

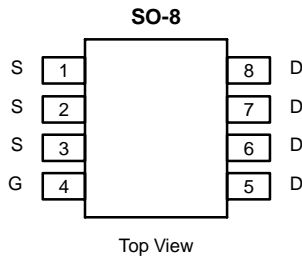


N-Channel 30-V (D-S) MOSFET

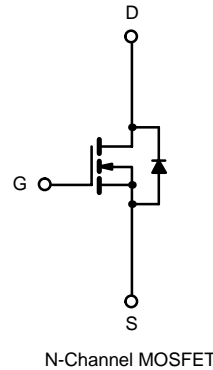
| PRODUCT SUMMARY | | |
|-----------------|---------------------------|-----------|
| V_{DS} (V) | $r_{DS(on)}$ (Ω) | I_D (A) |
| 30 | 0.024 @ $V_{GS} = 10$ V | 8.1 |
| | 0.033 @ $V_{GS} = 4.5$ V | 6.9 |

FEATURES

- TrenchFET® Power MOSFETS



Ordering Information: Si9410BDY
Si9410BDY-T1 (with Tape and Reel)



| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED) | | | | | |
|---|----------------|--------------------------|--------------|------------------|---|
| Parameter | Symbol | 10 secs | Steady State | Unit | |
| Drain-Source Voltage | V_{DS} | 30 | | V | |
| Gate-Source Voltage | V_{GS} | ± 20 | | | |
| Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a | I_D | $T_A = 25^\circ\text{C}$ | 8.1 | 6.2 | A |
| | | $T_A = 70^\circ\text{C}$ | 6.5 | 5.0 | |
| Pulsed Drain Current (10 μs Pulse Width) | I_{DM} | 30 | | | |
| Continuous Source Current (Diode Conduction) ^a | I_S | 2.1 | 1.2 | | |
| Maximum Power Dissipation ^a | P_D | $T_A = 25^\circ\text{C}$ | 2.5 | 1.5 | W |
| | | $T_A = 70^\circ\text{C}$ | 1.6 | 0.9 | |
| 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} | $t \leq 10$ sec | 40 | 50 | $^\circ\text{C/W}$ |
| | | Steady State | 70 | 85 | |
| Maximum Junction-to-Foot | R_{thJF} | 20 | 24 | | |

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

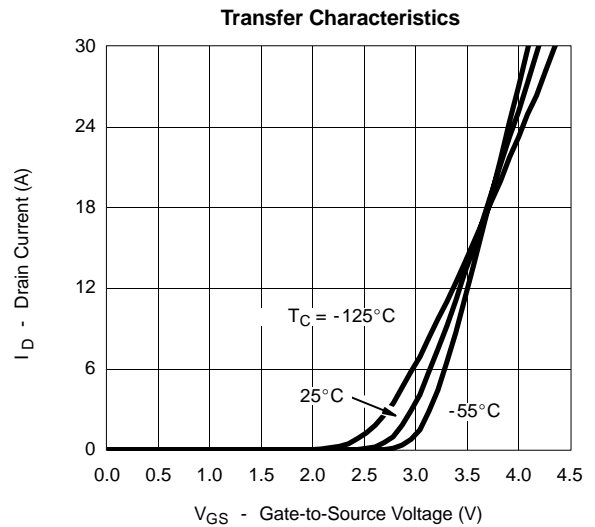
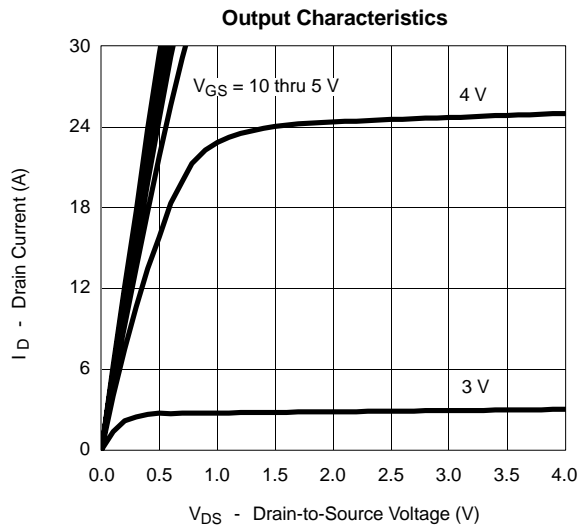


| SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED) | | | | | | |
|--|---------------------|--|-----|-------|-------|------|
| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
| Static | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250 μA | 1.0 | | 3.0 | 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} = 24 V, V _{GS} = 0 V | | | 1 | μA |
| | | V _{DS} = 24 V, V _{GS} = 0 V, T _J = 55 °C | | | 5 | |
| On-State Drain Current ^a | I _{D(on)} | V _{DS} ≥ 5 V, V _{GS} = 10 V | 30 | | | A |
| Drain-Source On-State Resistance ^a | r _{DS(on)} | V _{GS} = 10 V, I _D = 8.1 A | | 0.019 | 0.024 | Ω |
| | | V _{GS} = 4.5 V, I _D = 6.9 A | | 0.026 | 0.033 | |
| Forward Transconductance ^a | g _{fs} | V _{DS} = 15 V, I _D = 8.1 A | | 20 | | S |
| Diode Forward Voltage ^a | V _{SD} | I _S = 2.1 A, V _{GS} = 0 V | | 0.8 | 1.2 | V |
| Dynamic^b | | | | | | |
| Total Gate Charge | Q _g | V _{DS} = 15 V, V _{GS} = 10 V, I _D = 8.1 A | | 15 | 23 | nC |
| Gate-Source Charge | Q _{gs} | | | 3.2 | | |
| Gate-Drain Charge | Q _{gd} | | | 2.5 | | |
| Turn-On Delay Time | t _{d(on)} | V _{DD} = 15 V, R _L = 15 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _G = 6 Ω | | 10 | 15 | ns |
| Rise Time | t _r | | | 15 | 25 | |
| Turn-Off Delay Time | t _{d(off)} | | | 30 | 45 | |
| Fall Time | t _f | | | 11 | 20 | |
| Source-Drain Reverse Recovery Time | t _{rr} | I _F = 2.1 A, di/dt = 100 A/μs | | 25 | 50 | |

Notes

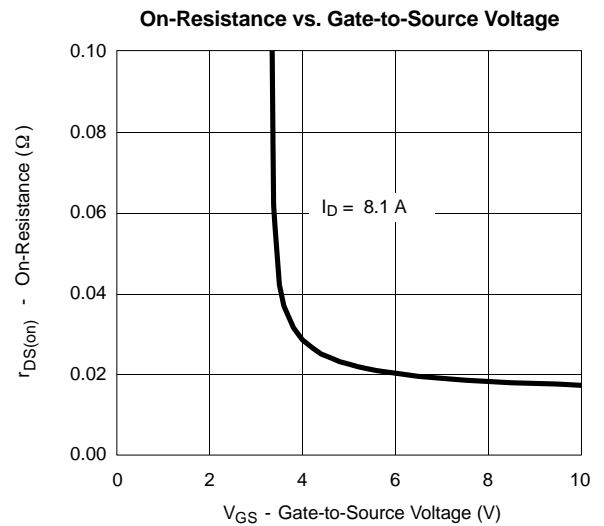
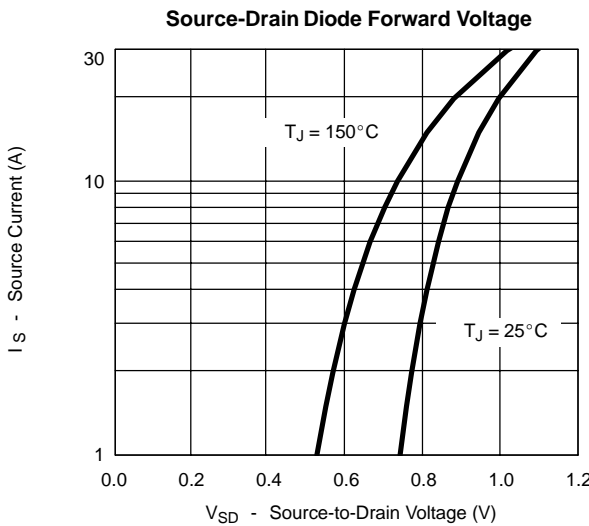
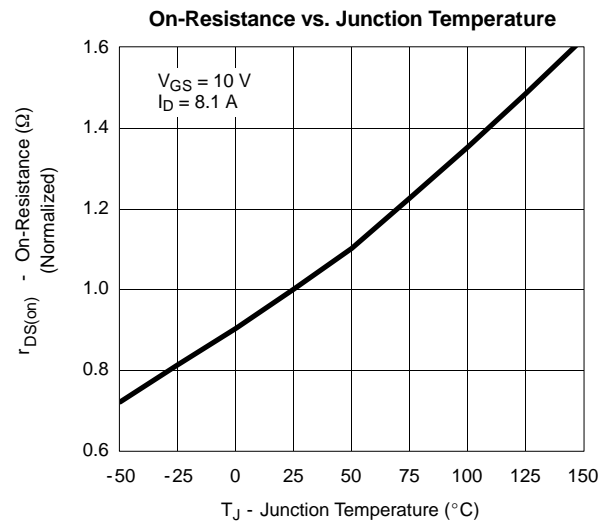
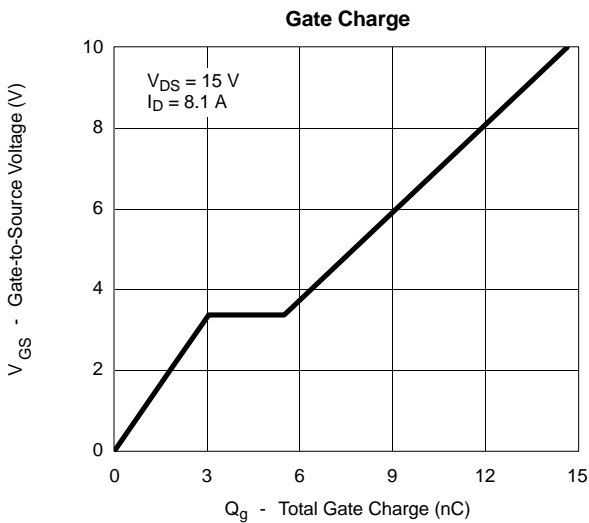
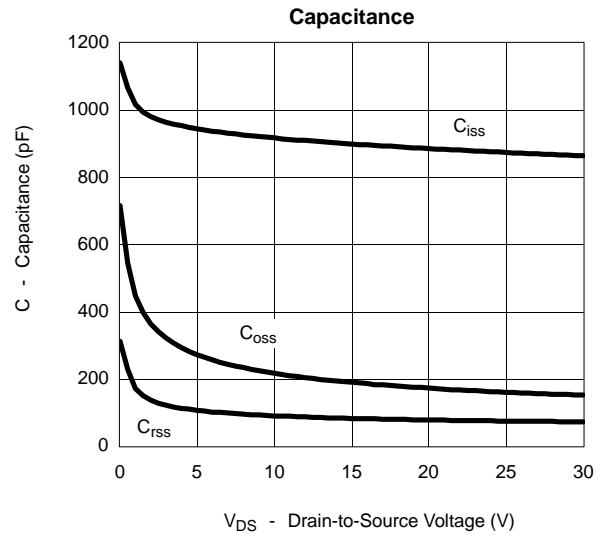
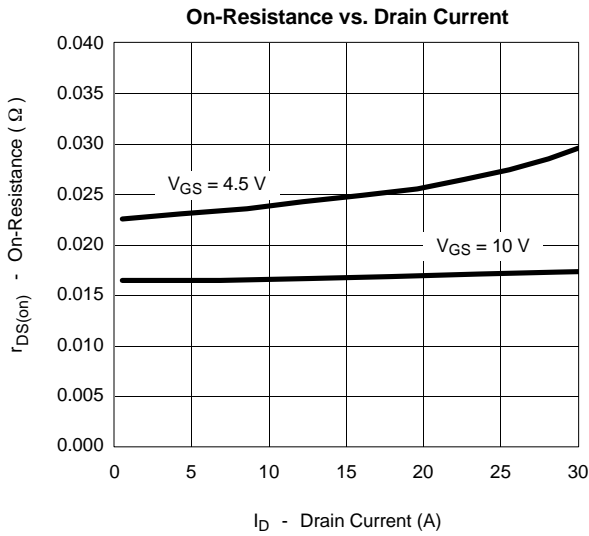
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



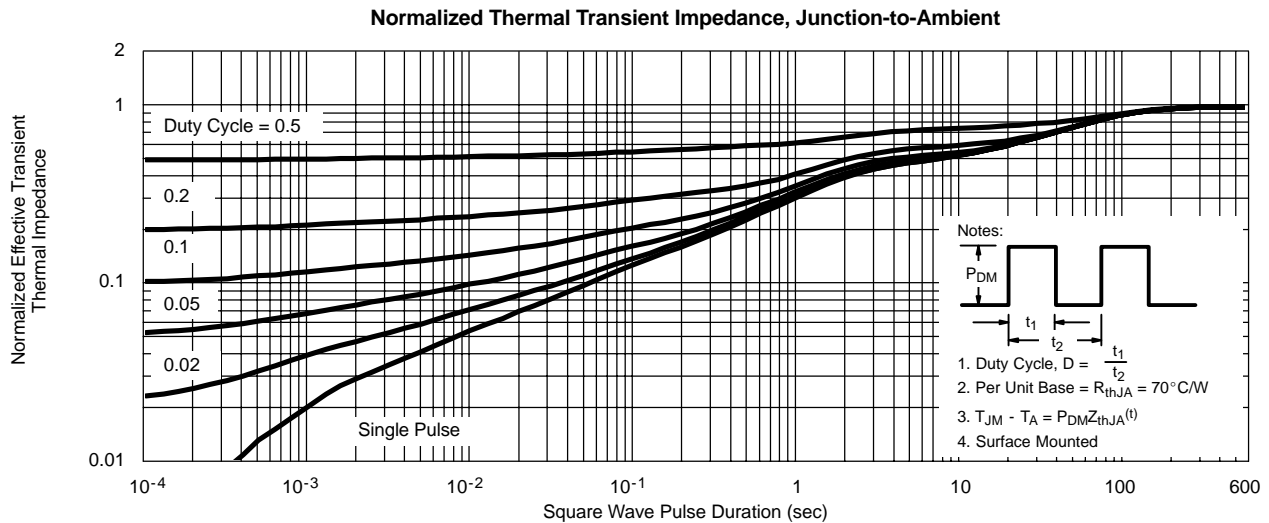
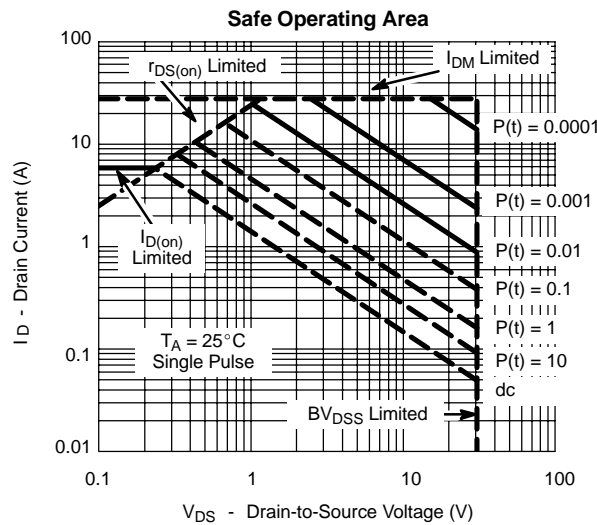
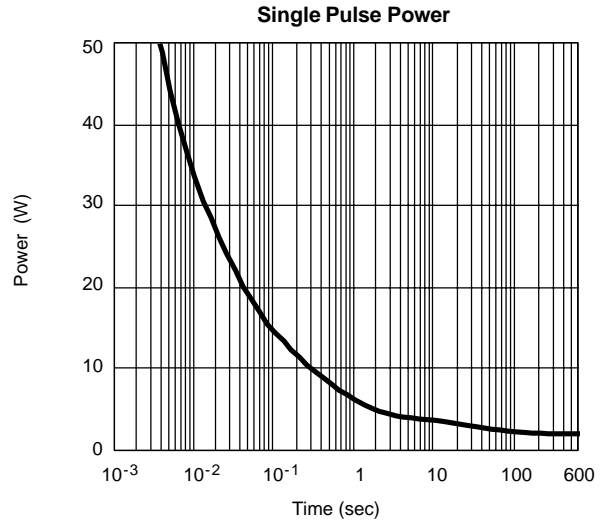
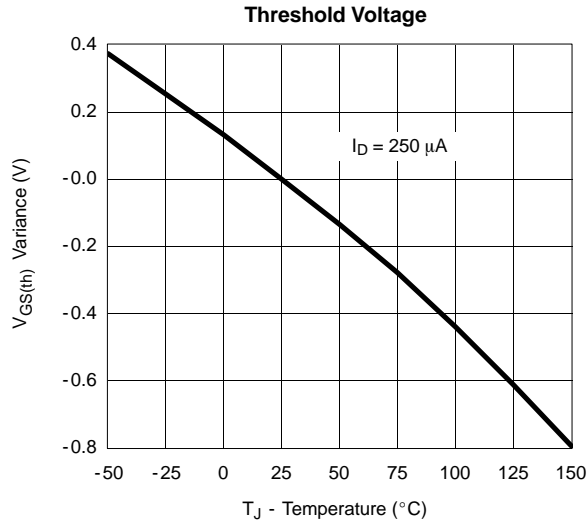


TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

