



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

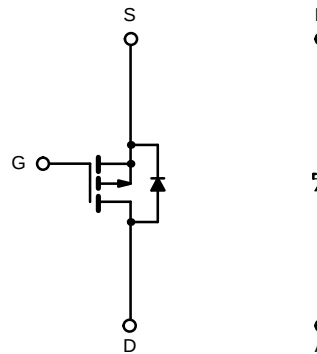
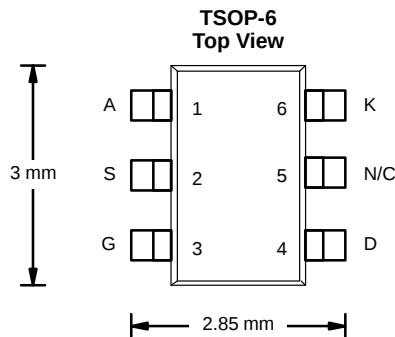
MOSFET PRODUCT SUMMARY

V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-30	0.200 @ $V_{GS} = -10$ V	± 1.8
	0.360 @ $V_{GS} = -4.5$ V	± 1.2

SCHOTTKY PRODUCT SUMMARY

V_{KA} (V)	V_f (V) Diode Forward Voltage	I_F (A)
30	0.5 V @ 0.5 A	0.5

LITTLE FOOT plus™



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter		Symbol	5 sec	Steady State	Unit
Drain-Source Voltage (MOSFET and Schottky)		V _{DS}	−30		V
Reverse Voltage (Schottky)		V _{KA}	30		
Gate-Source Voltage (MOSFET)		V _{GS}	± 20	± 20	
Continuous Drain Current (T _J = 150°C) (MOSFET) ^a	T _A = 25°C	I _D	± 1.8	± 1.6	A
	T _A = 70°C		± 1.5	± 1.2	
Pulsed Drain Current (MOSFET)		I _{DM}	± 7		
Continuous Source Current (MOSFET Diode Conduction) ^a		I _S	−1.05	−0.75	
Average Foward Current (Schottky)		I _F	0.5		
Pulsed Foward Current (Schottky)		I _{FM}	7		
Maximum Power Dissipation (MOSFET) ^a	T _A = 25°C	P _D	1.15	0.83	W
	T _A = 70°C		0.73	0.53	
Maximum Power Dissipation (Schottky) ^a	T _A = 25°C		1.0	0.76	
	T _A = 70°C		0.64	0.48	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	−55 to 150		°C

Notes

a. Surface Mounted on 1" x 1" FR4 Board.



THERMAL RESISTANCE RATINGS						
Parameter		Device	Symbol	Typical	Maximum	Unit
Junction-to-Ambient	$t \leq 5 \text{ sec}$	MOSFET	R_{thJA}	93	110	$^{\circ}\text{C/W}$
		Schottky		103	125	
	Steady State	MOSFET		130	150	
		Schottky		140	165	
Junction-to-Foot	Steady State	MOSFET	R_{thJF}	75	90	
		Schottky		80	95	

Notes

a. Surface Mounted on 1" x 1" FR4 Board.

MOSFET SPECIFICATIONS ($T_J = 25^{\circ}\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$	-1.0			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}$			-1	μA
		$V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 75^{\circ}\text{C}$			-10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq -5 \text{ V}, V_{GS} = -10 \text{ V}$	-5			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = -10 \text{ V}, I_D = -1.8 \text{ A}$		0.165	0.200	Ω
		$V_{GS} = -4.5 \text{ V}, I_D = -1.2 \text{ A}$		0.298	0.360	
Forward Transconductance ^a	g_{fs}	$V_{DS} = -15 \text{ V}, I_D = -1.8 \text{ A}$		2.4		S
Diode Forward Voltage ^a	V_{SD}	$I_S = -1.05 \text{ A}, V_{GS} = 0 \text{ V}$		-0.83	-1.10	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = -15 \text{ V}, V_{GS} = -5 \text{ V}, I_D = -1.8 \text{ A}$		2.4	3.6	nC
Gate-Source Charge	Q_{gs}			0.9		
Gate-Drain Charge	Q_{gd}			0.8		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -15 \text{ V}, R_L = 15 \Omega$ $I_D \approx -1 \text{ A}, V_{GEN} = -10 \text{ V}, R_G = 6 \Omega$		8	12	ns
Rise Time	t_r			12	18	
Turn-Off Delay Time	$t_{d(off)}$			12	18	
Fall Time	t_f			7	11	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = -1.05 \text{ A}, di/dt = 100 \text{ A}/\mu\text{s}$		30	60	

Notes

a. Pulse test; pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.

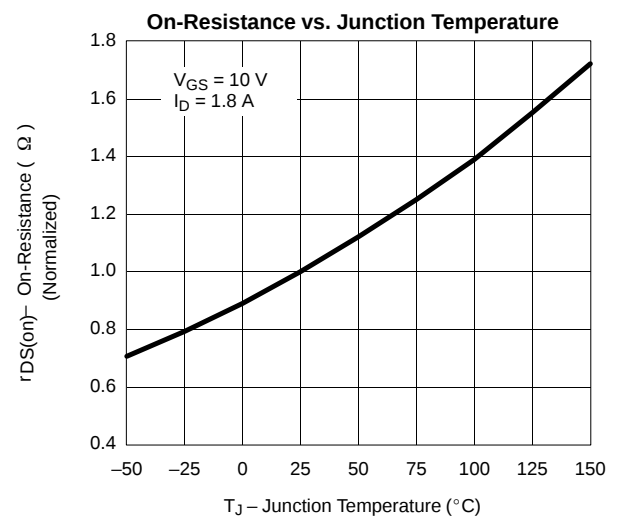
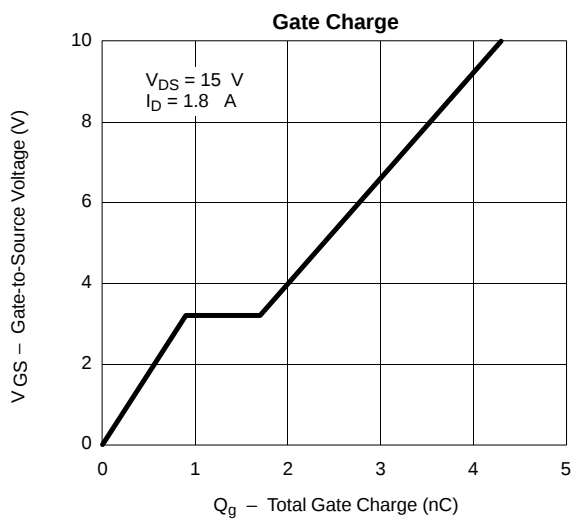
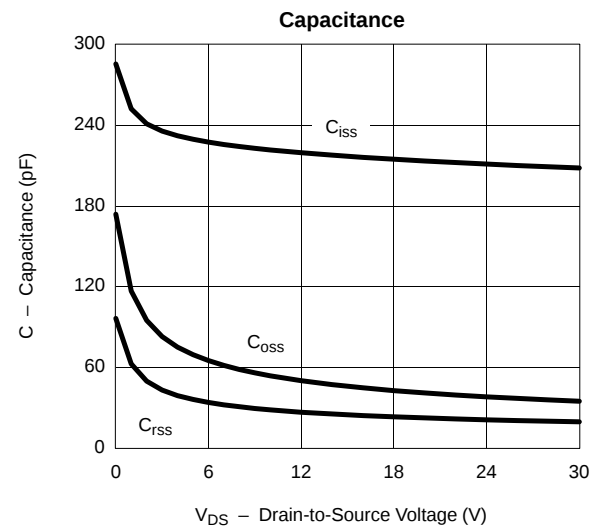
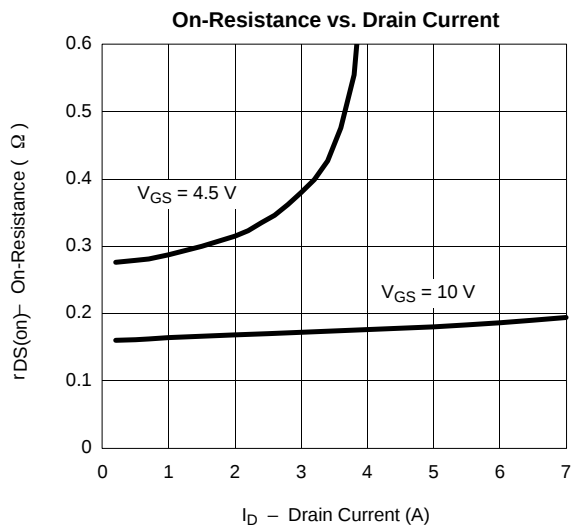
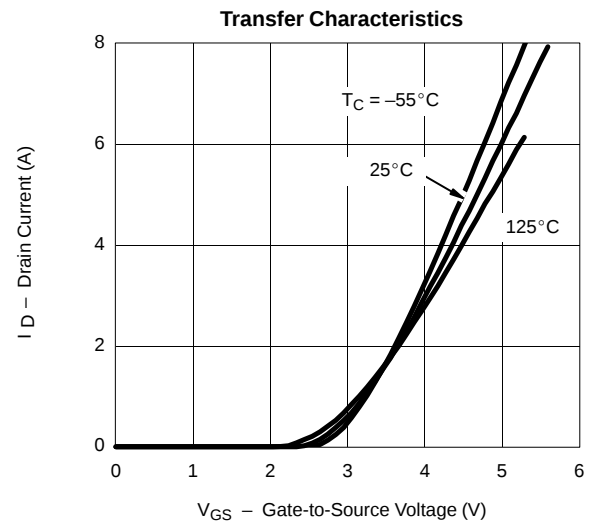
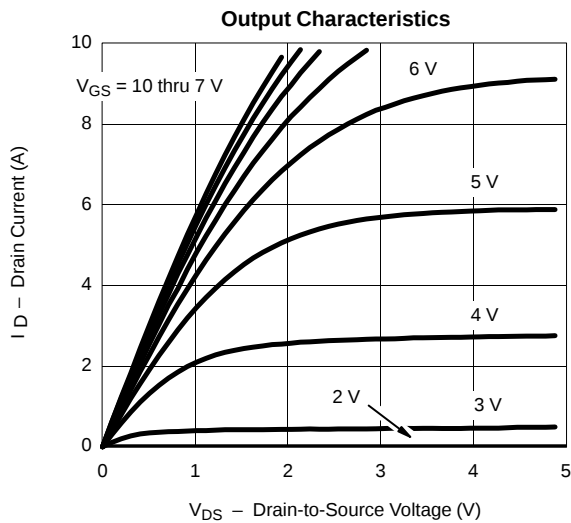
b. Guaranteed by design, not subject to production testing.

SCHOTTKY SPECIFICATIONS ($T_J = 25^{\circ}\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Forward Voltage Drop	V_F	$I_F = 0.5 \text{ A}$		0.45	0.5	V
		$I_F = 0.5 \text{ A}, T_J = 125^{\circ}\text{C}$		0.35	0.4	
Maximum Reverse Leakage Current	I_{rm}	$V_r = 30 \text{ V}$		0.002	0.100	mA
		$V_r = 30 \text{ V}, T_J = 75^{\circ}\text{C}$		0.06	1	
		$V_r = 30 \text{ V}, T_J = 125^{\circ}\text{C}$		1.5	10	
Junction Capacitance	C_T	$V_r = 10 \text{ V}$		24		pF



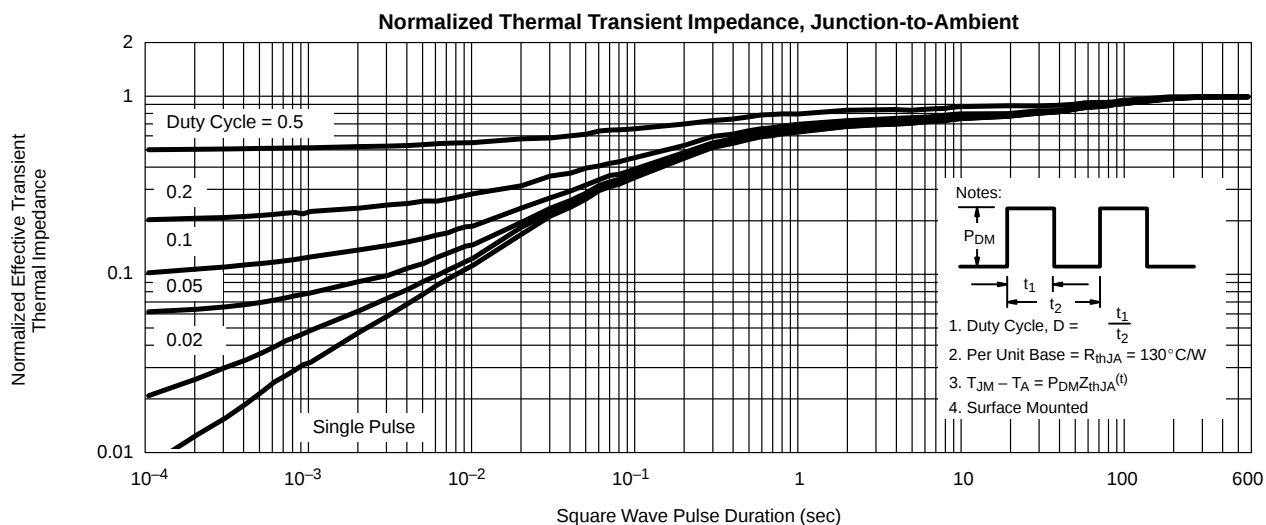
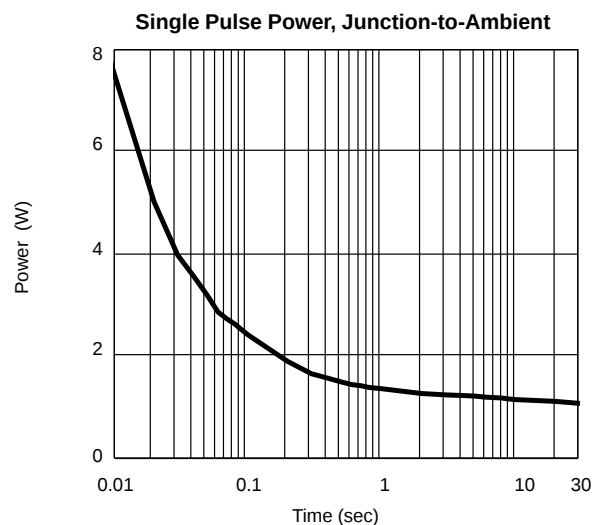
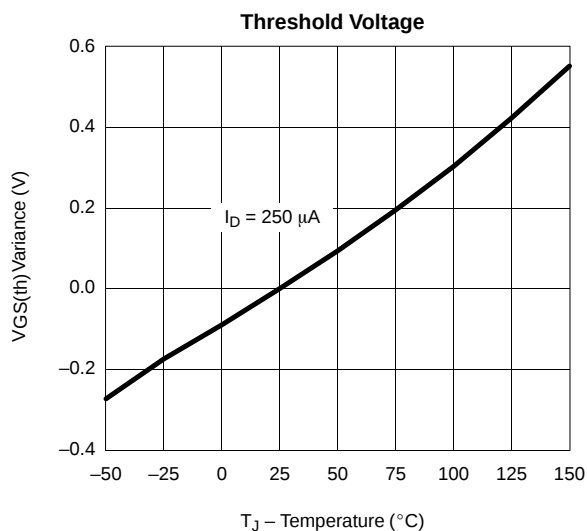
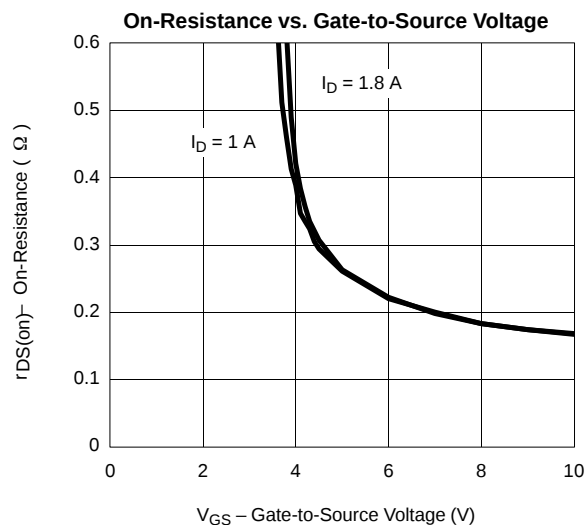
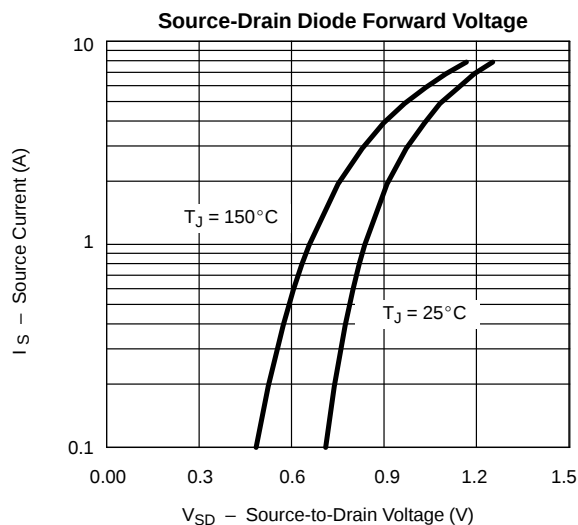
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

MOSFET



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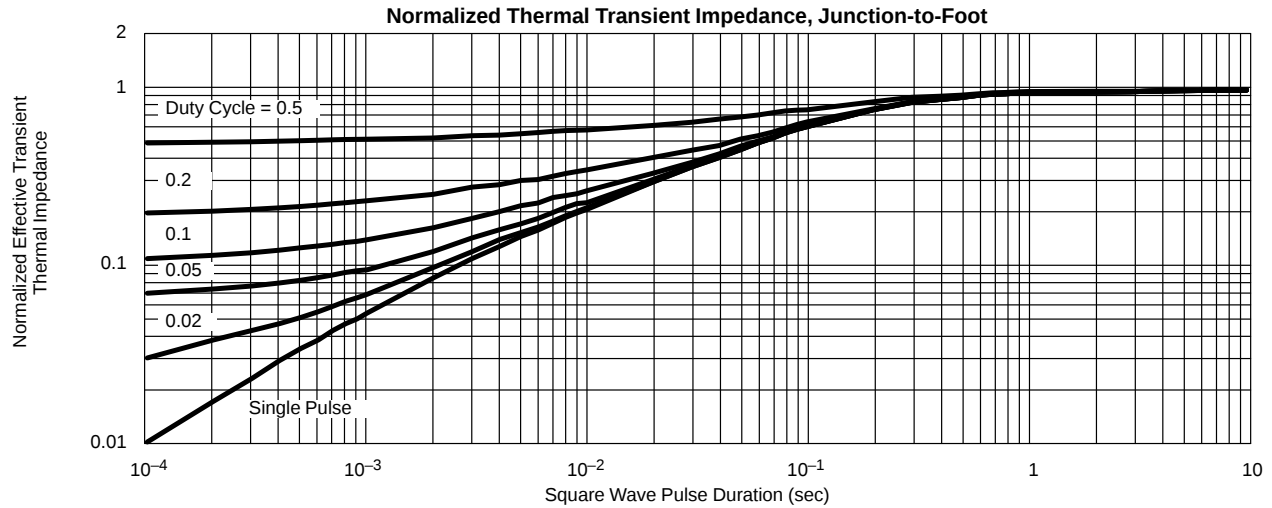
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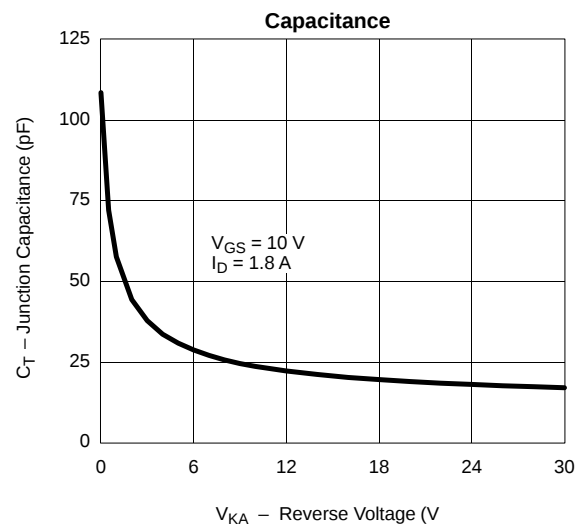
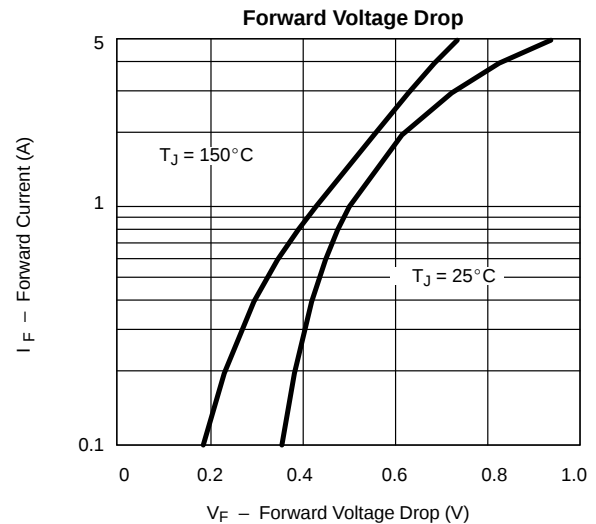
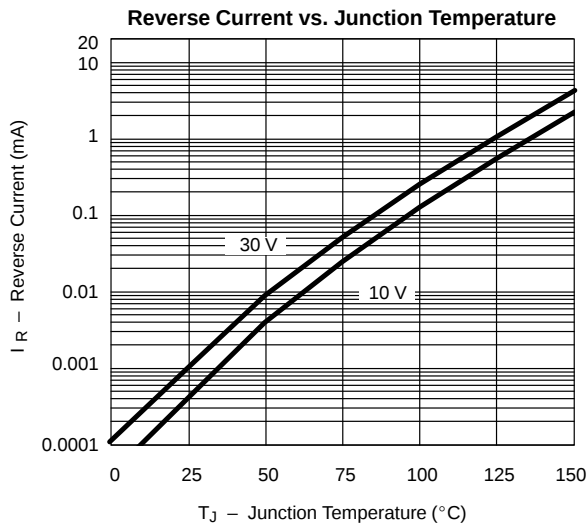
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