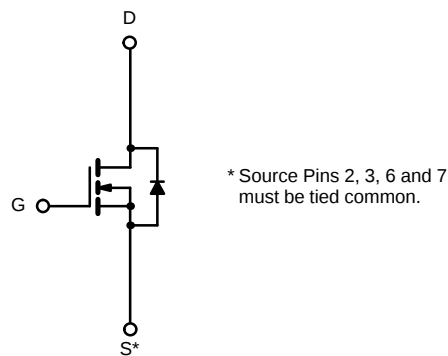
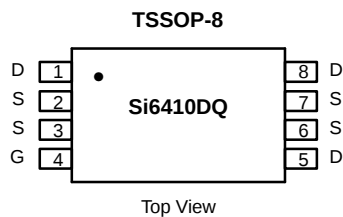




## N-Channel 30-V (D-S) MOSFET

| PRODUCT SUMMARY |                           |           |
|-----------------|---------------------------|-----------|
| $V_{DS}$ (V)    | $r_{DS(on)}$ ( $\Omega$ ) | $I_D$ (A) |
| 30              | 0.014 @ $V_{GS} = 10$ V   | $\pm 7.8$ |
|                 | 0.021 @ $V_{GS} = 4.5$ V  | $\pm 6.3$ |

**TrenchFET®**  
Power MOSFETs



N-Channel MOSFET

| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED) |                          |                |            |                  |
|-----------------------------------------------------------------------------|--------------------------|----------------|------------|------------------|
| Parameter                                                                   |                          | Symbol         | Limit      | Unit             |
| Drain-Source Voltage                                                        |                          | $V_{DS}$       | 30         | V                |
| Gate-Source Voltage                                                         |                          | $V_{GS}$       | $\pm 20$   |                  |
| Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a</sup>         | $T_A = 25^\circ\text{C}$ | $I_D$          | $\pm 7.8$  | A                |
|                                                                             | $T_A = 70^\circ\text{C}$ |                | $\pm 6.2$  |                  |
| Pulsed Drain Current                                                        |                          | $I_{DM}$       | $\pm 30$   |                  |
| Continuous Source Current (Diode Conduction) <sup>a</sup>                   |                          | $I_S$          | 1.5        |                  |
| Maximum Power Dissipation <sup>a</sup>                                      | $T_A = 25^\circ\text{C}$ | $P_D$          | 1.5        | W                |
|                                                                             | $T_A = 70^\circ\text{C}$ |                | 1.0        |                  |
| 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> | $R_{thJA}$ | 83    | $^\circ\text{C/W}$ |

Notes

a. Surface Mounted on FR4 Board,  $t \leq 10$  sec.

For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>

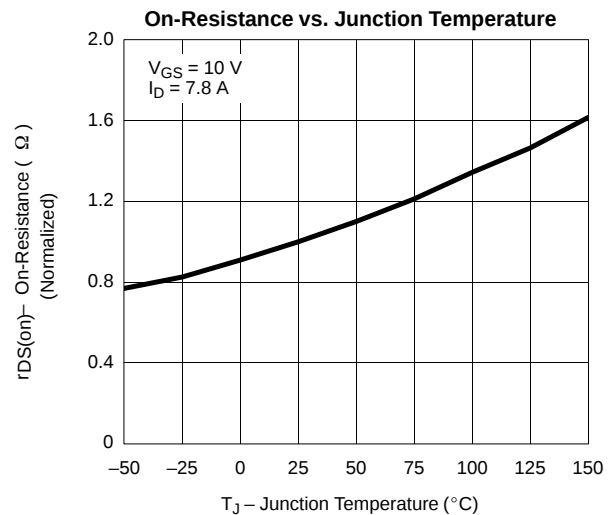
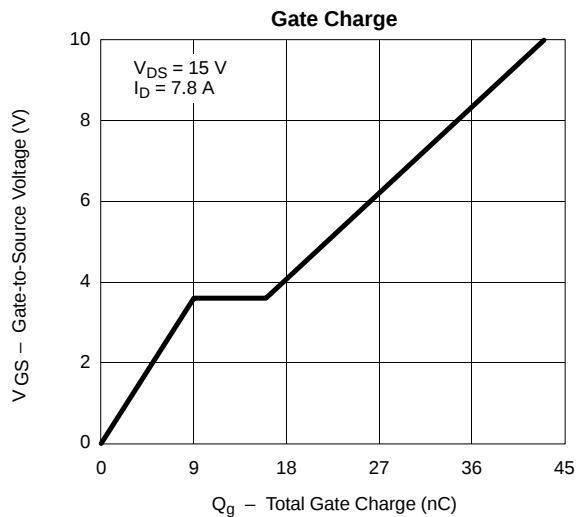
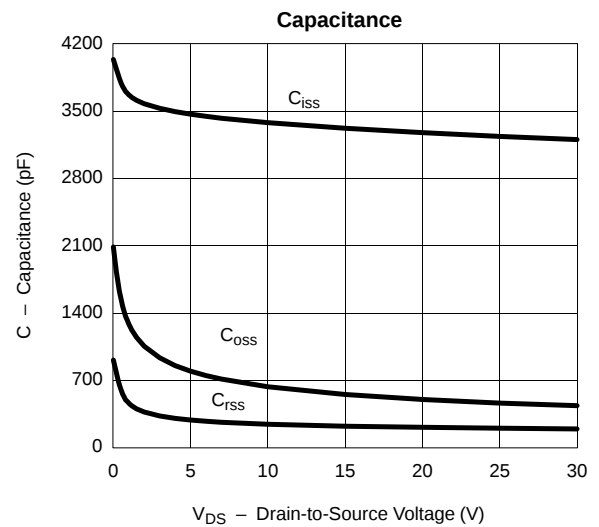
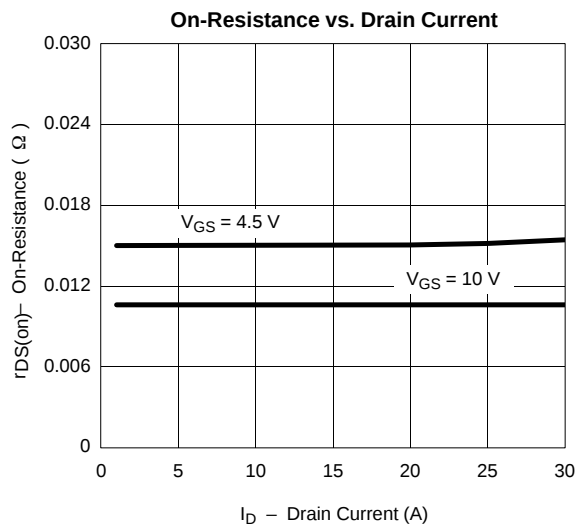
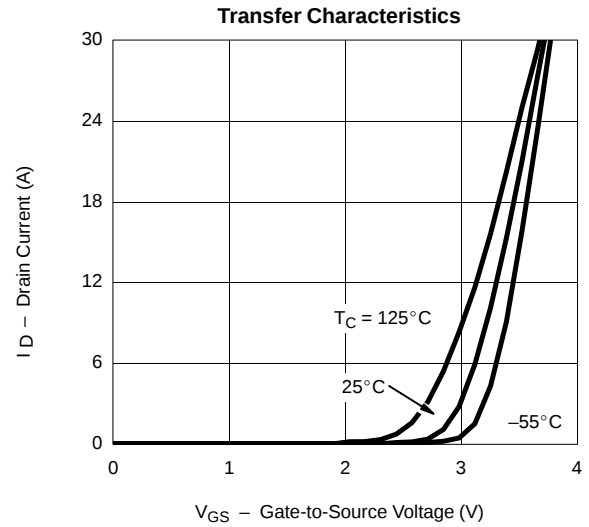
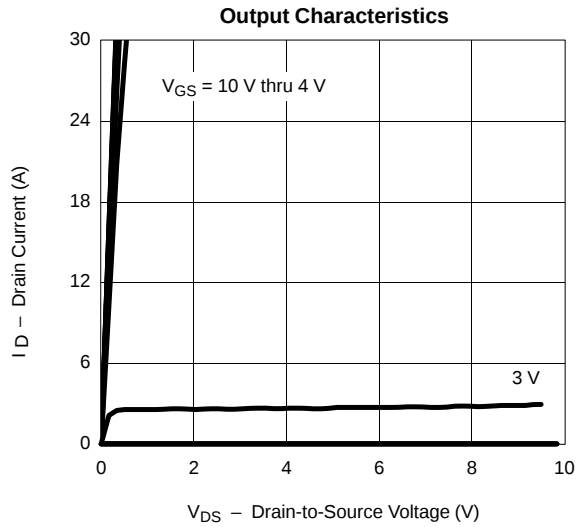
| <b>SPECIFICATIONS (<math>T_J = 25^\circ\text{C}</math> UNLESS OTHERWISE NOTED)</b> |              |                                                                                                                 |     |       |           |               |
|------------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------|-----|-------|-----------|---------------|
| Parameter                                                                          | Symbol       | Test Condition                                                                                                  | Min | Typ   | Max       | Unit          |
| <b>Static</b>                                                                      |              |                                                                                                                 |     |       |           |               |
| Gate Threshold Voltage                                                             | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$                                                                       | 1   |       |           | V             |
| Gate-Body Leakage                                                                  | $I_{GSS}$    | $V_{DS} = 0\ \text{V}, V_{GS} = \pm 20\ \text{V}$                                                               |     |       | $\pm 100$ | nA            |
| Zero Gate Voltage Drain Current                                                    | $I_{DSS}$    | $V_{DS} = 30\ \text{V}, V_{GS} = 0\ \text{V}$                                                                   |     |       | 1         | $\mu\text{A}$ |
|                                                                                    |              | $V_{DS} = 30\ \text{V}, V_{GS} = 0\ \text{V}, T_J = 55^\circ\text{C}$                                           |     |       | 25        |               |
| On-State Drain Current <sup>a</sup>                                                | $I_{D(on)}$  | $V_{DS} = 5\ \text{V}, V_{GS} = 10\ \text{V}$                                                                   | 20  |       |           | A             |
| Drain-Source On-State Resistance <sup>a</sup>                                      | $r_{DS(on)}$ | $V_{GS} = 10\ \text{V}, I_D = 7.8\ \text{A}$                                                                    |     | 0.011 | 0.014     | $\Omega$      |
|                                                                                    |              | $V_{GS} = 4.5\ \text{V}, I_D = 5\ \text{A}$                                                                     |     | 0.015 | 0.021     |               |
| Forward Transconductance <sup>a</sup>                                              | $g_{fs}$     | $V_{DS} = 15\ \text{V}, I_D = 7.8\ \text{A}$                                                                    |     | 27    |           | S             |
| Diode Forward Voltage <sup>a</sup>                                                 | $V_{SD}$     | $I_S = 1.5\ \text{A}, V_{GS} = 0\ \text{V}$                                                                     |     | 0.7   | 1.1       | V             |
| <b>Dynamic<sup>b</sup></b>                                                         |              |                                                                                                                 |     |       |           |               |
| Gate Charge                                                                        | $Q_g$        | $V_{DS} = 15\ \text{V}, V_{GS} = 5\ \text{V}, I_D = 7.8\ \text{A}$                                              |     | 22    | 33        | nC            |
| Total Gate Charge                                                                  | $Q_{gt}$     | $V_{DS} = 15\ \text{V}, V_{GS} = 10\ \text{V}, I_D = 7.8\ \text{A}$                                             |     | 43    | 60        |               |
| Gate-Source Charge                                                                 | $Q_{gs}$     |                                                                                                                 |     | 9.0   |           |               |
| Gate-Drain Charge                                                                  | $Q_{gd}$     |                                                                                                                 |     | 7.0   |           |               |
| Turn-On Delay Time                                                                 | $t_{d(on)}$  | $V_{DD} = 15\ \text{V}, R_L = 15\ \Omega$<br>$I_D \approx 1\ \text{A}, V_{GEN} = 10\ \text{V}, R_G = 6\ \Omega$ |     | 15    | 30        | ns            |
| Rise Time                                                                          | $t_r$        |                                                                                                                 |     | 10    | 20        |               |
| Turn-Off Delay Time                                                                | $t_{d(off)}$ |                                                                                                                 |     | 70    | 120       |               |
| Fall Time                                                                          | $t_f$        |                                                                                                                 |     | 20    | 50        |               |
| Source-Drain Reverse Recovery Time                                                 | $t_{rr}$     | $I_F = 1.5\ \text{A}, di/dt = 100\ \text{A}/\mu\text{s}$                                                        |     | 50    | 80        |               |

Notes

- a. Pulse test; pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$ .  
b. Guaranteed by design, not subject to production testing.



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



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

