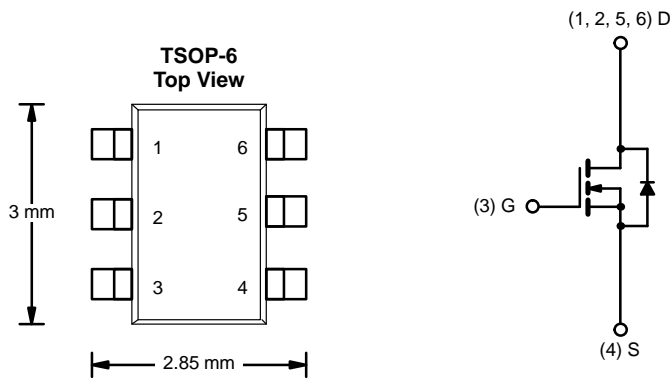




## N-Channel 30-V (D-S) MOSFET

| PRODUCT SUMMARY |                           |           |
|-----------------|---------------------------|-----------|
| $V_{DS}$ (V)    | $r_{DS(on)}$ ( $\Omega$ ) | $I_D$ (A) |
| 30              | 0.045 @ $V_{GS} = 10$ V   | $\pm 5.1$ |
|                 | 0.065 @ $V_{GS} = 4.5$ V  | $\pm 4.3$ |

**TrenchFET<sup>®</sup>**  
Power MOSFETs



N-Channel MOSFET

| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED) |                          |                |            |                  |
|---|--------------------------|----------------|------------|------------------|
| Parameter   |                          | Symbol         | Limit      | Unit             |
| Drain-Source Voltage  |                          | $V_{DS}$       | $\pm 30$   | V                |
| Gate-Source Voltage   |                          | $V_{GS}$       | $\pm 20$   |                  |
| Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a</sup>         | $T_A = 25^\circ\text{C}$ | $I_D$          | $\pm 5.1$  | A                |
|   | $T_A = 70^\circ\text{C}$ |                | $\pm 4.1$  |                  |
| Pulsed Drain Current  |                          | $I_{DM}$       | $\pm 20$   |                  |
| Continuous Source Current (Diode Conduction) <sup>a</sup>                   |                          | $I_S$          | $\pm 1.7$  |                  |
| Maximum Power Dissipation <sup>a</sup>                                      | $T_A = 25^\circ\text{C}$ | $P_D$          | 2          | W                |
|   | $T_A = 70^\circ\text{C}$ |                | 1.3        |                  |
| Operating Junction and Storage Temperature Range                            |                          | $T_J, T_{stg}$ | -55 to 150 | $^\circ\text{C}$ |

| THERMAL RESISTANCE RATINGS               |            |       |                    |
|--|------------|-------|--------------------|
| Parameter                                | Symbol     | Limit | Unit               |
| Maximum Junction-to-Ambient <sup>a</sup> | $R_{thJA}$ | 62.5  | $^\circ\text{C/W}$ |

Notes

a. Surface Mounted on FR4 Board,  $t \leq 5$  sec.



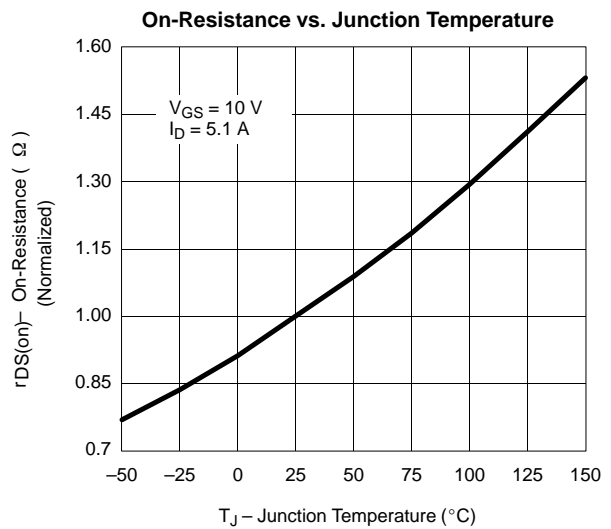
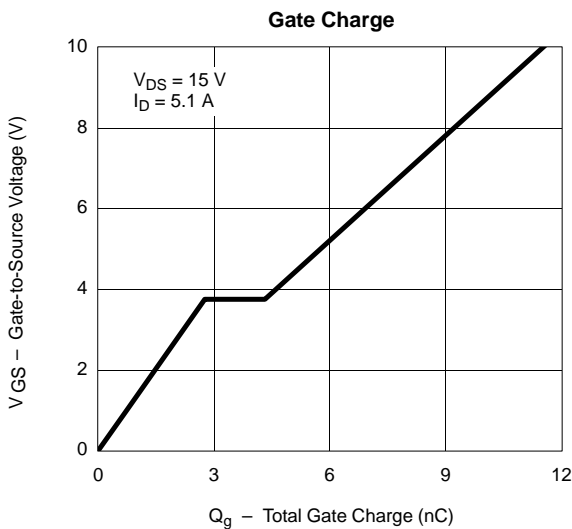
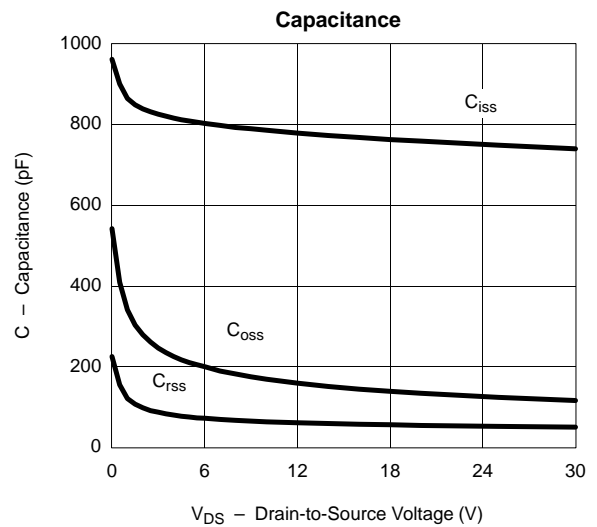
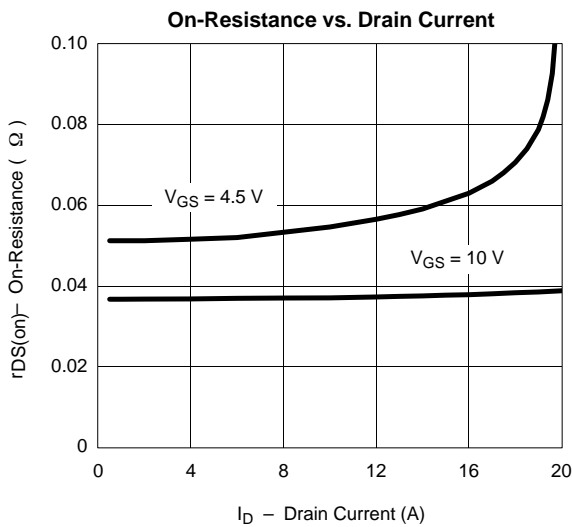
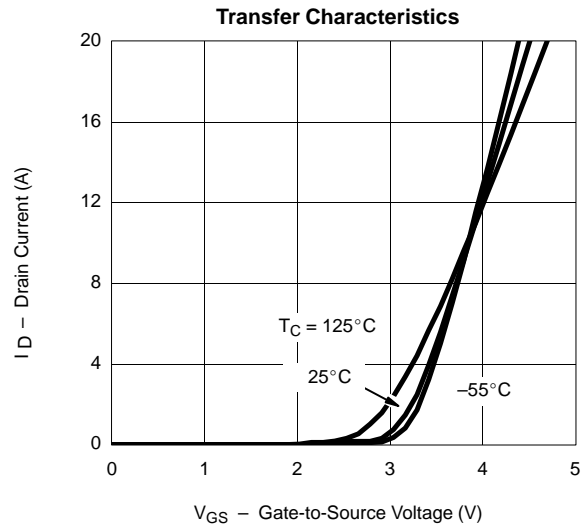
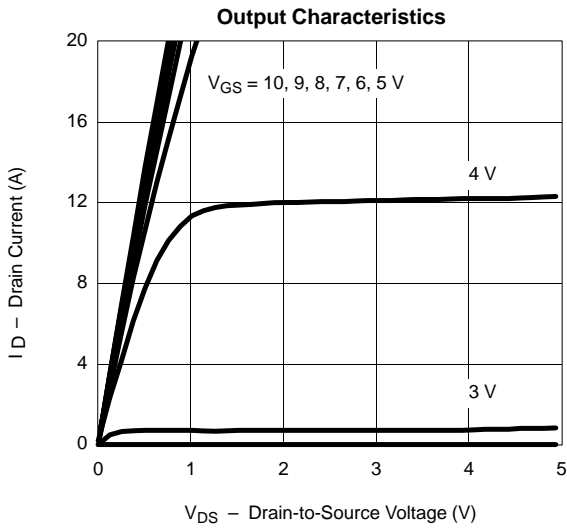
| <b>SPECIFICATIONS (T<sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)</b> |                     |  |     |       |       |      |
|--|---------------------|--|-----|-------|-------|------|
| Parameter  | Symbol              | Test Condition   | Min | Typ   | Max   | Unit |
| <b>Static</b>  |                     |  |     |       |       |      |
| Gate Threshold Voltage   | V <sub>GS(th)</sub> | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA  | 1.0 |       |       | V    |
| Gate-Body Leakage  | I <sub>GSS</sub>    | V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±20 V   |     |       | ±100  | nA   |
| Zero Gate Voltage Drain Current                                      | I <sub>DSS</sub>    | V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 0 V  |     |       | 1     | μA   |
|  |                     | V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 70 °C  |     |       | 5     |      |
| On-State Drain Current <sup>a</sup>                                  | I <sub>D(on)</sub>  | V <sub>DS</sub> = 5 V, V <sub>GS</sub> = 10 V  | 15  |       |       | A    |
| Drain-Source On-State Resistance <sup>a</sup>                        | r <sub>DS(on)</sub> | V <sub>GS</sub> = 10 V, I <sub>D</sub> = 5.1 A   |     | 0.037 | 0.045 | Ω    |
|  |                     | V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 4.3 A  |     | 0.051 | 0.065 |      |
| Forward Transconductance <sup>a</sup>                                | g <sub>fs</sub>     | V <sub>DS</sub> = 10 V, I <sub>D</sub> = 5.1 A   |     | 13    |       | S    |
| Diode Forward Voltage <sup>a</sup>                                   | V <sub>SD</sub>     | I <sub>S</sub> = 1.7 A, V <sub>GS</sub> = 0 V  |     |       | 1.2   | V    |
| <b>Dynamic<sup>b</sup></b>   |                     |  |     |       |       |      |
| Gate Charge  | Q <sub>g</sub>      | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 5 V, I <sub>D</sub> = 5.1 A  |     | 5.7   | 9     | nC   |
| Total Gate Charge  | Q <sub>gt</sub>     | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 10 V, I <sub>D</sub> = 5.1 A   |     | 12    | 20    |      |
| Gate-Source Charge   | Q <sub>gs</sub>     |  |     | 2.8   |       |      |
| Gate-Drain Charge  | Q <sub>gd</sub>     |  |     | 1.6   |       |      |
| Turn-On Delay Time   | t <sub>d(on)</sub>  | V <sub>DD</sub> = 15 V, R <sub>L</sub> = 15 Ω<br>I <sub>D</sub> ≅ 1 A, V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 6 Ω |     | 10    | 20    | ns   |
| Rise Time  | t <sub>r</sub>      |  |     | 10    | 20    |      |
| Turn-Off Delay Time  | t <sub>d(off)</sub> |  |     | 25    | 50    |      |
| Fall Time  | t <sub>f</sub>      |  |     | 10    | 20    |      |
| Source-Drain Reverse Recovery Time                                   | t <sub>rr</sub>     | I <sub>F</sub> = 1.7 A, di/dt = 100 A/μs   |     | 60    | 80    |      |

Notes

- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.



**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**



**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

