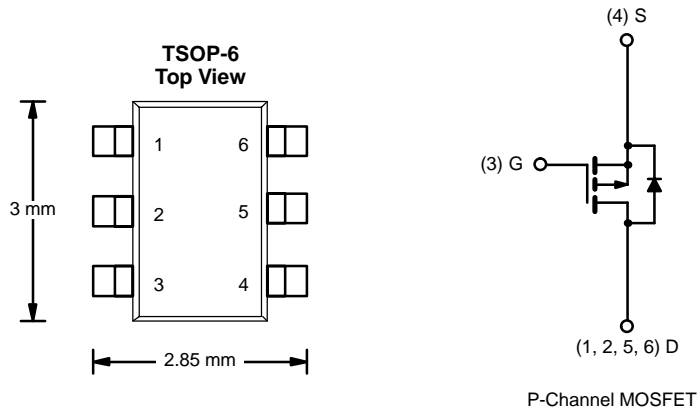




## P-Channel 2.5-V (G-S) MOSFET

**2.5-V Rated**

| PRODUCT SUMMARY |                           |                        |
|-----------------|---------------------------|------------------------|
| $V_{DS}$ (V)    | $r_{DS(on)}$ ( $\Omega$ ) | $I_D$ (A) <sup>b</sup> |
| -20             | 0.10 @ $V_{GS} = -4.5$ V  | -3.3                   |
|                 | 0.135 @ $V_{GS} = -2.5$ V | -2.9                   |



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED) |                          |                |            |              |                  |
|---|--------------------------|----------------|------------|--------------|------------------|
| Parameter   |                          | Symbol         | 5 sec      | Steady State | Unit             |
| Drain-Source Voltage  |                          | $V_{DS}$       | -20        |              | V                |
| Gate-Source Voltage   |                          | $V_{GS}$       | $\pm 8$    |              |                  |
| Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a, b</sup>      | $T_A = 25^\circ\text{C}$ | $I_D$          | -3.3       | -2.3         | A                |
|   | $T_A = 70^\circ\text{C}$ |                | -2.6       | -1.8         |                  |
| Pulsed Drain Current  |                          | $I_{DM}$       | -16        |              |                  |
| Continuous Source Current (Diode Conduction) <sup>a, b</sup>                |                          | $I_S$          | -1.6       | -0.8         |                  |
| Maximum Power Dissipation <sup>a, b</sup>                                   | $T_A = 25^\circ\text{C}$ | $P_D$          | 2.0        | 0.96         | W                |
|   | $T_A = 70^\circ\text{C}$ |                | 1.28       | 0.6          |                  |
| Operating Junction and Storage Temperature Range                            |                          | $T_J, T_{stg}$ | -55 to 150 |              | $^\circ\text{C}$ |

| THERMAL RESISTANCE RATINGS               |                |            |         |         |                    |
|--|----------------|------------|---------|---------|--------------------|
| Parameter                                |                | Symbol     | Typical | Maximum | Unit               |
| Maximum Junction-to-Ambient <sup>a</sup> | $t \leq 5$ sec | $R_{thJA}$ | 50      | 62.5    | $^\circ\text{C/W}$ |
|  | Steady State   |            | 106     | 130     |                    |
| Maximum Junction-to-Foot (Drain)         | Steady State   | $R_{thJF}$ | 40      | 50      |                    |

**Notes**

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

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

**SPECIFICATIONS (T<sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)**

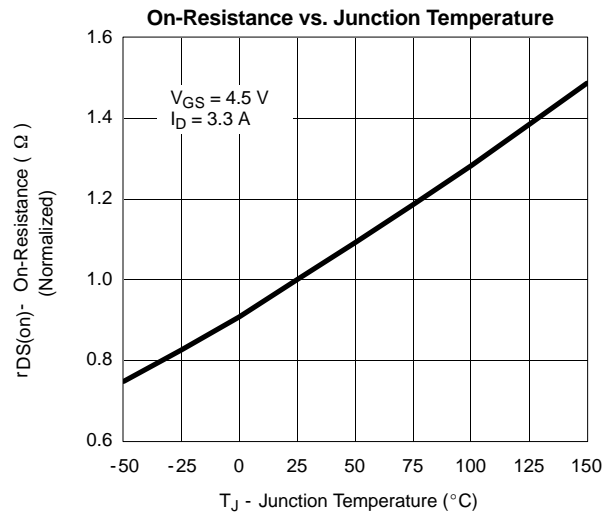
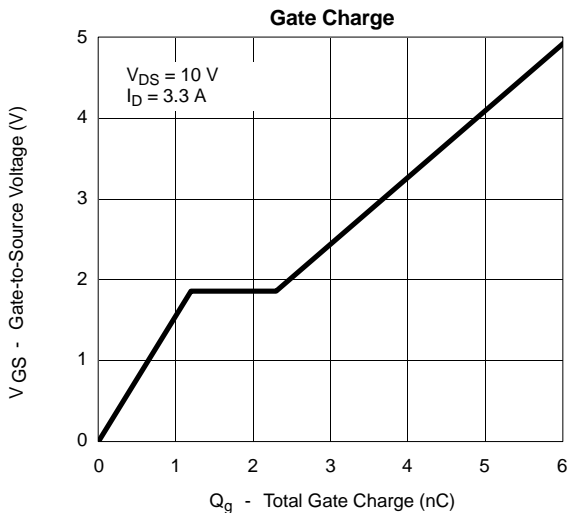
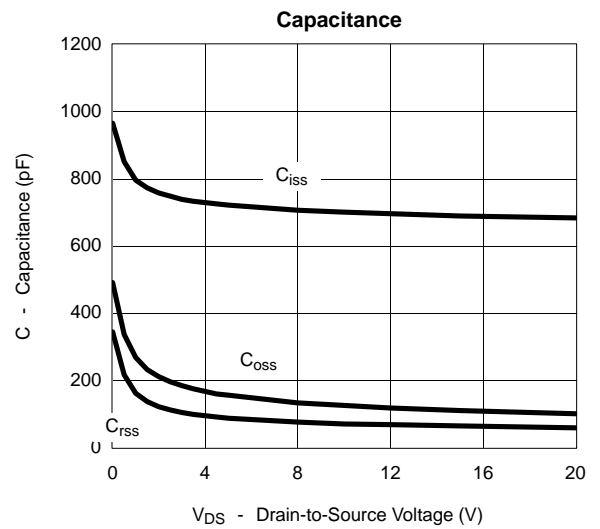
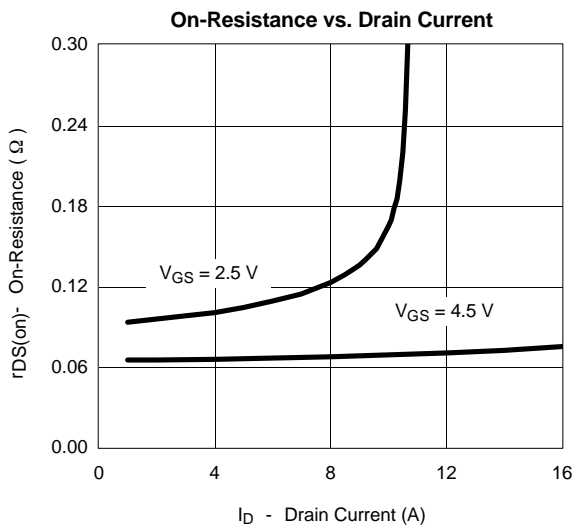
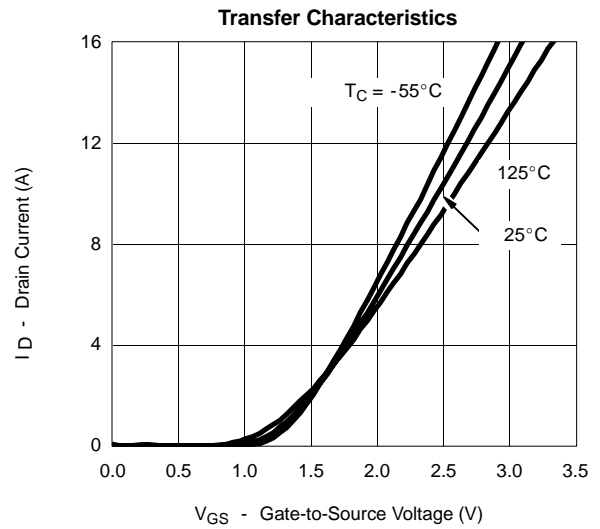
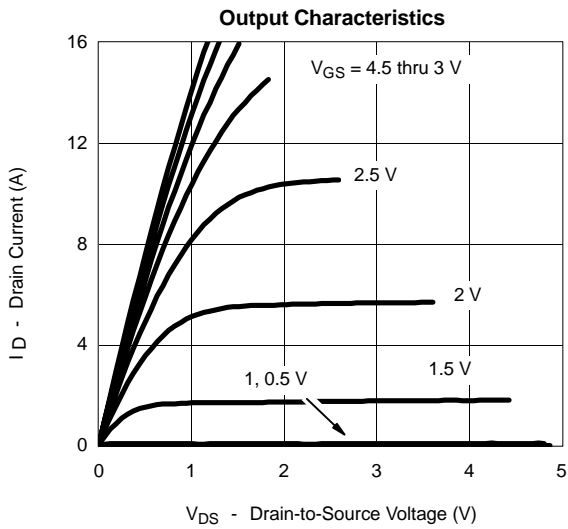
| Parameter                                     | Symbol              | Test Condition   | Min   | Typ   | Max   | Unit |
|---|---------------------|--|-------|-------|-------|------|
| <b>Static</b>                                 |                     |  |       |       |       |      |
| Gate Threshold Voltage                        | V <sub>GS(th)</sub> | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 μA   | -0.45 |       | -0.95 | V    |
| Gate-Body Leakage                             | I <sub>GSS</sub>    | V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±8 V  |       |       | ±100  | nA   |
| Zero Gate Voltage Drain Current               | I <sub>DSS</sub>    | V <sub>DS</sub> = -20 V, V <sub>GS</sub> = 0 V   |       |       | -1    | μA   |
|   |                     | V <sub>DS</sub> = -20 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> = -4.5 V   | -10   |       |       | A    |
|   |                     | V <sub>DS</sub> = -5 V, V <sub>GS</sub> = -2.5 V   | -4    |       |       |      |
| Drain-Source On-State Resistance <sup>a</sup> | r <sub>DS(on)</sub> | V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -3.3 A  |       | 0.067 | 0.10  | Ω    |
|   |                     | V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -2.9 A  |       | 0.100 | 0.135 |      |
| Forward Transconductance <sup>a</sup>         | g <sub>fs</sub>     | V <sub>DS</sub> = -10 V, I <sub>D</sub> = -3.3 A   |       | 8     |       | S    |
| Diode Forward Voltage <sup>a</sup>            | V <sub>SD</sub>     | I <sub>S</sub> = -1.6 A, V <sub>GS</sub> = 0 V   |       | 0.8   | -1.2  | V    |
| <b>Dynamic<sup>b</sup></b>                    |                     |  |       |       |       |      |
| Total Gate Charge                             | Q <sub>g</sub>      | V <sub>DS</sub> = -10 V, V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -3.3 A   |       | 5.5   | 14    | nC   |
| Gate-Source Charge                            | Q <sub>gs</sub>     |  |       | 1.2   |       |      |
| Gate-Drain Charge                             | Q <sub>gd</sub>     |  |       | 1.1   |       |      |
| Turn-On Delay Time                            | t <sub>d(on)</sub>  | V <sub>DD</sub> = -10 V, R <sub>L</sub> = 10 Ω<br>I <sub>D</sub> ≅ -1.6 A, V <sub>GEN</sub> = -4.5 V, R <sub>G</sub> = 6 Ω |       | 15    | 50    | ns   |
| Rise Time                                     | t <sub>r</sub>      |  |       | 40    | 60    |      |
| Turn-Off Delay Time                           | t <sub>d(off)</sub> |  |       | 40    | 80    |      |
| Fall Time                                     | t <sub>f</sub>      |  |       | 50    | 70    |      |
| Source-Drain Reverse Recovery Time            | t <sub>rr</sub>     | I <sub>F</sub> = -1.6 A, di/dt = 100 A/μs  |       | 50    | 80    |      |

## Notes

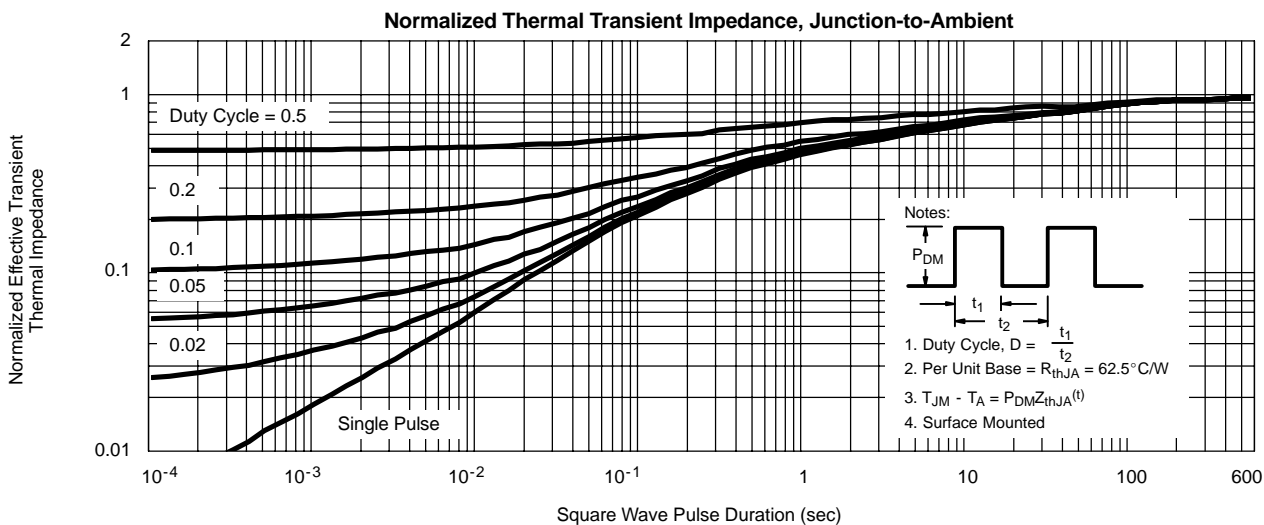
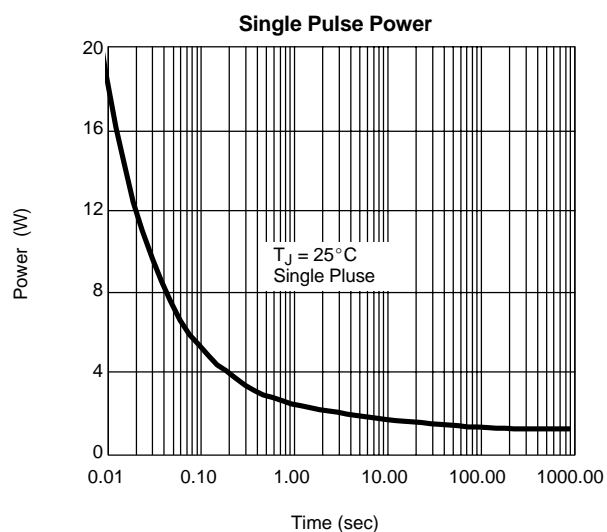
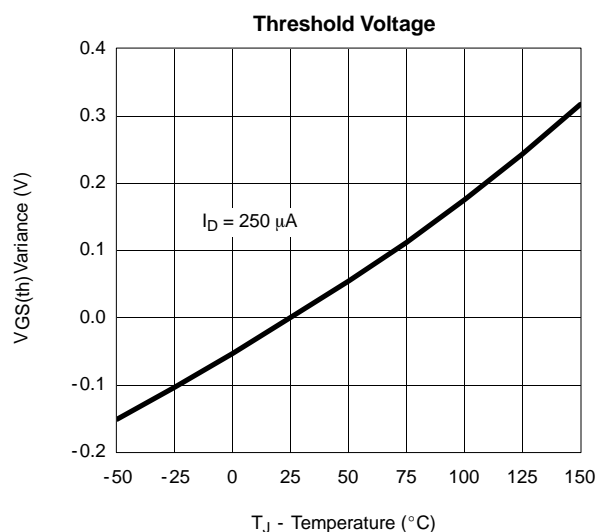
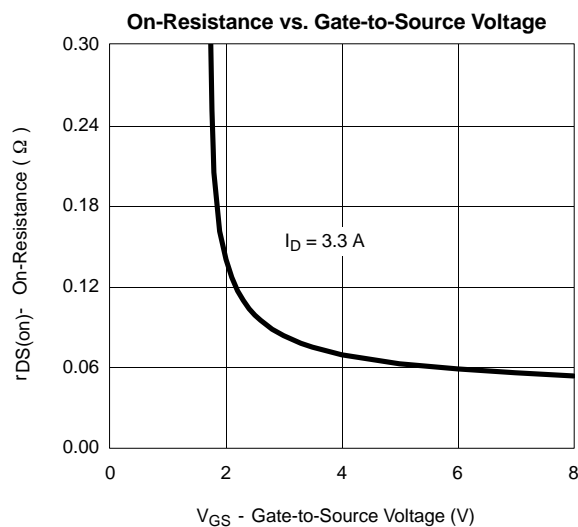
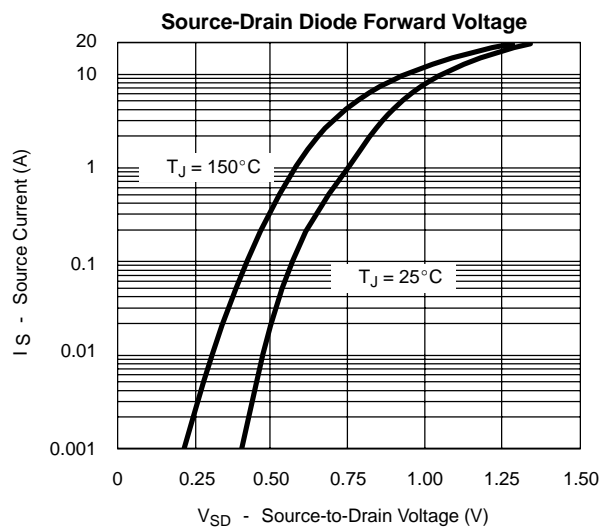
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.  
b. Guaranteed by design, not subject to production testing.



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



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



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