



N-Channel 150-V (D-S) MOSFET

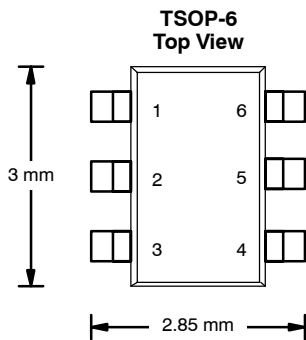
| PRODUCT SUMMARY | | |
|-----------------|---------------------------|-----------|
| V_{DS} (V) | $r_{DS(on)}$ (Ω) | I_D (A) |
| 150 | 0.375 @ $V_{GS} = 10$ V | 1.5 |
| | 0.400 @ $V_{GS} = 6.0$ V | 1.4 |

FEATURES

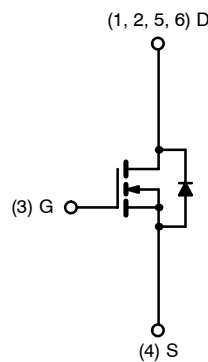
- TrenchFET® Power MOSFET
- PWM Optimized for Fast Switching In Small Footprint
- 100% R_g Tested

APPLICATIONS

- Primary Side Switch for Low Power DC/DC Converters



Ordering Information: Si3440DV-T1—E3



N-Channel MOSFET

| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED) | | | | | |
|---|----------------|--------------------------|--------------|------------------|---|
| Parameter | Symbol | 5 secs | Steady State | Unit | |
| Drain-Source Voltage | V_{DS} | 150 | | V | |
| Gate-Source Voltage | V_{GS} | ± 20 | | | |
| Continuous Drain Current ($T_J = 175^\circ\text{C}$) ^a | I_D | $T_A = 25^\circ\text{C}$ | 1.5 | 1.2 | A |
| | | $T_A = 85^\circ\text{C}$ | 1.1 | 0.8 | |
| Pulsed Drain Current | I_{DM} | 6 | | | |
| Single Avalanche Current | I_{AS} | 4 | | mJ | |
| Single Avalanche Energy (Duty Cycle $\leq 1\%$) | | E_{AS} | 0.8 | | |
| Continuous Source Current (Diode Conduction) ^a | I_S | 1.7 | 1.0 | A | |
| Maximum Power Dissipation ^a | P_D | $T_A = 25^\circ\text{C}$ | 2.0 | 1.14 | W |
| | | $T_A = 85^\circ\text{C}$ | 1.0 | 0.59 | |
| 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 ^a | R_{thJA} | $t \leq 5$ sec | 45 | 62.5 | $^\circ\text{C/W}$ |
| | | Steady State | 90 | 110 | |
| Maximum Junction-to-Foot (Drain) | R_{thJF} | 25 | 30 | | |

Notes

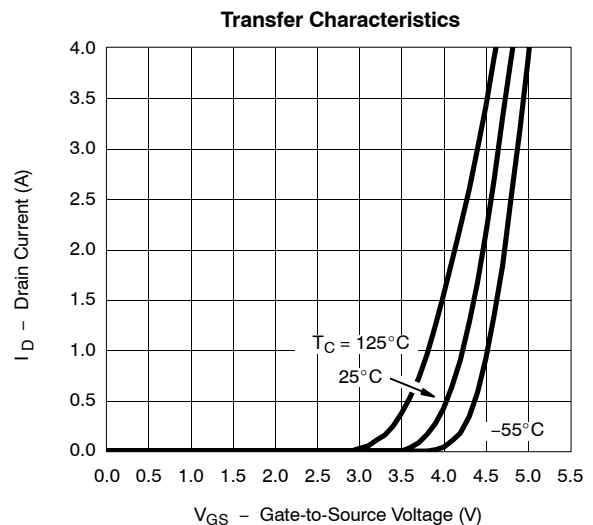
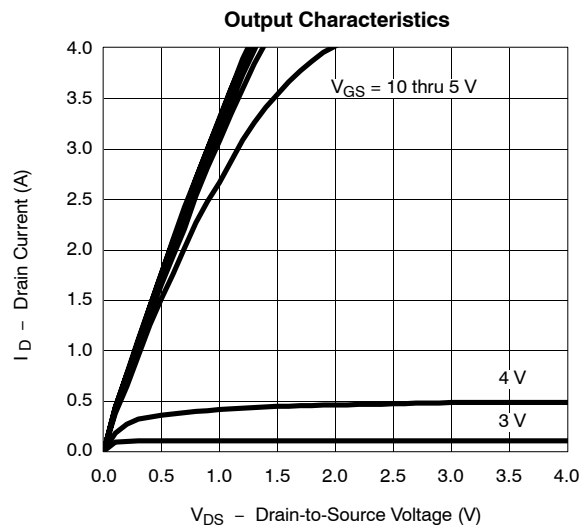
a. Surface Mounted on 1" x 1" FR4 Board.

SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---------------------|--|-----|-------|-------|------|
| Static | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250 μA | 2 | | 4 | V |
| Gate-Body Leakage | I _{GSS} | V _{DS} = 0 V, V _{GS} = ±20 V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 150 V, V _{GS} = 0 V | | | 1 | μA |
| | | V _{DS} = 150 V, V _{GS} = 0 V, T _J = 85 °C | | | 5 | |
| On-State Drain Current ^a | I _{D(on)} | V _{DS} ≥ 5 V, V _{GS} = 10 V | 4 | | | A |
| Drain-Source On-State Resistance ^a | r _{DS(on)} | V _{GS} = 10 V, I _D = 1.5 A | | 0.310 | 0.375 | Ω |
| | | V _{GS} = 6.0 V, I _D = 1.4 A | | 0.330 | 0.400 | |
| Forward Transconductance ^a | g _{fs} | V _{DS} = 15 V, I _D = 1.5 A | | 4.1 | | S |
| Diode Forward Voltage ^a | V _{SD} | I _S = 1.7 A, V _{GS} = 0 V | | 0.8 | 1.2 | V |
| Dynamic^b | | | | | | |
| Total Gate Charge | Q _g | V _{DS} = 75 V, V _{GS} = 10 V, I _D = 1.5 A | | 5.4 | 8 | nC |
| Gate-Source Charge | Q _{gs} | | | 1.1 | | |
| Gate-Drain Charge | Q _{gd} | | | 1.9 | | |
| Gate Resistance | R _g | f = 1 MHz | 4 | 9 | 15 | Ω |
| Turn-On Delay Time | t _{d(on)} | V _{DD} = 75 V, R _L = 75 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _G = 6 Ω | | 8 | 15 | ns |
| Rise Time | t _r | | | 10 | 15 | |
| Turn-Off Delay Time | t _{d(off)} | | | 20 | 30 | |
| Fall Time | t _f | | | 15 | 25 | |
| Source-Drain Reverse Recovery Time | t _{rr} | I _F = 1.7 A, di/dt = 100 A/μs | | 40 | 60 | ns |

Notes

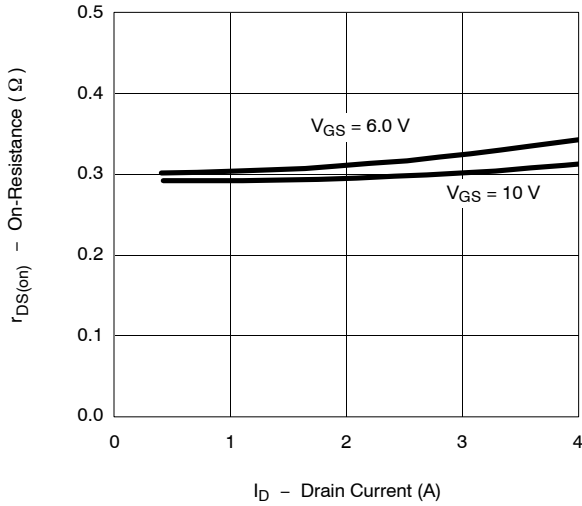
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

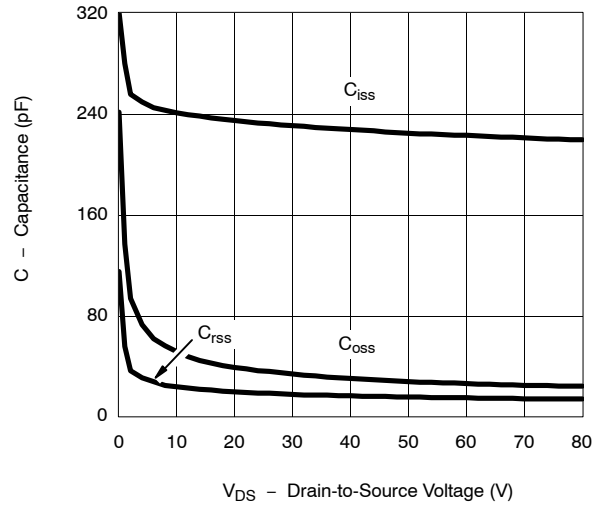


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

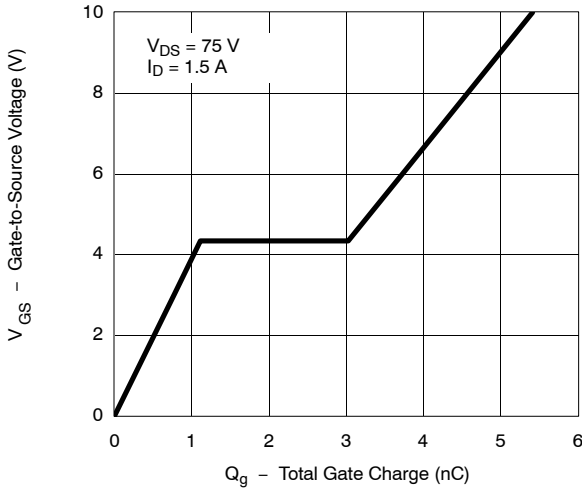
On-Resistance vs. Drain Current



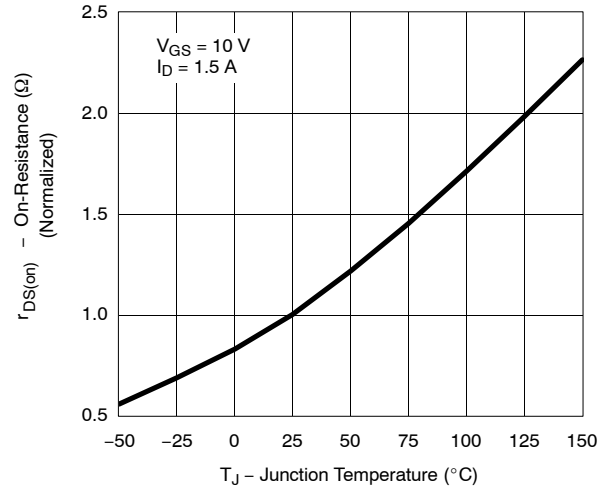
Capacitance



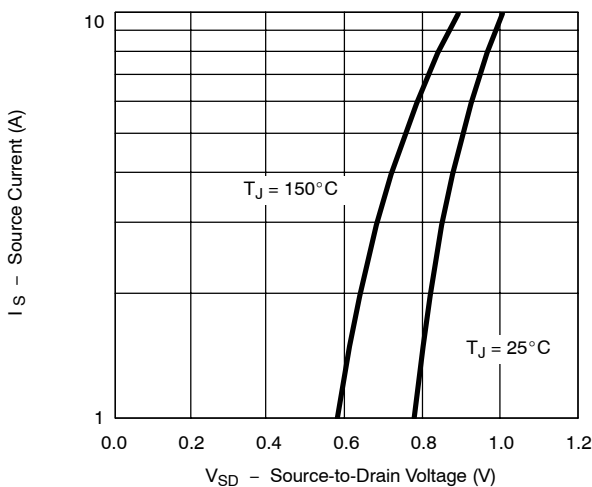
Gate Charge



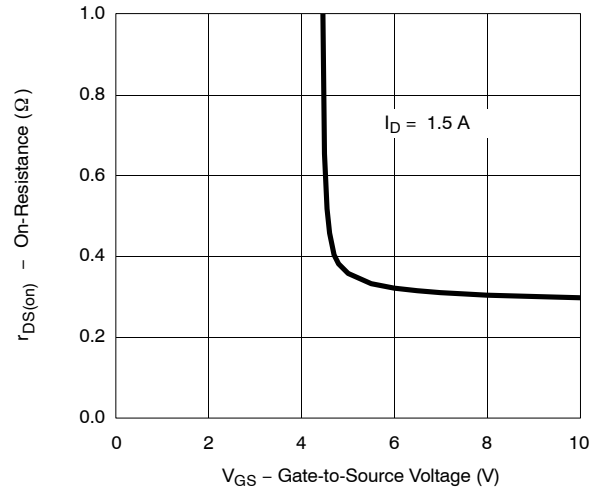
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

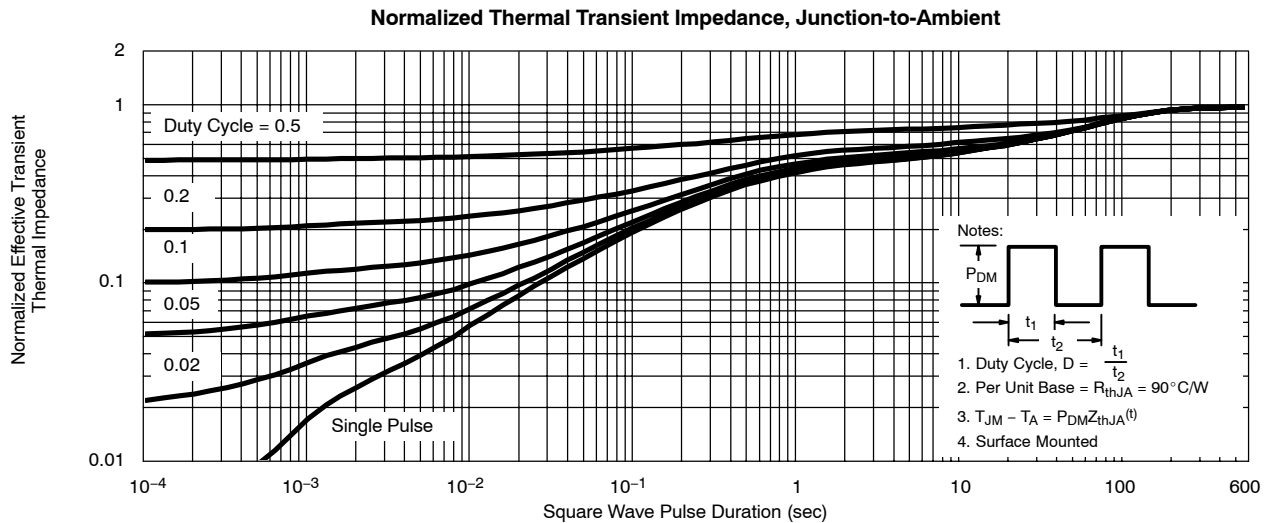
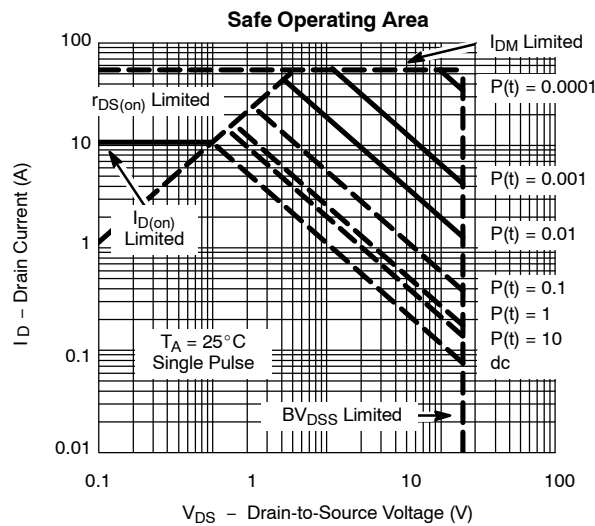
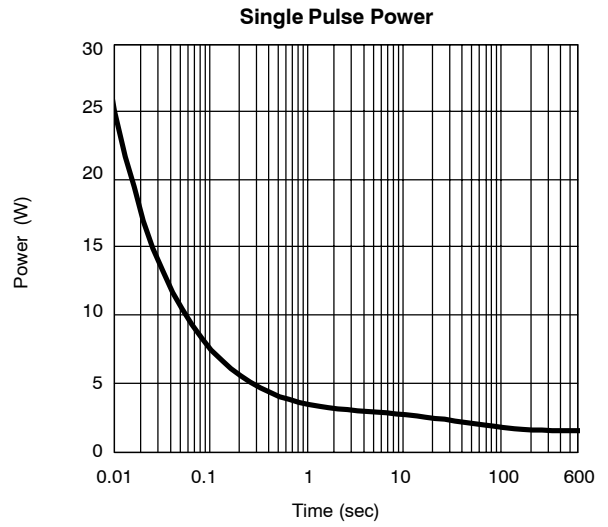
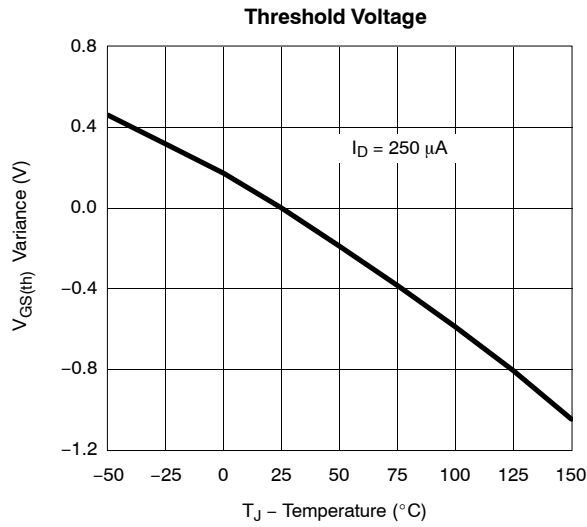


On-Resistance vs. Gate-to-Source Voltage





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

