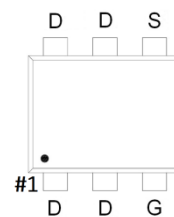
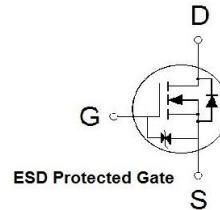




**PRODUCT SUMMARY**

|               |               |       |
|---------------|---------------|-------|
| $V_{(BR)DSS}$ | $R_{DS(ON)}$  | $I_D$ |
| 20V           | 300m $\Omega$ | 0.96A |



G: GATE  
D: DRAIN  
S: SOURCE

**Features**

- Pb-Free, Halogen Free and RoHS compliant.
- Low  $R_{DS(on)}$  to Minimize Conduction Losses.
- Ohmic Region Good  $R_{DS(on)}$  Ratio.
- Optimized Gate Charge to Minimize Switching Losses.
- ESD Protection – HBM Class : 1C.

**Applications**

- Protection Circuits Applications.
- Logic/Load Switch Circuits Applications.
- Space Limit & Smart Devices Applications.

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

| PARAMETERS/TEST CONDITIONS                     |                                  | SYMBOL         | LIMITS     | UNITS            |
|--|----------------------------------|----------------|------------|------------------|
| Gate-Source Voltage                            |                                  | $V_{GS}$       | $\pm 10$   | V                |
| Continuous Drain Current <sup>2</sup>          | $T_A = 25\text{ }^\circ\text{C}$ | $I_D$          | 0.96       | A                |
|  | $T_A = 70\text{ }^\circ\text{C}$ |                | 0.76       |                  |
| Pulsed Drain Current <sup>1,2</sup>            |                                  | $I_{DM}$       | 3          | A                |
| Power Dissipation                              | $T_A = 25\text{ }^\circ\text{C}$ | $P_D$          | 0.49       | W                |
|  | $T_A = 70\text{ }^\circ\text{C}$ |                | 0.31       |                  |
| Operating Junction & Storage Temperature Range |                                  | $T_j, T_{stg}$ | -55 to 150 | $^\circ\text{C}$ |

**THERMAL RESISTANCE RATINGS**

| THERMAL RESISTANCE  | SYMBOL          | TYPICAL | MAXIMUM | UNITS                       |
|---------------------|-----------------|---------|---------|-----------------------------|
| Junction-to-Ambient | $R_{\theta JA}$ |         | 251     | $^\circ\text{C} / \text{W}$ |

<sup>1</sup>Limited by maximum junction temperature.

<sup>2</sup>Limited by package.

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

| PARAMETER                      | SYMBOL        | TEST CONDITIONS                            | LIMITS |     |     | UNIT |
|--------------------------------|---------------|--|--------|-----|-----|------|
|                                |               |  | MIN    | TYP | MAX |      |
| <b>STATIC</b>                  |               |  |        |     |     |      |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$ | 20     |     |     | V    |
| Gate Threshold Voltage         | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\mu\text{A}$    | 0.4    | 0.7 | 1   |      |

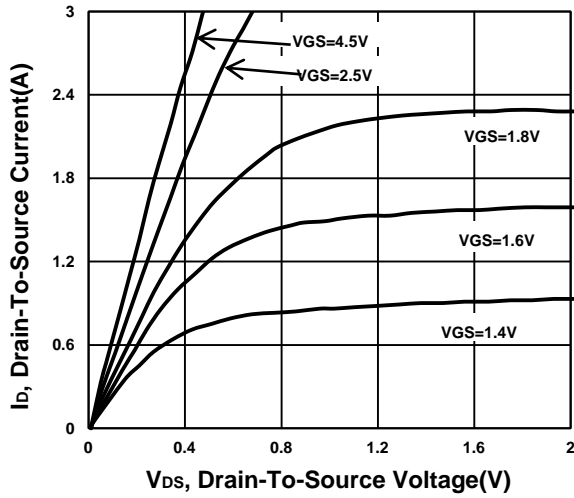
|   |              |  |  |     |          |           |
|---|--------------|--|--|-----|----------|-----------|
| Gate-Body Leakage                             | $I_{GSS}$    | $V_{DS} = 0V, V_{GS} = \pm 8V$                 |  |     | $\pm 30$ | $\mu A$   |
| Zero Gate Voltage Drain Current               | $I_{DSS}$    | $V_{DS} = 16V, V_{GS} = 0V$                    |  |     | 1        | $\mu A$   |
|   |              | $V_{DS} = 10V, V_{GS} = 0V, T_J = 125^\circ C$ |  |     | 10       |           |
| Drain-Source On-State Resistance <sup>1</sup> | $R_{DS(ON)}$ | $V_{GS} = 4.5V, I_D = 0.5A$                    |  | 144 | 300      | $m\Omega$ |
|   |              | $V_{GS} = 2.5V, I_D = 0.25A$                   |  | 186 | 400      |           |
|   |              | $V_{GS} = 1.8V, I_D = 0.2A$                    |  | 250 | 700      |           |
| Forward Transconductance <sup>1</sup>         | $g_{fs}$     | $V_{DS} = 5V, I_D = 0.5A$                      |  | 2.5 |          | S         |

| DYNAMIC   |              |  |  |     |      |         |
|---|--------------|--|--|-----|------|---------|
| Input Capacitance   | $C_{iss}$    | $V_{GS} = 0V, V_{DS} = 10V, f = 1MHz$                              |  | 60  |      | $pF$    |
| Output Capacitance  | $C_{oss}$    |  |  | 24  |      |         |
| Reverse Transfer Capacitance  | $C_{rss}$    |  |  | 11  |      |         |
| Total Gate Charge <sup>2</sup>  | $Q_g$        | $V_{GS} = 4.5V, V_{DS} = 20V, I_D = 1A$                            |  | 1.1 |      | $nC$    |
| Gate-Source Charge <sup>2</sup>                                       | $Q_{gs}$     |  |  | 0.2 |      |         |
| Gate-Drain Charge <sup>2</sup>  | $Q_{gd}$     |  |  | 0.3 |      |         |
| Turn-On Delay Time <sup>2</sup>                                       | $t_{d(on)}$  | $V_{DD} = 10V, I_D \cong 0.5A, V_{GS} = 4.5V, R_{GEN} = 5.1\Omega$ |  | 17  |      | $nS$    |
| Rise Time <sup>2</sup>  | $t_r$        |  |  | 36  |      |         |
| Turn-Off Delay Time <sup>2</sup>                                      | $t_{d(off)}$ |  |  | 86  |      |         |
| Fall Time <sup>2</sup>  | $t_f$        |  |  | 173 |      |         |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ( $T_J = 25^\circ C$ ) |              |  |  |     |      |         |
| Continuous Current  | $I_S$        |  |  |     | 0.25 | A       |
| Forward Voltage <sup>1</sup>  | $V_{SD}$     | $I_F = 0.5A, V_{GS} = 0V$  |  |     | 1.2  | V       |
| Reverse Recovery Time   | $t_{rr}$     | $I_F = 1A, dI/dt = 100 A/\mu s$                                    |  | 111 |      | nS      |
| Reverse Recovery Charge   | $Q_{rr}$     |  |  | 102 |      | $\mu C$ |

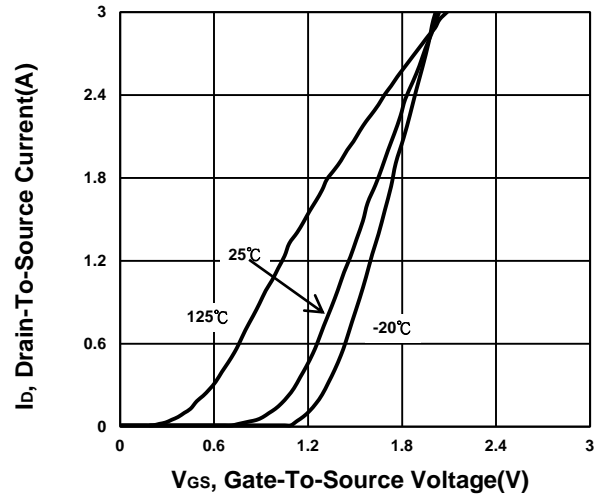
<sup>1</sup>Pulse test : Pulse Width  $\leq 300 \mu sec$ , Duty Cycle  $\leq 2\%$ .

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

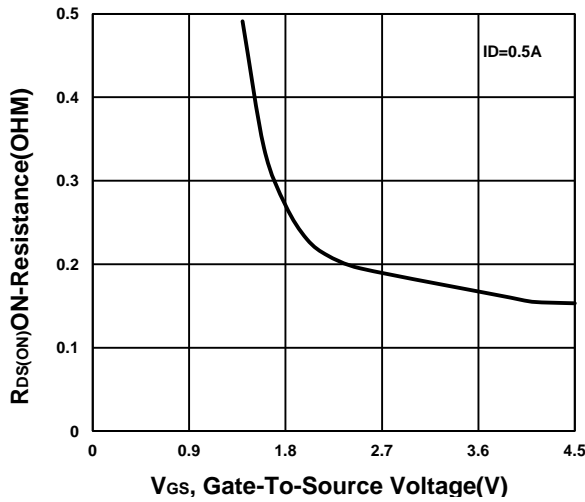
**Output Characteristics**



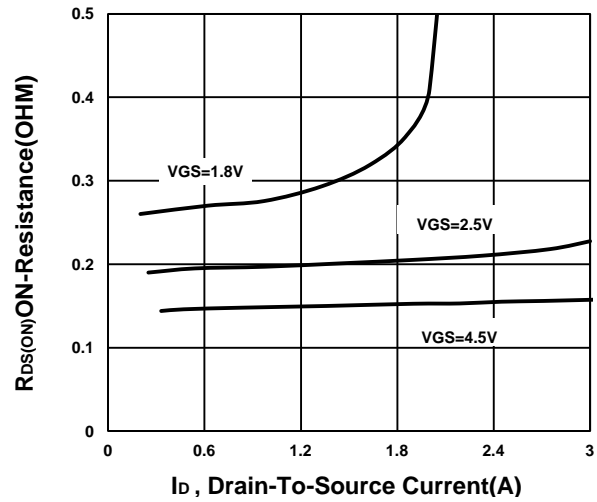
**Transfer Characteristics**



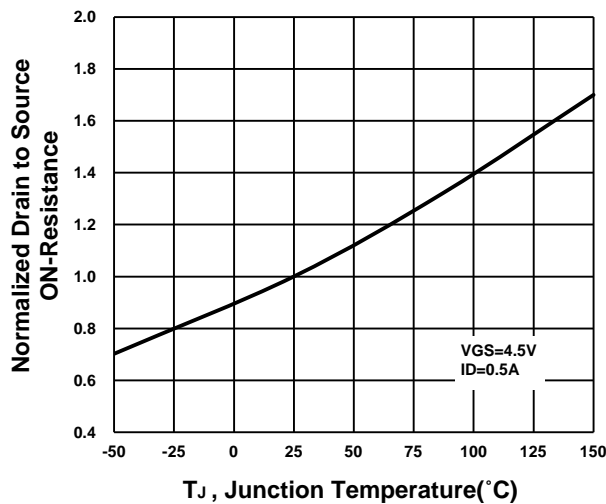
**On-Resistance VS Gate-To-Source**



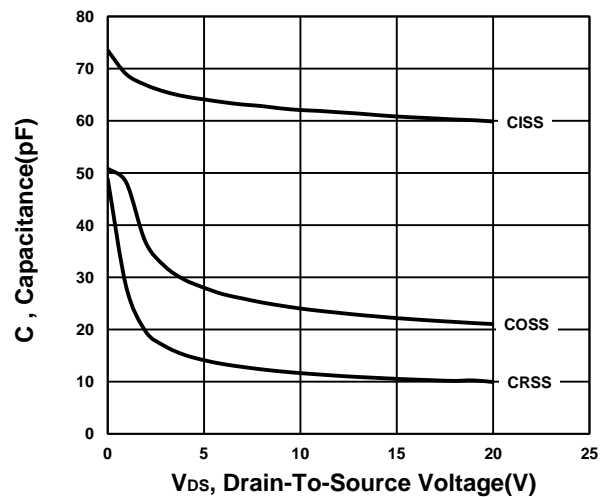
**On-Resistance VS Drain Current**



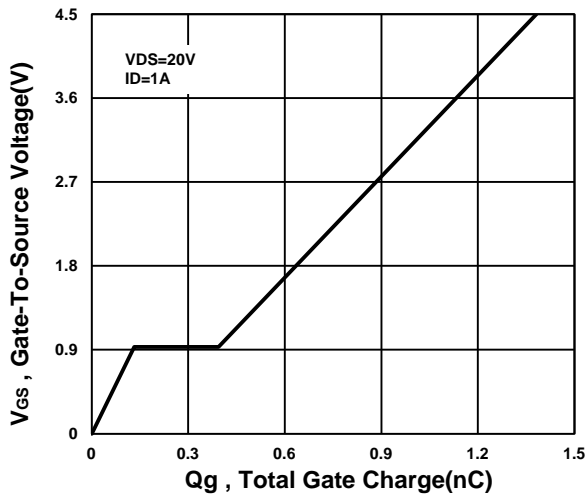
**On-Resistance VS Temperature**



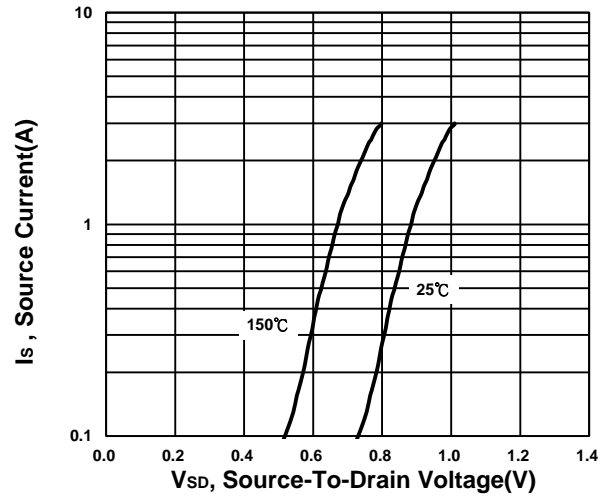
**Capacitance Characteristic**



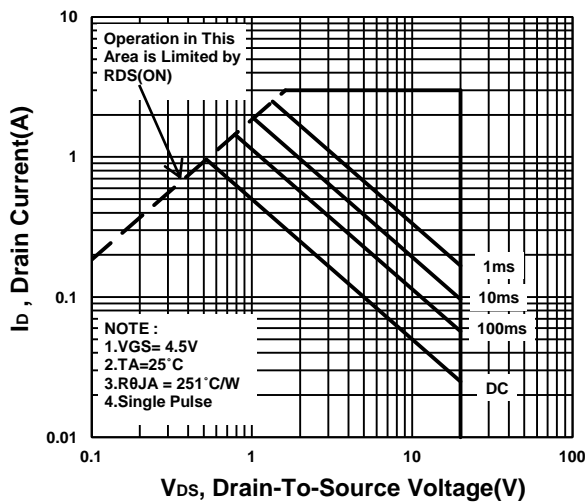
**Gate charge Characteristics**



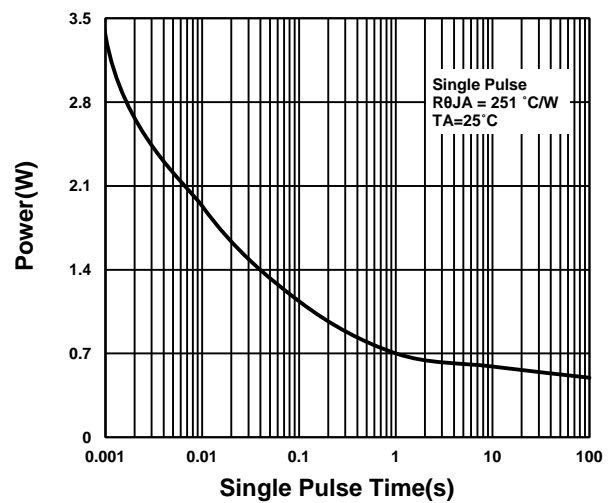
**Source-Drain Diode Forward Voltage**



**Safe Operating Area**



**Single Pulse Maximum Power Dissipation**



**Transient Thermal Response Curve**

