



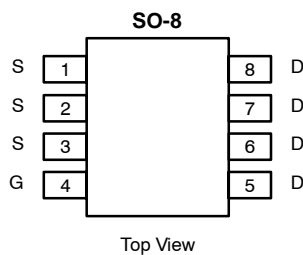
N-Channel 30-V (D-S) MOSFET with Schottky Diode

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

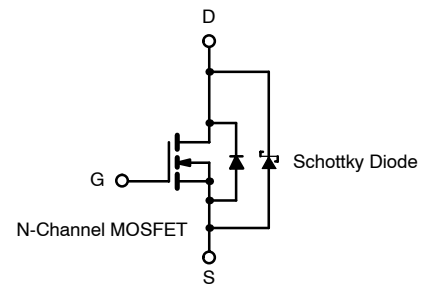
SCHOTTKY PRODUCT SUMMARY		
V_{DS} (V)	V_{SD} (V) Diode Forward Voltage	I_F (A)
30	0.50 V @ 1.0 A	1.4

FEATURES

- LITTLE FOOT® Plus Power MOSFET
- 100% R_g Tested



Ordering Information:
 Si4812DY
 Si4812DY-T1 (with Tape and Reel)
 Si4812DY—E3 (Lead (Pb)-Free)
 Si4812DY-T1—E3 (Lead (Pb)-Free with Tape and Reel)



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ 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 ($T_J = 150^\circ\text{C}$) (MOSFET) ^{a, b}	I_D	$T_A = 25^\circ\text{C}$	9	6.9	A
		$T_A = 70^\circ\text{C}$	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 Forward Current (Schottky)	I_F	1.4	0.8		
Pulsed Forward Current (Schottky)	I_{FM}	30			
Maximum Power Dissipation (MOSFET) ^{a, b}	P_D	$T_A = 25^\circ\text{C}$	2.5	1.4	W
		$T_A = 70^\circ\text{C}$	1.6	0.9	
Maximum Power Dissipation (Schottky) ^{a, b}	P_D	$T_A = 25^\circ\text{C}$	2.0	1.2	
		$T_A = 70^\circ\text{C}$	1.3	0.8	
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}	40	50	$^\circ\text{C/W}$
	Schottky		50	60	
Maximum Junction-to-Ambient ($t = \text{steady state}$) ^a	MOSFET		72	90	
	Schottky		85	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		3	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		0.004	0.100	mA
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 100 °C		0.7	10	
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 125 °C		3.0	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 = 1.0 A, V _{GS} = 0 V		0.45	0.50	V
		I _S = 1.0 A, V _{GS} = 0 V, T _J = 125 °C		0.33	0.42	
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}			5.7		
Gate Resistance	R _g		0.2		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 = 1.0 A, di/dt = 100 A/μs		35	70	

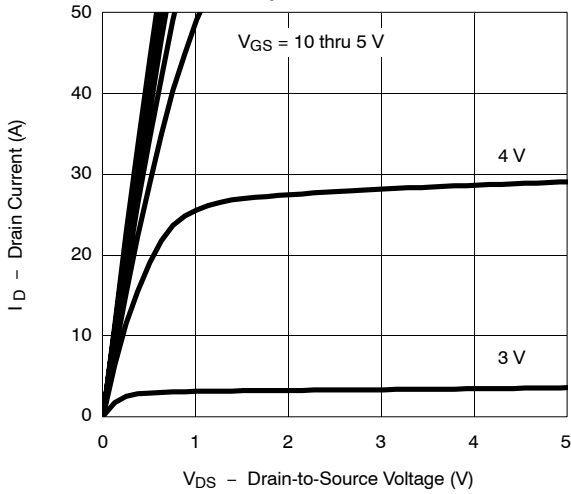
Notes

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

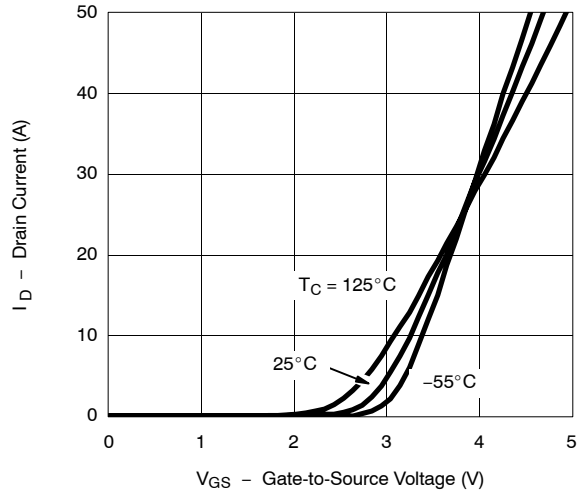


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

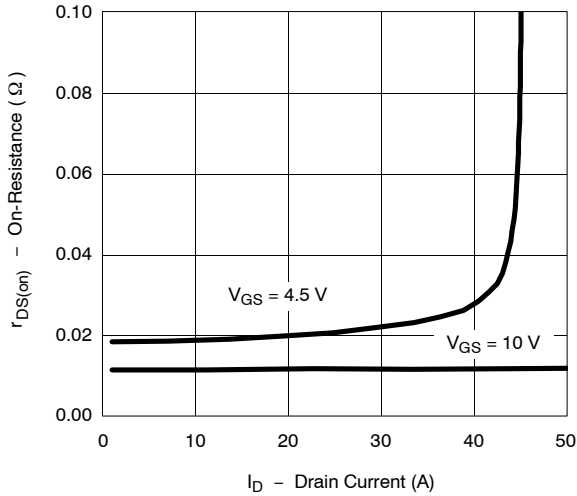
Output Characteristics



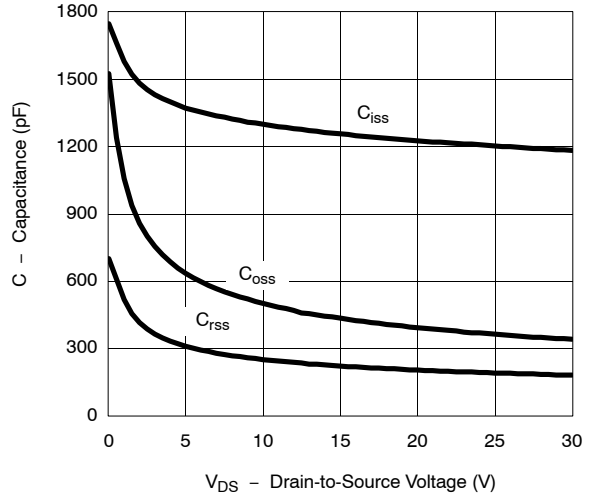
Transfer Characteristics



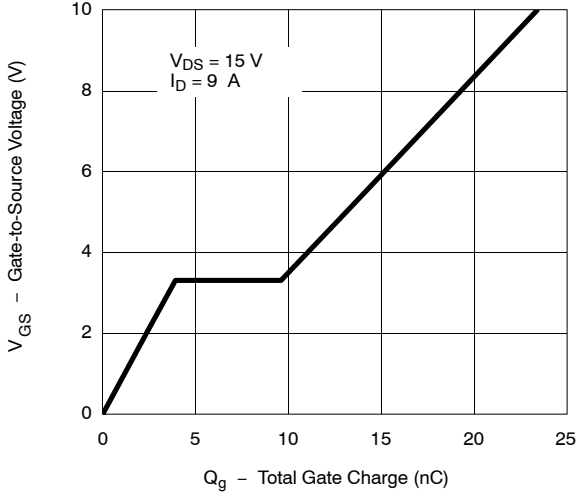
On-Resistance vs. Drain Current



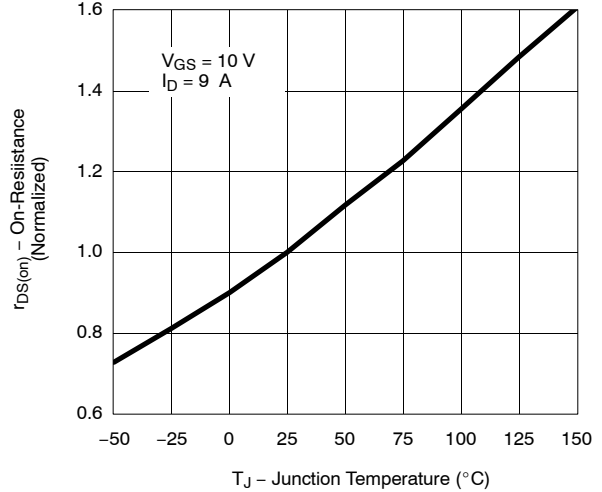
Capacitance



Gate Charge

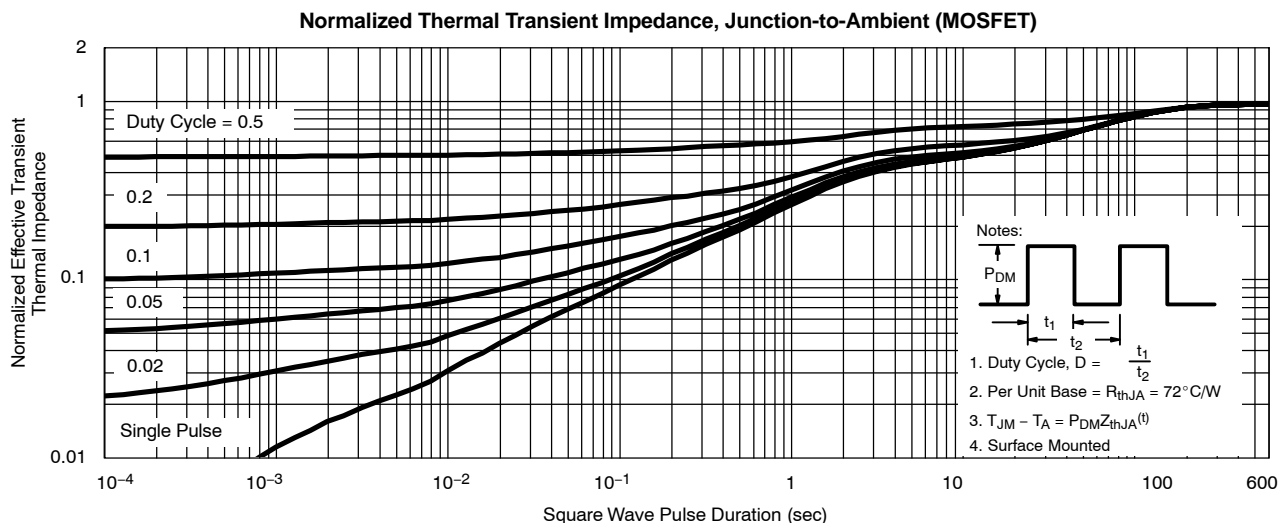
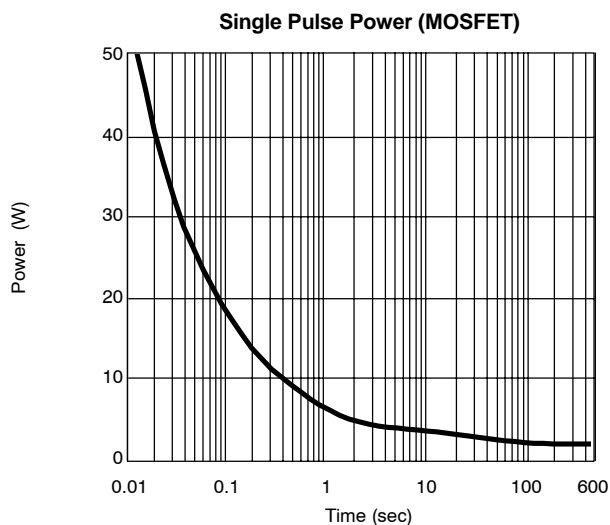
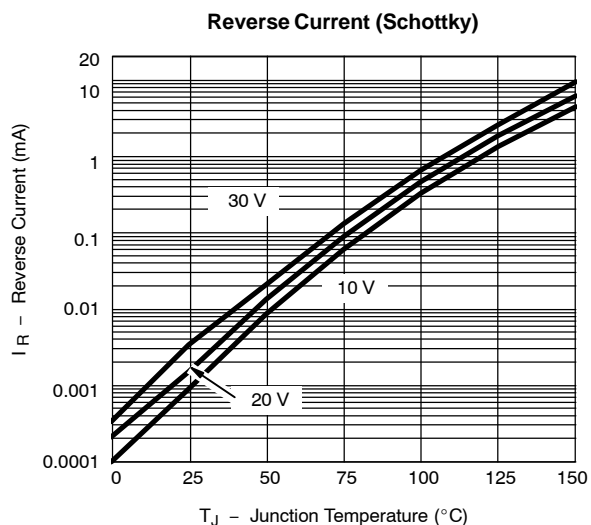
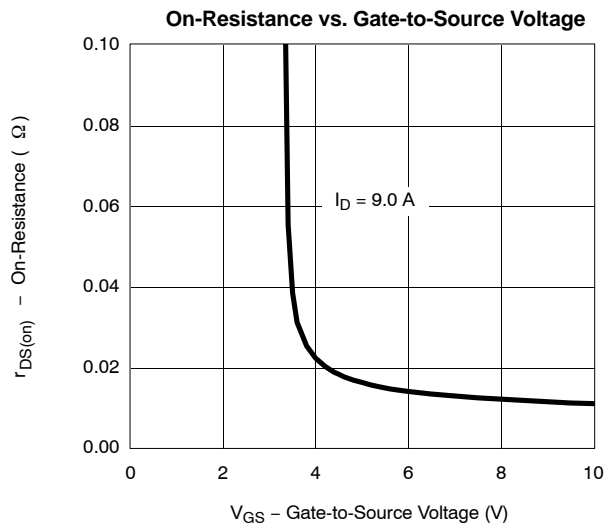
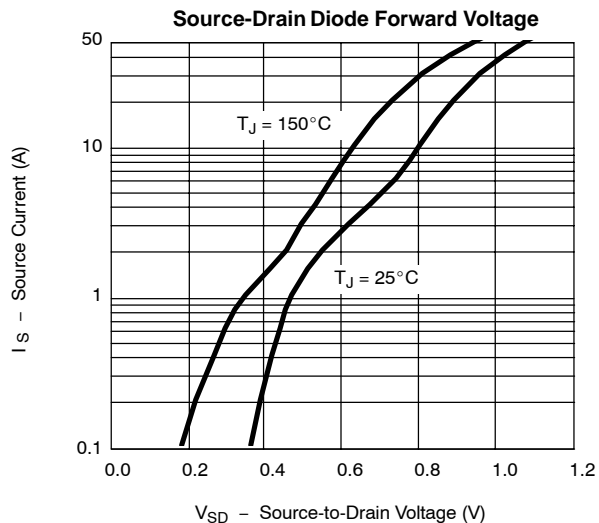


On-Resistance vs. Junction Temperature





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

