

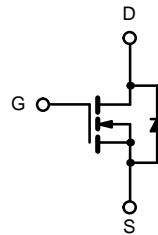
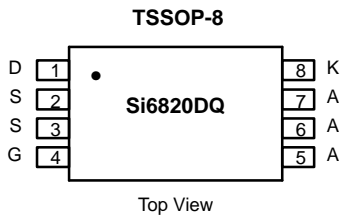


## N-Channel, Reduced $Q_g$ , MOSFET with Schottky Diode

MOSFET PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
20	0.160 @ $V_{GS} = 4.5$ V	$\pm 1.9$
	0.260 @ $V_{GS} = 3.0$ V	$\pm 1.5$

SCHOTTKY PRODUCT SUMMARY		
$V_{KA}$ (V)	$V_F$ (v) Diode Forward Voltage	$I_F$ (A)
20	0.5 V @ 1 A	1.5

LITTLE FOOT Plus™



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Unit
Drain-Source Voltage (MOSFET)		$V_{DS}$	20	V
Reverse Voltage (Schottky)		$V_{KA}$	20	
Gate-Source Voltage (MOSFET)		$V_{GS}$	$\pm 12$	
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) (MOSFET) <sup>a, b</sup>		$T_A = 25^\circ\text{C}$	$I_D$	$\pm 1.9$
		$T_A = 70^\circ\text{C}$		$\pm 1.5$
Pulsed Drain Current (MOSFET)		$I_{DM}$	$\pm 8$	A
Continuous Source Current (MOSFET Diode Conduction) <sup>a, b</sup>		$I_S$	1.0	
Average Forward Current (Schottky)		$I_F$	1.5	
Pulsed Forward Current (Schottky)		$I_{FM}$	30	
Maximum Power Dissipation (MOSFET) <sup>a, b</sup>		$T_A = 25^\circ\text{C}$	$P_D$	1.2
		$T_A = 70^\circ\text{C}$		0.76
Maximum Power Dissipation (Schottky) <sup>a, b</sup>		$T_A = 25^\circ\text{C}$	$P_D$	1.0
		$T_A = 70^\circ\text{C}$		0.64
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) <sup>a</sup>	MOSFET	$R_{thJA}$		105	$^\circ\text{C/W}$
	Schottky			125	
Maximum Junction-to-Ambient ( $t = \text{steady state}$ ) <sup>a</sup>	MOSFET		115		
	Schottky		130		

Notes

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



<b>MOSFET SPECIFICATIONS (T<sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)</b>						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA	0.6			V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±12 V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 20 V, V <sub>GS</sub> = 0 V			1	μA
		V <sub>DS</sub> = 20 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C			25	
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> ≥ 5 V, V <sub>GS</sub> = 4.5 V	6			A
Drain-Source On-State Resistance <sup>a</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 1.9 A		0.085	0.160	Ω
		V <sub>GS</sub> = 3.0 V, I <sub>D</sub> = 1.5 A		0.115	0.260	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 1.9 A		5		S
Diode Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = 1.0 A, V <sub>GS</sub> = 0 V		0.77	1.2	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 3.5 V, V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 0.3 A		2.1	3.5	nC
Gate-Source Charge	Q <sub>gs</sub>			0.43		
Gate-Drain Charge	Q <sub>gd</sub>			0.30		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 3.5 V, R <sub>L</sub> = 11.5 Ω I <sub>D</sub> ≅ 0.3 A, V <sub>GEN</sub> = 4.5 V, R <sub>G</sub> = 6 Ω		8	20	ns
Rise Time	t <sub>r</sub>			10	20	
Turn-Off Delay Time	t <sub>d(off)</sub>			12	25	
Fall Time	t <sub>f</sub>			6	15	
Source-Drain Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 1.0 A, di/dt = 100 A/μs		31	60	

Notes

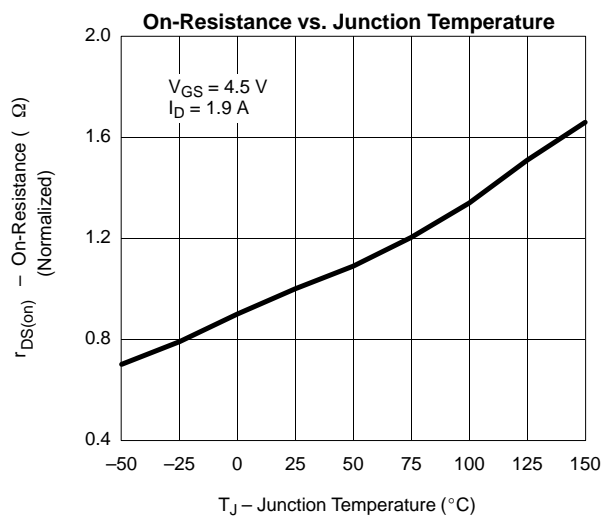
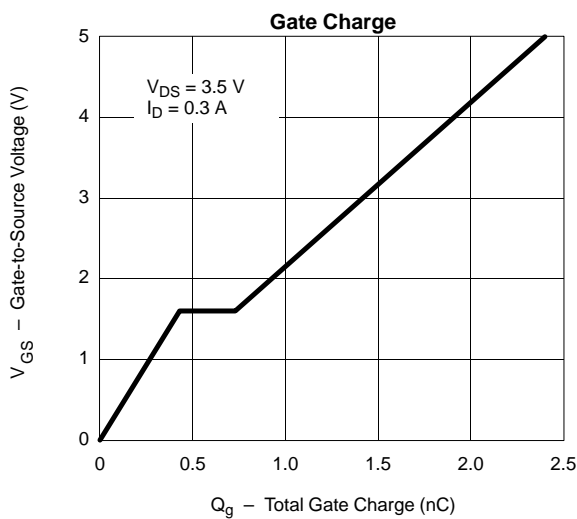
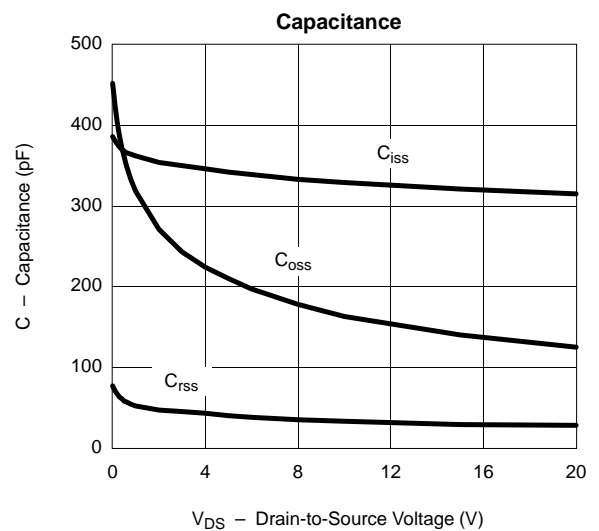
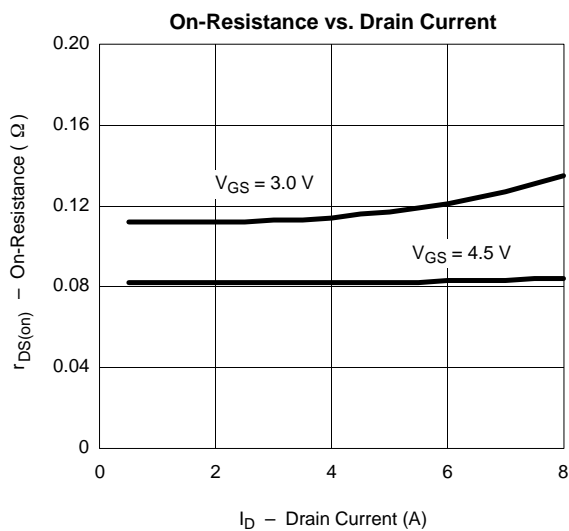
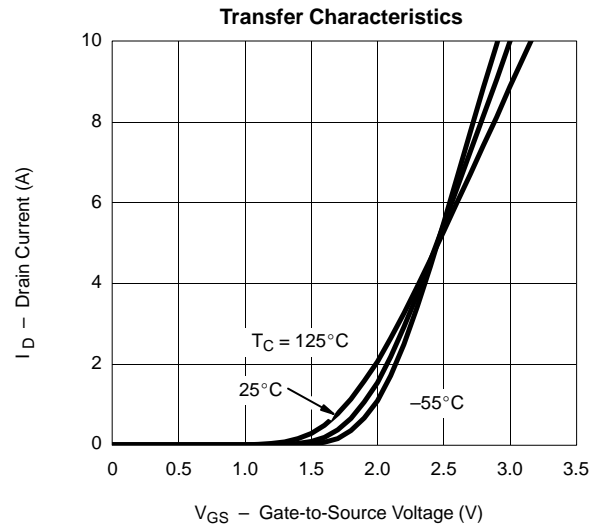
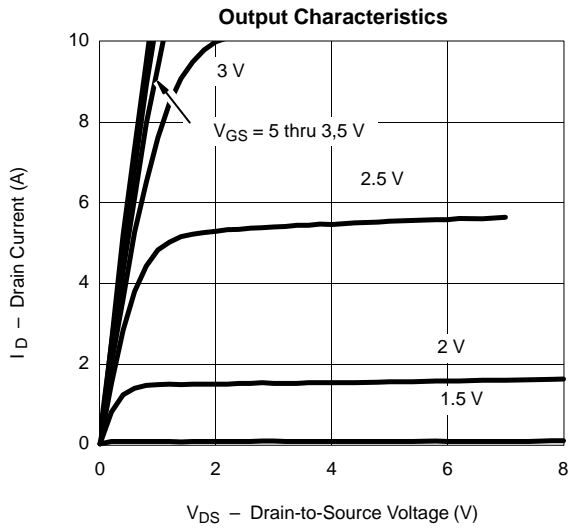
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

<b>SCHOTTKY SPECIFICATIONS (T<sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)</b>						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Forward Voltage Drop	V <sub>F</sub>	I <sub>F</sub> = 1 A		0.45	0.50	V
		I <sub>F</sub> = 1 A, T <sub>J</sub> = 125 °C		0.36	0.42	
Maximum Reverse Leakage Current	I <sub>rm</sub>	V <sub>r</sub> = 20 V		0.003	0.100	mA
		V <sub>r</sub> = 20 V, T <sub>J</sub> = 75 °C		0.1	1	
		V <sub>r</sub> = 20 V, T <sub>J</sub> = 125 °C		2	10	
Junction Capacitance	C <sub>T</sub>	V <sub>r</sub> = 10 V		62		pF

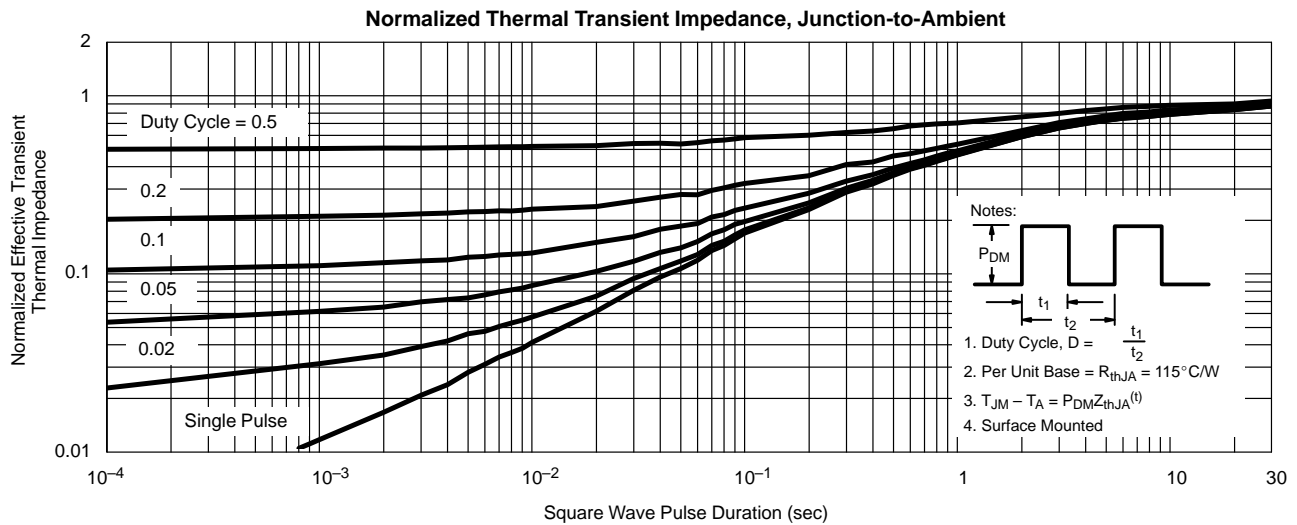
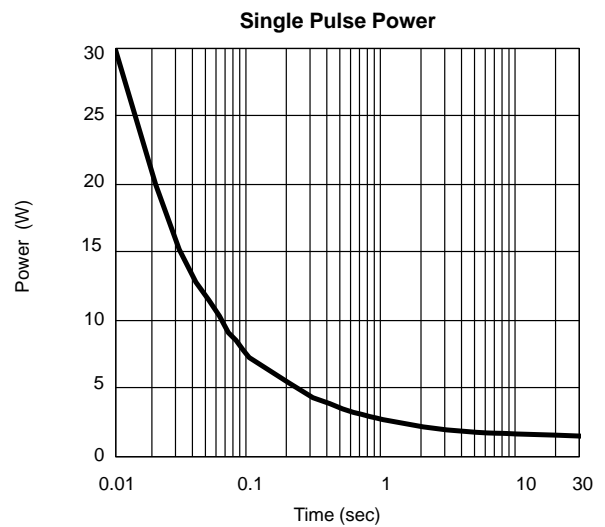
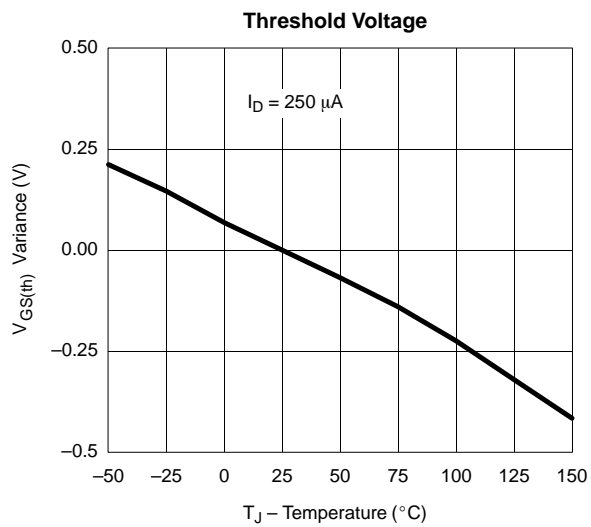
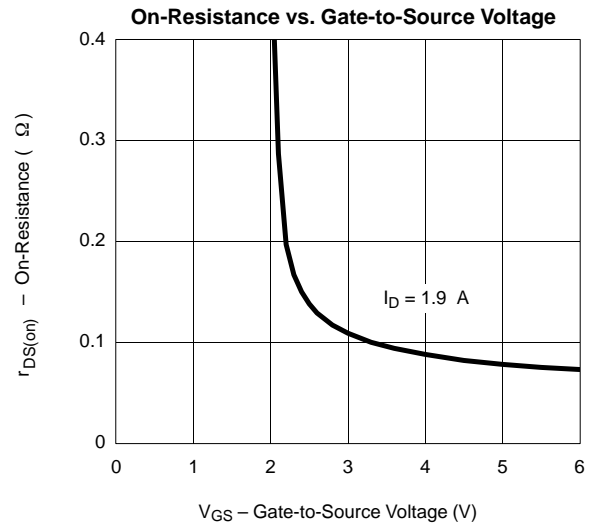
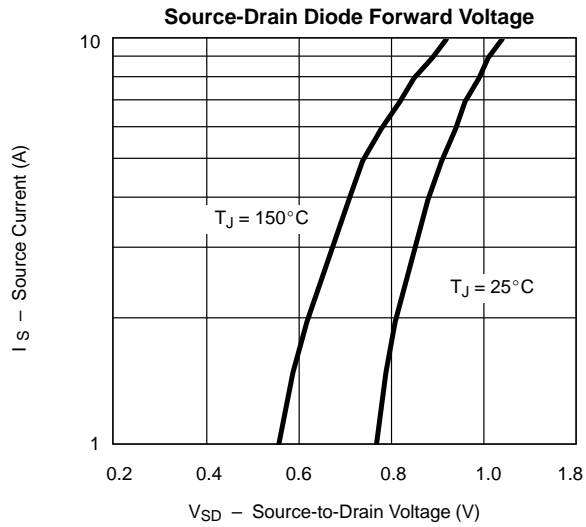


**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

**MOSFET**



**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) MOSFET**





**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**

**SCHOTTKY**

