



New Product

**Si4462DY**  
Vishay Siliconix

## N-Channel 200-V (D-S) MOSFET

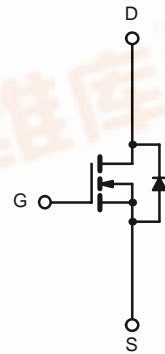
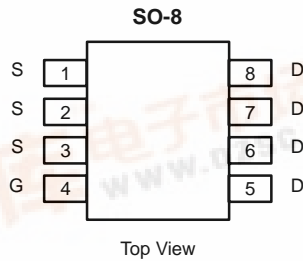
| PRODUCT SUMMARY |                           |           |
|-----------------|---------------------------|-----------|
| $V_{DS}$ (V)    | $r_{DS(on)}$ ( $\Omega$ ) | $I_D$ (A) |
| 200             | 0.480 @ $V_{GS} = 10$ V   | 1.50      |
|                 | 0.510 @ $V_{GS} = 6.0$ V  | 1.45      |

### FEATURES

- TrenchFET® Power MOSFET
- PWM Optimized for Fast Switching

### APPLICATIONS

- Primary Side Switch



N-Channel MOSFET

| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED) |                |                          |              |                  |   |
|---|----------------|--------------------------|--------------|------------------|---|
| Parameter   | Symbol         | 10 secs                  | Steady State | Unit             |   |
| Drain-Source Voltage  | $V_{DS}$       | 200                      |              | V                |   |
| Gate-Source Voltage   | $V_{GS}$       | $\pm 20$                 |              |                  |   |
| Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a</sup>         | $I_D$          | $T_A = 25^\circ\text{C}$ | 1.50         | 1.15             | A |
|   |                | $T_A = 70^\circ\text{C}$ | 1.20         | 0.92             |   |
| Pulsed Drain Current  | $I_{DM}$       | 5                        |              |                  |   |
| Single Avalanche Current  | $I_{AS}$       | 1.5                      |              | mJ               |   |
| Single Avalanche Energy   | $E_{AS}$       | 0.11                     |              |                  |   |
| Continuous Source Current (Diode Conduction) <sup>a</sup>                   | $I_S$          | 2.1                      | 1.1          | A                |   |
| Maximum Power Dissipation <sup>a</sup>                                      | $P_D$          | $T_A = 25^\circ\text{C}$ | 2.5          | 1.3              | W |
|   |                | $T_A = 70^\circ\text{C}$ | 1.6          | 0.85             |   |
| 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> | $R_{thJA}$ | $t \leq 10$ sec | 40      | 50   | $^\circ\text{C/W}$ |
|  |            | Steady State    | 70      | 85   |                    |
| Maximum Junction-to-Foot (Drain)         | $R_{thJF}$ | 20              | 24      |      |                    |

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



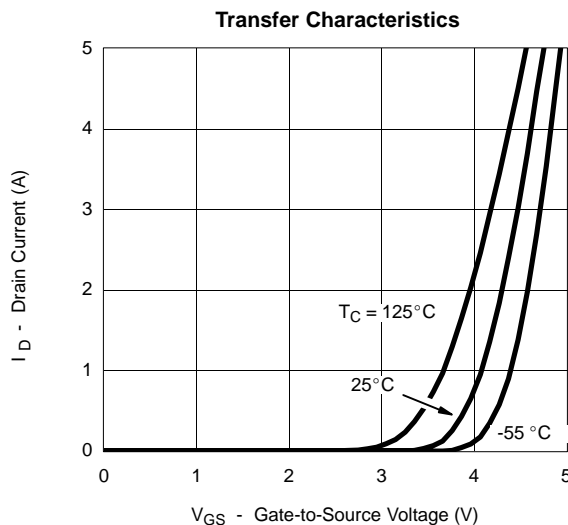
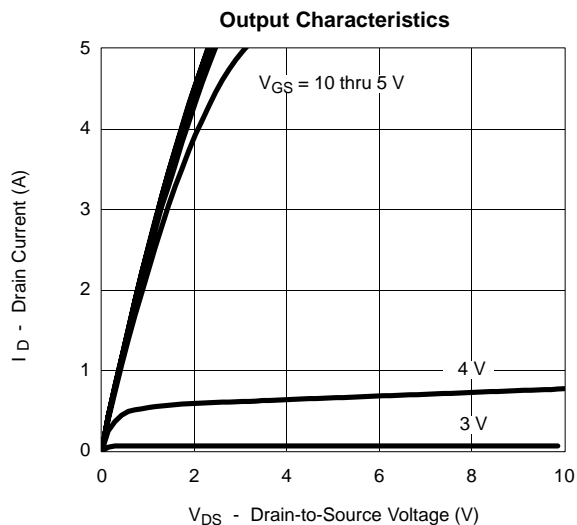
### SPECIFICATIONS (T<sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)

| 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  | 2.0 |       | 4     | 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> = 160 V, V <sub>GS</sub> = 0 V   |     |       | 1     | μA   |
|   |                     | V <sub>DS</sub> = 160 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °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  | 5   |       |       | A    |
| Drain-Source On-State Resistance <sup>a</sup> | r <sub>DS(on)</sub> | V <sub>GS</sub> = 10 V, I <sub>D</sub> = 1.5 A   |     | 0.39  | 0.480 | Ω    |
|   |                     | V <sub>GS</sub> = 6.0 V, I <sub>D</sub> = 1.45 A   |     | 0.420 | 0.510 |      |
| Forward Transconductance <sup>a</sup>         | g <sub>fs</sub>     | V <sub>DS</sub> = 15 V, I <sub>D</sub> = 1.5 A   |     | 5     |       | S    |
| Diode Forward Voltage <sup>a</sup>            | V <sub>SD</sub>     | I <sub>S</sub> = 2.1 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> = 100 V, V <sub>GS</sub> = 10 V, I <sub>D</sub> = 1.5 A  |     | 6     | 9     | nC   |
| Gate-Source Charge                            | Q <sub>gs</sub>     |  |     | 0.9   |       |      |
| Gate-Drain Charge                             | Q <sub>gd</sub>     |  |     | 1.9   |       |      |
| Gate Resistance                               | R <sub>G</sub>      |  |     | 3.7   |       | Ω    |
| Turn-On Delay Time                            | t <sub>d(on)</sub>  | V <sub>DD</sub> = 100 V, R <sub>L</sub> = 100 Ω<br>I <sub>D</sub> ≅ 1.0 A, V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 6 Ω |     | 10    | 15    | ns   |
| Rise Time                                     | t <sub>r</sub>      |  |     | 12    | 20    |      |
| Turn-Off Delay Time                           | t <sub>d(off)</sub> |  |     | 10    | 15    |      |
| Fall Time                                     | t <sub>f</sub>      |  |     | 15    | 25    |      |
| Source-Drain Reverse Recovery Time            | t <sub>rr</sub>     | I <sub>F</sub> = 2.1 A, di/dt = 100 A/μs   |     | 55    | 90    |      |

**Notes**

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

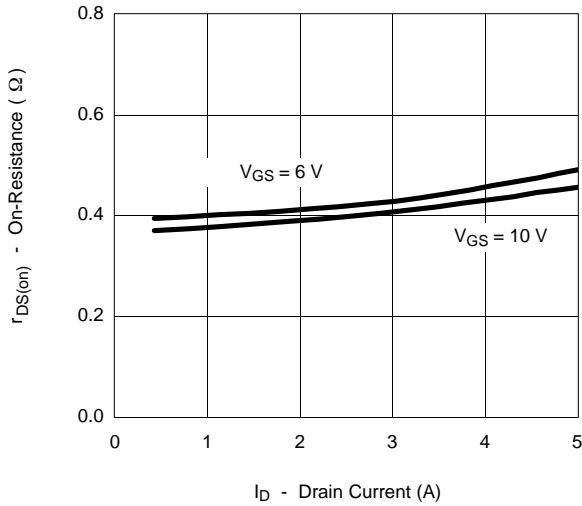
### TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



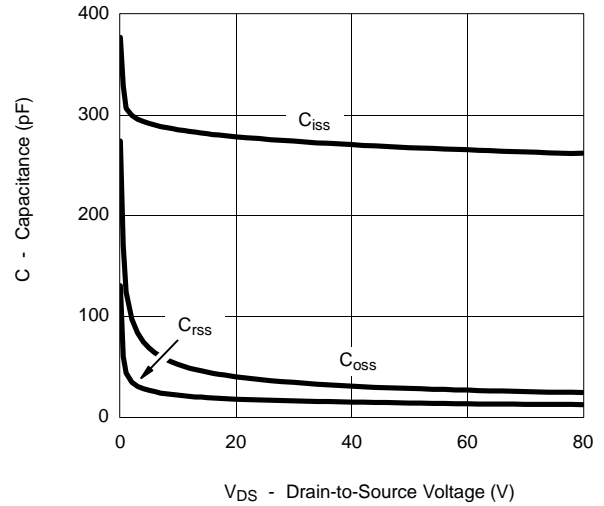


**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

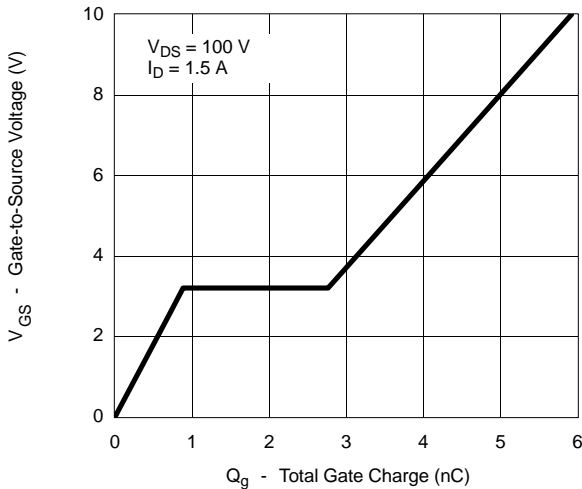
On-Resistance vs. Drain Current



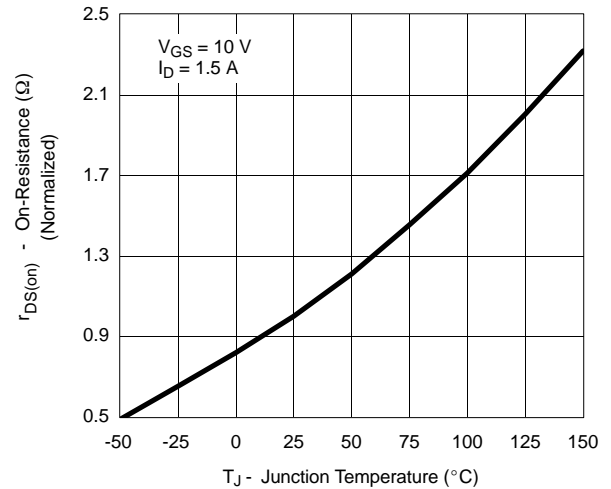
Capacitance



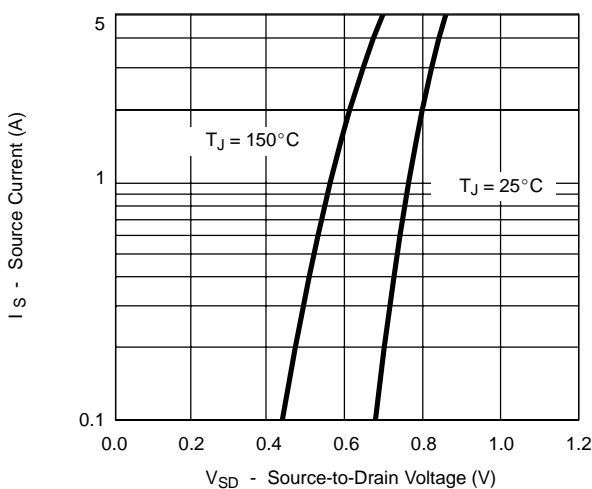
Gate Charge



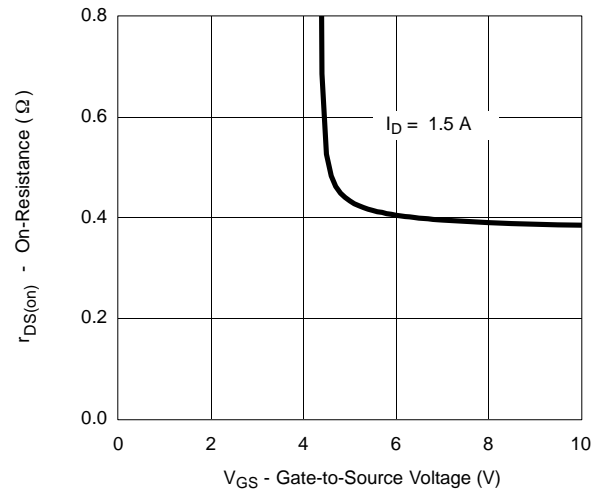
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

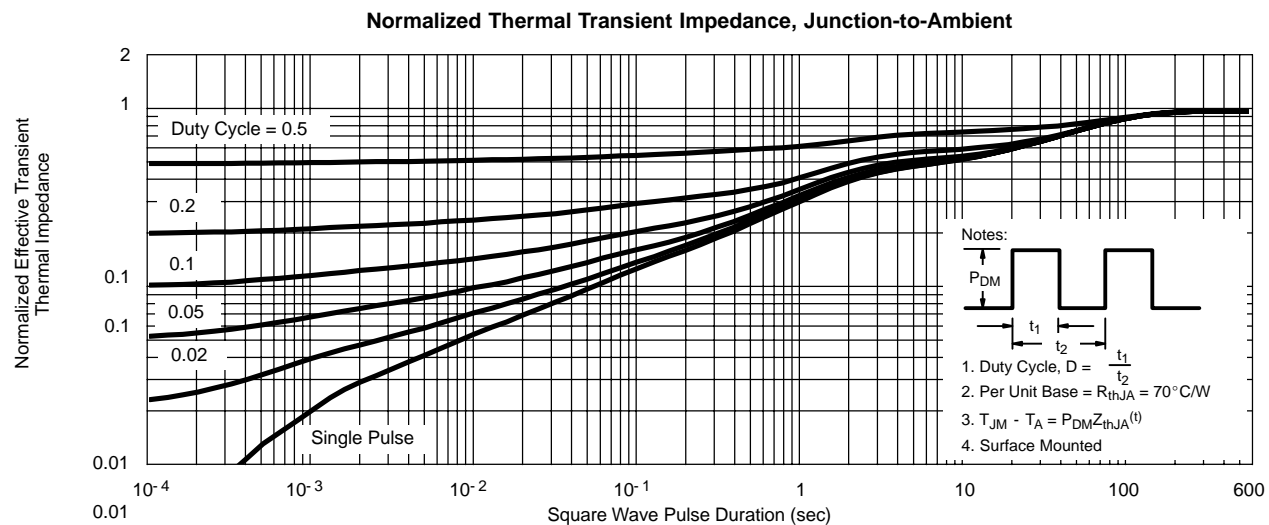
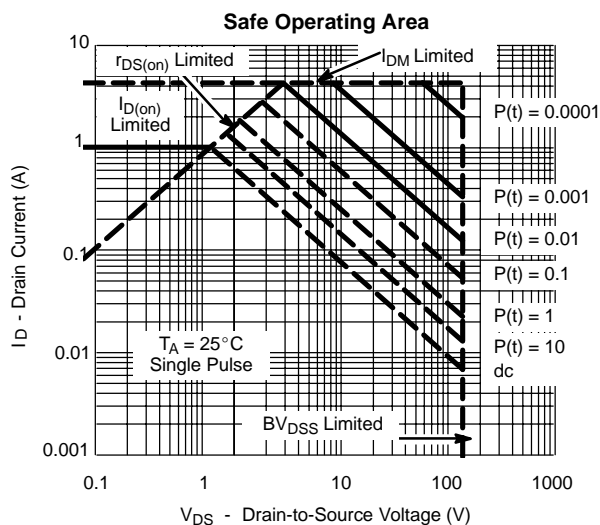
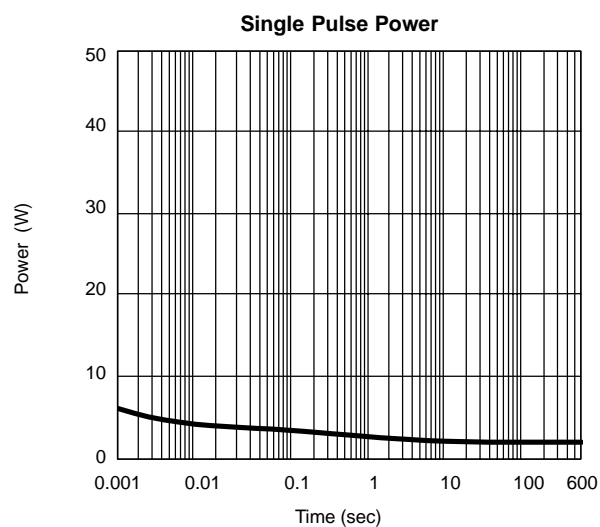
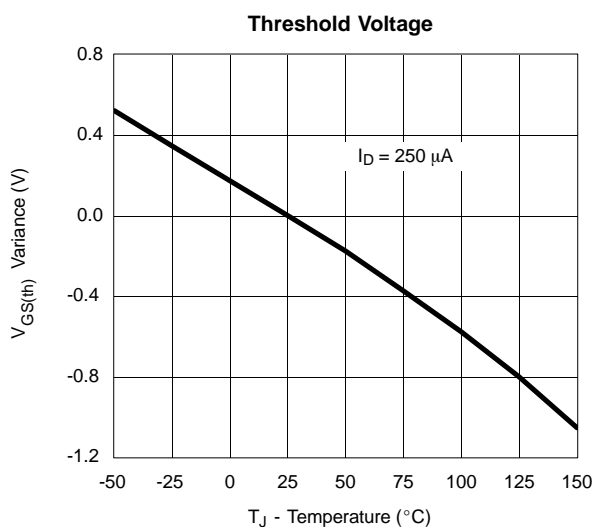


On-Resistance vs. Gate-to-Source Voltage





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