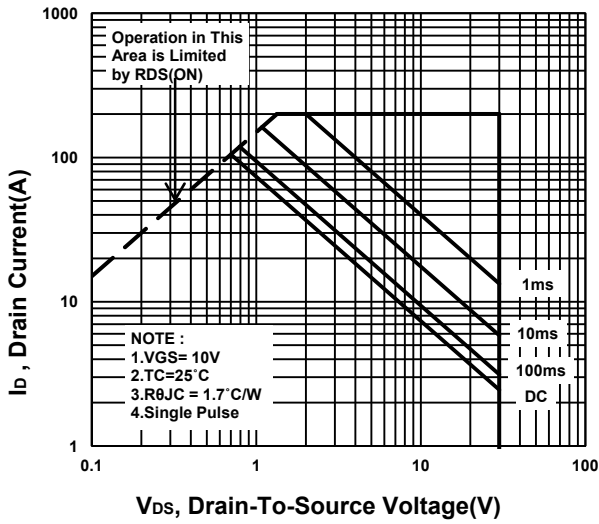
**Gate charge Characteristics**



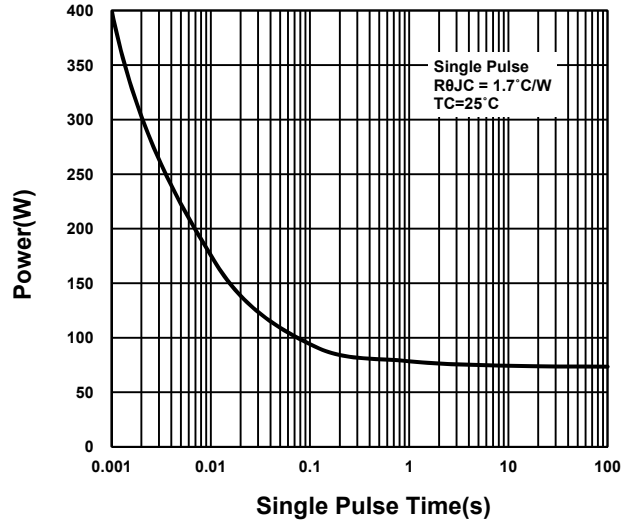
**Source-Drain Diode Forward Voltage**



**Safe Operating Area**



**Single Pulse Maximum Power Dissipation**



**Transient Thermal Response Curve**

