

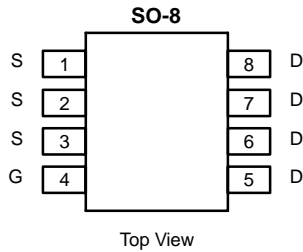


N-Channel 30-V (D-S) MOSFET with Schottky Diode

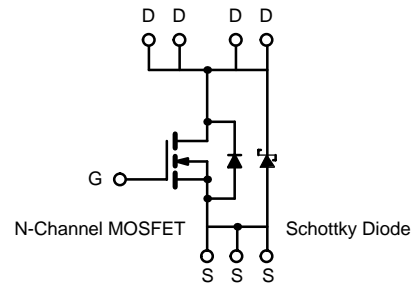
MOSFET PRODUCT SUMMARY		
V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A)
30	0.0135 @ V _{GS} = 10 V	10
	0.020 @ V _{GS} = 4.5 V	8

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™



Ordering Information:
Si4810DY
Si4810DY-T1 (with Tape and Reel)



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}	I _D	T _A = 25 °C	10
		T _A = 70 °C	8
Pulsed Drain Current (MOSFET)	I _{DM}	50	A
Continuous Source Current (MOSFET Diode Conduction) ^{a, b}	I _S	2.3	
Average Forward Current (Schottky)	I _F	4.0	
Pulsed Forward Current (Schottky)	I _{FM}	50	
Maximum Power Dissipation (MOSFET) ^{a, b}	P _D	T _A = 25 °C	2.5
		T _A = 70 °C	1.6
Maximum Power Dissipation (Schottky) ^{a, b}	P _D	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 ≤ 10 sec) ^a	MOSFET	R _{thJA}		50	°C/W
	Schottky			60	
Maximum Junction-to-Ambient (t = steady state) ^a	MOSFET		70		
	Schottky		80		

Notes

- a. Surface Mounted on FR4 Board.
- b. t ≤ 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)

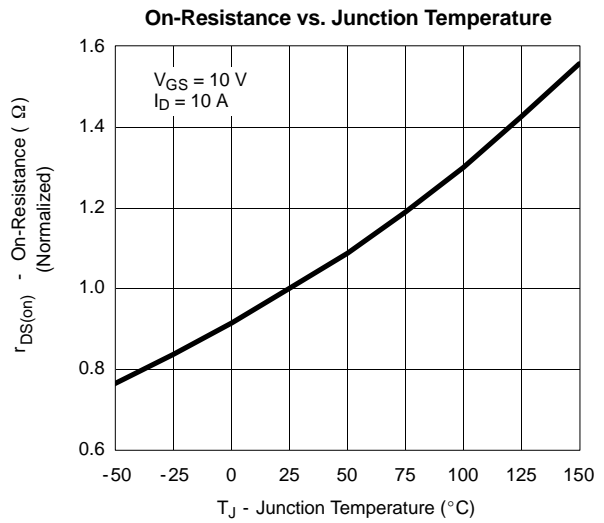
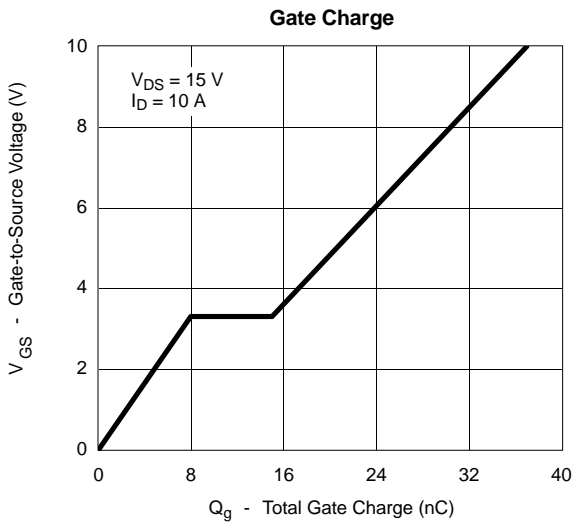
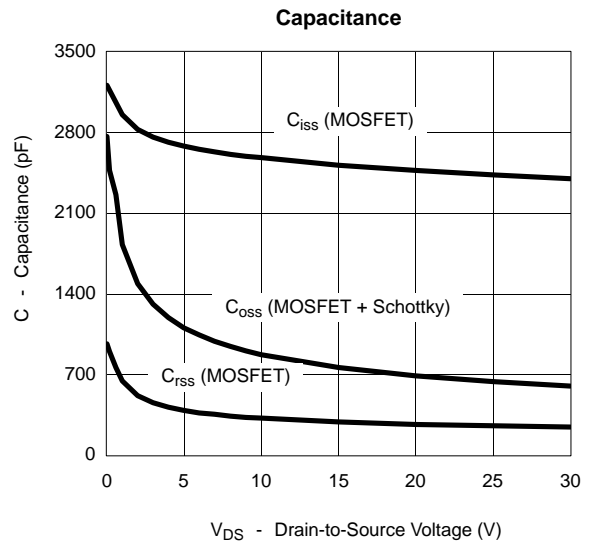
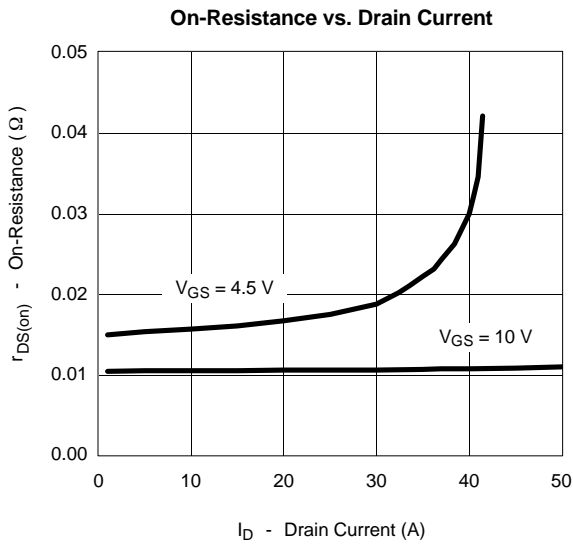
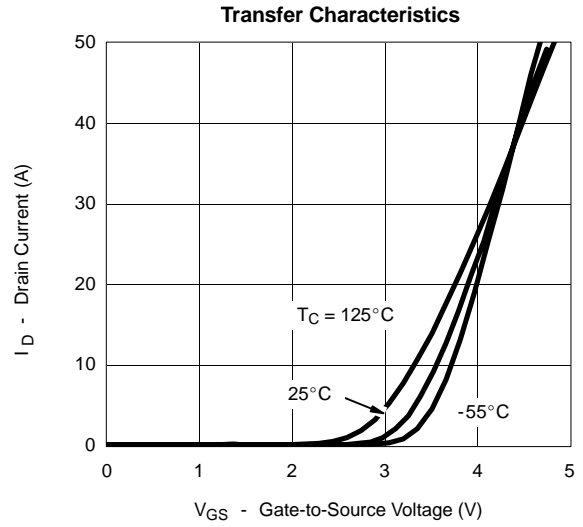
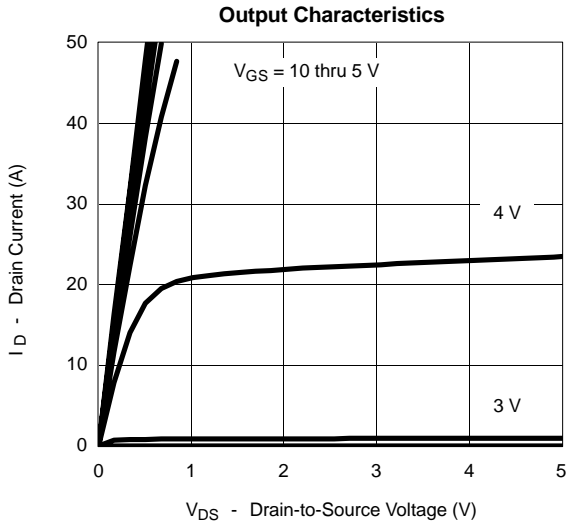
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	1			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA
Zero Gate Voltage Drain Current (MOSFET + Schottky)	I_{DSS}	$V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}$		0.007	0.100	mA
		$V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 100^\circ\text{C}$		1.5	10	
		$V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 125^\circ\text{C}$		6.5	20	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 5 \text{ V}, V_{GS} = 10 \text{ V}$	20			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = 10 \text{ V}, I_D = 10 \text{ A}$		0.0105	0.0135	Ω
		$V_{GS} = 4.5 \text{ V}, I_D = 5 \text{ A}$		0.0155	0.020	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15 \text{ V}, I_D = 10 \text{ A}$		28		S
Schottky Diode Forward Voltage ^a	V_{SD}	$I_S = 3.0 \text{ A}, V_{GS} = 0 \text{ V}$		0.485	0.53	V
		$I_S = 3.0 \text{ A}, V_{GS} = 0 \text{ V}, T_J = 125^\circ\text{C}$		0.420	0.47	
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = 15 \text{ V}, V_{GS} = 5 \text{ V}, I_D = 10 \text{ A}$		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	$t_{d(on)}$	$V_{DD} = 15 \text{ V}, R_L = 15 \Omega$ $I_D \cong 1 \text{ A}, V_{GEN} = 10 \text{ V}, R_G = 6 \Omega$		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}	$I_F = 3.0 \text{ A}, di/dt = 100 \text{ A}/\mu\text{s}$		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.

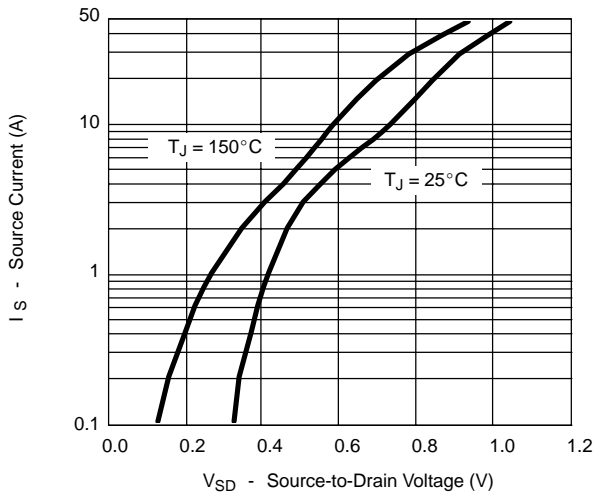


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

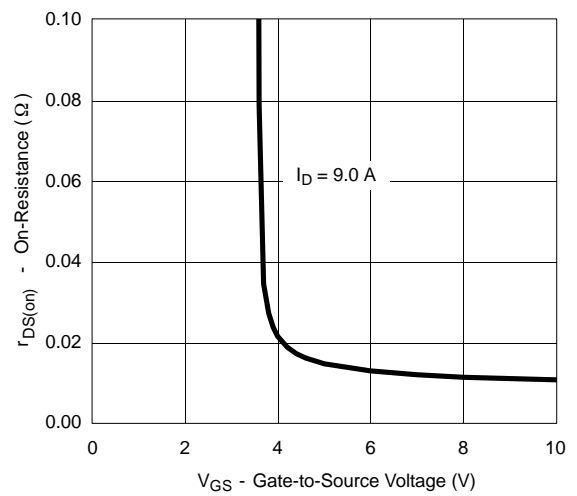


TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

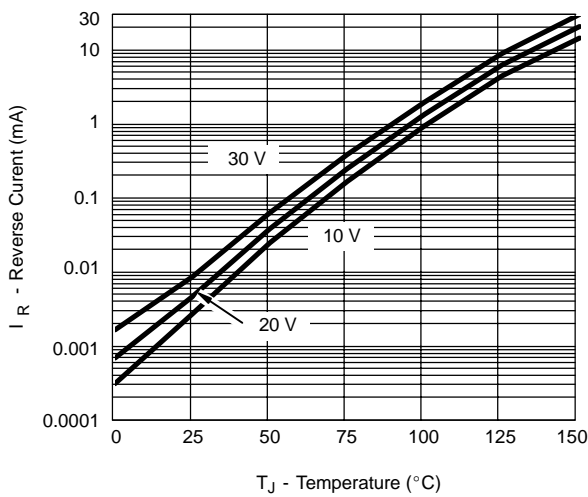
Source-Drain Diode Forward Voltage



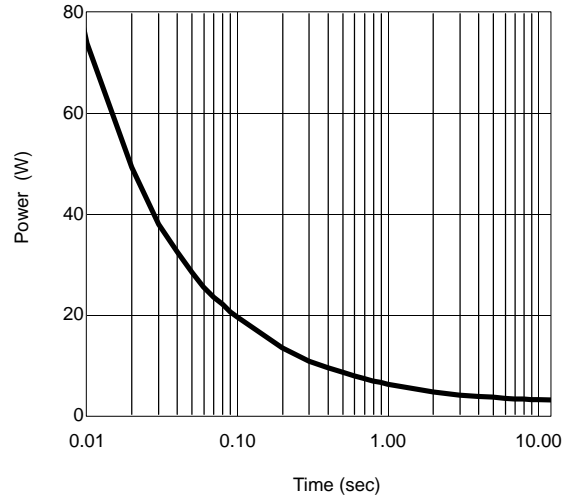
On-Resistance vs. Gate-to-Source Voltage



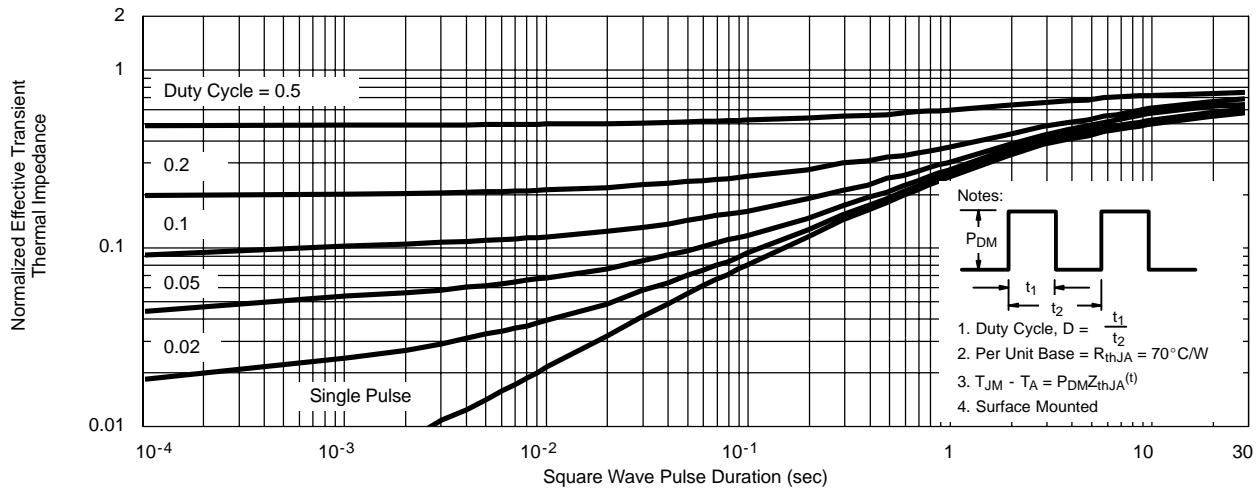
Reverse Current (Schottky)



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

