

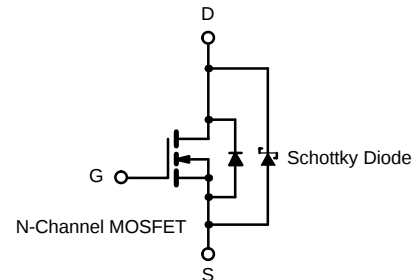
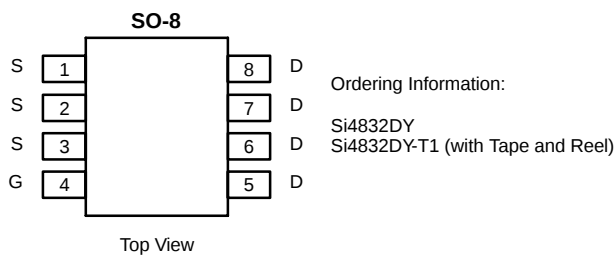


N-Channel 30-V (D-S) MOSFET with Schottky Diode

MOSFET PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.018 @ $V_{GS} = 10$ V	9
	0.028 @ $V_{GS} = 4.5$ V	7.3

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
			10 sec	Steady State	
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	9	6.9	A
	T _A = 70°C		7.5	5.6	
Pulsed Drain Current (MOSFET)		I _{DM}	50		
Continuous Source Current (MOSFET Diode Conduction)a, b		I _S	2.1	1.2	
Average Foward Current (Schottky)		I _F	4.0	2.3	
Pulsed Foward Current (Schottky)		I _{FM}	50		
Maximum Power Dissipation (MOSFET)a b	T _A = 25°C	P _D	2.5	1.4	W
	T _A = 70°C		1.6	0.9	
Maximum Power Dissipation (Schottky)a, b	T _A = 25°C		2.0	1.2	
	T _A = 70°C		1.3	0.8	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to 150	-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}	40	50	$^\circ\text{C/W}$
	Schottky		50	60	
Maximum Junction-to-Ambient ($t = \text{steady state}$) ^a	MOSFET		70	90	
	Schottky		80	100	

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 °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 = 9 A		0.012	0.018	Ω
		V _{GS} = 4.5 V, I _D = 7.3 A		0.019	0.028	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 9 A		23		S
Schottky Diode Forward Voltage ^a	V _{SD}	I _S = 3.0 A, V _{GS} = 0 V		0.493	0.53	V
		I _S = 3.0 A, V _{GS} = 0 V, T _J = 125°C		0.40	0.47	
Dynamic ^b						
Total Gate Charge	Q _g	V _{DS} = 15 V, V _{GS} = 5 V, I _D = 9 A		13	24	nC
Gate-Source Charge	Q _{gs}			4		
Gate-Drain Charge	Q _{gd}			5.6		
Gate Resistance	R _g		0.2	1.0	2.4	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		16	25	ns
Rise Time	t _r			10	20	
Turn-Off Delay Time	t _{d(off)}			35	50	
Fall Time	t _f			13	20	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 3.0 A, di/dt = 100 A/μs		40	70	

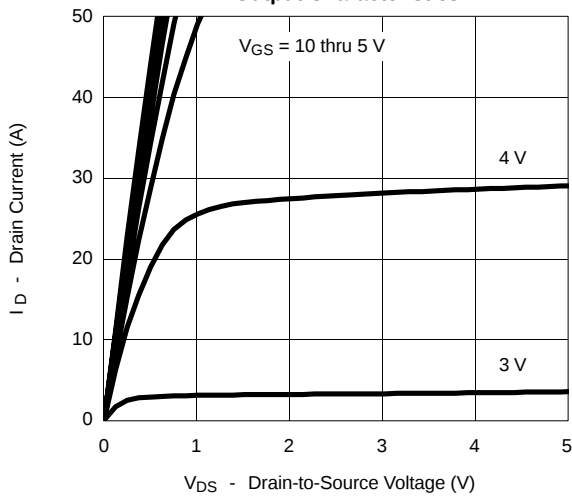
Notes

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

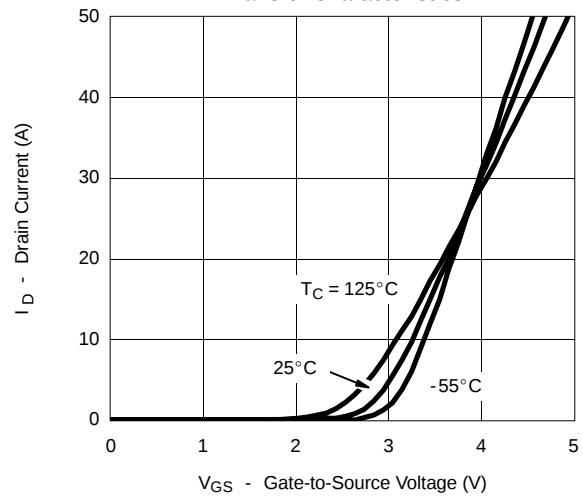


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

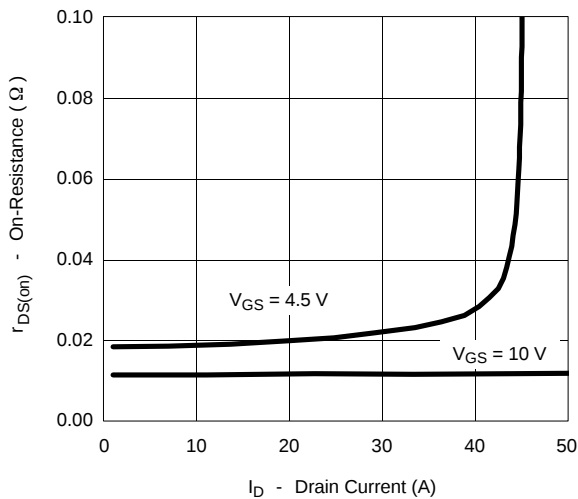
Output Characteristics



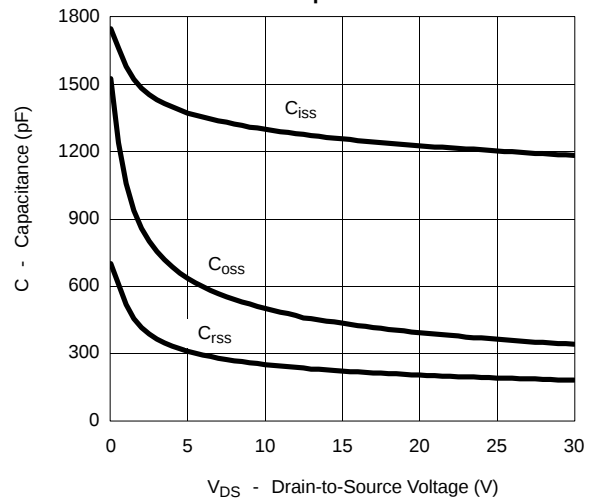
Transfer Characteristics



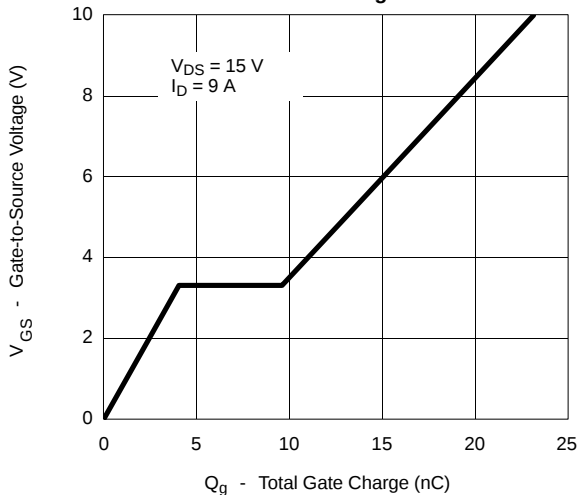
On-Resistance vs. Drain Current



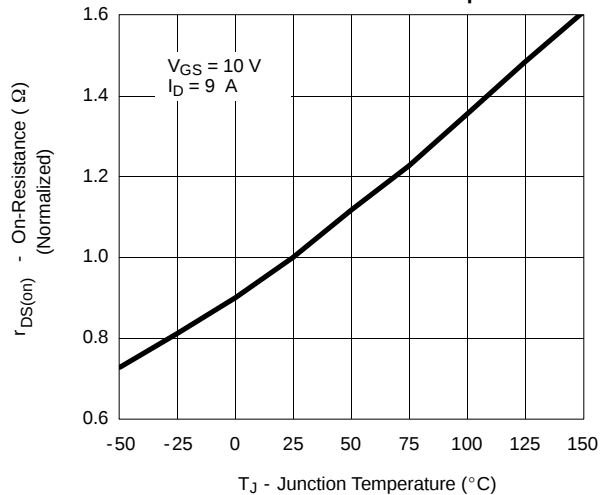
Capacitance

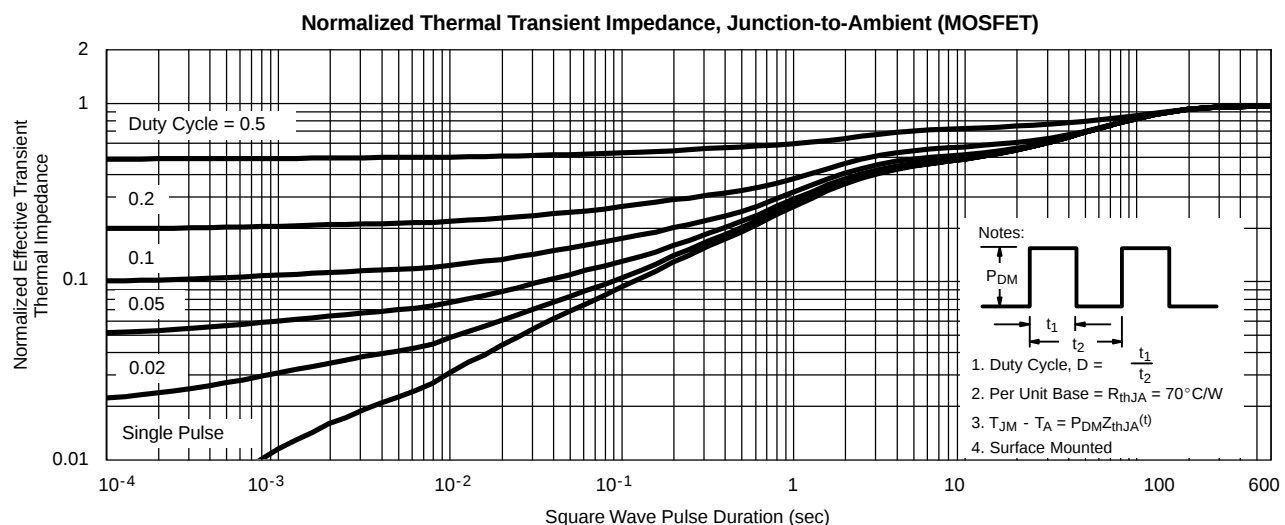
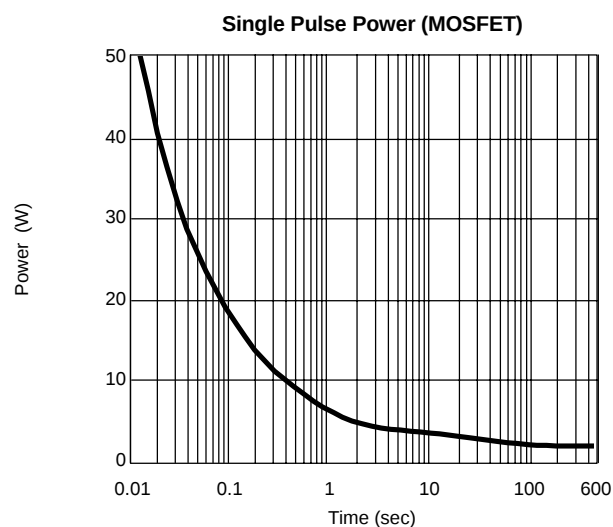
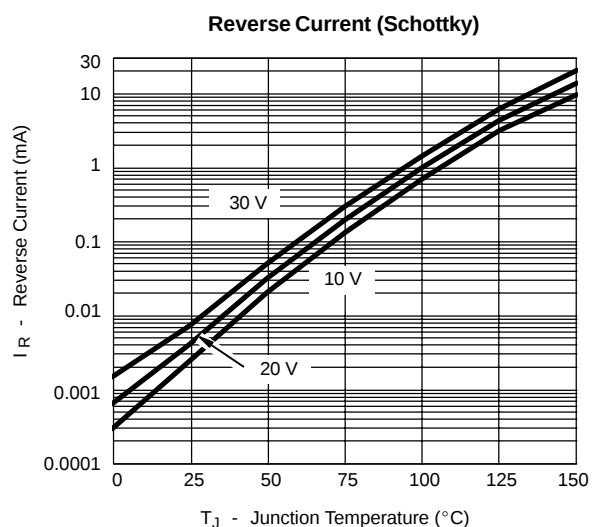
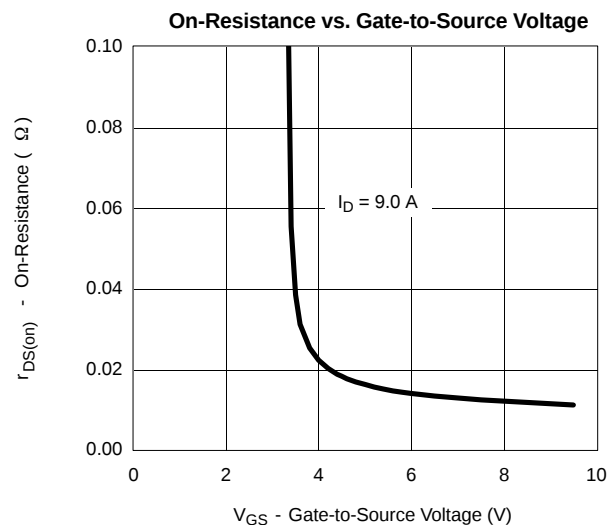
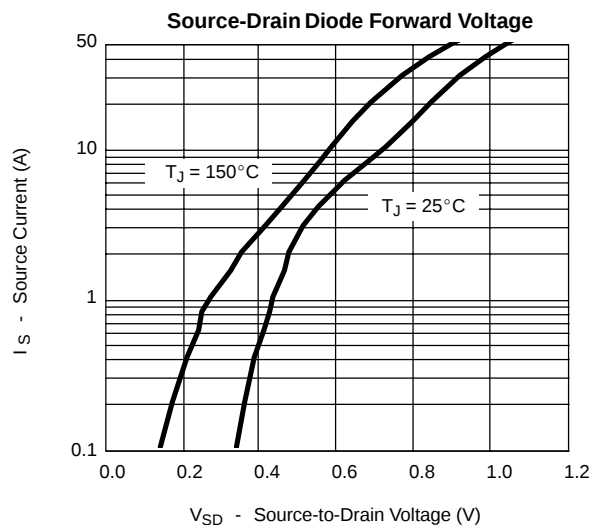


Gate Charge



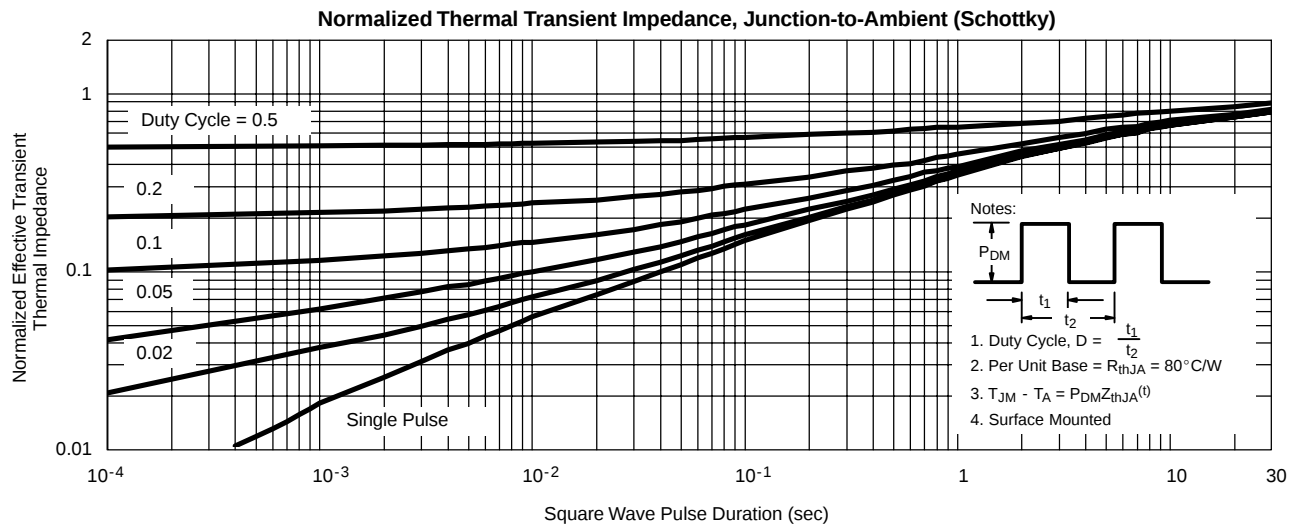
On-Resistance vs. Junction Temperature



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)




TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





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