

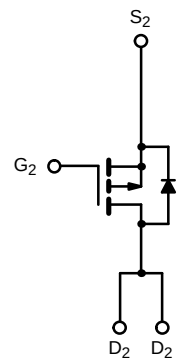
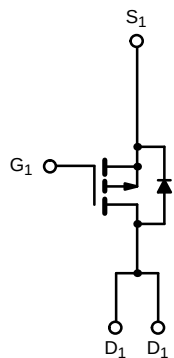
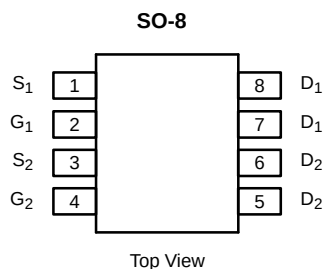


## Dual P-Channel 60-V (D-S), 175°C MOSFET

### PRODUCT SUMMARY

| $V_{DS}$ (V) | $r_{DS(on)}$ ( $\Omega$ ) | $I_D$ (A) |
|--------------|---------------------------|-----------|
| -60          | 0.17 @ $V_{GS} = -10$ V   | $\pm 2.6$ |
|              | 0.26 @ $V_{GS} = -4.5$ V  | $\pm 2.1$ |

**175°C Rated**  
Maximum Junction Temperature  
**TrenchFET®**  
Power MOSFETs



### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

| Parameter                                                           | Symbol                   | Limit      | Unit             |
|---------------------------------------------------------------------|--------------------------|------------|------------------|
| Drain-Source Voltage                                                | $V_{DS}$                 | -60        | V                |
| Gate-Source Voltage                                                 | $V_{GS}$                 | $\pm 20$   |                  |
| Continuous Drain Current ( $T_J = 175^\circ\text{C}$ ) <sup>a</sup> | $T_A = 25^\circ\text{C}$ | $I_D$      | A                |
|                                                                     | $T_A = 70^\circ\text{C}$ |            |                  |
| Pulsed Drain Current                                                | $I_{DM}$                 | $\pm 15$   |                  |
| Continuous Source Current (Diode Conduction) <sup>a</sup>           | $I_S$                    | -2         |                  |
| Maximum Power Dissipation <sup>a</sup>                              | $T_A = 25^\circ\text{C}$ | $P_D$      | W                |
|                                                                     | $T_A = 70^\circ\text{C}$ |            |                  |
| Operating Junction and Storage Temperature Range                    | $T_J, T_{stg}$           | -55 to 175 | $^\circ\text{C}$ |

### THERMAL RESISTANCE RATINGS

| Parameter                        | Symbol          | Typ        | Max  | Unit               |
|----------------------------------|-----------------|------------|------|--------------------|
| Junction-to-Ambient <sup>a</sup> | $t \leq 10$ sec | $R_{thJA}$ | 62.5 | $^\circ\text{C/W}$ |
|                                  | Steady State    |            | 93   |                    |

Notes

a. Surface Mounted on 1" x 1" FR4 Board

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

**SPECIFICATIONS ( $T_J = 25^\circ\text{C}$  UNLESS OTHERWISE NOTED)**

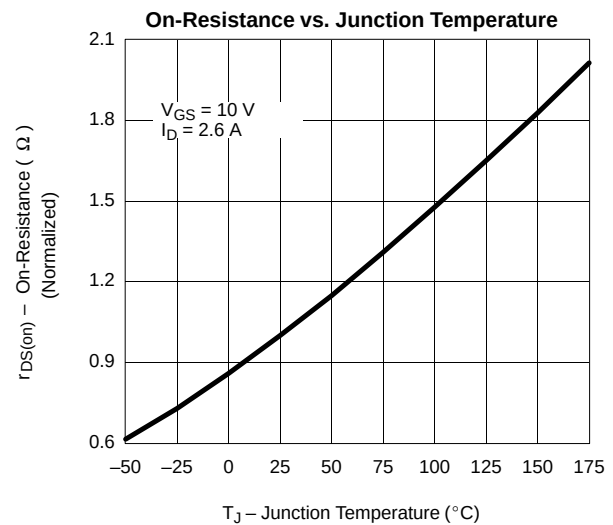
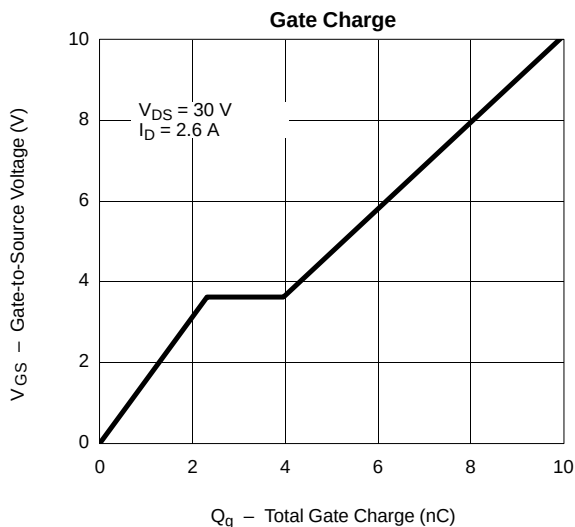
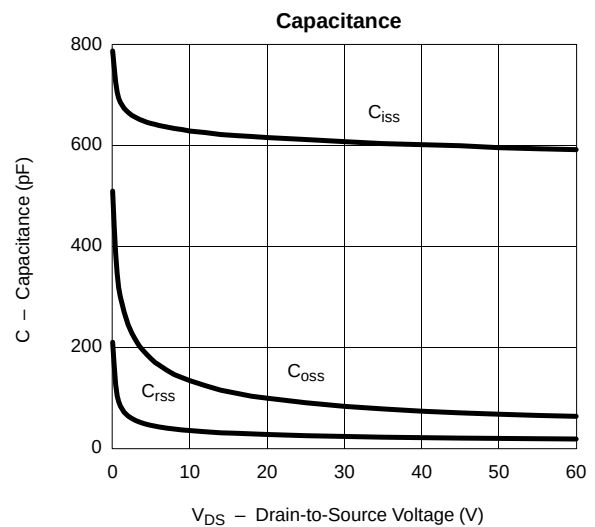
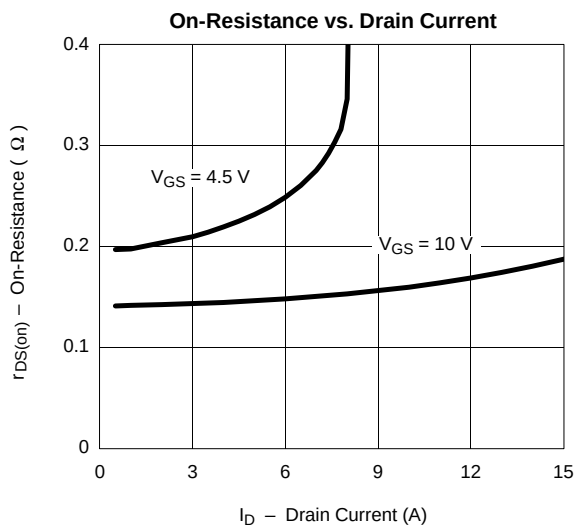
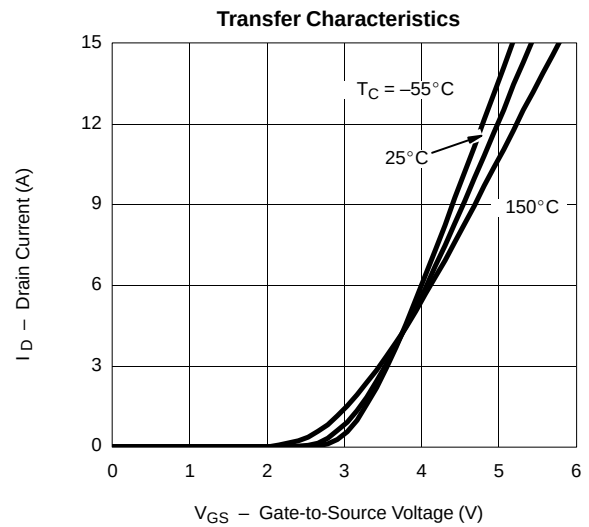
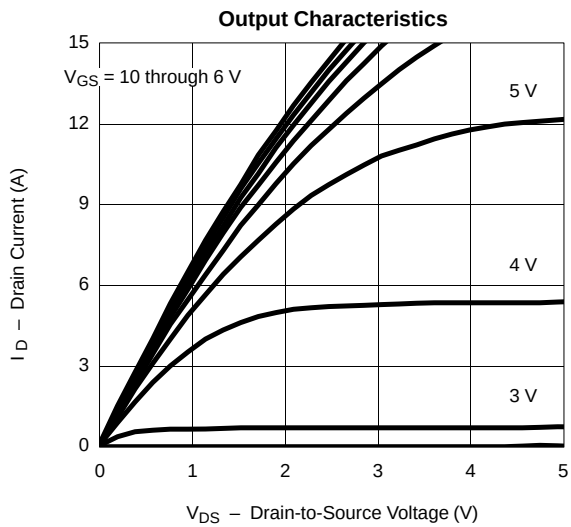
| Parameter                                     | Symbol       | Test Condition                                                                                                            | Min | Typ  | Max       | Unit          |
|-----------------------------------------------|--------------|---------------------------------------------------------------------------------------------------------------------------|-----|------|-----------|---------------|
| <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               | $I_{DSS}$    | $V_{DS} = -60\ \text{V}$ , $V_{GS} = 0\ \text{V}$                                                                         |     |      | -1        | $\mu\text{A}$ |
|                                               |              | $V_{DS} = -60\ \text{V}$ , $V_{GS} = 0\ \text{V}$ , $T_J = 55^\circ\text{C}$                                              |     |      | -10       |               |
| On-State Drain Current <sup>a</sup>           | $I_{D(on)}$  | $V_{DS} \leq -5\ \text{V}$ , $V_{GS} = -10\ \text{V}$                                                                     | -15 |      |           | A             |
| Drain-Source On-State Resistance <sup>a</sup> | $r_{DS(on)}$ | $V_{GS} = -10\ \text{V}$ , $I_D = -2.6\ \text{A}$                                                                         |     | 0.14 | 0.17      | $\Omega$      |
|                                               |              | $V_{GS} = -4.5\ \text{V}$ , $I_D = -2.1\ \text{A}$                                                                        |     | 0.20 | 0.26      |               |
| Forward Transconductance <sup>a</sup>         | $g_{fs}$     | $V_{DS} = -15\ \text{V}$ , $I_D = -2.6\ \text{A}$                                                                         |     | 5.0  |           | S             |
| Diode Forward Voltage <sup>a</sup>            | $V_{SD}$     | $I_S = -2.0\ \text{A}$ , $V_{GS} = 0\ \text{V}$                                                                           |     |      | -1.2      | V             |
| <b>Dynamic<sup>b</sup></b>                    |              |                                                                                                                           |     |      |           |               |
| Total Gate Charge                             | $Q_g$        | $V_{DS} = -30\ \text{V}$ , $V_{GS} = -10\ \text{V}$ , $I_D = -2.6\ \text{A}$                                              |     | 10   | 20        | nC            |
| Gate-Source Charge                            | $Q_{gs}$     |                                                                                                                           |     | 2.5  |           |               |
| Gate-Drain Charge                             | $Q_{gd}$     |                                                                                                                           |     | 1.8  |           |               |
| Turn-On Delay Time                            | $t_{d(on)}$  | $V_{DD} = -30\ \text{V}$ , $R_L = 30\ \Omega$<br>$I_D \cong -1\ \text{A}$ , $V_{GEN} = -10\ \text{V}$ , $R_G = 6\ \Omega$ |     | 8    | 20        | ns            |
| Rise Time                                     | $t_r$        |                                                                                                                           |     | 10   | 20        |               |
| Turn-Off Delay Time                           | $t_{d(off)}$ |                                                                                                                           |     | 23   | 40        |               |
| Fall Time                                     | $t_f$        |                                                                                                                           |     | 12   | 20        |               |
| Source-Drain Reverse Recovery Time            | $t_{rr}$     | $I_F = -2.0\ \text{A}$ , $di/dt = 100\ \text{A}/\mu\text{s}$                                                              |     | 50   | 90        |               |

## 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)**



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