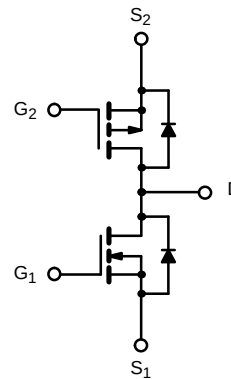
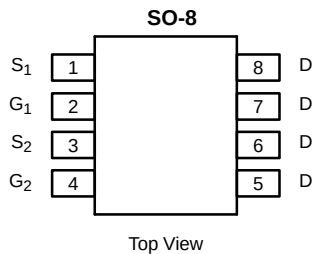




## Complementary MOSFET Half-Bridge (N- and P-Channel)

| PRODUCT SUMMARY |              |                           |           |
|-----------------|--------------|---------------------------|-----------|
|                 | $V_{DS}$ (V) | $r_{DS(on)}$ ( $\Omega$ ) | $I_D$ (A) |
| N-Channel       | 20           | 0.030 @ $V_{GS} = 4.5$ V  | $\pm 7.0$ |
|                 |              | 0.040 @ $V_{GS} = 2.5$ V  | $\pm 6.0$ |
| P-Channel       | -20          | 0.065 @ $V_{GS} = -4.5$ V | $\pm 4.5$ |
|                 |              | 0.100 @ $V_{GS} = -2.5$ V | $\pm 3.5$ |



| ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25°C UNLESS OTHERWISE NOTED) |                       |                                   |            |           |      |
|-------------------------------------------------------------------------|-----------------------|-----------------------------------|------------|-----------|------|
| Parameter                                                               |                       | Symbol                            | N-Channel  | P-Channel | Unit |
| Drain-Source Voltage                                                    |                       | V <sub>DS</sub>                   | 20         | −20       | V    |
| Gate-Source Voltage                                                     |                       | V <sub>GS</sub>                   | ± 12       | ± 12      |      |
| Continuous Drain Current (T <sub>J</sub> = 150°C) <sup>a, b</sup>       | T <sub>A</sub> = 25°C | I <sub>D</sub>                    | ± 7.0      | ± 4.5     | A    |
|                                                                         | T <sub>A</sub> = 70°C |                                   | ± 5.5      | ± 3.5     |      |
| Pulsed Drain Current                                                    |                       | I <sub>DM</sub>                   | ± 30       | ± 20      |      |
| Continuous Source Current (Diode Conduction) <sup>a, b</sup>            |                       | I <sub>S</sub>                    | 1.7        | −1.7      |      |
| Maximum Power Dissipation <sup>a, b</sup>                               | T <sub>A</sub> = 25°C | P <sub>D</sub>                    | 2.5        |           | W    |
|                                                                         | T <sub>A</sub> = 70°C |                                   | 1.6        |           |      |
| Operating Junction and Storage Temperature Range                        |                       | T <sub>J</sub> , T <sub>stg</sub> | −55 to 150 |           | °C   |

| THERMAL RESISTANCE RATINGS               |                 |            |           |     |           |     |                    |
|------------------------------------------|-----------------|------------|-----------|-----|-----------|-----|--------------------|
| Parameter                                |                 | Symbol     | N-Channel |     | P-Channel |     | Unit               |
|                                          |                 |            | Typ       | Max | Typ       | Max |                    |
| Maximum Junction-to-Ambient <sup>a</sup> | $t \leq 10$ sec | $R_{thJA}$ | 38        | 50  | 40        | 50  | $^\circ\text{C/W}$ |
|                                          | Steady-State    |            | 73        | 95  | 73        | 95  |                    |
| Maximum Junction-to-Foot                 | Steady-State    | $R_{thJC}$ | 17        | 22  | 20        | 26  |                    |

## Notes

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

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

| Parameter                                     | Symbol              | Test Condition                                                                                                                                                                                                                                                                  |           | Min            | Typ <sup>a</sup> | Max   | Unit |
|-----------------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------|------------------|-------|------|
| Static                                        |                     |                                                                                                                                                                                                                                                                                 |           |                |                  |       |      |
| Gate Threshold Voltage                        | V <sub>GS(th)</sub> | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA                                                                                                                                                                                                                     | N-Ch      | 0.6            |                  |       | V    |
|                                               |                     | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = −250 μA                                                                                                                                                                                                                    | P-Ch      | −0.6           |                  |       |      |
| Gate-Body Leakage                             | I <sub>GSS</sub>    | V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±12 V                                                                                                                                                                                                                                  | N-Ch      |                |                  | ±100  | nA   |
|                                               |                     |                                                                                                                                                                                                                                                                                 | P-Ch      |                |                  | ±100  |      |
| Zero Gate Voltage Drain Current               | I <sub>DSS</sub>    | V <sub>DS</sub> = 16 V, V <sub>GS</sub> = 0 V                                                                                                                                                                                                                                   | N-Ch      |                |                  | 1     | μA   |
|                                               |                     | V <sub>DS</sub> = −16 V, V <sub>GS</sub> = 0 V                                                                                                                                                                                                                                  | P-Ch      |                |                  | −1    |      |
|                                               |                     | V <sub>DS</sub> = 16 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55°C                                                                                                                                                                                                            | N-Ch      |                |                  | 5     |      |
|                                               |                     | V <sub>DS</sub> = −16 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55°C                                                                                                                                                                                                           | P-Ch      |                |                  | −5    |      |
| On-State Drain Current <sup>b</sup>           | I <sub>D(on)</sub>  | V <sub>DS</sub> = 5 V, V <sub>GS</sub> = 4.5 V                                                                                                                                                                                                                                  | N-Ch      | 30             |                  |       | A    |
|                                               |                     | V <sub>DS</sub> = −5 V, V <sub>GS</sub> = −4.5 V                                                                                                                                                                                                                                | P-Ch      | −20            |                  |       |      |
| Drain-Source On-State Resistance <sup>b</sup> | r <sub>DS(on)</sub> | V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 7.0 A                                                                                                                                                                                                                                 | N-Ch      |                | 0.022            | 0.030 | Ω    |
|                                               |                     | V <sub>GS</sub> = −4.5 V, I <sub>D</sub> = −4.5 A                                                                                                                                                                                                                               | P-Ch      |                | 0.058            | 0.065 |      |
|                                               |                     | V <sub>GS</sub> = 2.5 V, I <sub>D</sub> = 6.0 A                                                                                                                                                                                                                                 | N-Ch      |                | 0.030            | 0.040 |      |
|                                               |                     | V <sub>GS</sub> = −2.5 V, I <sub>D</sub> = −3.5 A                                                                                                                                                                                                                               | P-Ch      |                | 0.087            | 0.100 |      |
| Forward Transconductance <sup>b</sup>         | g <sub>fs</sub>     | V <sub>DS</sub> = 15 V, I <sub>D</sub> = 7.0 A                                                                                                                                                                                                                                  | N-Ch      |                | 22               |       | S    |
|                                               |                     | V <sub>DS</sub> = −15 V, I <sub>D</sub> = −4.5 A                                                                                                                                                                                                                                | P-Ch      |                | 10               |       |      |
| Diode Forward Voltage <sup>b</sup>            | V <sub>SD</sub>     | I <sub>S</sub> = 1.7 A, V <sub>GS</sub> = 0 V                                                                                                                                                                                                                                   | N-Ch      |                | 0.70             | 1.2   | V    |
|                                               |                     | I <sub>S</sub> = −1.7 A, V <sub>GS</sub> = 0 V                                                                                                                                                                                                                                  | P-Ch      |                | −0.80            | −1.2  |      |
| Dynamic <sup>a</sup>                          |                     |                                                                                                                                                                                                                                                                                 |           |                |                  |       |      |
| Total Gate Charge                             | Q <sub>g</sub>      | N-Channel<br>V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 3.5 A<br><br>P-Channel<br>V <sub>DS</sub> = −10 V, V <sub>GS</sub> = −4.5 V, I <sub>D</sub> = −4.5 A                                                                                             | N-Ch      |                | 13               | 25    | nC   |
| Gate-Source Charge                            | Q <sub>gs</sub>     |                                                                                                                                                                                                                                                                                 | P-Ch      |                | 8.5              | 15    |      |
|                                               |                     |                                                                                                                                                                                                                                                                                 | N-Ch      |                | 3.0              |       |      |
| Gate-Drain Charge                             | Q <sub>gd</sub>     |                                                                                                                                                                                                                                                                                 | P-Ch      |                | 2.8              |       |      |
|                                               |                     | N-Ch                                                                                                                                                                                                                                                                            |           | 3.3            |                  |       |      |
| Turn-On Delay Time                            | t <sub>d(on)</sub>  | N-Channel<br>V <sub>DD</sub> = 10 V, R <sub>L</sub> = 10 Ω<br>I <sub>D</sub> ≅ 1 A, V <sub>GEN</sub> = 4.5 V, R <sub>G</sub> = 6 Ω<br><br>P-Channel<br>V <sub>DD</sub> = −10 V, R <sub>L</sub> = 10 Ω<br>I <sub>D</sub> ≅ −1 A, V <sub>GEN</sub> = −4.5 V, R <sub>G</sub> = 6 Ω | P-Ch      |                | 1.7              |       |      |
|                                               |                     |                                                                                                                                                                                                                                                                                 | Rise Time | t <sub>r</sub> | N-Ch             |       | 22   |
| P-Ch                                          |                     |                                                                                                                                                                                                                                                                                 |           |                | 15               | 30    |      |
| Turn-Off Delay Time                           | t <sub>d(off)</sub> |                                                                                                                                                                                                                                                                                 | N-Ch      |                | 40               | 80    |      |
|                                               |                     |                                                                                                                                                                                                                                                                                 | P-Ch      |                | 32               | 60    |      |
| Fall Time                                     | t <sub>f</sub>      |                                                                                                                                                                                                                                                                                 | N-Ch      |                | 50               | 100   |      |
|                                               |                     |                                                                                                                                                                                                                                                                                 | P-Ch      |                | 57               | 100   |      |
| Source-Drain Reverse Recovery Time            | t <sub>rr</sub>     |                                                                                                                                                                                                                                                                                 | N-Ch      |                | 20               | 40    |      |
|                                               |                     | P-Ch                                                                                                                                                                                                                                                                            |           | 40             | 80               |       |      |
|                                               |                     | I <sub>F</sub> = 1.7 A, di/dt = 100 A/μs                                                                                                                                                                                                                                        | N-Ch      |                | 40               | 80    |      |
|                                               |                     |                                                                                                                                                                                                                                                                                 | P-Ch      |                | 40               | 80    |      |

## Notes

a. Guaranteed by design, not subject to production testing.

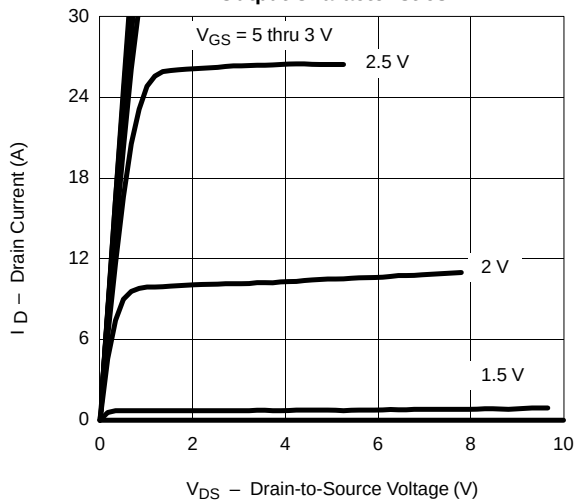
b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.



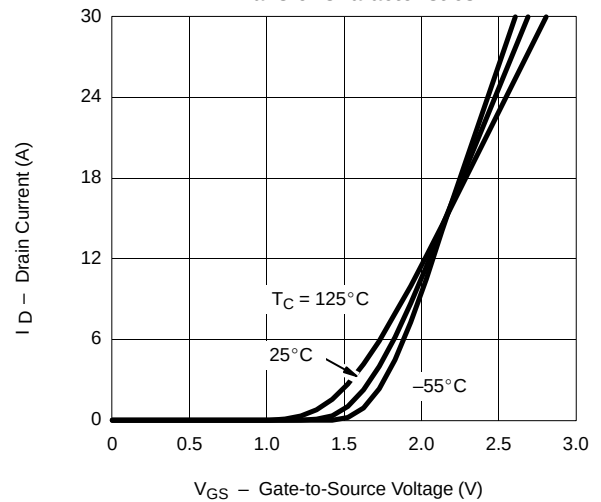
## TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

## N-CHANNEL

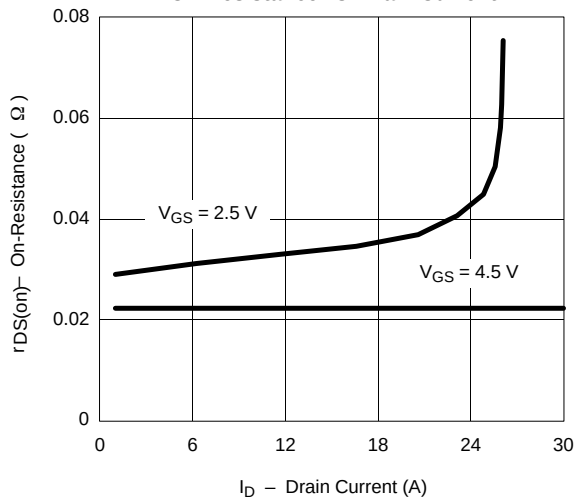
Output Characteristics



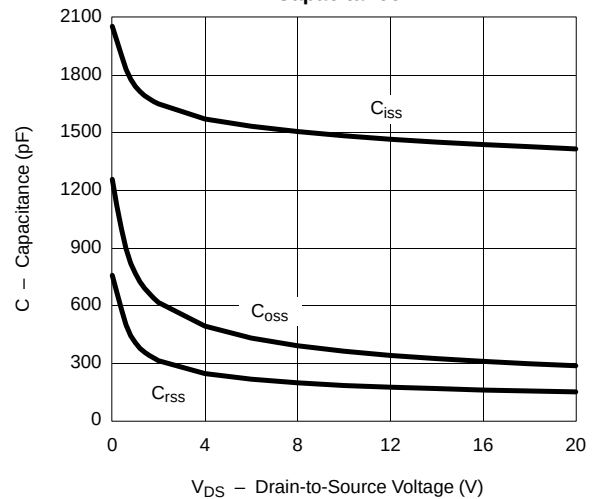
Transfer Characteristics



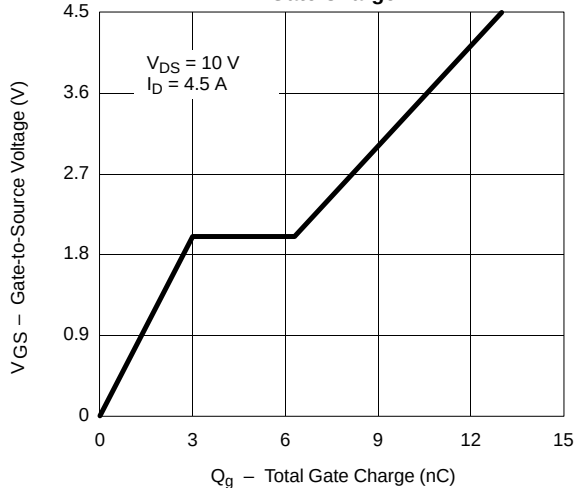
On-Resistance vs. Drain Current



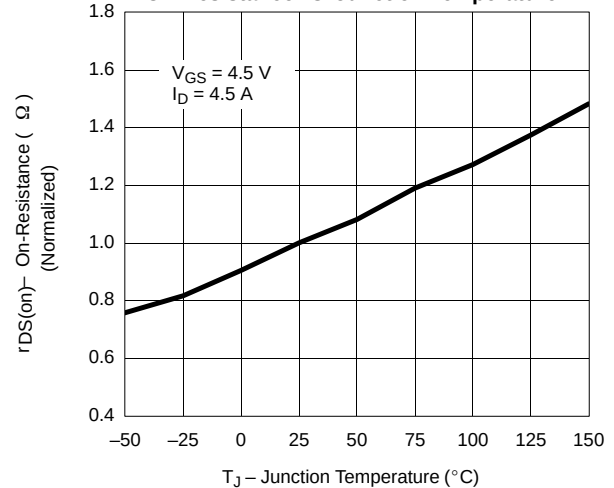
Capacitance



Gate Charge

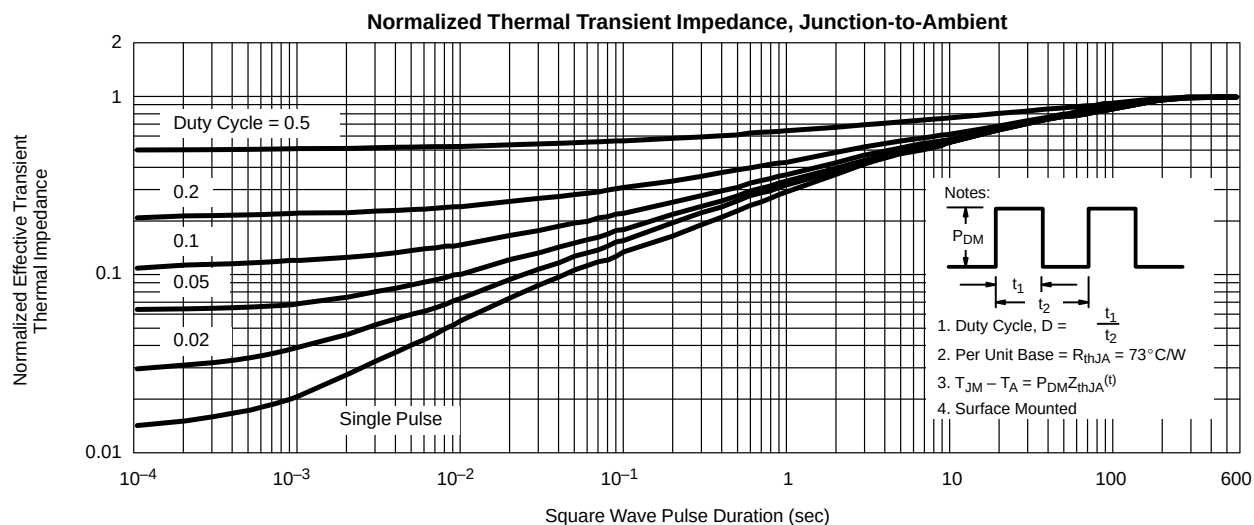
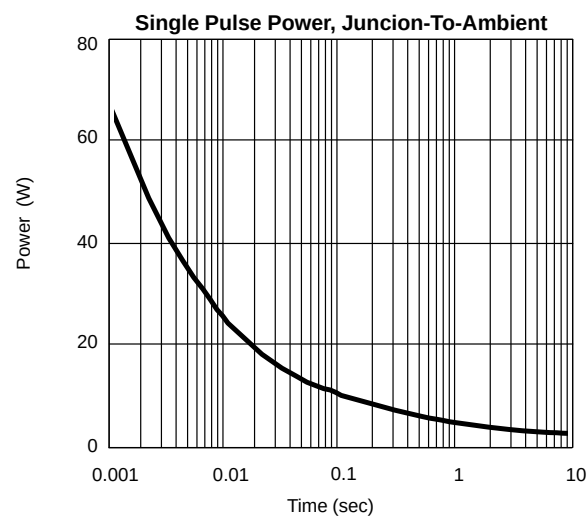
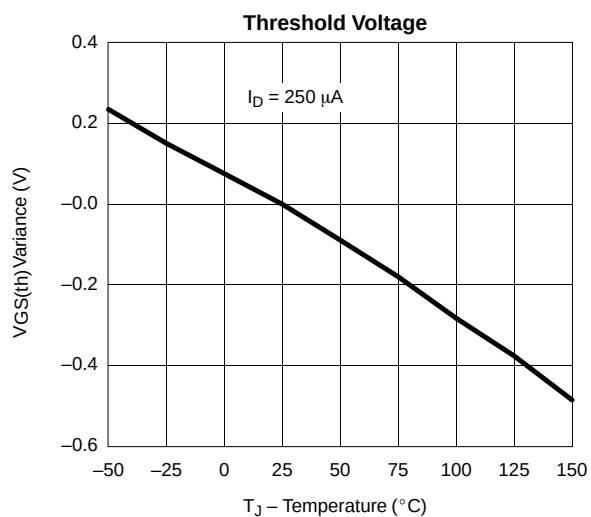
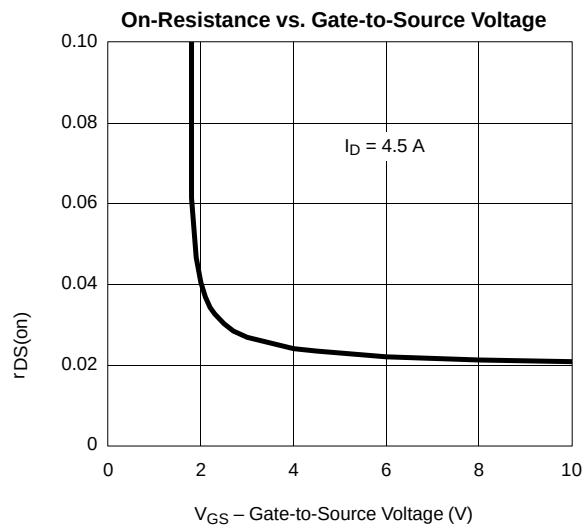
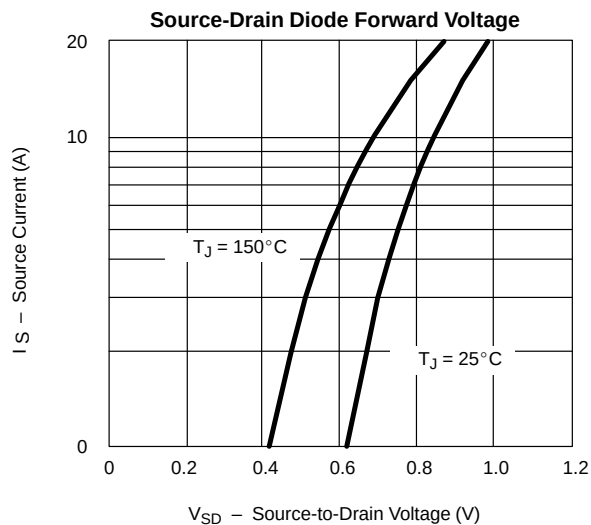


On-Resistance vs. Junction Temperature



## TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

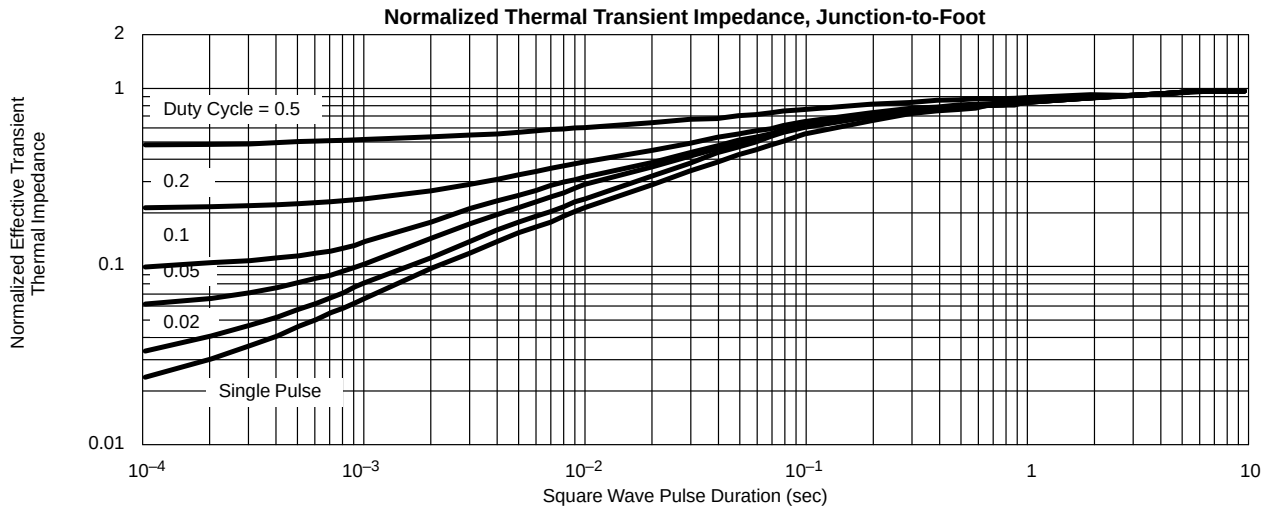
## N-CHANNEL





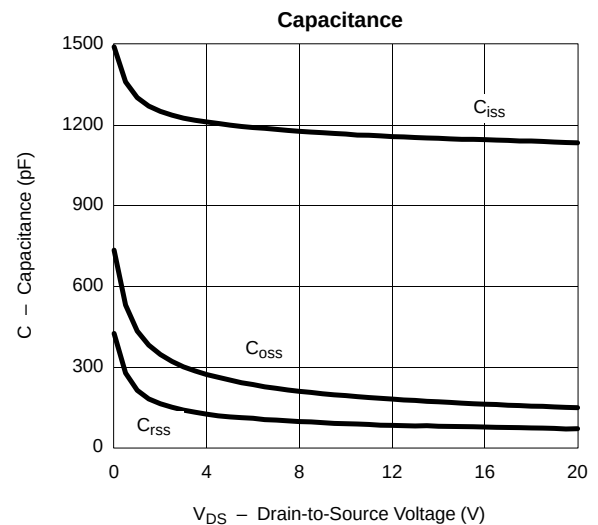
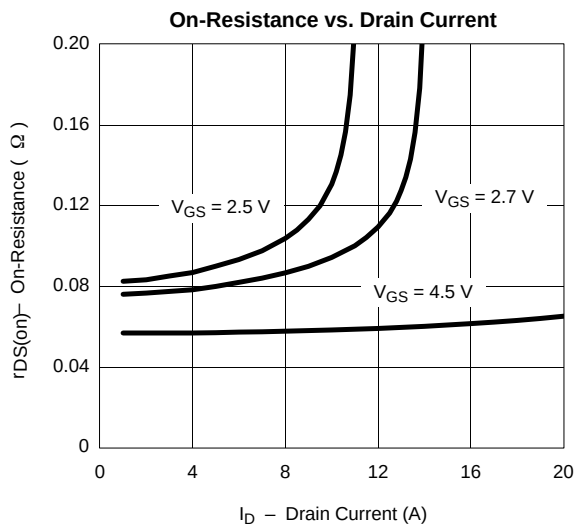
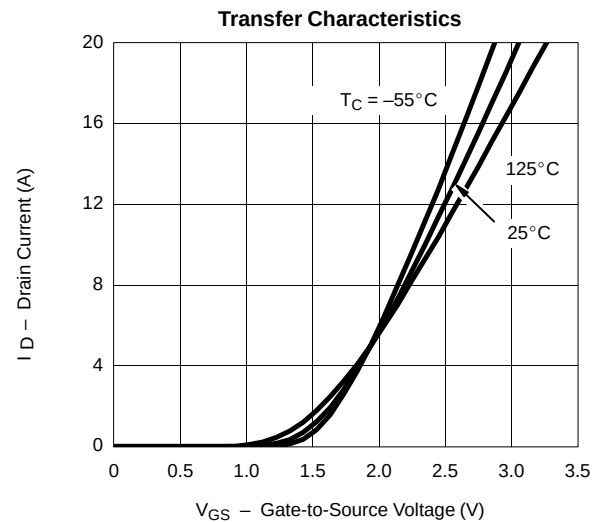
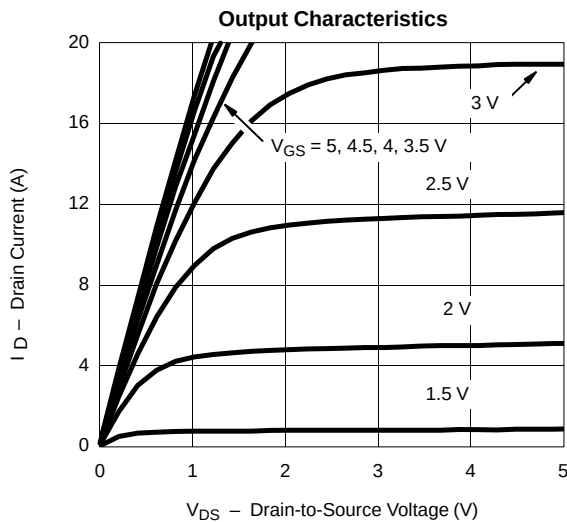
## TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

## N-CHANNEL



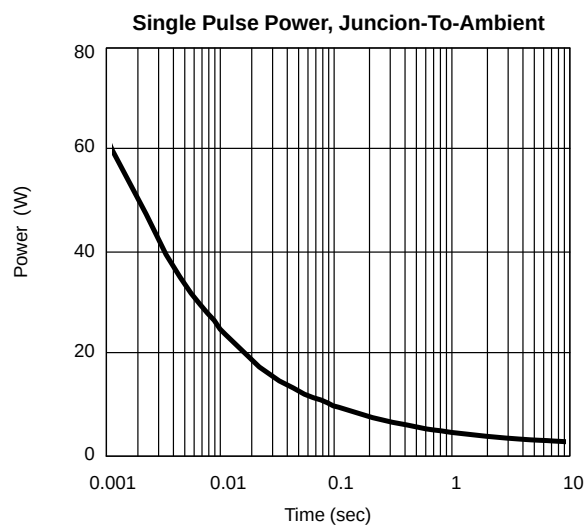
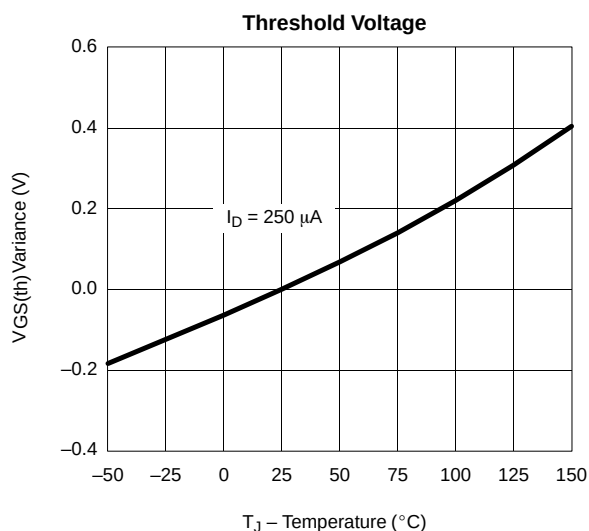
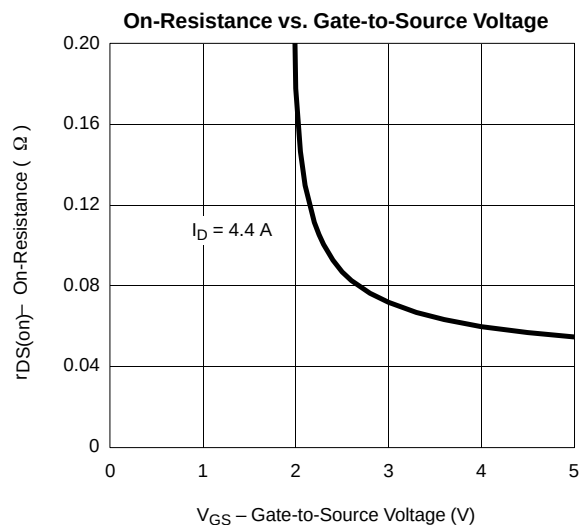
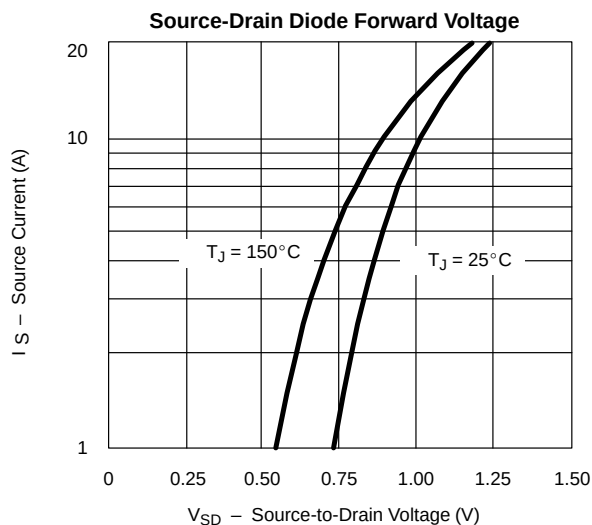
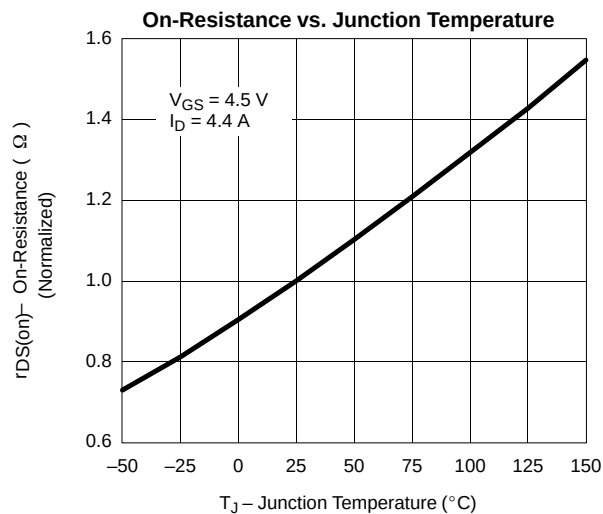
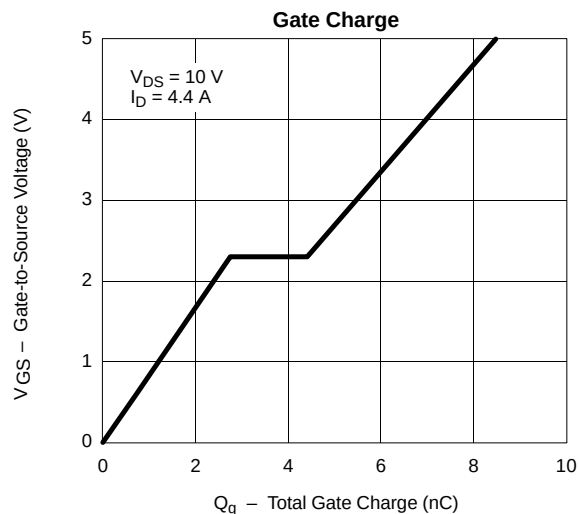
## TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

## P-CHANNEL



## TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

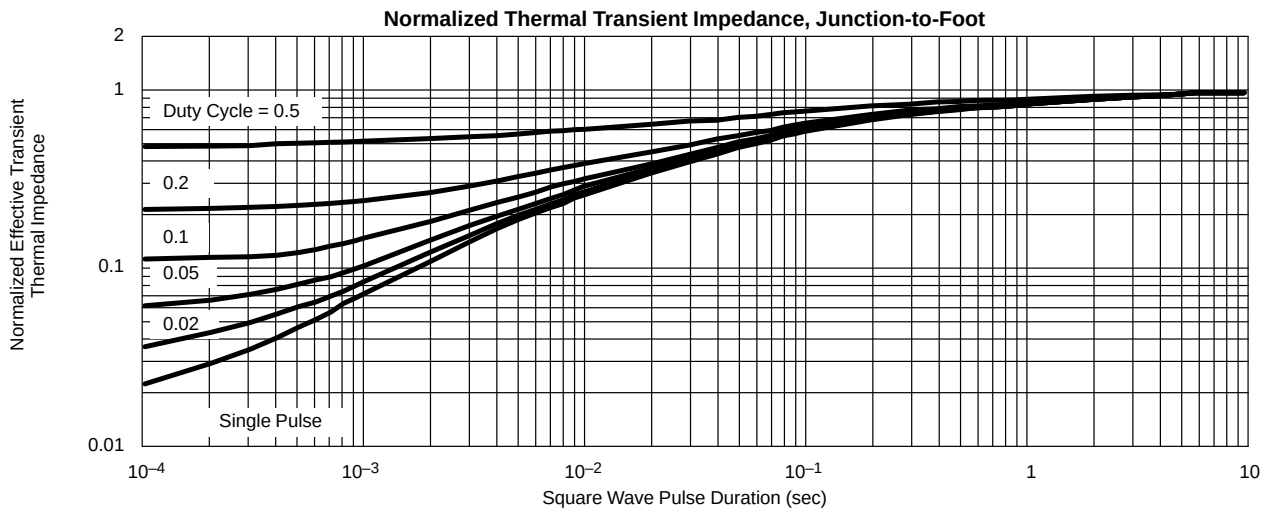
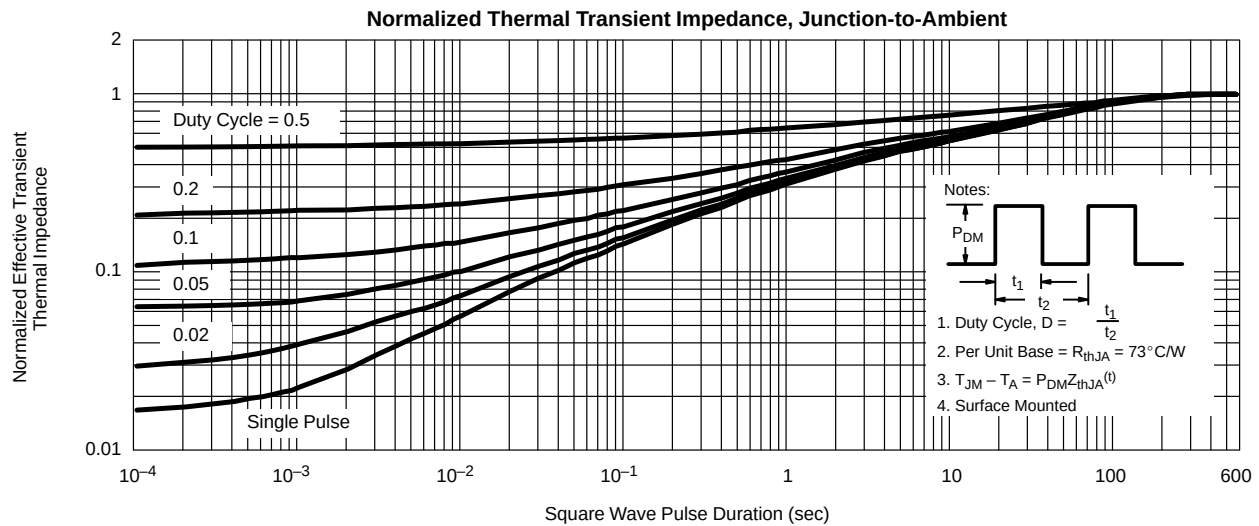
## P-CHANNEL





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

**P-CHANNEL**





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