

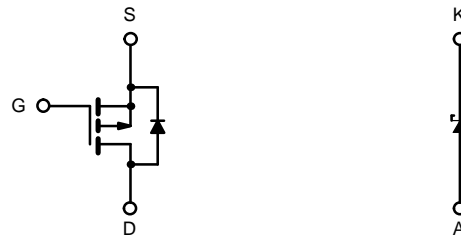
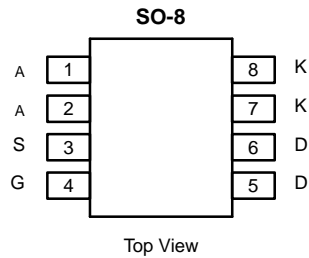


P-Channel 30-V (D-S) MOSFET with Schottky Diode

| MOSFET PRODUCT SUMMARY | | |
|------------------------|---------------------------|-----------|
| V_{DS} (V) | $r_{DS(on)}$ (Ω) | I_D (A) |
| -30 | 0.085 @ $V_{GS} = -10$ V | ± 3.5 |
| | 0.180 @ $V_{GS} = -4.5$ V | ± 2.5 |

| SCHOTTKY PRODUCT SUMMARY | | |
|--------------------------|------------------------------------|-----------|
| V_{KA} (V) | V_F (V) Diode Forward Voltage | I_F (A) |
| 30 | 0.5 V @ 1.0 A | 1.4 |

LITTLE FOOT Plus™



| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED) | | | | |
|---|--------------------------|----------------|------------|------------------|
| Parameter | | Symbol | Limit | Unit |
| Drain-Source Voltage (MOSFET) | | V_{DS} | -30 | V |
| Reverse Voltage (Schottky) | | V_{KA} | 30 | |
| Gate-Source Voltage (MOSFET) | | V_{GS} | ± 20 | |
| Continuous Drain Current ($T_J = 150^\circ\text{C}$) (MOSFET) ^{a, b} | $T_A = 25^\circ\text{C}$ | I_D | ± 3.5 | A |
| | $T_A = 70^\circ\text{C}$ | | ± 2.8 | |
| Pulsed Drain Current (MOSFET) | | I_{DM} | ± 20 | |
| Continuous Source Current (MOSFET Diode Conduction) ^{a, b} | | I_S | -1.7 | |
| Average Forward Current (Schottky) | | I_F | 1.4 | |
| Pulsed Forward Current (Schottky) | | I_{FM} | 30 | |
| Maximum Power Dissipation (MOSFET) ^{a, b} | $T_A = 25^\circ\text{C}$ | P_D | 2 | W |
| | $T_A = 70^\circ\text{C}$ | | 1.3 | |
| Maximum Power Dissipation (Schottky) ^{a, b} | $T_A = 25^\circ\text{C}$ | | 1.9 | |
| | $T_A = 70^\circ\text{C}$ | | 1.2 | |
| Operating Junction and Storage Temperature Range | | T_J, T_{stg} | -55 to 150 | $^\circ\text{C}$ |

| THERMAL RESISTANCE RATINGS | | | | | |
|--|----------|------------|---------|---------|--------------------|
| Parameter | Device | Symbol | Typical | Maximum | Unit |
| Maximum Junction-to-Ambient ($t \leq 10$ sec) ^a | MOSFET | R_{thJA} | | 62.5 | $^\circ\text{C/W}$ |
| | Schottky | | | 65 | |
| Maximum Junction-to-Ambient ($t = \text{steady state}$) ^a | MOSFET | | 90 | | |
| | Schottky | | 92 | | |

Notes

- a. Surface Mounted on FR4 Board.
- b. $t \leq 10$ sec.



| MOSFET 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 | | | 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} = -30 V, V _{GS} = 0 V | | | -1 | μA |
| | | V _{DS} = -30 V, V _{GS} = 0 V, T _J = 55 °C | | | -25 | |
| On-State Drain Current ^a | I _{D(on)} | V _{DS} ≥ -5 V, V _{GS} = -10 V | -15 | | | A |
| Drain-Source On-State Resistance ^a | r _{DS(on)} | V _{GS} = -10 V, I _D = -2.5 A | | 0.066 | 0.085 | Ω |
| | | V _{GS} = -4.5 V, I _D = -1.8 A | | 0.125 | 0.180 | |
| Forward Transconductance ^a | g _{fs} | V _{DS} = -10 V, I _D = -2.5 A | | 5.0 | | 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} = -10 V, V _{GS} = -10 V, I _D = -2.5 A | | 8.7 | 15 | nC |
| Gate-Source Charge | Q _{gs} | | | 1.9 | | |
| Gate-Drain Charge | Q _{gd} | | | 1.3 | | |
| Turn-On Delay Time | t _{d(on)} | V _{DD} = -10 V, R _L = 10 Ω I _D ≅ -1 A, V _{GEN} = -10 V, R _G = 6 Ω | | 7 | 15 | ns |
| Rise Time | t _r | | | 9 | 18 | |
| Turn-Off Delay Time | t _{d(off)} | | | 14 | 27 | |
| Fall Time | t _f | | | 8 | 15 | |
| Source-Drain Reverse Recovery Time | t _{rr} | I _F = -1.7 A, di/dt = 100 A/μs | | 50 | 80 | |

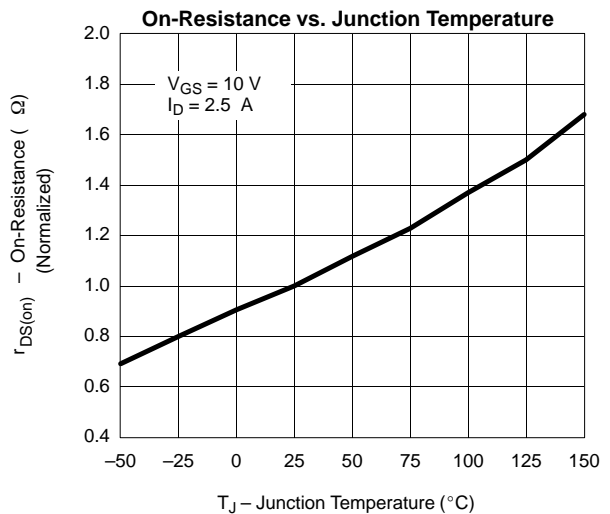
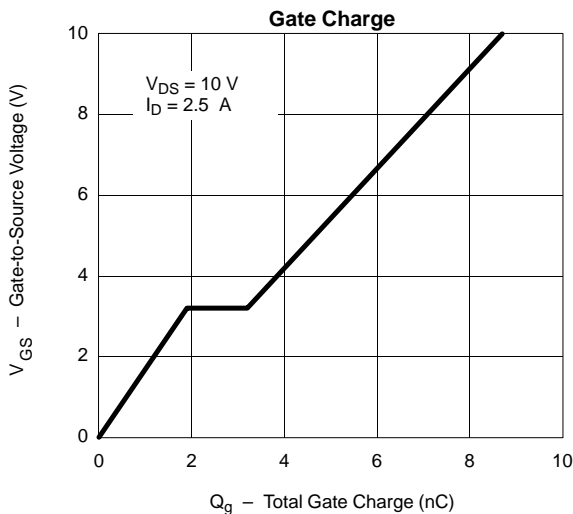
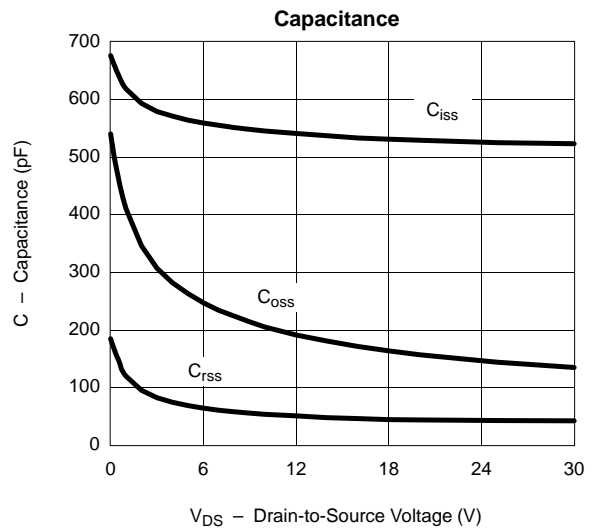
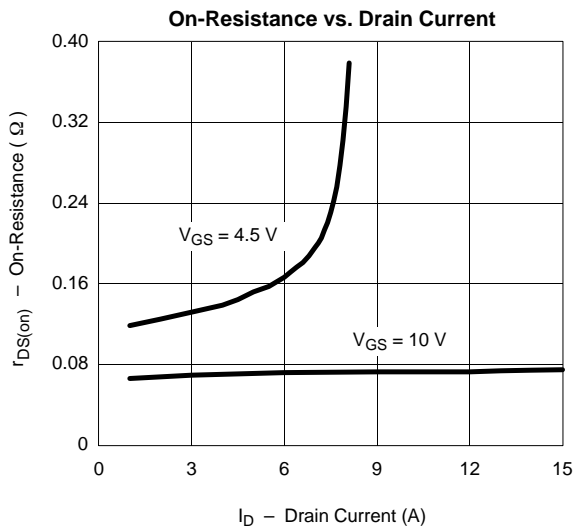
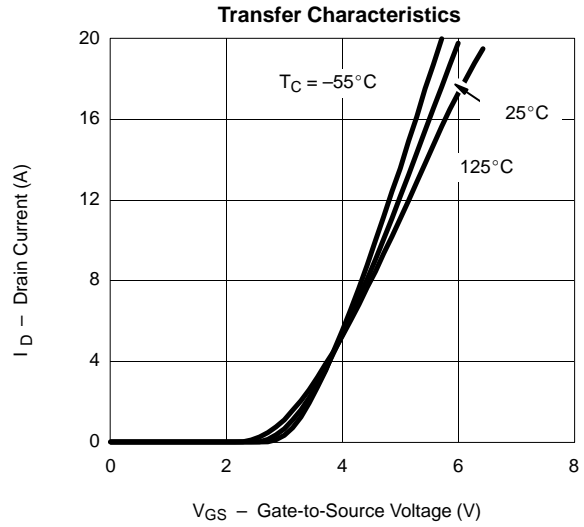
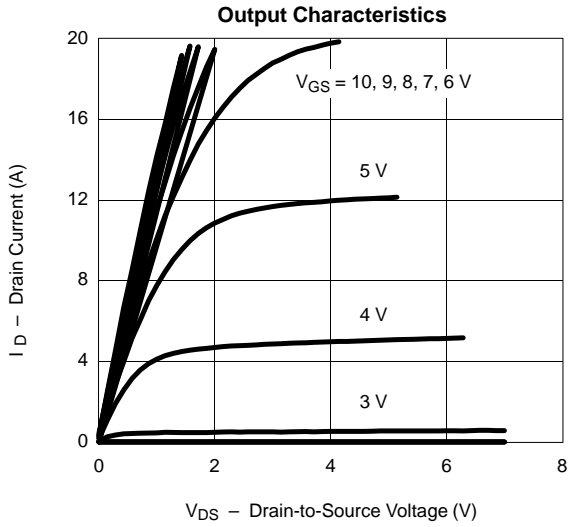
Notes

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

| SCHOTTKY SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED) | | | | | | |
|---|-----------------|---|-----|-------|-------|------|
| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
| Forward Voltage Drop | V _F | I _F = 1.0 A | | 0.45 | 0.5 | V |
| | | I _F = 1.0 A, T _J = 125 °C | | 0.36 | 0.42 | |
| Maximum Reverse Leakage Current | I _{rm} | V _r = 30 V | | 0.004 | 0.100 | mA |
| | | V _r = 30 V, T _J = 100 °C | | 0.7 | 10 | |
| | | V _r = -30 V, T _J = 125 °C | | 3.0 | 20 | |
| Junction Capacitance | C _T | V _r = 10 V | | 62 | | pF |

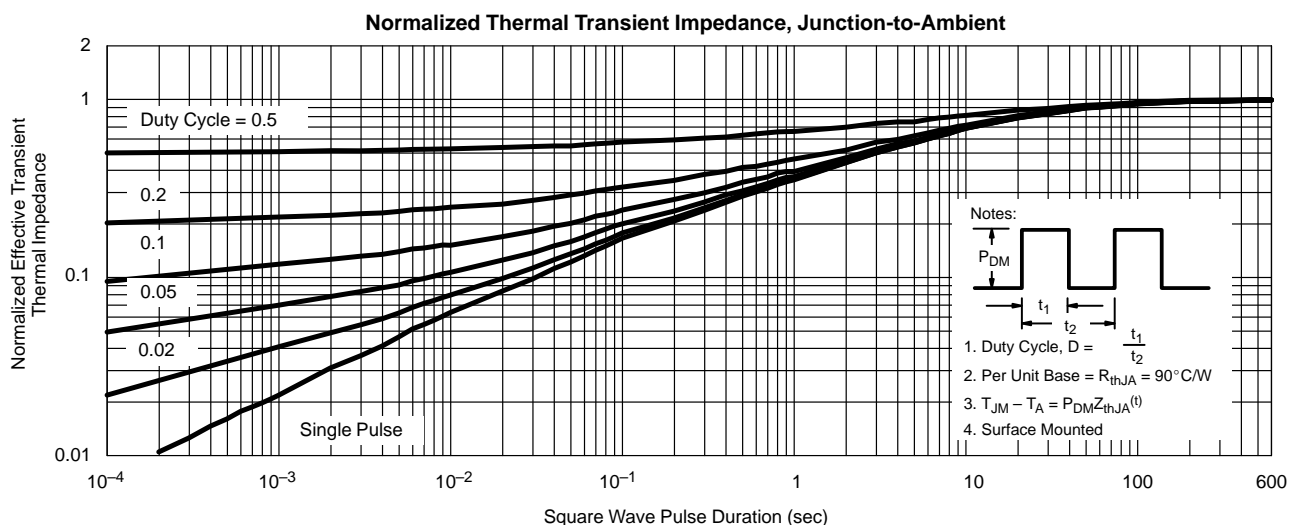
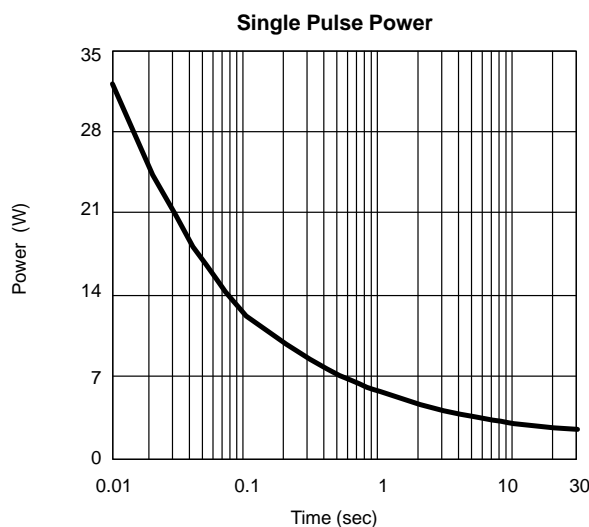
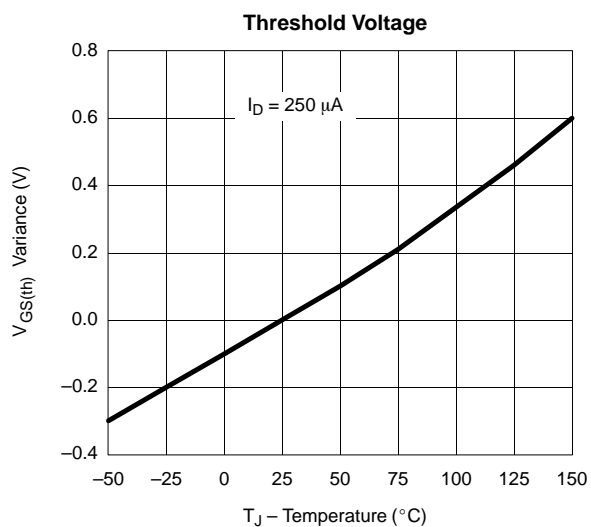
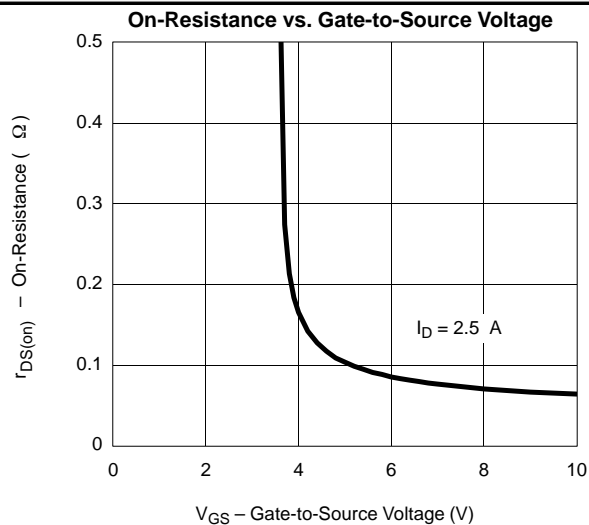
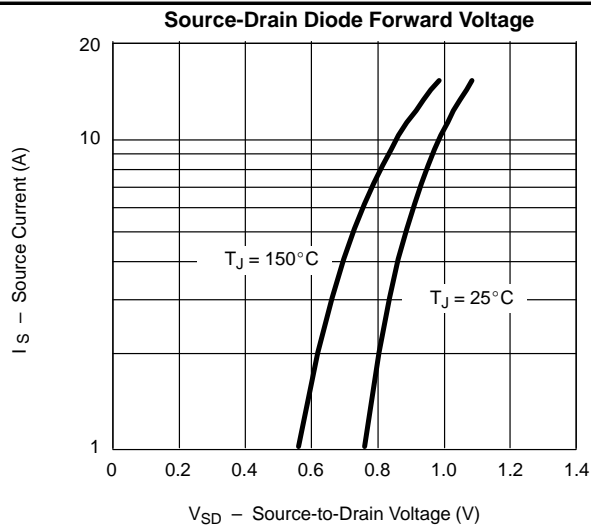


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) MOSFET



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

MOSFET





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) SCHOTTKY

