

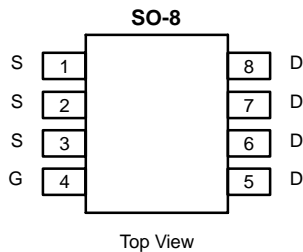


N-Channel 30-V (D-S) MOSFET with Schottky Diode

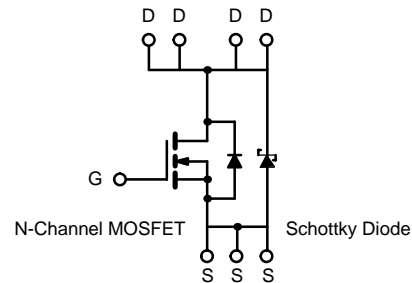
| MOSFET PRODUCT SUMMARY | | |
|------------------------|---------------------------------|--------------------|
| V _{DS} (V) | r _{DS(on)} (Ω) | I _D (A) |
| 30 | 0.0135 @ V _{GS} = 10 V | 10 |
| | 0.020 @ V _{GS} = 4.5 V | 8 |

| SCHOTTKY PRODUCT SUMMARY | | |
|--------------------------|--|--------------------|
| V _{DS} (V) | V _{SD} (V) Diode Forward Voltage | I _F (A) |
| 30 | 0.53 V @ 3.0 A | 4.0 |

LITTLE FOOT Plus™



Ordering Information:
Si4810DY
Si4810DY-T1 (with Tape and Reel)



| ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C UNLESS OTHERWISE NOTED) | | | |
|---|-----------------------------------|------------------------|------|
| Parameter | Symbol | Limit | Unit |
| Drain-Source Voltage (MOSFET) | V _{DS} | 30 | V |
| Reverse Voltage (Schottky) | | 30 | |
| Gate-Source Voltage (MOSFET) | V _{GS} | ±20 | |
| Continuous Drain Current (T _J = 150 °C) (MOSFET) ^{a, b} | I _D | T _A = 25 °C | 10 |
| | | T _A = 70 °C | 8 |
| Pulsed Drain Current (MOSFET) | I _{DM} | 50 | A |
| Continuous Source Current (MOSFET Diode Conduction) ^{a, b} | I _S | 2.3 | |
| Average Forward Current (Schottky) | I _F | 4.0 | |
| Pulsed Forward Current (Schottky) | I _{FM} | 50 | |
| Maximum Power Dissipation (MOSFET) ^{a, b} | P _D | T _A = 25 °C | 2.5 |
| | | T _A = 70 °C | 1.6 |
| Maximum Power Dissipation (Schottky) ^{a, b} | P _D | T _A = 25 °C | 2.0 |
| | | T _A = 70 °C | 1.3 |
| Operating Junction and Storage Temperature Range | T _J , T _{stg} | -55 to 150 | °C |

| THERMAL RESISTANCE RATINGS | | | | | |
|---|----------|-------------------|---------|---------|------|
| Parameter | Device | Symbol | Typical | Maximum | Unit |
| Maximum Junction-to-Ambient (t ≤ 10 sec) ^a | MOSFET | R _{thJA} | | 50 | °C/W |
| | Schottky | | | 60 | |
| Maximum Junction-to-Ambient (t = steady state) ^a | MOSFET | | 70 | | |
| | Schottky | | 80 | | |

Notes

- a. Surface Mounted on FR4 Board.
- b. t ≤ 10 sec.

For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>

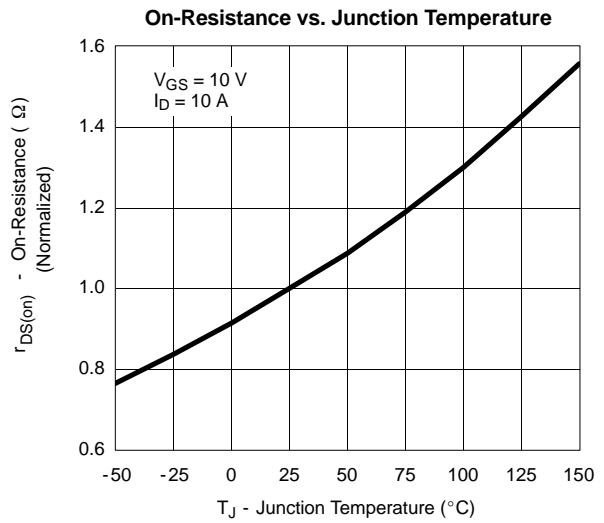
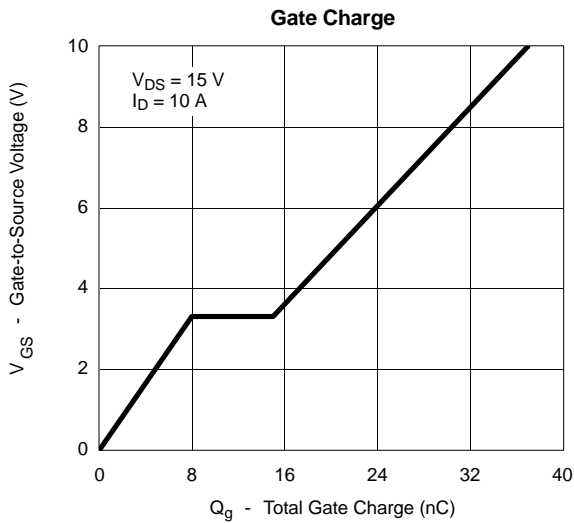
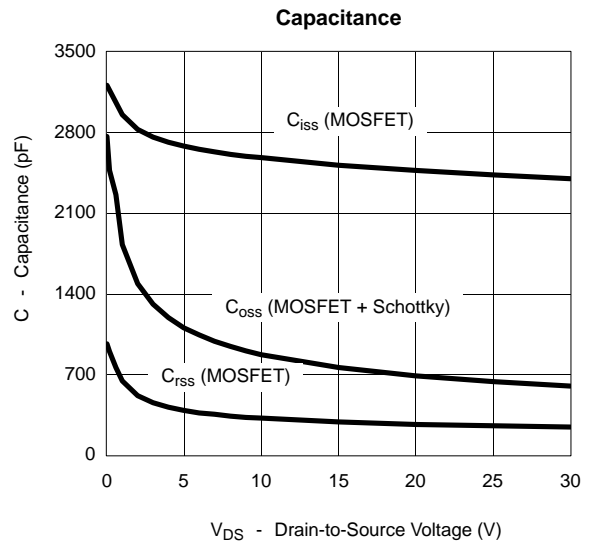
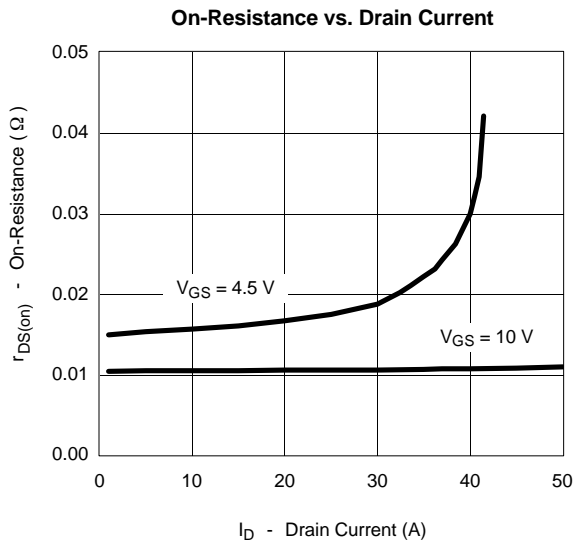
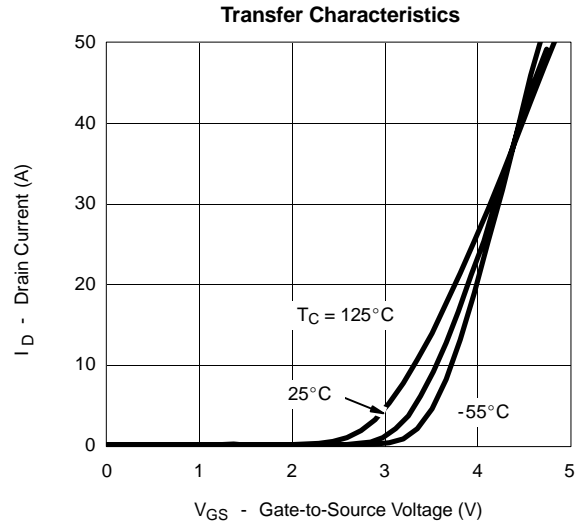
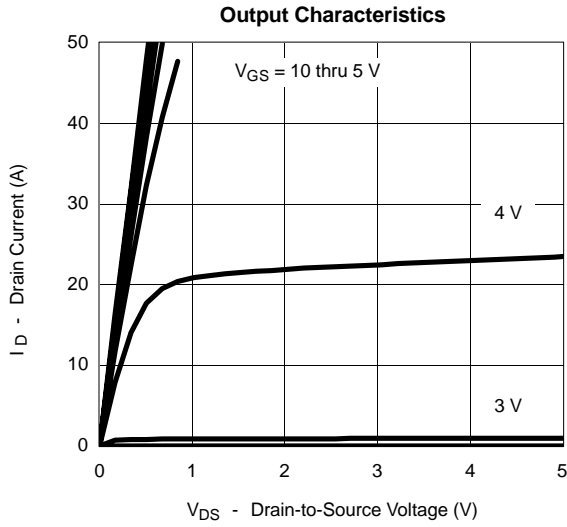

MOSFET + SCHOTTKY SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|--|---------------------|--|-----|--------|--------|------|
| Static | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250 μA | 1 | | | V |
| Gate-Body Leakage | I _{GSS} | V _{DS} = 0 V, V _{GS} = ±20 V | | | ±100 | nA |
| Zero Gate Voltage Drain Current (MOSFET + Schottky) | I _{DSS} | V _{DS} = 30 V, V _{GS} = 0 V | | 0.007 | 0.100 | mA |
| | | V _{DS} = 30 V, V _{GS} = 0 V, T _J = 100 °C | | 1.5 | 10 | |
| | | V _{DS} = 30 V, V _{GS} = 0 V, T _J = 125 °C | | 6.5 | 20 | |
| On-State Drain Current ^a | I _{D(on)} | V _{DS} ≥ 5 V, V _{GS} = 10 V | 20 | | | A |
| Drain-Source On-State Resistance ^a | r _{DS(on)} | V _{GS} = 10 V, I _D = 10 A | | 0.0105 | 0.0135 | Ω |
| | | V _{GS} = 4.5 V, I _D = 5 A | | 0.0155 | 0.020 | |
| Forward Transconductance ^a | g _{fs} | V _{DS} = 15 V, I _D = 10 A | | 28 | | S |
| Schottky Diode Forward Voltage ^a | V _{SD} | I _S = 3.0 A, V _{GS} = 0 V | | 0.485 | 0.53 | V |
| | | I _S = 3.0 A, V _{GS} = 0 V, T _J = 125 °C | | 0.420 | 0.47 | |
| Dynamic^b | | | | | | |
| Total Gate Charge | Q _g | V _{DS} = 15 V, V _{GS} = 5 V, I _D = 10 A | | 20 | 30 | nC |
| Gate-Source Charge | Q _{gs} | | | 8 | | |
| Gate-Drain Charge | Q _{gd} | | | 7 | | |
| Gate Resistance | R _g | | 0.5 | 1.0 | 1.6 | Ω |
| 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 | | 15 | 30 | ns |
| Rise Time | t _r | | | 8 | 15 | |
| Turn-Off Delay Time | t _{d(off)} | | | 45 | 90 | |
| Fall Time | t _f | | | 18 | 40 | |
| Source-Drain Reverse Recovery Time | t _{rr} | I _F = 3.0 A, di/dt = 100 A/μs | | 36 | 70 | |

Notes

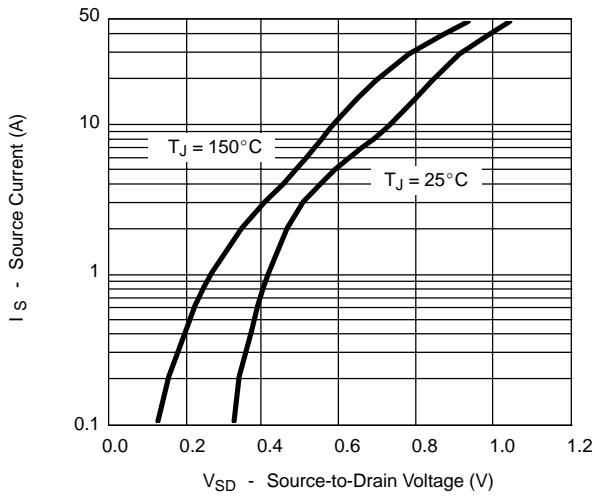
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
 b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

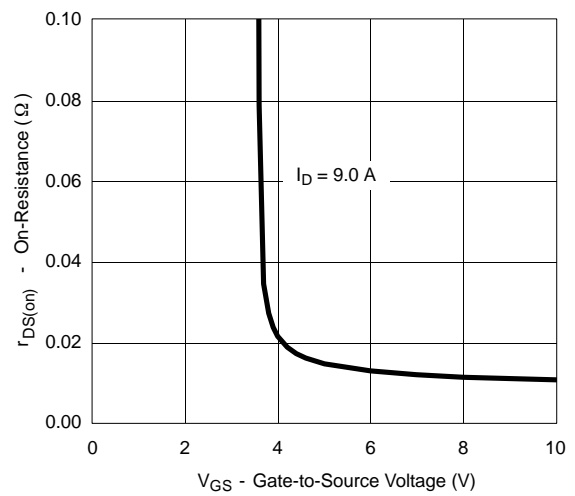


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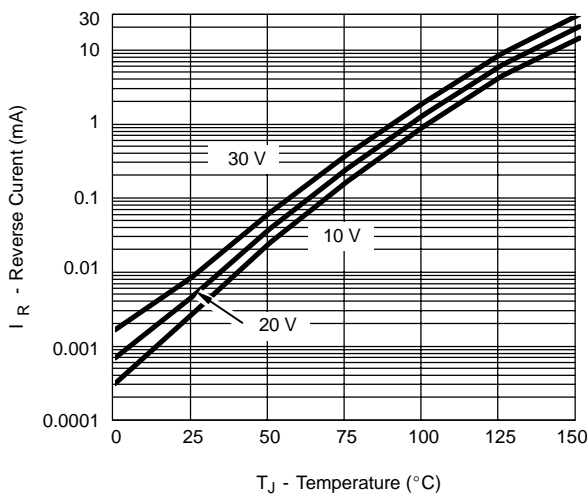
Source-Drain Diode Forward Voltage



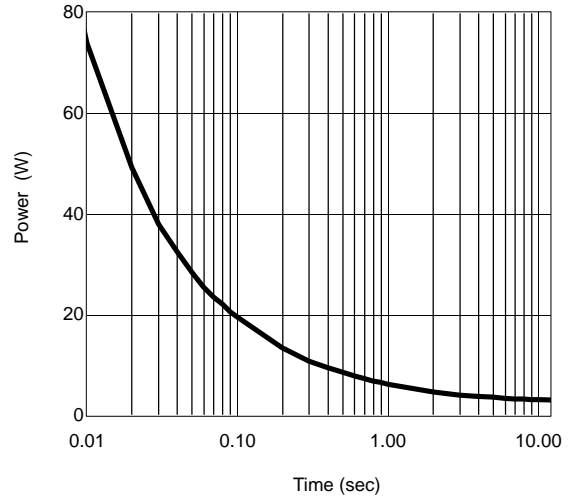
On-Resistance vs. Gate-to-Source Voltage



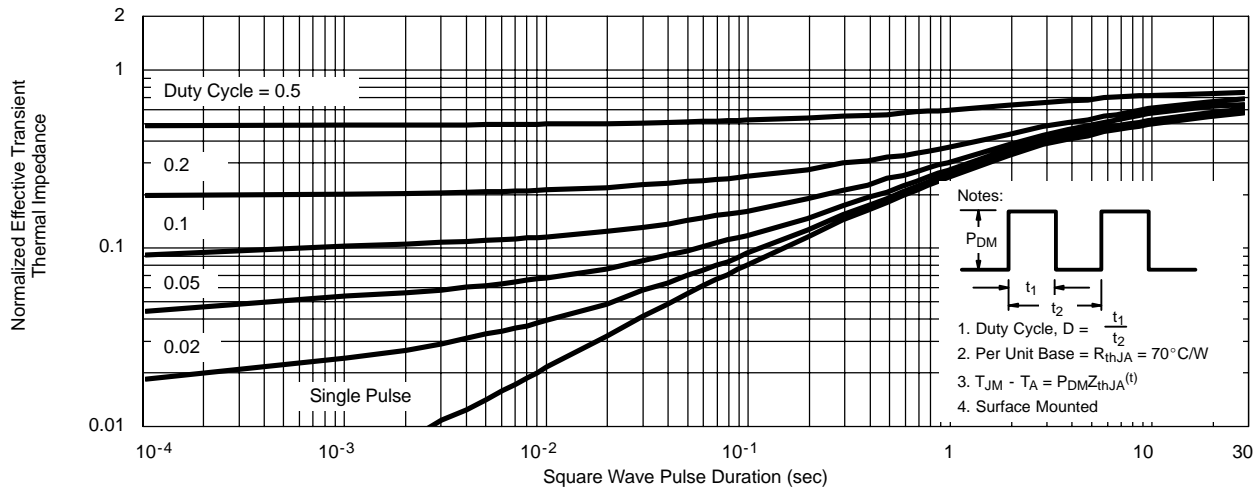
Reverse Current (Schottky)



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

