

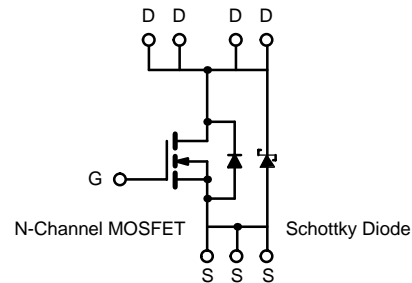
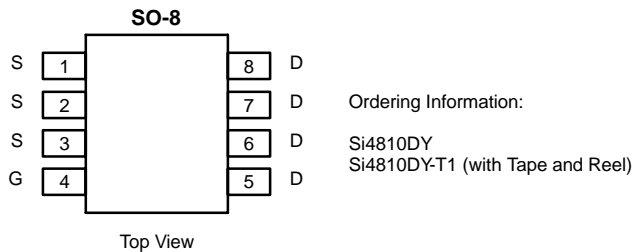


N-Channel 30-V (D-S) MOSFET with Schottky Diode

MOSFET PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.0135 @ $V_{GS} = 10$ V	10
	0.020 @ $V_{GS} = 4.5$ V	8

SCHOTTKY PRODUCT SUMMARY		
V_{DS} (V)	V_{SD} (V) Diode Forward Voltage	I_F (A)
30	0.53 V @ 3.0 A	4.0

LITTLE FOOT Plus™



ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Unit
Drain-Source Voltage (MOSFET)		V _{DS}	30	V
Reverse Voltage (Schottky)			30	
Gate-Source Voltage (MOSFET)		V _{GS}	± 20	
Continuous Drain Current (T _J = 150 °C) (MOSFET) ^{a, b}	T _A = 25 °C	I _D	10	A
	T _A = 70 °C		8	
Pulsed Drain Current (MOSFET)		I _{DM}	50	
Continuous Source Current (MOSFET Diode Conduction) ^{a, b}		I _S	2.3	
Average Foward Current (Schottky)		I _F	4.0	
Pulsed Foward Current (Schottky)		I _{FM}	50	
Maximum Power Dissipation (MOSFET) ^{a, b}	T _A = 25 °C	P _D	2.5	W
	T _A = 70 °C		1.6	
Maximum Power Dissipation (Schottky) ^{a, b}	T _A = 25 °C		2.0	
	T _A = 70 °C		1.3	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS					
Parameter	Device	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ($t \leq 10$ sec) ^a	MOSFET	R_{thJA}		50	$^\circ\text{C/W}$
	Schottky			60	
Maximum Junction-to-Ambient ($t = \text{steady state}$) ^a	MOSFET		70		
	Schottky		80		

Notes

a. Surface Mounted on FR4 Board.

b. $t \leq 10$ sec.

For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>

MOSFET + SCHOTTKY 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 μA	1			V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current (MOSFET + Schottky)	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V		0.007	0.100	mA
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 100°C		1.5	10	
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 125°C		6.5	20	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	20			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 10 A		0.0105	0.0135	Ω
		V _{GS} = 4.5 V, I _D = 5 A		0.0155	0.020	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 10 A		28		S
Schottky Diode Forward Voltage ^a	V _{SD}	I _S = 3.0 A, V _{GS} = 0 V		0.485	0.53	V
		I _S = 3.0 A, V _{GS} = 0 V, T _J = 125°C		0.420	0.47	
Dynamic ^b						
Total Gate Charge	Q _g	V _{DS} = 15 V, V _{GS} = 5 V, I _D = 10 A		20	30	nC
Gate-Source Charge	Q _{gs}			8		
Gate-Drain Charge	Q _{gd}			7		
Gate Resistance	R _g		0.5	1.0	1.6	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15 V, R _L = 15 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _G = 6 Ω		15	30	ns
Rise Time	t _r			8	15	
Turn-Off Delay Time	t _{d(off)}			45	90	
Fall Time	t _f			18	40	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 3.0 A, di/dt = 100 A/μs		36	70	

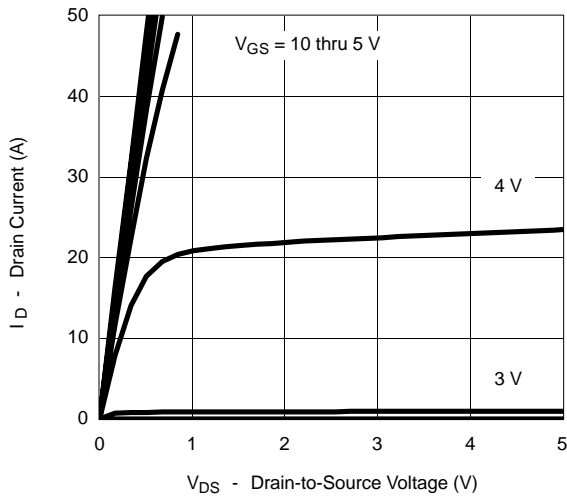
Notes

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

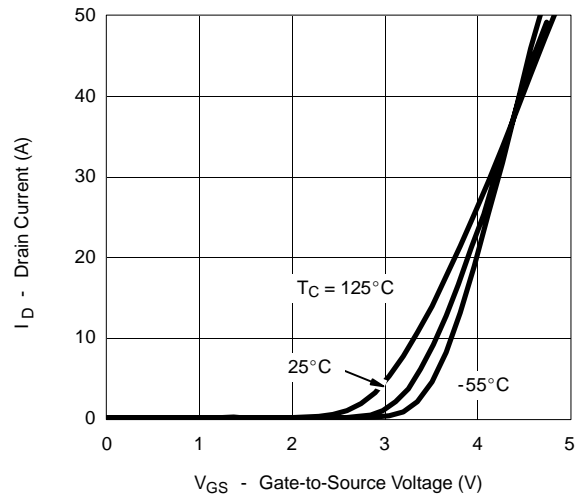


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

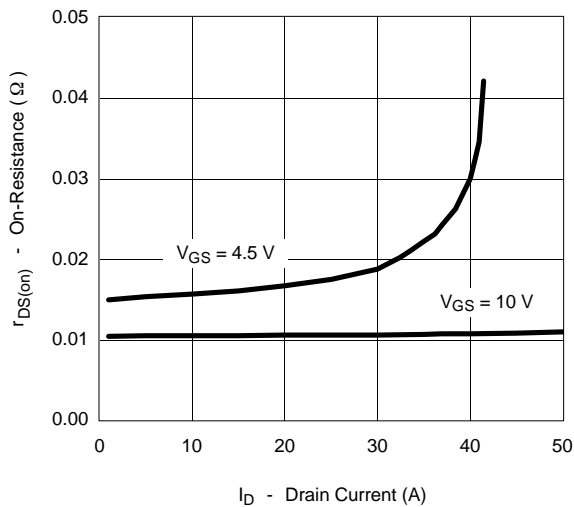
Output Characteristics



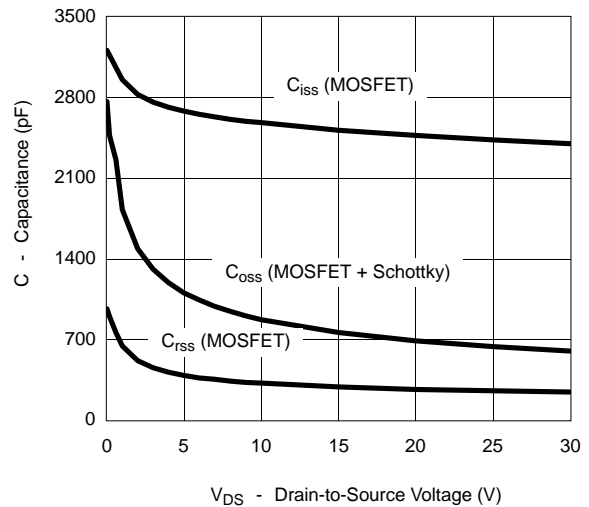
Transfer Characteristics



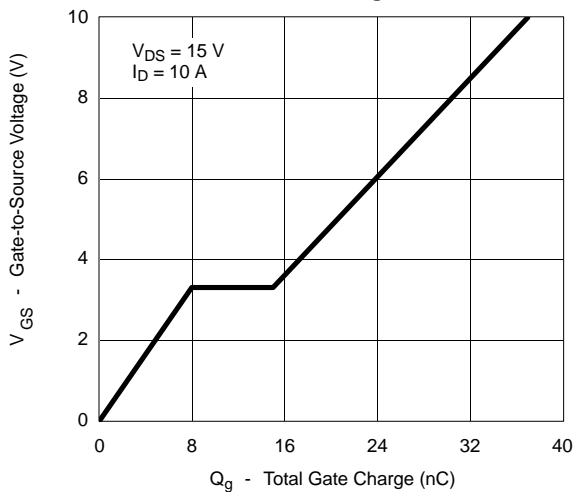
On-Resistance vs. Drain Current



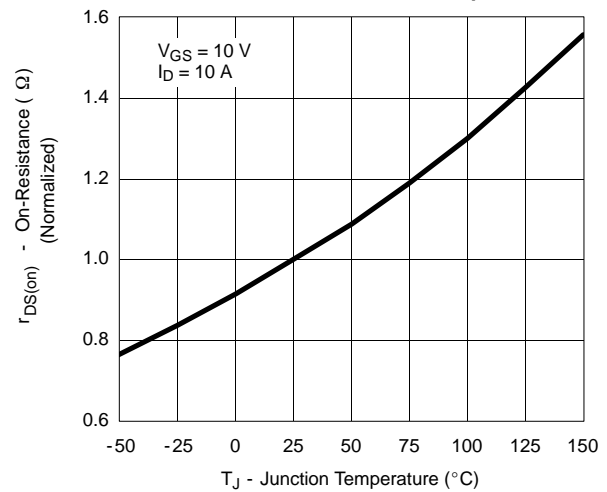
Capacitance

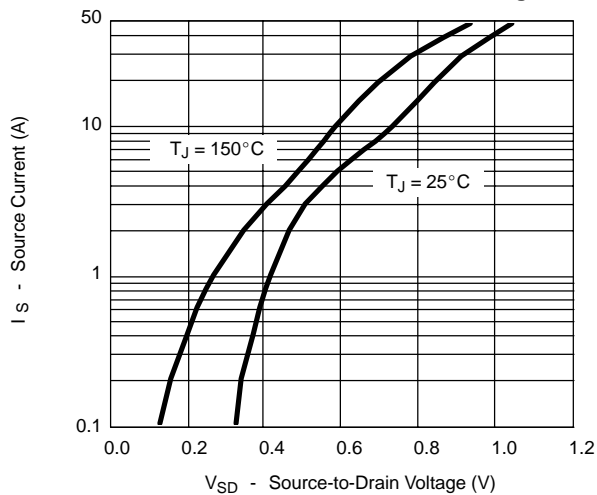
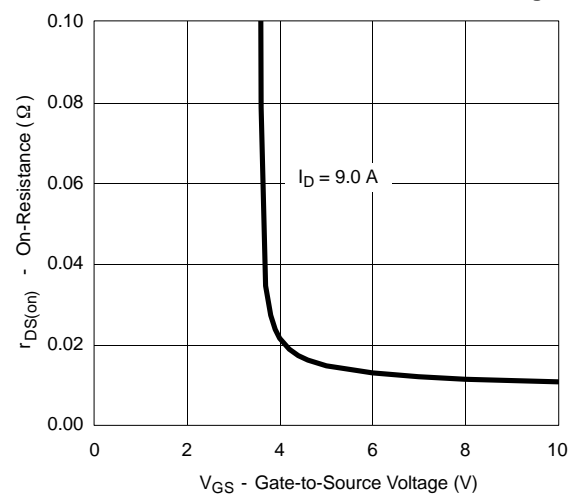
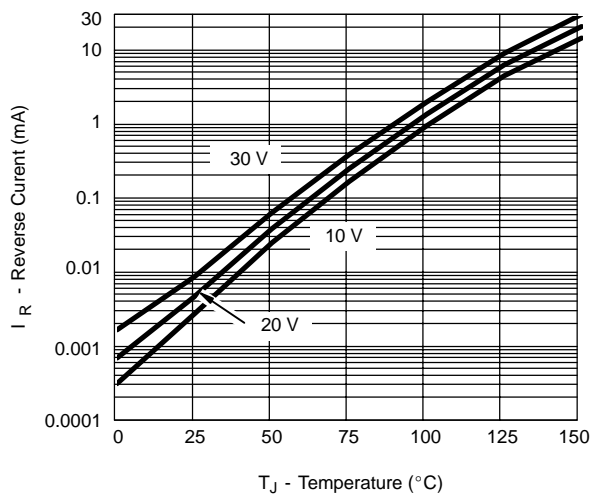
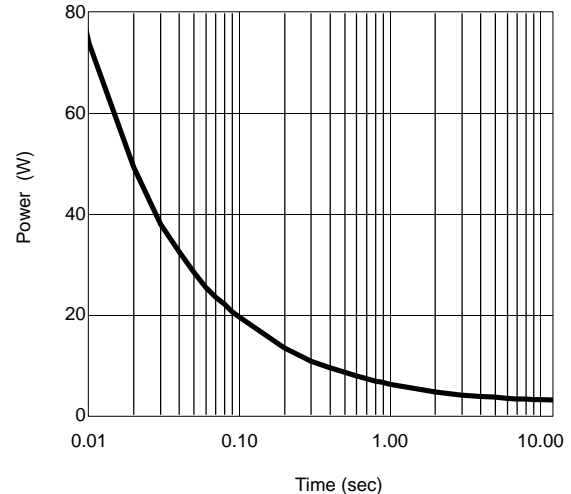
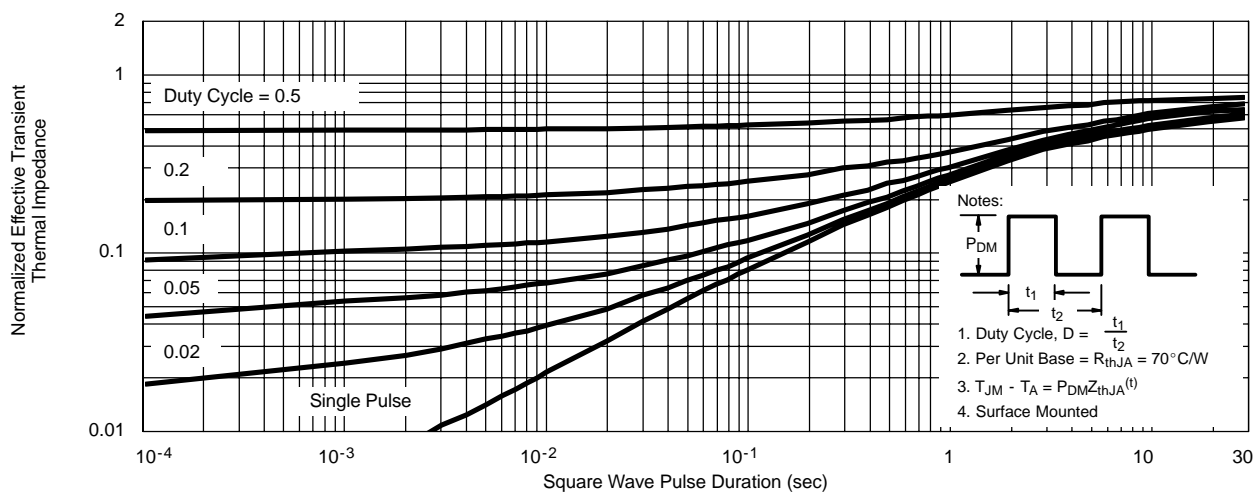


Gate Charge



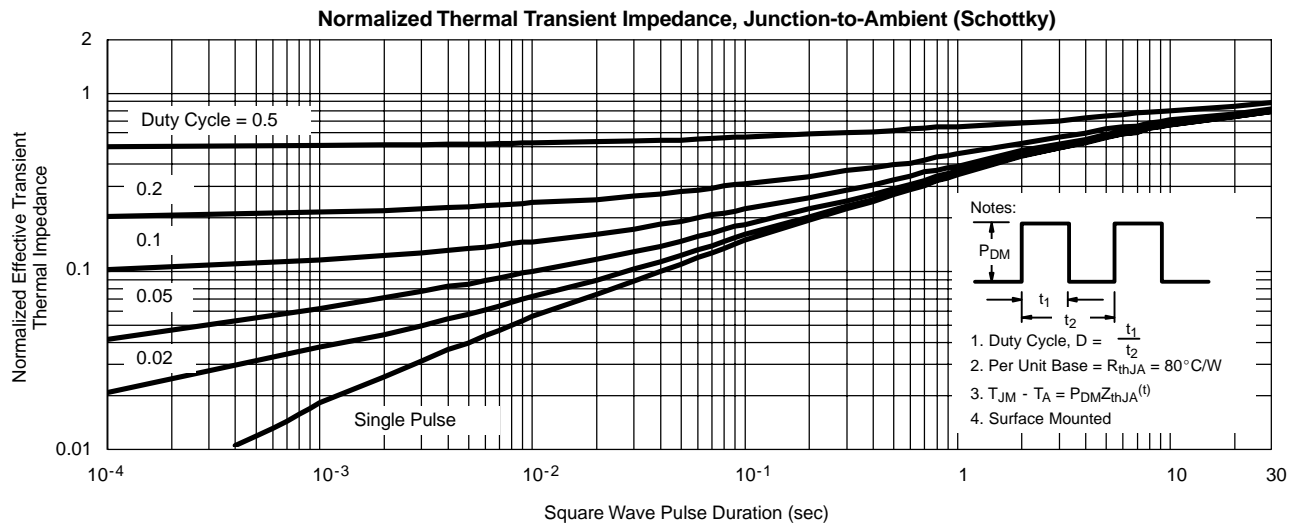
On-Resistance vs. Junction Temperature



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)
Source-Drain Diode Forward Voltage

On-Resistance vs. Gate-to-Source Voltage

Reverse Current (Schottky)

Single Pulse Power

Normalized Thermal Transient Impedance, Junction-to-Ambient




TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





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