

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

### PRODUCT SUMMARY

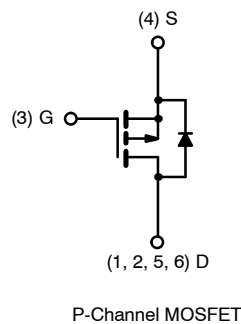
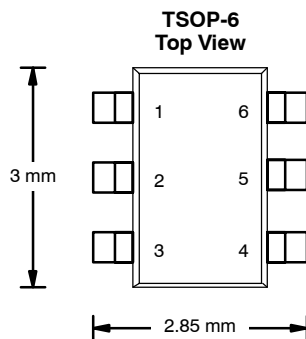
| $V_{DS}$ (V) | $r_{DS(on)}$ ( $\Omega$ ) | $I_D$ (A) |
|--------------|---------------------------|-----------|
| -30          | 0.035 @ $V_{GS} = -10$ V  | -6.2      |
|              | 0.053 @ $V_{GS} = -4.5$ V | -5.0      |

### FEATURES

- TrenchFET® Power MOSFET

### APPLICATIONS

- Load Switch



Ordering Information: Si3483DV-T1—E3 (Lead Free)

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

| Parameter                                                      |                       | Symbol                            | 5 secs     | Steady State | Unit |
|----------------------------------------------------------------|-----------------------|-----------------------------------|------------|--------------|------|
| Drain-Source Voltage                                           |                       | V <sub>DS</sub>                   | −30        |              | V    |
| Gate-Source Voltage                                            |                       | V <sub>GS</sub>                   | ± 20       |              |      |
| Continuous Drain Current (T <sub>J</sub> = 150°C) <sup>a</sup> | T <sub>A</sub> = 25°C | I <sub>D</sub>                    | −6.2       | −4.7         | A    |
|                                                                | T <sub>A</sub> = 70°C |                                   | −4.9       | −3.7         |      |
| Pulsed Drain Current                                           |                       | I <sub>DM</sub>                   | −25        |              |      |
| Continuous Source Current (Diode Conduction) <sup>a</sup>      |                       | I <sub>S</sub>                    | −1.7       | −0.95        |      |
| Maximum Power Dissipation <sup>a</sup>                         | T <sub>A</sub> = 25°C | P <sub>D</sub>                    | 2.0        | 1.14         | W    |
|                                                                | T <sub>A</sub> = 70°C |                                   | 1.3        | 0.73         |      |
| Operating Junction and Storage Temperature Range               |                       | T <sub>J</sub> , T <sub>stg</sub> | −55 to 150 |              | °C   |

### THERMAL RESISTANCE RATINGS

| Parameter                                |                | Symbol     | Typical | Maximum | Unit               |
|------------------------------------------|----------------|------------|---------|---------|--------------------|
| Maximum Junction-to-Ambient <sup>a</sup> | $t \leq 5$ sec | $R_{thJA}$ | 45      | 62.5    | $^\circ\text{C/W}$ |
|                                          | Steady State   |            | 90      | 110     |                    |
| Maximum Junction-to-Foot (Drain)         | Steady State   | $R_{thJF}$ | 25      | 30      |                    |

#### Notes

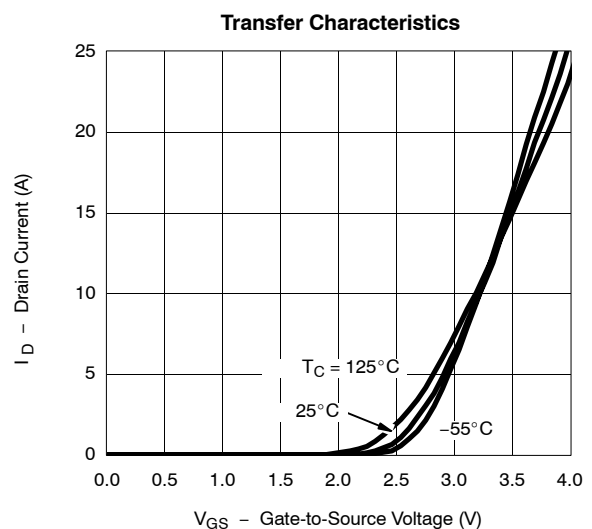
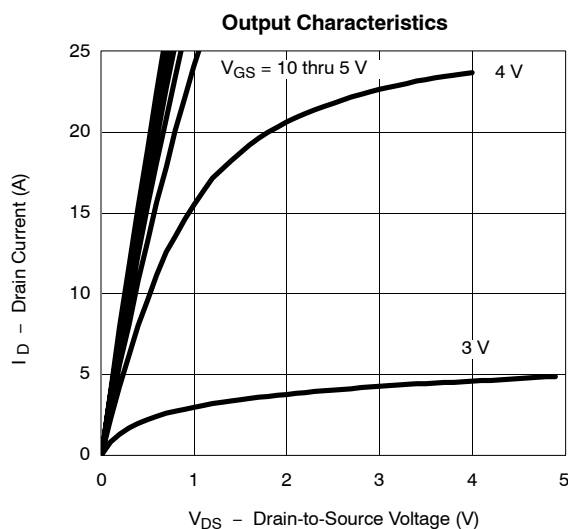
a. Surface Mounted on 1" x 1" FR4 Board.

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

| Parameter                                     | Symbol       | Test Condition                                                                                                   | Min  | Typ   | Max       | Unit          |
|-----------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------------|------|-------|-----------|---------------|
| <b>Static</b>                                 |              |                                                                                                                  |      |       |           |               |
| Gate Threshold Voltage                        | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250\ \mu\text{A}$                                                                       | -1.0 |       | -3        | 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        | $\mu\text{A}$ |
|                                               |              | $V_{DS} = -30\ \text{V}, V_{GS} = 0\ \text{V}, T_J = 85^\circ\text{C}$                                           |      |       | -5        |               |
| On-State Drain Current <sup>a</sup>           | $I_{D(on)}$  | $V_{DS} \leq -5\ \text{V}, V_{GS} = -10\ \text{V}$                                                               | -25  |       |           | A             |
| Drain-Source On-State Resistance <sup>a</sup> | $r_{DS(on)}$ | $V_{GS} = -10\ \text{V}, I_D = -6.2\ \text{A}$                                                                   |      | 0.028 | 0.035     | $\Omega$      |
|                                               |              | $V_{GS} = -4.5\ \text{V}, I_D = -5.0\ \text{A}$                                                                  |      | 0.042 | 0.053     |               |
| Forward Transconductance <sup>a</sup>         | $g_{fs}$     | $V_{DS} = -15\ \text{V}, I_D = -6.2\ \text{A}$                                                                   |      | 14    |           | S             |
| Diode Forward Voltage <sup>a</sup>            | $V_{SD}$     | $I_S = -1.7\ \text{A}, V_{GS} = 0\ \text{V}$                                                                     |      | -0.8  | -1.2      | V             |
| <b>Dynamic<sup>b</sup></b>                    |              |                                                                                                                  |      |       |           |               |
| Total Gate Charge                             | $Q_g$        | $V_{DS} = -15\ \text{V}, V_{GS} = -10\ \text{V}, I_D = -6.2\ \text{A}$                                           |      | 23    | 35        | nC            |
| Gate-Source Charge                            | $Q_{gs}$     |                                                                                                                  |      | 3.6   |           |               |
| Gate-Drain Charge                             | $Q_{gd}$     |                                                                                                                  |      | 6     |           |               |
| Turn-On Delay Time                            | $t_{d(on)}$  | $V_{DD} = -15\ \text{V}, R_L = 15\ \Omega$<br>$I_D \cong -1\ \text{A}, V_{GEN} = -10\ \text{V}, R_g = 6\ \Omega$ |      | 10    | 15        | ns            |
| Rise Time                                     | $t_r$        |                                                                                                                  |      | 10    | 15        |               |
| Turn-Off Delay Time                           | $t_{d(off)}$ |                                                                                                                  |      | 71    | 110       |               |
| Fall Time                                     | $t_f$        |                                                                                                                  |      | 45    | 70        |               |
| Source-Drain Reverse Recovery Time            | $t_{rr}$     | $I_F = -1.7\ \text{A}, di/dt = 100\ \text{A}/\mu\text{s}$                                                        |      | 45    | 70        |               |

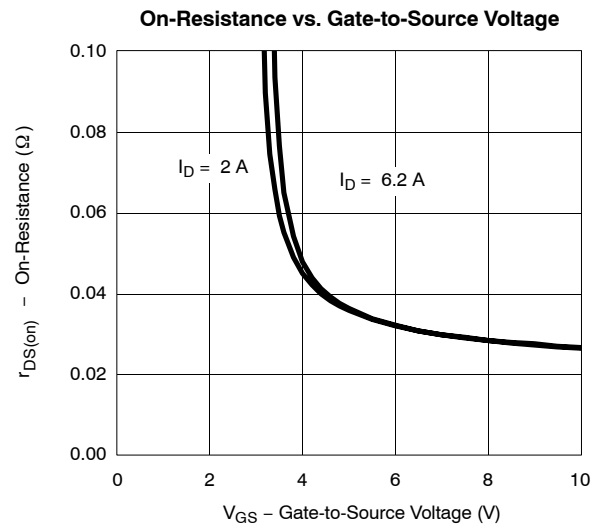
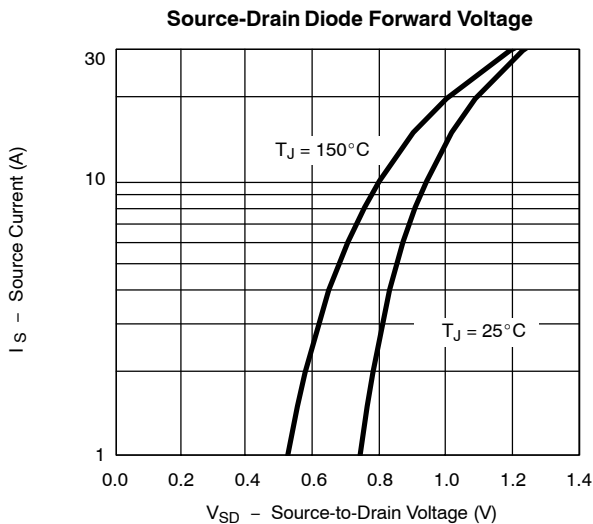
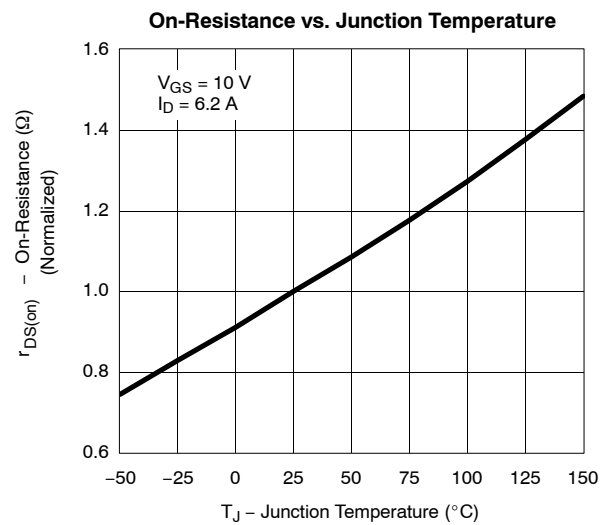
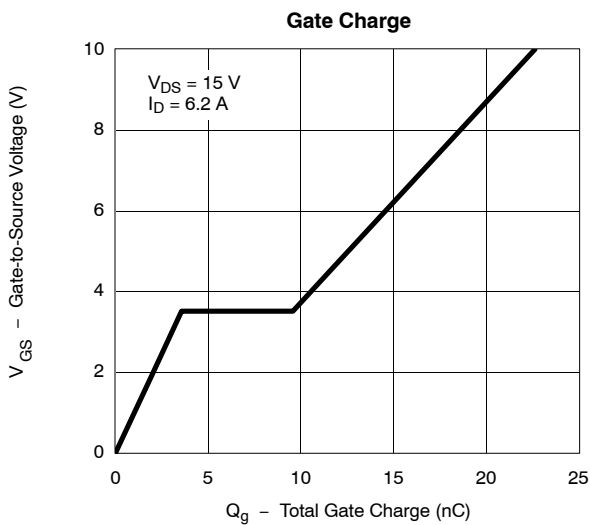
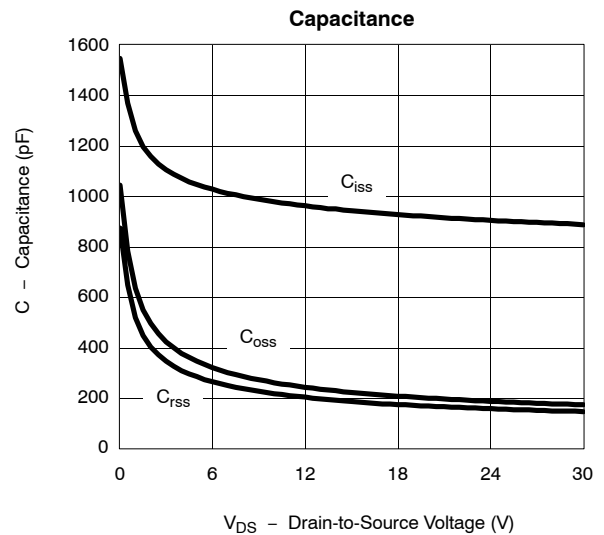
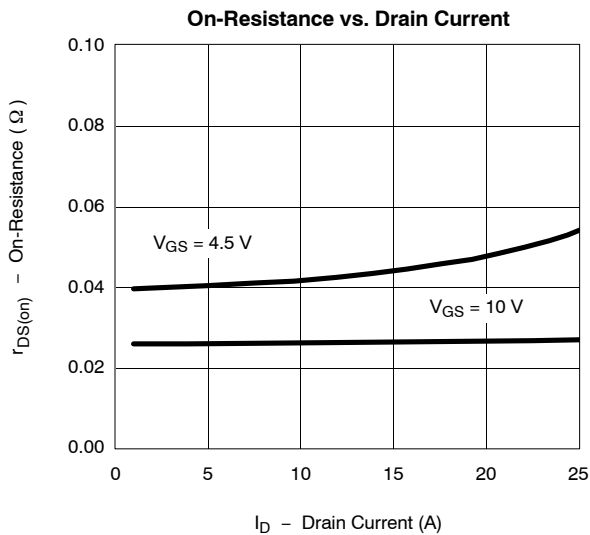
## Notes

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

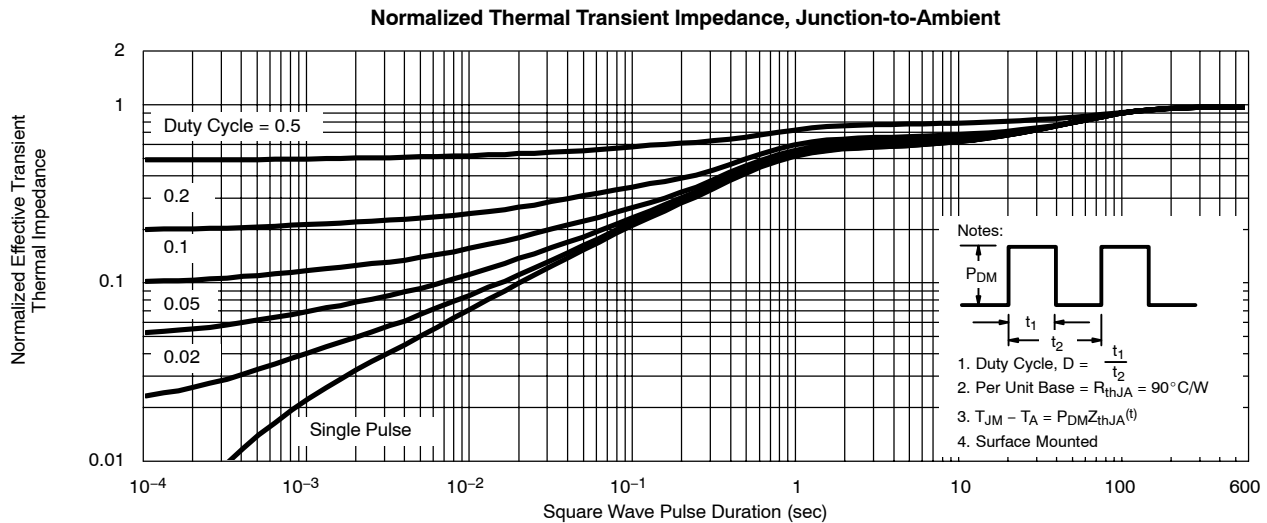
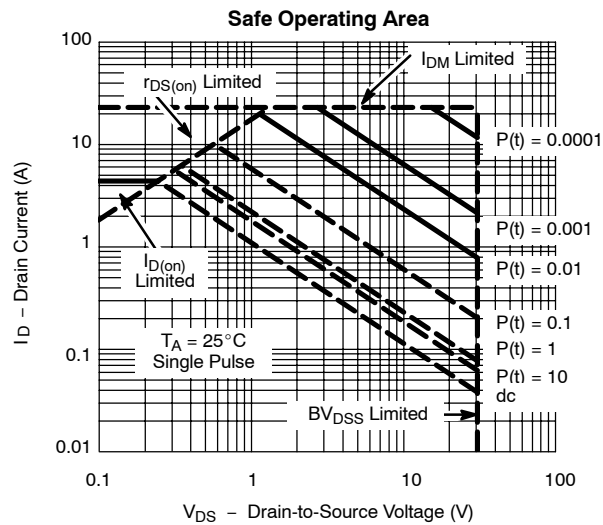
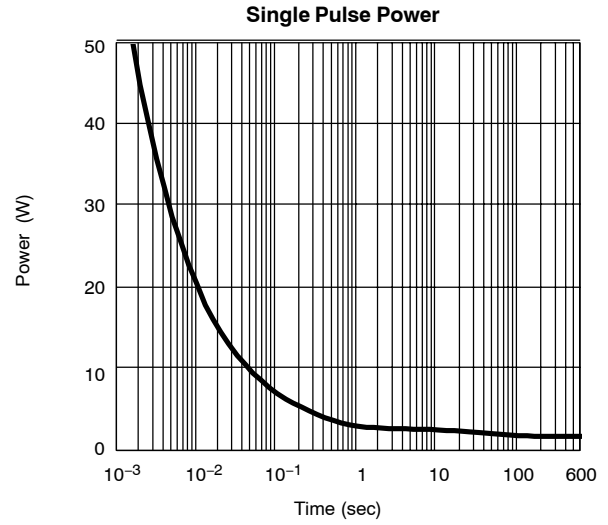
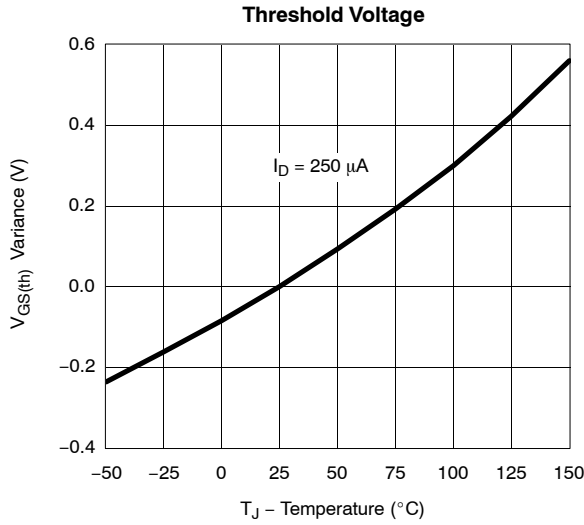
**TYPICAL CHARACTERISTICS ( $25^\circ\text{C}$  UNLESS NOTED)**



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