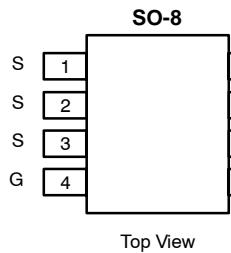


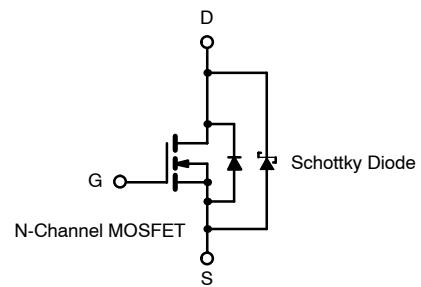
N-Channel 30-V (D-S) MOSFET with Schottky Diode

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



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	
			30			
Gate-Source Voltage (MOSFET)		V_{GS}	± 20			
Continuous Drain Current ($T_J = 150^\circ\text{C}$) (MOSFET) ^{a, b}	$T_A = 25^\circ\text{C}$	I_D	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 Foward Current (Schottky)		I_F	1.4	0.8		
Pulsed Foward Current (Schottky)		I_{FM}	30			
Maximum Power Dissipation (MOSFET) ^{a, b}	$T_A = 25^\circ\text{C}$	P_D	2.5	1.4	W	
	$T_A = 70^\circ\text{C}$		1.6	0.9		
Maximum Power Dissipation (Schottky) ^{a, b}	$T_A = 25^\circ\text{C}$		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.

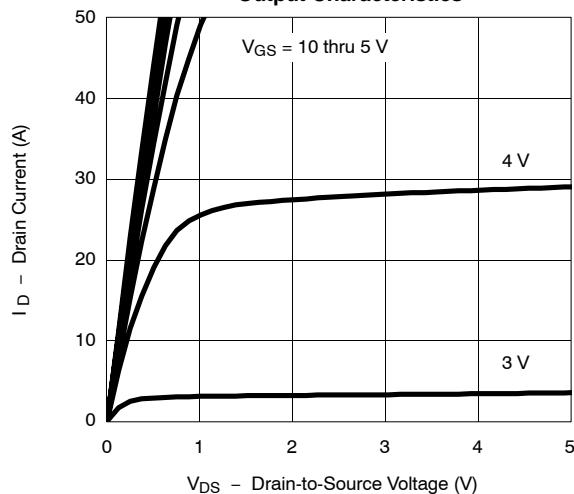
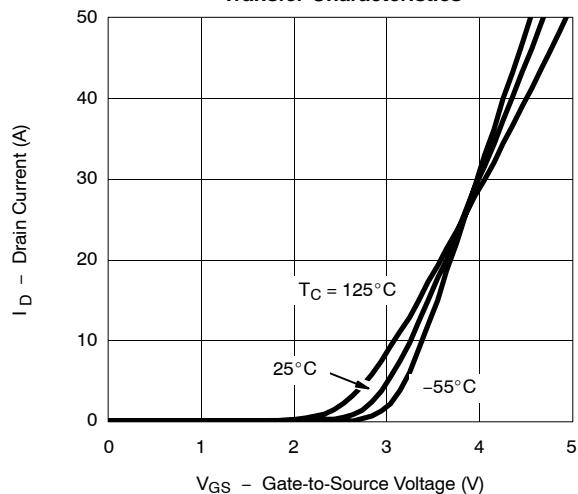
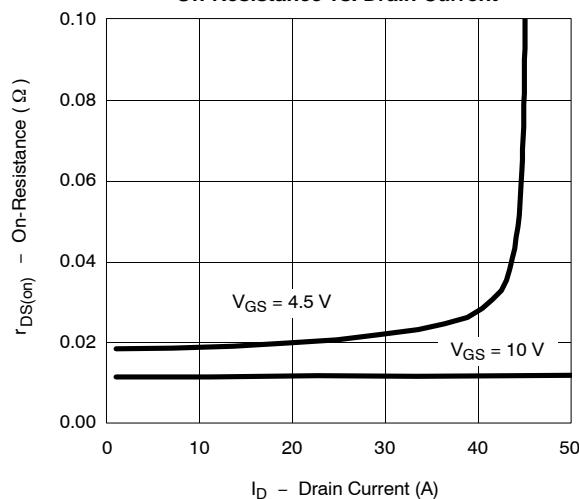
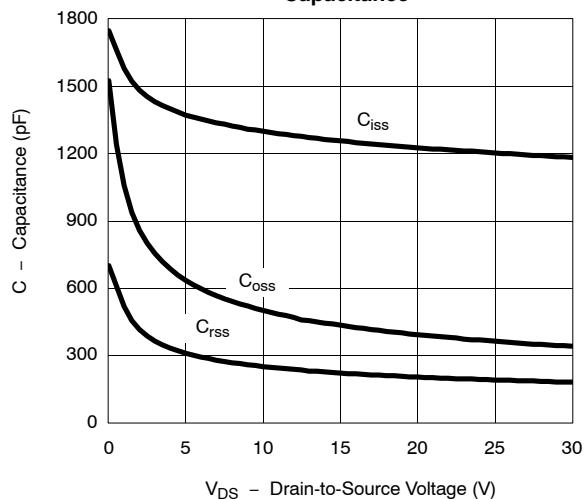
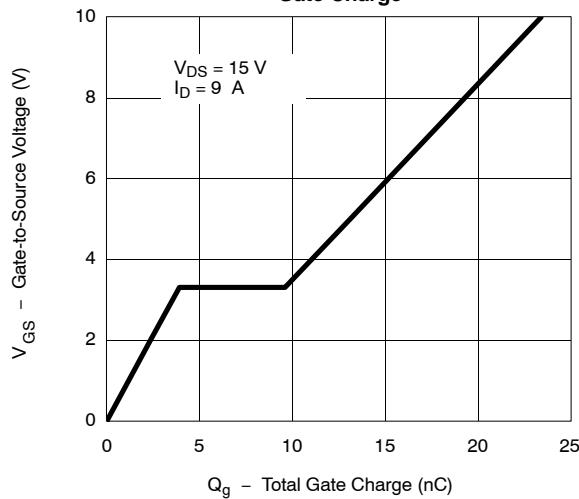
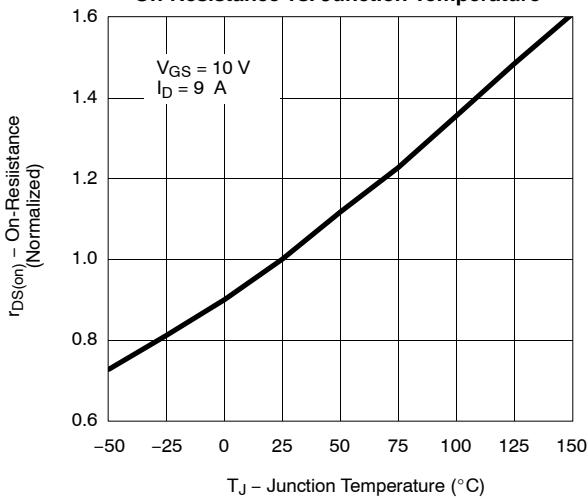
For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>

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

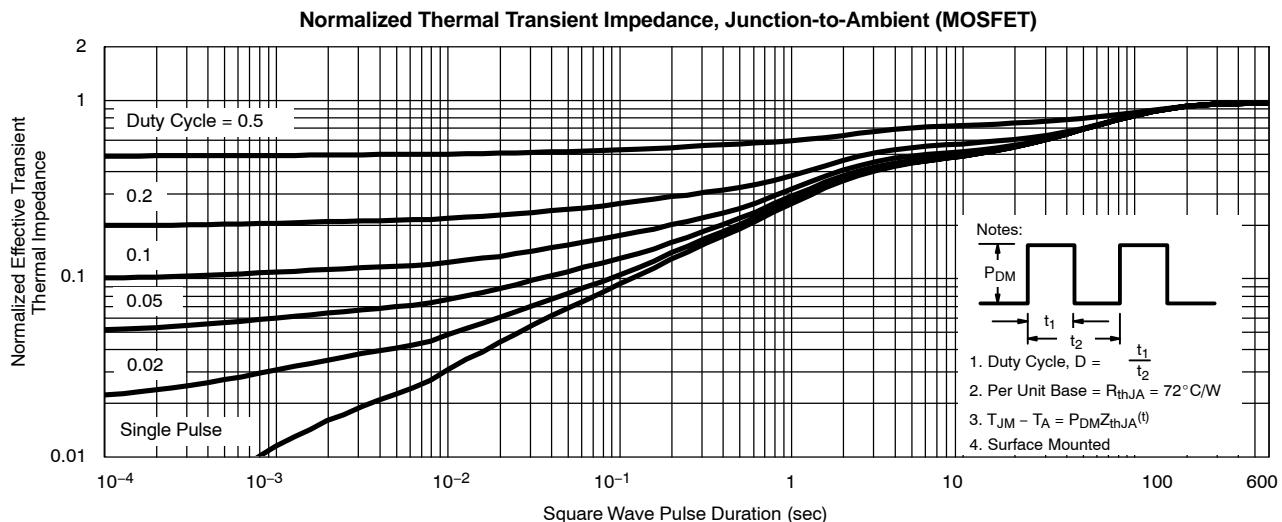
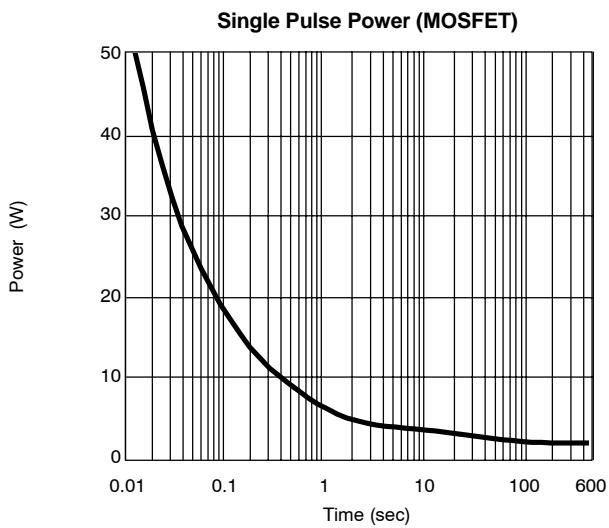
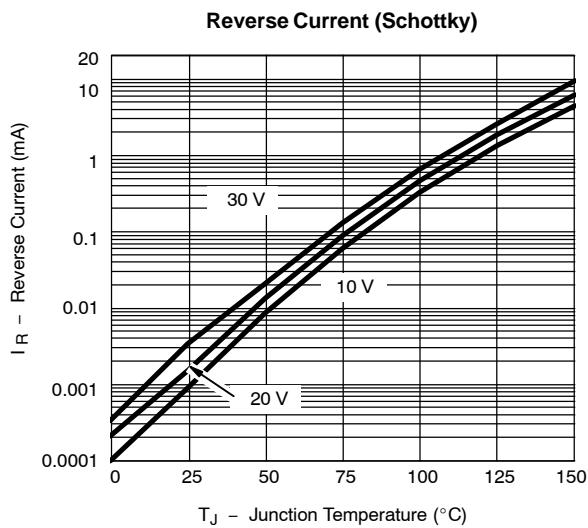
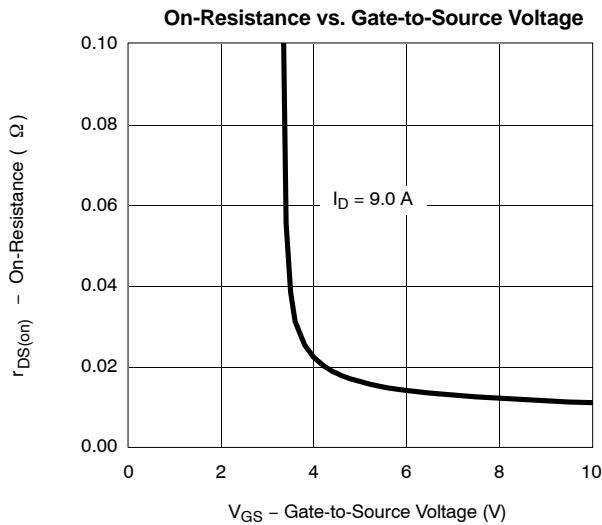
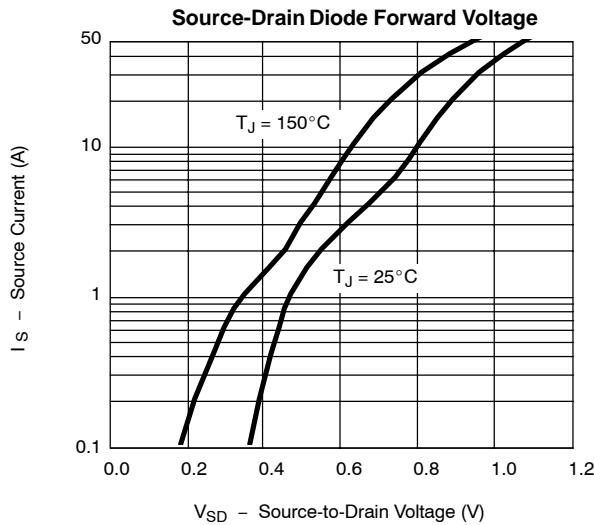
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(\text{th})}$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	1		3	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA
Zero Gate Voltage Drain Current (MOSFET + Schottky)	I_{DSS}	$V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}$		0.004	0.100	mA
		$V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 100^\circ\text{C}$		0.7	10	
		$V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 125^\circ\text{C}$		3.0	20	
On-State Drain Current ^a	$I_{D(\text{on})}$	$V_{DS} \geq 5 \text{ V}, V_{GS} = 10 \text{ V}$	20			A
Drain-Source On-State Resistance ^a	$r_{DS(\text{on})}$	$V_{GS} = 10 \text{ V}, I_D = 9 \text{ A}$		0.012	0.018	Ω
		$V_{GS} = 4.5 \text{ V}, I_D = 7.3 \text{ A}$		0.019	0.028	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15 \text{ V}, I_D = 9 \text{ A}$		23		S
Schottky Diode Forward Voltage ^a	V_{SD}	$I_S = 1.0 \text{ A}, V_{GS} = 0 \text{ V}$		0.45	0.50	V
		$I_S = 1.0 \text{ A}, V_{GS} = 0 \text{ V}, T_J = 125^\circ\text{C}$		0.33	0.42	
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = 15 \text{ V}, V_{GS} = 5 \text{ V}, I_D = 9 \text{ A}$		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	$t_{d(\text{on})}$	$V_{DD} = 15 \text{ V}, R_L = 15 \Omega$ $I_D \approx 1 \text{ A}, V_{GEN} = 10 \text{ V}, R_g = 6 \Omega$		16	25	ns
Rise Time	t_r			10	20	
Turn-Off Delay Time	$t_{d(\text{off})}$			35	50	
Fall Time	t_f			13	20	
Source-Drain Reverse Recovery Time	t_{rr}		$I_F = 1.0 \text{ A}, dI/dt = 100 \text{ A}/\mu\text{s}$	35	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)
