

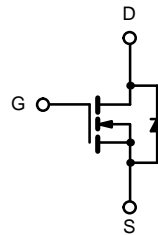
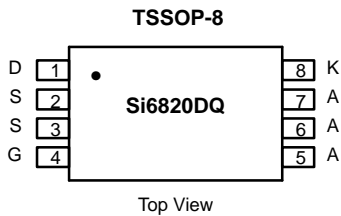


N-Channel, Reduced Q_g , MOSFET with Schottky Diode

MOSFET PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
20	0.160 @ $V_{GS} = 4.5$ V	± 1.9
	0.260 @ $V_{GS} = 3.0$ V	± 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}	± 12	
Continuous Drain Current ($T_J = 150^\circ\text{C}$) (MOSFET) ^{a, b}		$T_A = 25^\circ\text{C}$	I_D	± 1.9
		$T_A = 70^\circ\text{C}$		± 1.5
Pulsed Drain Current (MOSFET)		I_{DM}	± 8	A
Continuous Source Current (MOSFET Diode Conduction) ^{a, b}		I_S	1.0	
Average Forward Current (Schottky)		I_F	1.5	
Pulsed Forward Current (Schottky)		I_{FM}	30	
Maximum Power Dissipation (MOSFET) ^{a, b}		$T_A = 25^\circ\text{C}$	P_D	1.2
		$T_A = 70^\circ\text{C}$		0.76
Maximum Power Dissipation (Schottky) ^{a, b}		$T_A = 25^\circ\text{C}$	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) ^a	MOSFET	R_{thJA}		105	$^\circ\text{C/W}$
	Schottky			125	
Maximum Junction-to-Ambient ($t = \text{steady state}$) ^a	MOSFET		115		
	Schottky		130		

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	0.6			V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±12 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20 V, V _{GS} = 0 V			1	μA
		V _{DS} = 20 V, V _{GS} = 0 V, T _J = 55 °C			25	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 4.5 V	6			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 4.5 V, I _D = 1.9 A		0.085	0.160	Ω
		V _{GS} = 3.0 V, I _D = 1.5 A		0.115	0.260	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 1.9 A		5		S
Diode Forward Voltage ^a	V _{SD}	I _S = 1.0 A, V _{GS} = 0 V		0.77	1.2	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = 3.5 V, V _{GS} = 4.5 V, I _D = 0.3 A		2.1	3.5	nC
Gate-Source Charge	Q _{gs}			0.43		
Gate-Drain Charge	Q _{gd}			0.30		
Turn-On Delay Time	t _{d(on)}	V _{DD} = 3.5 V, R _L = 11.5 Ω I _D ≅ 0.3 A, V _{GEN} = 4.5 V, R _G = 6 Ω		8	20	ns
Rise Time	t _r			10	20	
Turn-Off Delay Time	t _{d(off)}			12	25	
Fall Time	t _f			6	15	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 1.0 A, di/dt = 100 A/μs		31	60	

Notes

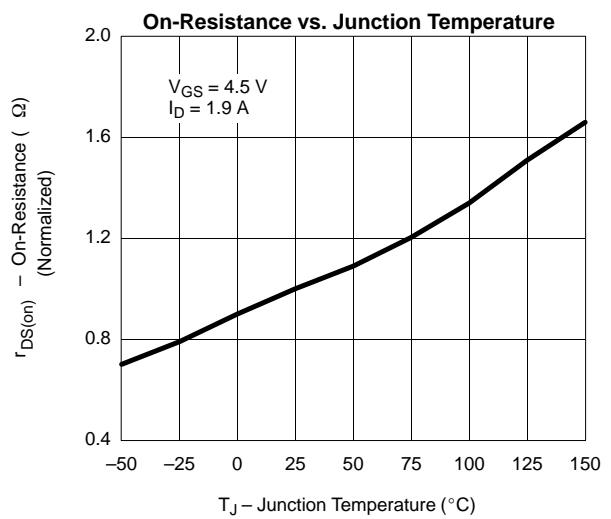
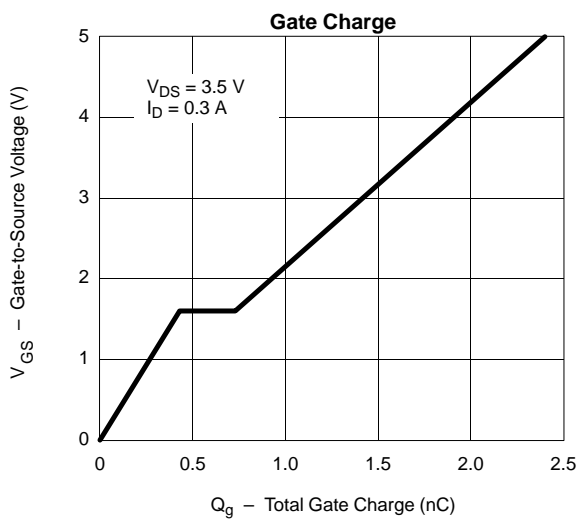
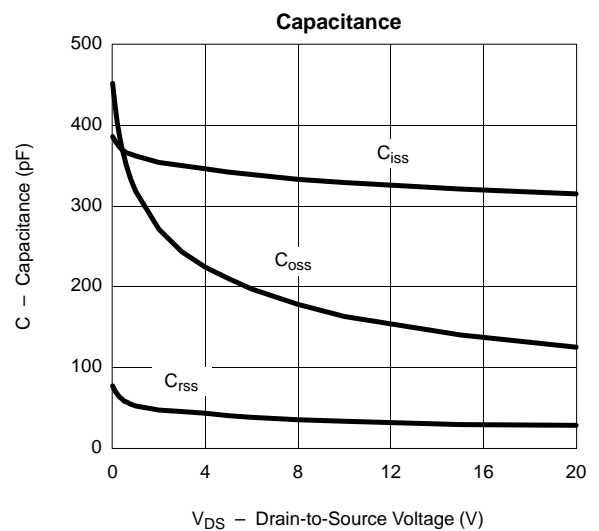
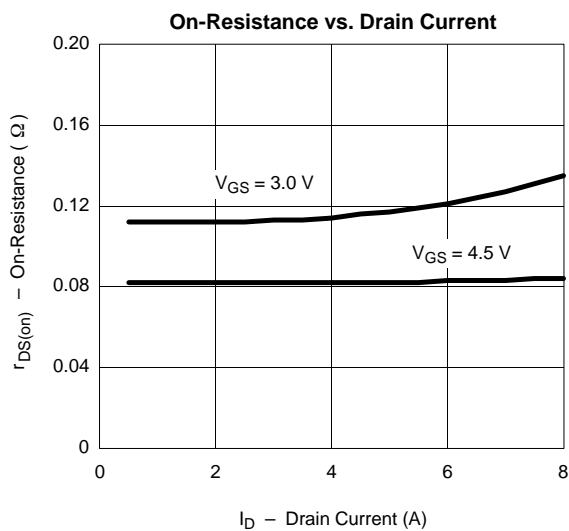
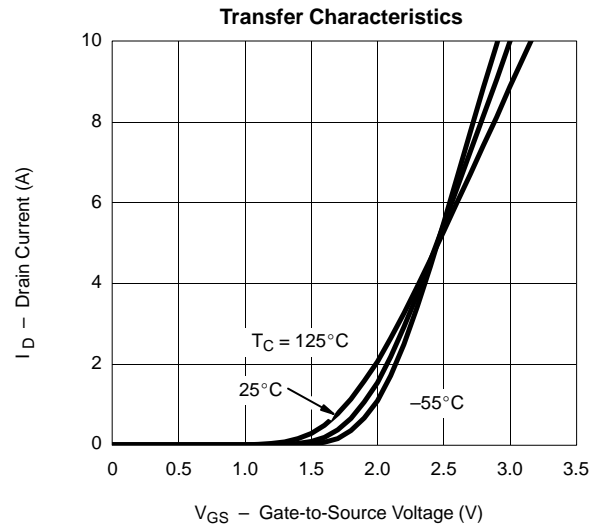
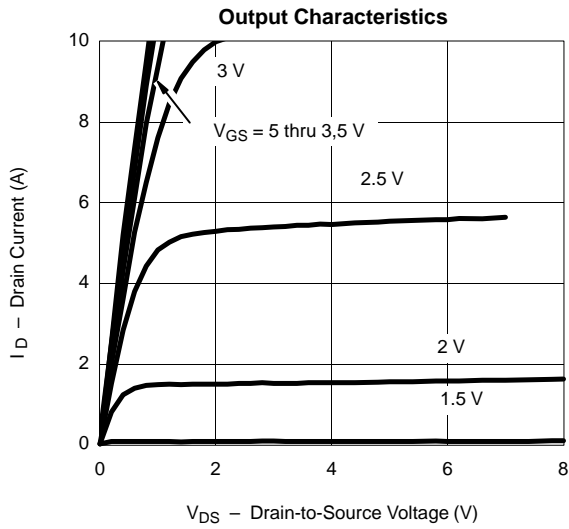
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

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 A		0.45	0.50	V
		I _F = 1 A, T _J = 125 °C		0.36	0.42	
Maximum Reverse Leakage Current	I _{rm}	V _r = 20 V		0.003	0.100	mA
		V _r = 20 V, T _J = 75 °C		0.1	1	
		V _r = 20 V, T _J = 125 °C		2	10	
Junction Capacitance	C _T	V _r = 10 V		62		pF

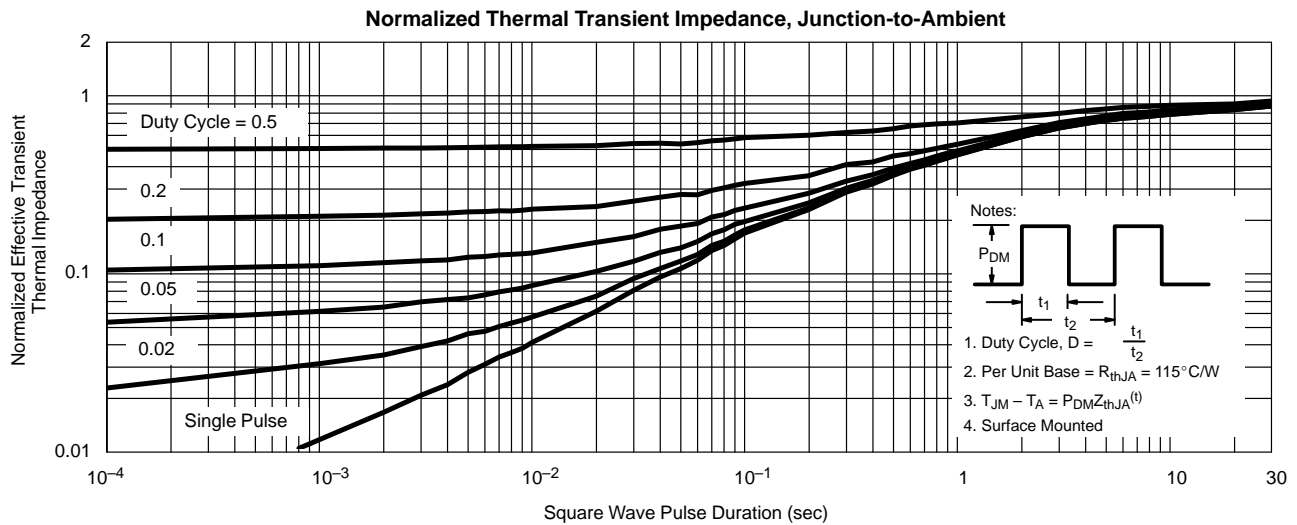
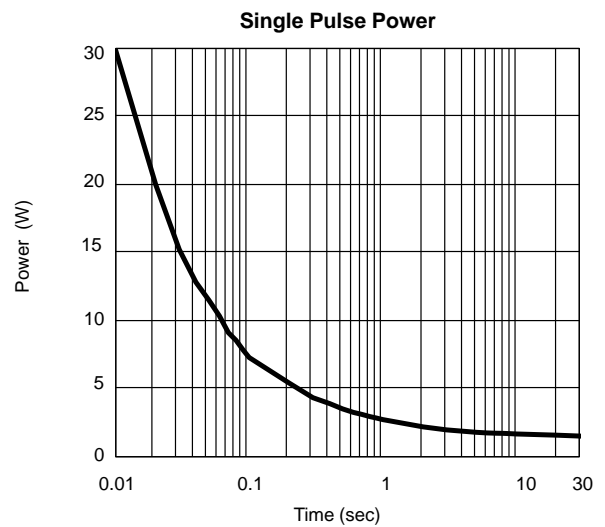
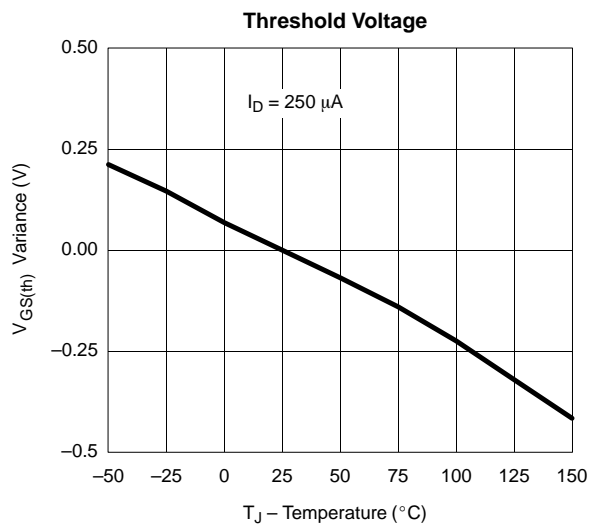
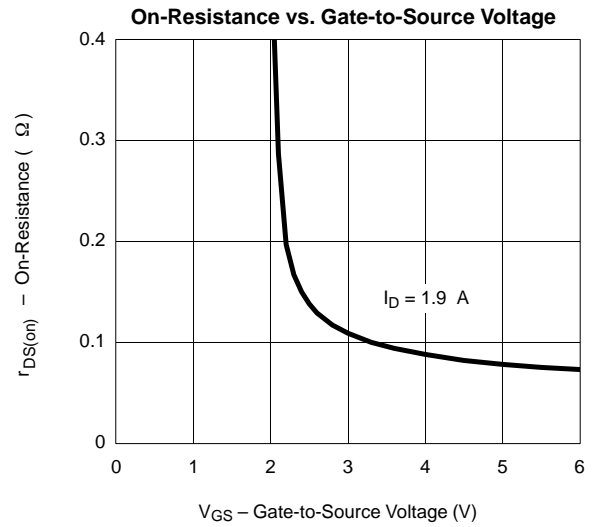
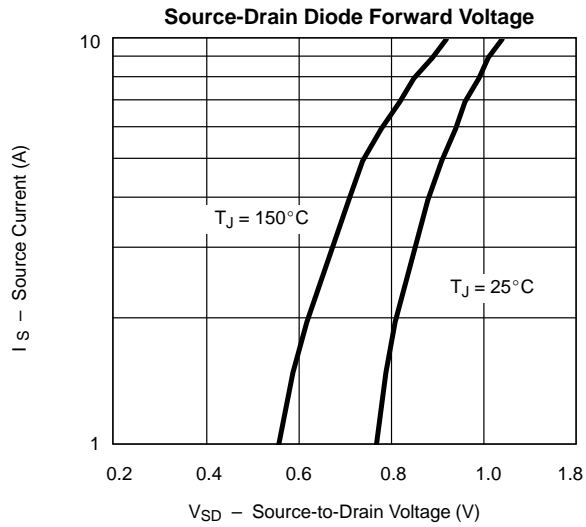


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

MOSFET



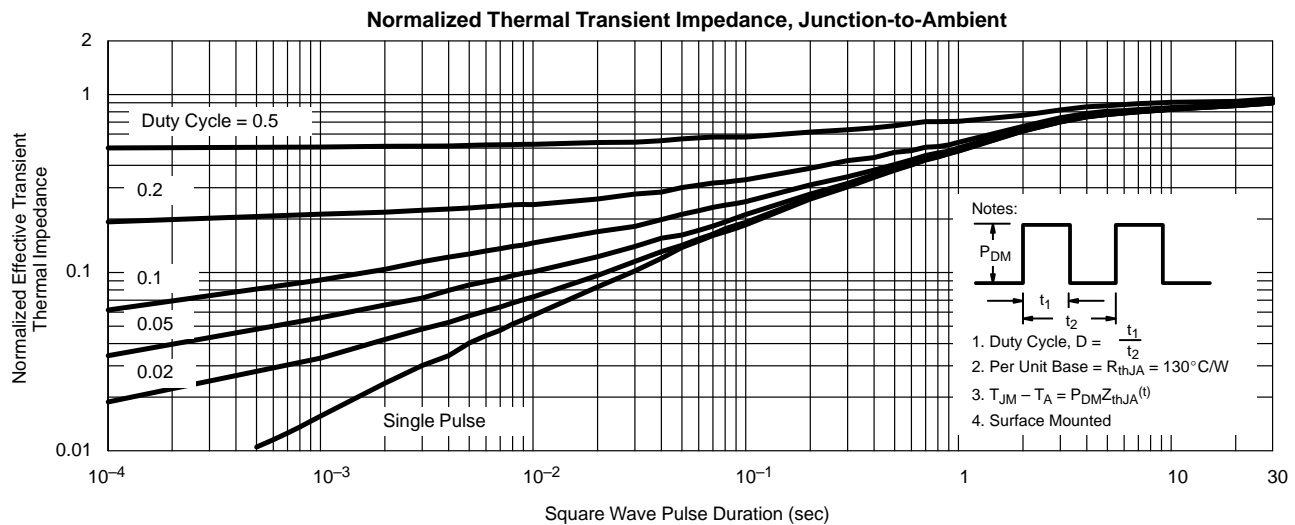
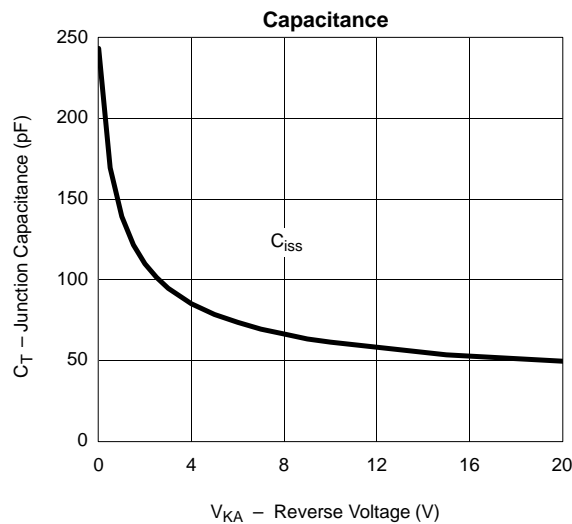
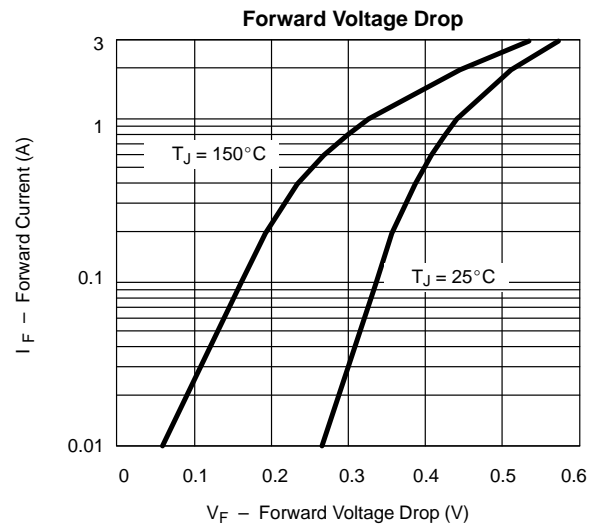
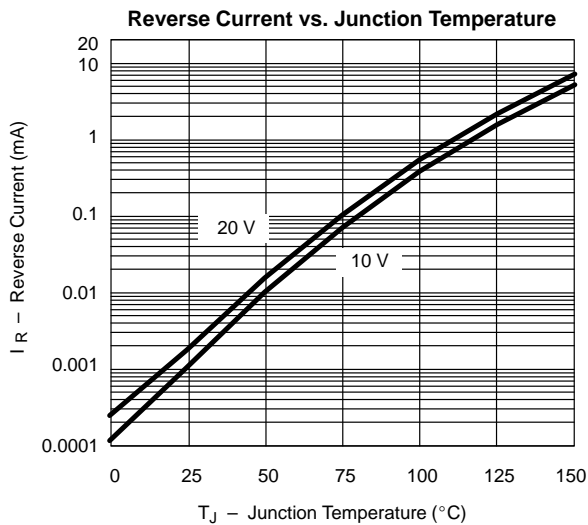
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) MOSFET





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

SCHOTTKY





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