

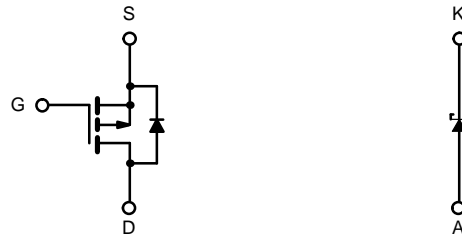
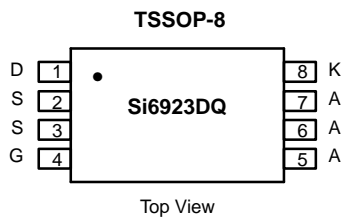


## P-Channel 2.5-V (G-S) MOSFET with Schottky Diode

MOSFET PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
-20	0.050 @ $V_{GS} = -4.5$ V	$\pm 3.5$
	0.085 @ $V_{GS} = -2.5$ V	$\pm 2.7$

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 and Schottky)	$V_{DS}$	-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>	$I_D$	$T_A = 25^\circ\text{C}$	$\pm 3.5$	A
		$T_A = 70^\circ\text{C}$	$\pm 2.8$	
Pulsed Drain Current (MOSFET)	$I_{DM}$	$\pm 30$		
Continuous Source Current (MOSFET Diode Conduction) <sup>a, b</sup>	$I_S$	-1.25		
Average Forward Current (Schottky)	$I_F$	1.5		
Pulsed Forward Current (Schottky)	$I_{FM}$	30		
Maximum Power Dissipation (MOSFET) <sup>a, b</sup>	$P_D$	$T_A = 25^\circ\text{C}$	1.2	W
		$T_A = 70^\circ\text{C}$	0.76	
Maximum Power Dissipation (Schottky) <sup>a, b</sup>	$P_D$	$T_A = 25^\circ\text{C}$	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.


**MOSFET SPECIFICATIONS ( $T_J = 25^\circ\text{C}$  UNLESS OTHERWISE NOTED)**

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$	-0.6			V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 12 \text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -20 \text{ V}, V_{GS} = 0 \text{ V}$			-1	$\mu\text{A}$
		$V_{DS} = -20 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^\circ\text{C}$			-25	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} \geq -5 \text{ V}, V_{GS} = -4.5 \text{ V}$	-30			A
Drain-Source On-State Resistance <sup>a</sup>	$r_{DS(on)}$	$V_{GS} = -4.5 \text{ V}, I_D = -3.5 \text{ A}$		0.040	0.050	$\Omega$
		$V_{GS} = -2.5 \text{ V}, I_D = -2.7 \text{ A}$		0.06	0.085	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = -10 \text{ V}, I_D = -3.5 \text{ A}$		10		S
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	$I_S = -1.25 \text{ A}, V_{GS} = 0 \text{ V}$		-0.72	-1.2	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = -10 \text{ V}, V_{GS} = -10 \text{ V}, I_D = -3.5 \text{ A}$		14.5	25	nC
Gate-Source Charge	$Q_{gs}$			3.5		
Gate-Drain Charge	$Q_{gd}$			3.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10 \text{ V}, R_L = 10 \Omega$ $I_D \cong -1 \text{ A}, V_{GEN} = -4.5 \text{ V}, R_G = 6 \Omega$		27	50	ns
Rise Time	$t_r$			30	60	
Turn-Off Delay Time	$t_{d(off)}$			57	100	
Fall Time	$t_f$			21	40	
Source-Drain Reverse Recovery Time	$t_{rr}$	$I_F = -1.25 \text{ A}, di/dt = 100 \text{ A}/\mu\text{s}$		60	100	

## Notes

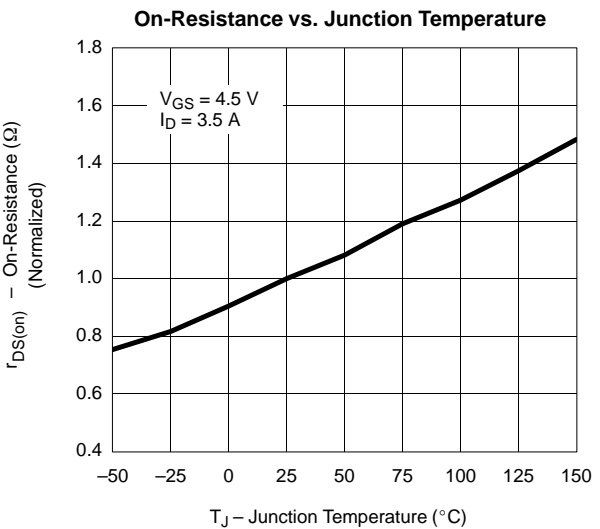
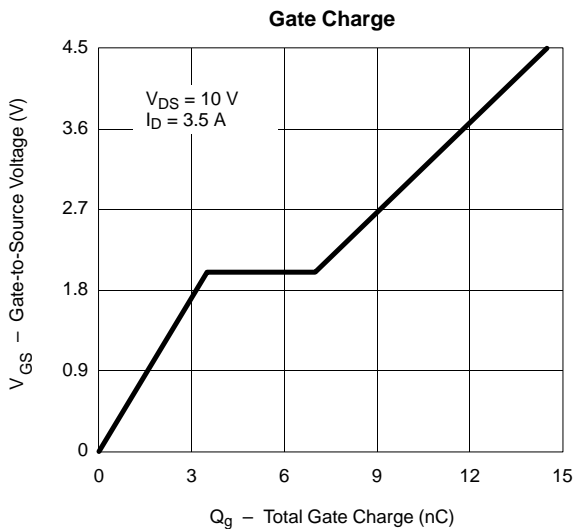
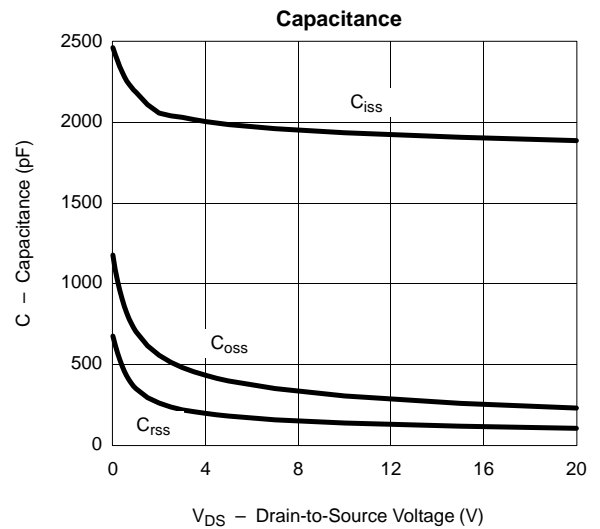
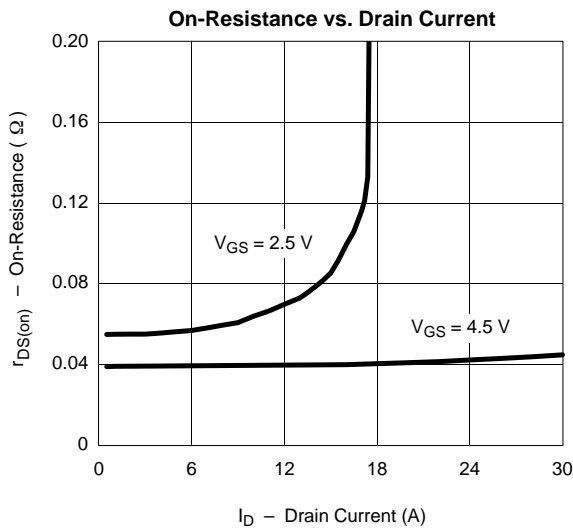
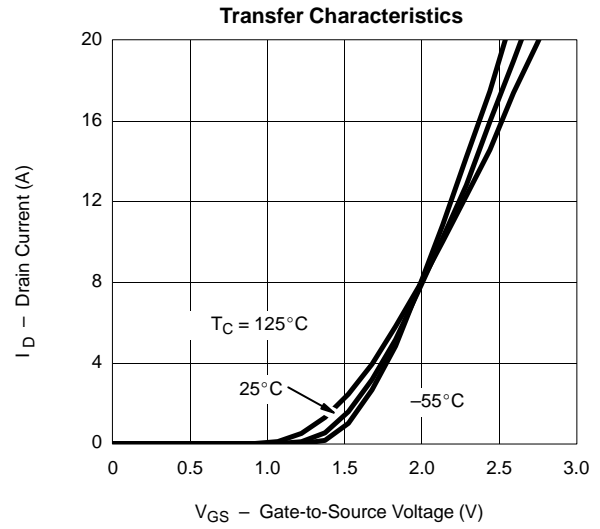
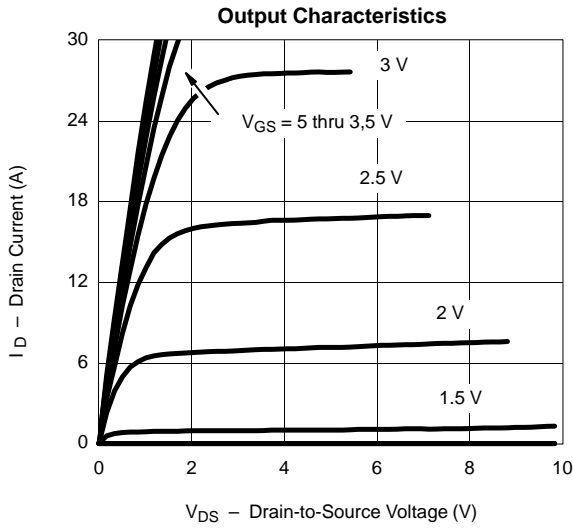
- a. Pulse test; pulse width  $\leq 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .  
b. Guaranteed by design, not subject to production testing.

**SCHOTTKY SPECIFICATIONS ( $T_J = 25^\circ\text{C}$  UNLESS OTHERWISE NOTED)**

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Forward Voltage Drop	$V_F$	$I_F = 1 \text{ A}$		0.45	0.5	V
		$I_F = 1 \text{ A}, T_J = 125^\circ\text{C}$		0.36	0.42	
Maximum Reverse Leakage Current	$I_{rm}$	$V_r = 20 \text{ V}$		0.003	0.100	mA
		$V_r = 20 \text{ V}, T_J = 75^\circ\text{C}$		0.1	1	
		$V_r = 20 \text{ V}, T_J = 125^\circ\text{C}$		2	10	
Junction Capacitance	$C_T$	$V_r = 10 \text{ V}$		62		pF

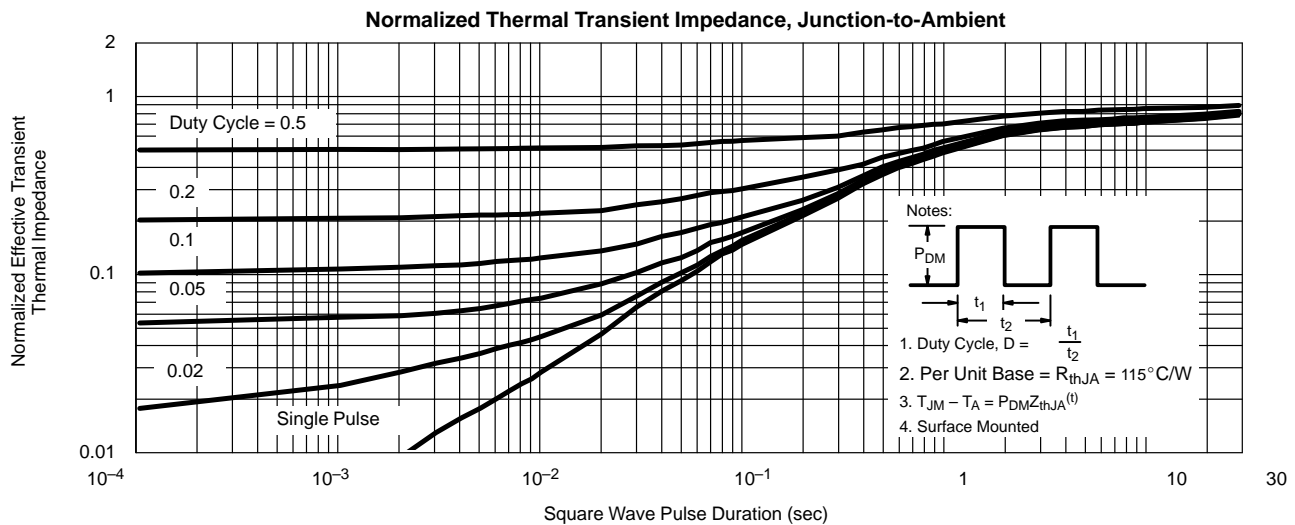
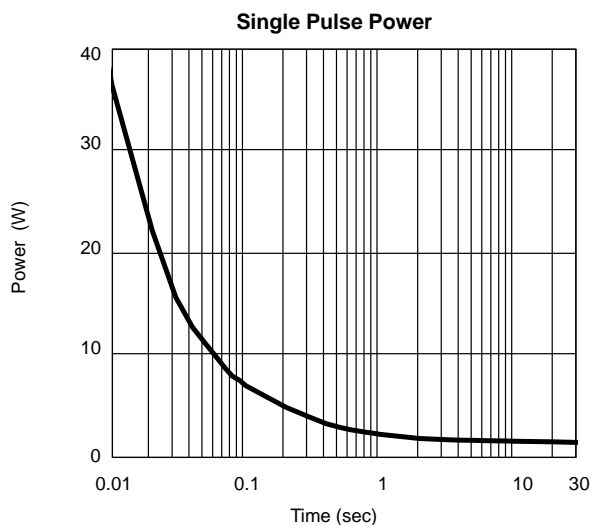
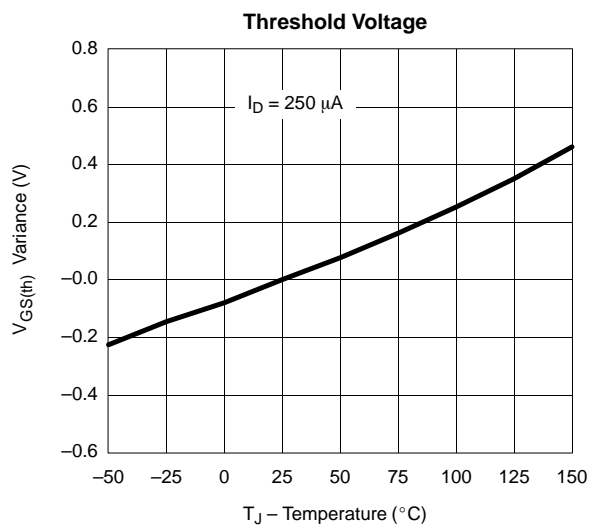
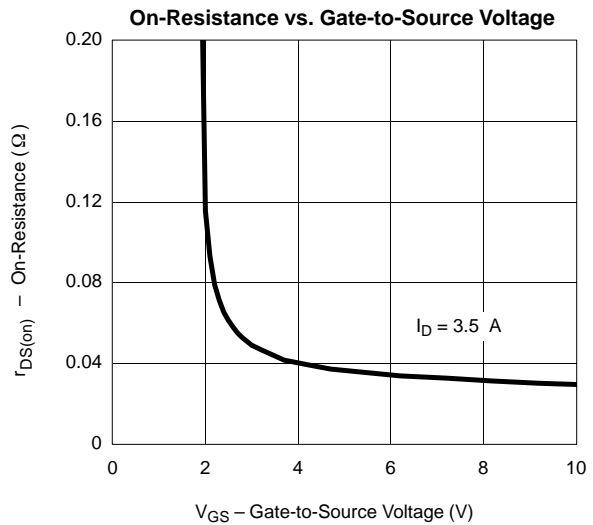
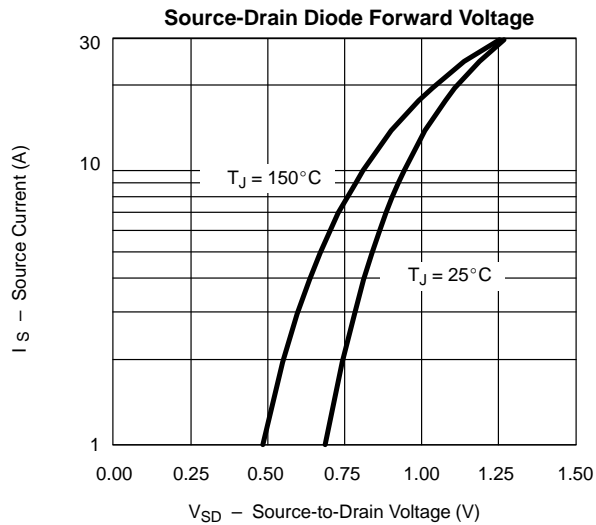


**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) MOSFET**





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