



Si4816DY

Vishay Siliconix

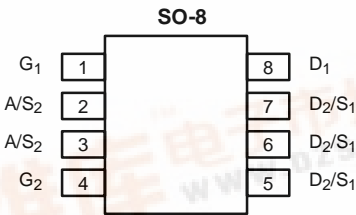
Dual N-Channel 30-V (D-S) MOSFET with Schottky Diode

PRODUCT SUMMARY			
	V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A)
Channel-1	30	0.022 @ V _{GS} = 10 V	6.3
		0.030 @ V _{GS} = 4.5 V	5.4
Channel-2		0.013 @ V _{GS} = 10 V	10
		0.0185 @ V _{GS} = 4.5 V	8.6

SCHOTTKY PRODUCT SUMMARY		
V _{DS} (V)	V _{SD} (V) Diode Forward Voltage	I _F (A)
30	0.50 V @ 1.0 A	2.0

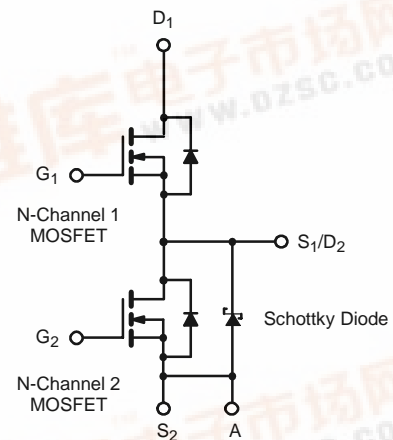
FEATURES

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



Top View

Ordering Information: Si4816DY
 Si4816DY-T1 (with Tape and Reel)
 Si4816DY—E3 (Lead (Pb)-Free)
 Si4816DY-T1—E3 (Lead (Pb)-Free with Tape and Reel)



ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C UNLESS OTHERWISE NOTED)							
Parameter	Symbol	Channel-1		Channel-2		Unit	
		10 secs	Steady State	10 secs	Steady State		
Drain-Source Voltage	V _{DS}	30				V	
Gate-Source Voltage	V _{GS}	20					
Continuous Drain Current (T _J = 150 °C) ^a	I _D	T _A = 25 °C	6.3	5.3	10	7.7	A
		T _A = 70 °C	5.4	4.2	8.2	6.2	
Pulsed Drain Current	I _{DM}	30		40		A	
Continuous Source Current (Diode Conduction) ^a	I _S	1.3	0.9	2.2	1.15		
Avalanche Current ^b	I _{AS}	L = 0.1 mH	12		25		mJ
Single Pulse Avalanche Energy ^b			E _{AS}	7.2		31.25	
Maximum Power Dissipation ^a	P _D	T _A = 25 °C	1.4	1.0	2.4	1.25	W
		T _A = 70 °C	0.9	0.64	1.5	0.8	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 150				°C	

THERMAL RESISTANCE RATINGS									
Parameter	Symbol	Channel-1		Channel-2		Schottky		Unit	
		Typ	Max	Typ	Max	Typ	Max		
Maximum Junction-to-Ambient ^a	R _{thJA}	t ≤ 10 sec	72	90	43	53	48	60	°C/W
		Steady-State	100	125	82	100	80	100	
Maximum Junction-to-Foot (Drain)	R _{thJC}	51	63	25	30	28	35		

Notes:
^a Surface Mounted on 1" x 1" FR4 Board.
^b Starting date code W46BAA.



MOSFET SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit		
Static								
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	Ch-1	0.8		2	V	
			Ch-2	1.0		3		
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = 20 V	Ch-1			100	nA	
			Ch-2			100		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V	Ch-1			1	μA	
			Ch-2			100		
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 85 °C	Ch-1			15		
			Ch-2			2000		
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	Ch-1	20			A	
			Ch-2	30				
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 6.3 A	Ch-1		0.018	0.022	Ω	
		V _{GS} = 10 V, I _D = 10 A	Ch-2		0.0105	0.013		
		V _{GS} = 4.5 V, I _D = 5.4 A	Ch-1		0.024	0.030		
		V _{GS} = 4.5 V, I _D = 8.6 A	Ch-2		0.015	0.0185		
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 6.3 A	Ch-1		17		S	
		V _{DS} = 15 V, I _D = 10 A	Ch-2		28			
Diode Forward Voltage ^b	V _{SD}	I _S = 1.3 A, V _{GS} = 0 V	Ch-1		0.7	1.1	V	
		I _S = 1 A, V _{GS} = 0 V	Ch-2		0.47	0.5		
Dynamic^a								
Total Gate Charge	Q _g	Channel-1 V _{DS} = 15 V, V _{GS} = 5 V, I _D = 6.3 A Channel-2 V _{DS} = 15 V, V _{GS} = 5 V, I _D = -10 A	Ch-1		8.0	12	nC	
			Ch-2		15	23		
Gate-Source Charge	Q _{gs}		Ch-1		1.75			
			Ch-2		5.3			
Gate-Drain Charge	Q _{gd}		Ch-1		3.2			
			Ch-2		4.6			
Gate Resistance	R _g		Ch-1	1.5		3.1	Ω	
			Ch-2	0.5		2.6		
Turn-On Delay Time	t _{d(on)}		Channel-1 V _{DD} = 15 V, R _L = 15 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _g = 6 Ω Channel-2 V _{DD} = 15 V, R _L = 15 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _g = 6 Ω	Ch-1		10	20	ns
				Ch-2		15	30	
Rise Time	t _r	Ch-1			5	10		
		Ch-2			5	10		
Turn-Off Delay Time	t _{d(off)}	Ch-1			26	50		
		Ch-2			44	80		
Fall Time	t _f	Ch-1			8	16		
		Ch-2			12	24		
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 1.3 A, di/dt = 100 A/μs		Ch-1		30	60	
		I _F = 2.2 A, di/dt = 100 μA/μs		Ch-2		32	70	

Notes

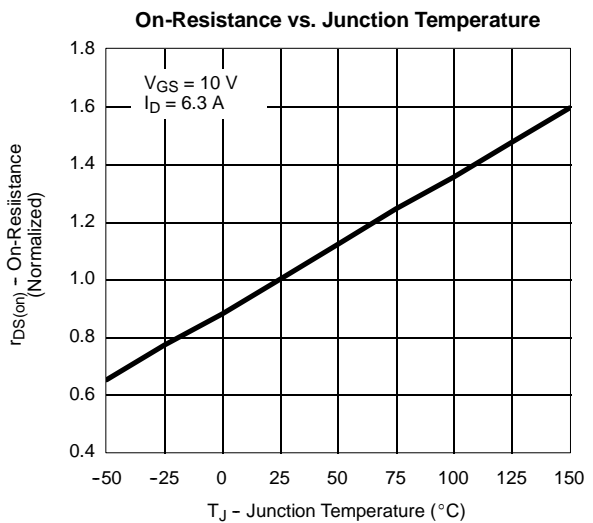
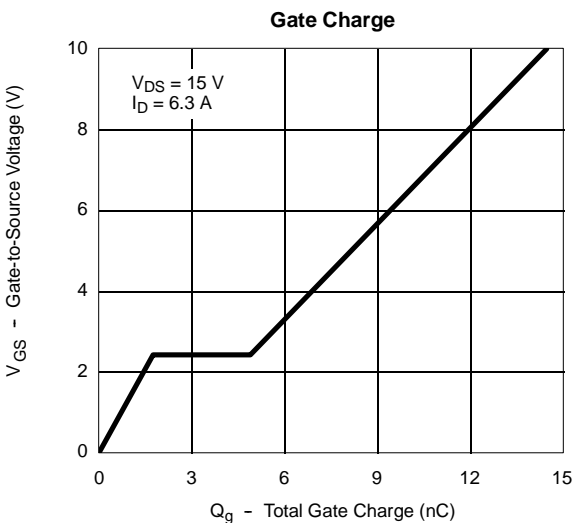
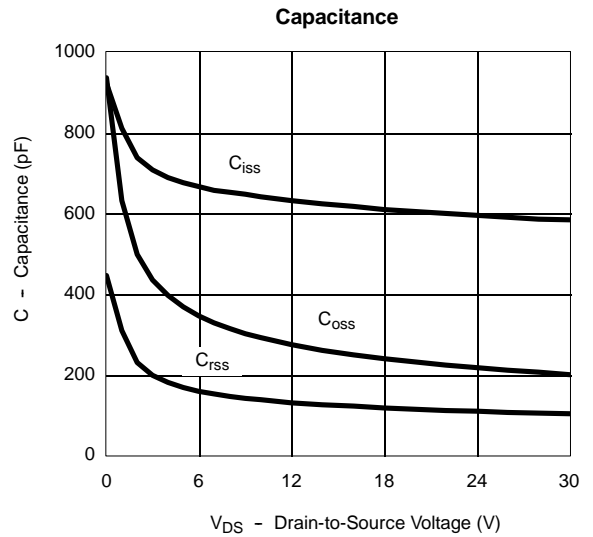
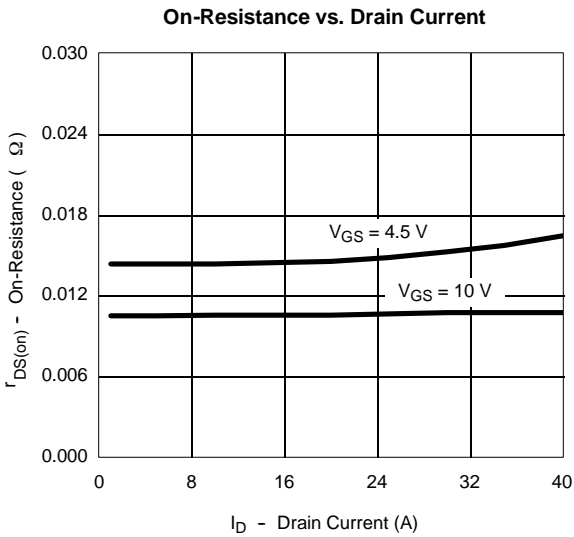
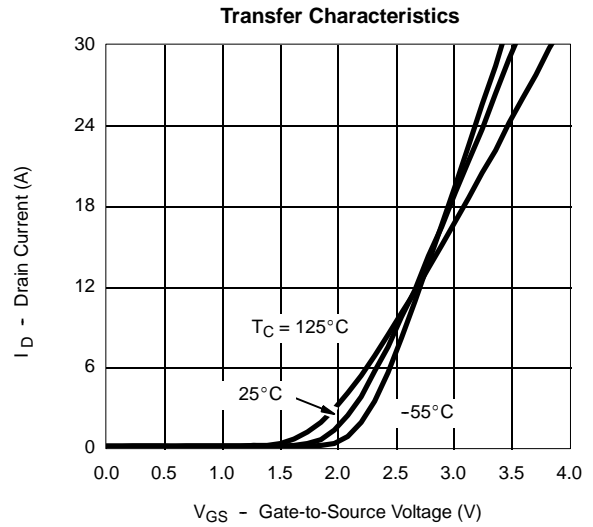
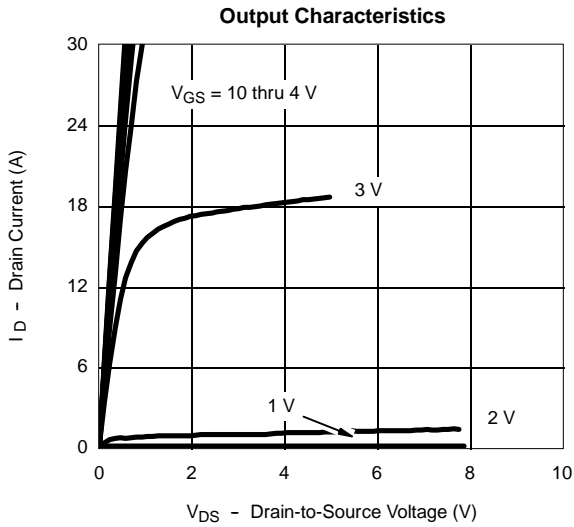
- a. Guaranteed by design, not subject to production testing.
- b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

SCHOTTKY SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Forward Voltage Drop	V _F	I _F = 1.0 A		0.47	0.50	V
		I _F = 1.0 A, T _J = 125 °C		0.36	0.42	
Maximum Reverse Leakage Current	I _{rm}	V _r = 30 V		0.004	0.100	mA
		V _r = 30 V, T _J = 100 °C		0.7	10	
		V _r = -30 V, T _J = 125 °C		3.0	20	
Junction Capacitance	C _T	V _r = 10 V		50		pF



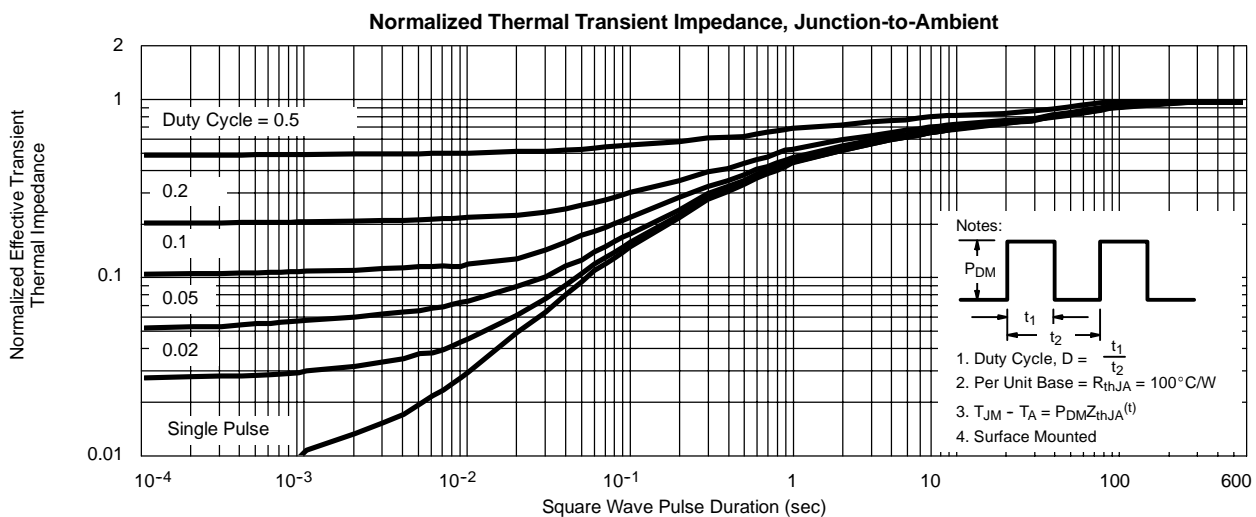
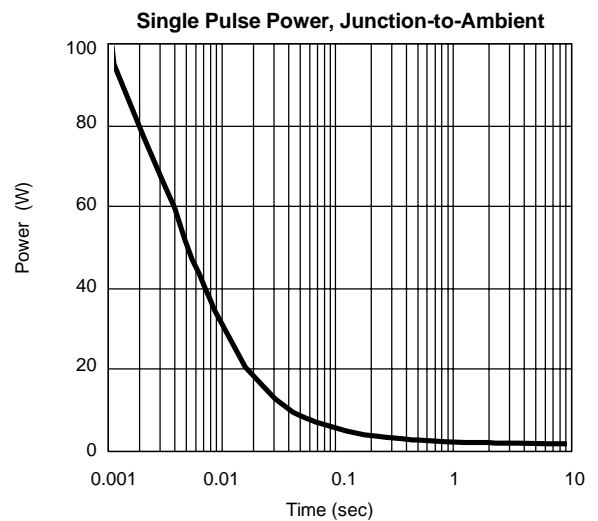
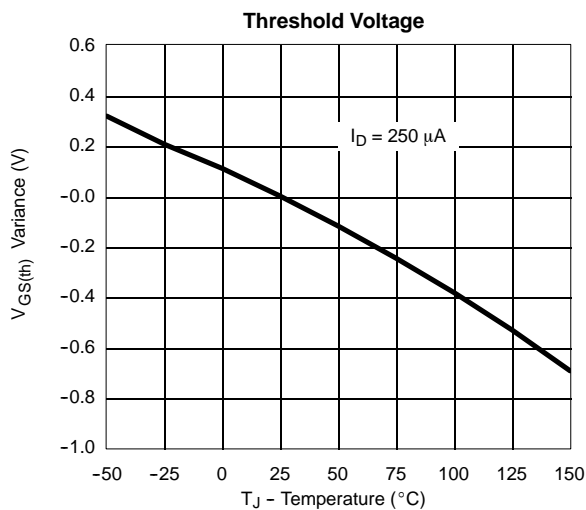
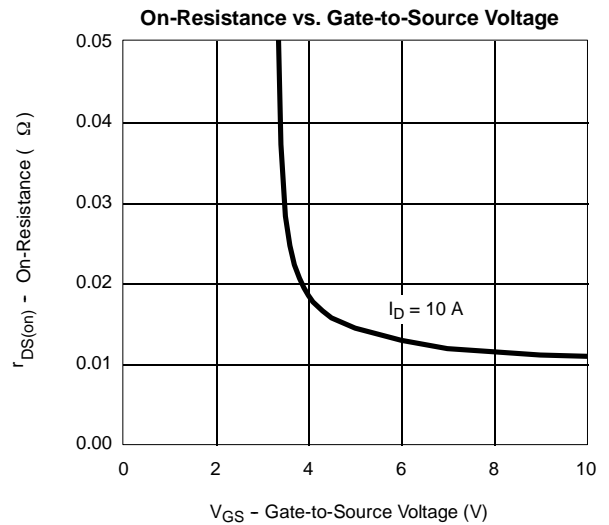
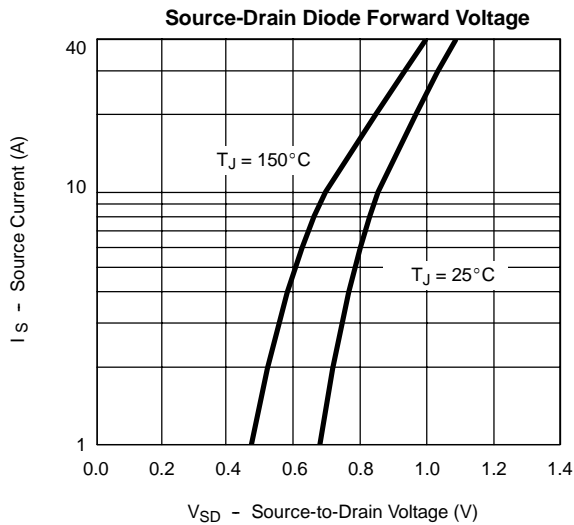
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) CHANNEL-1





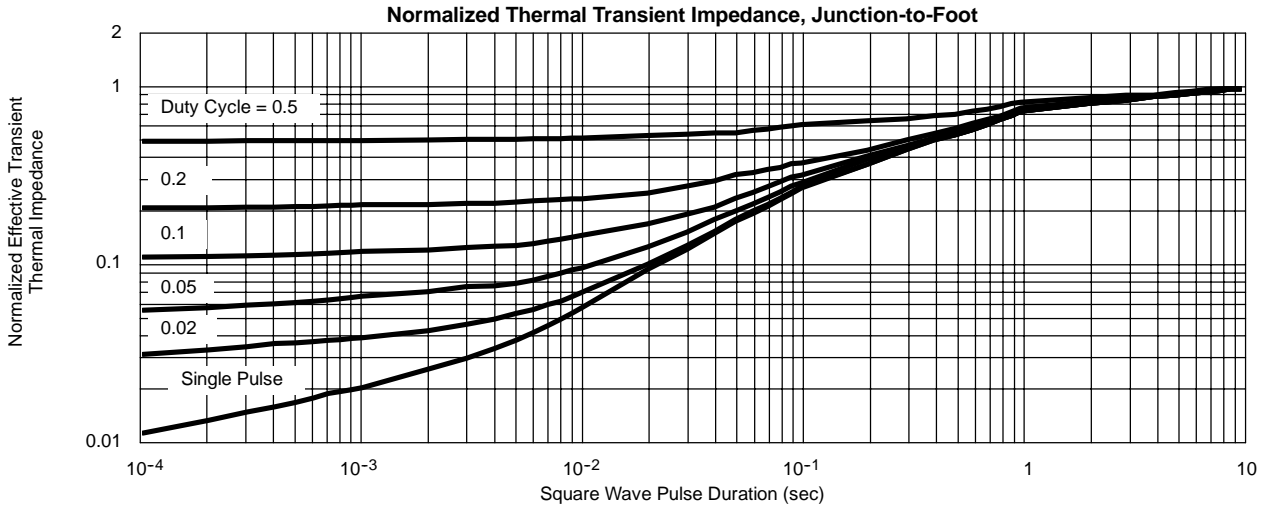
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

CHANNEL-1

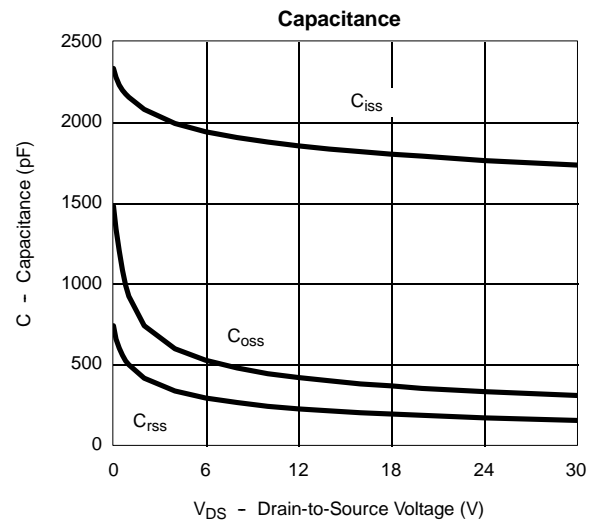
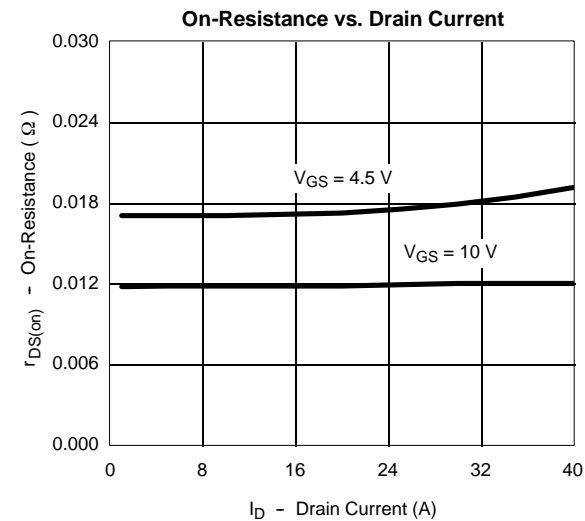
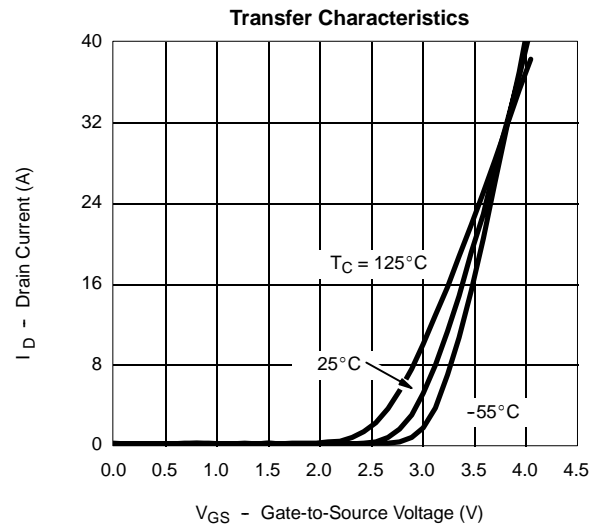
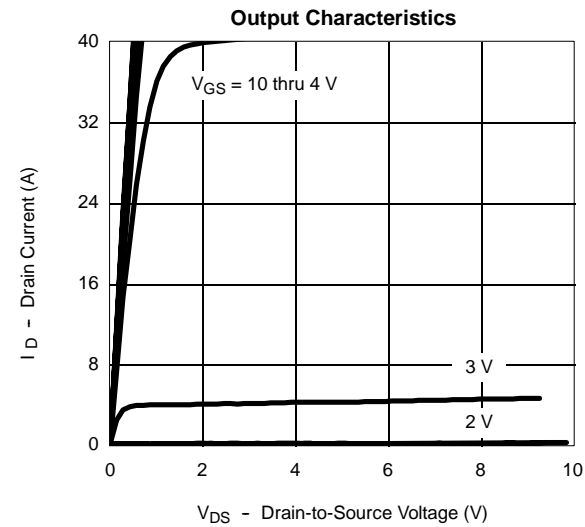




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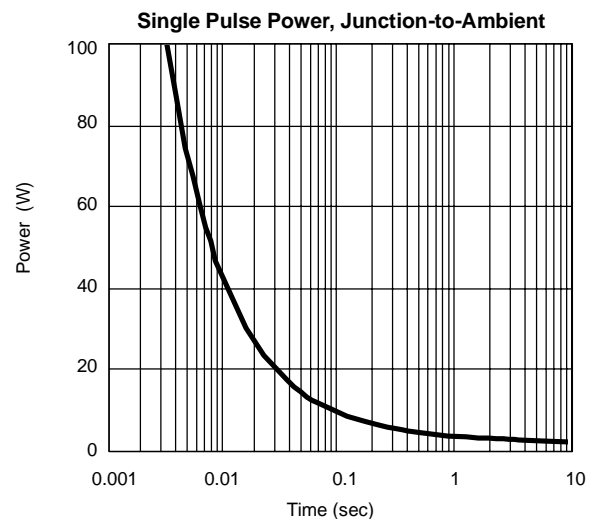
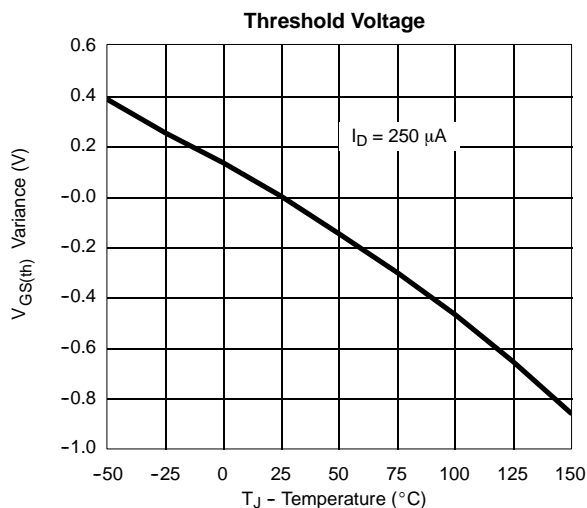
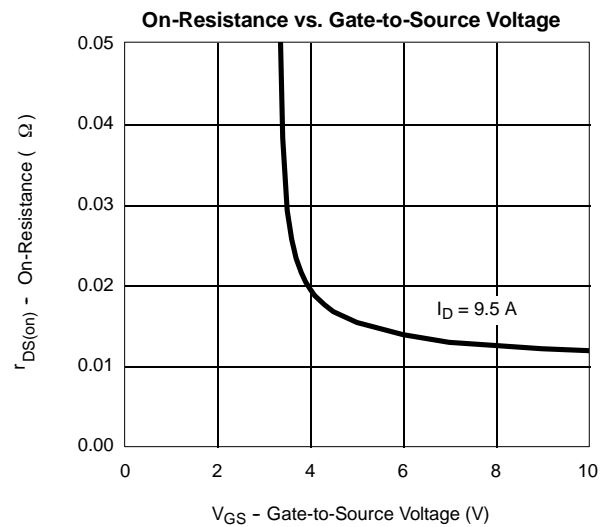
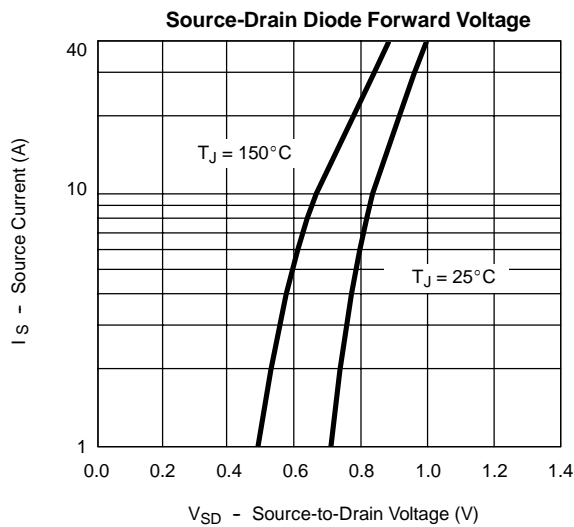
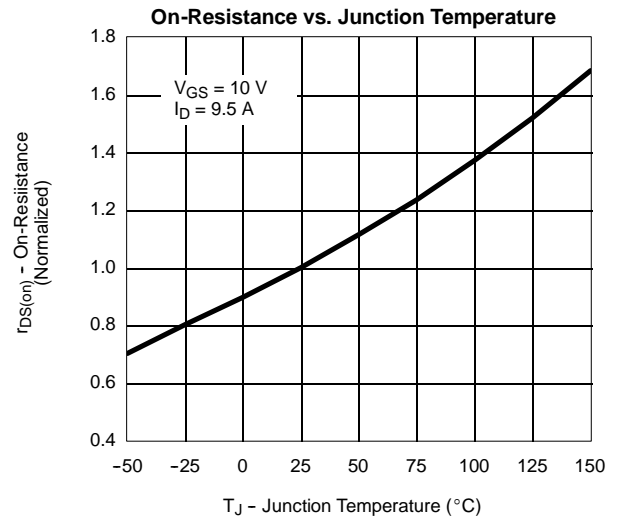
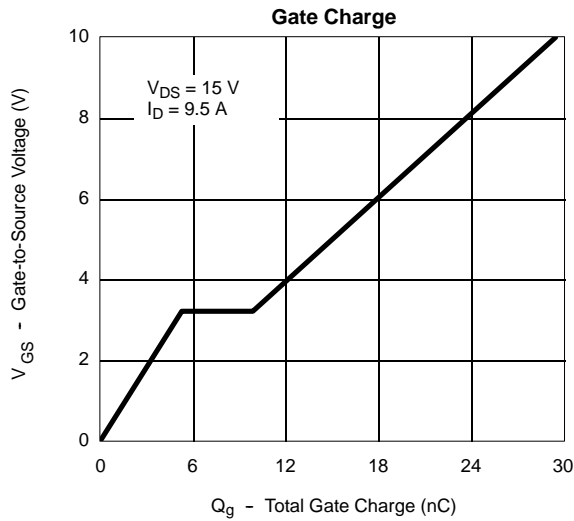


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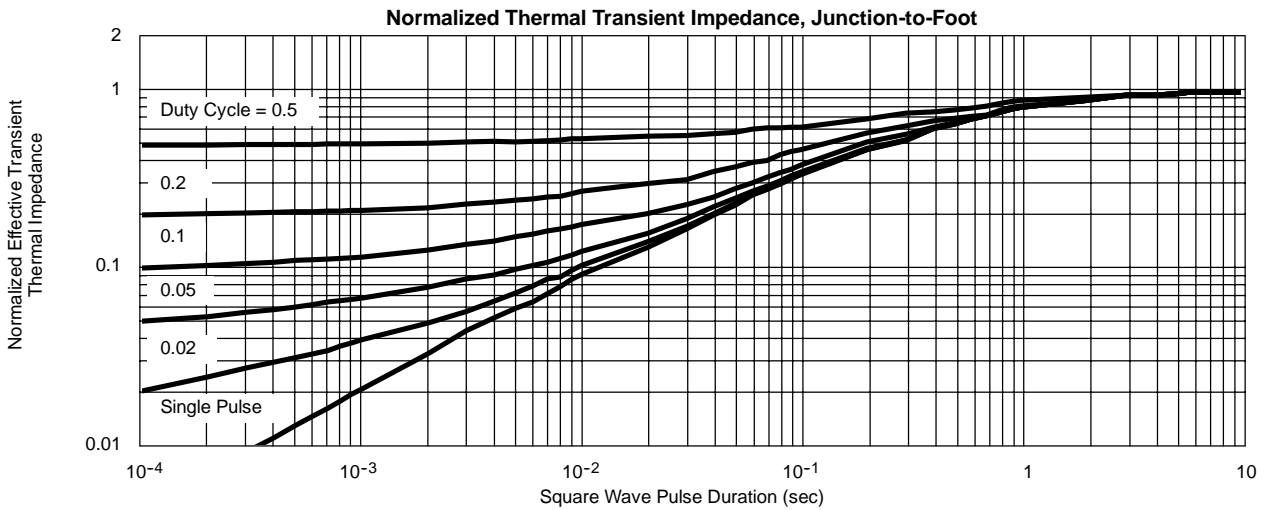
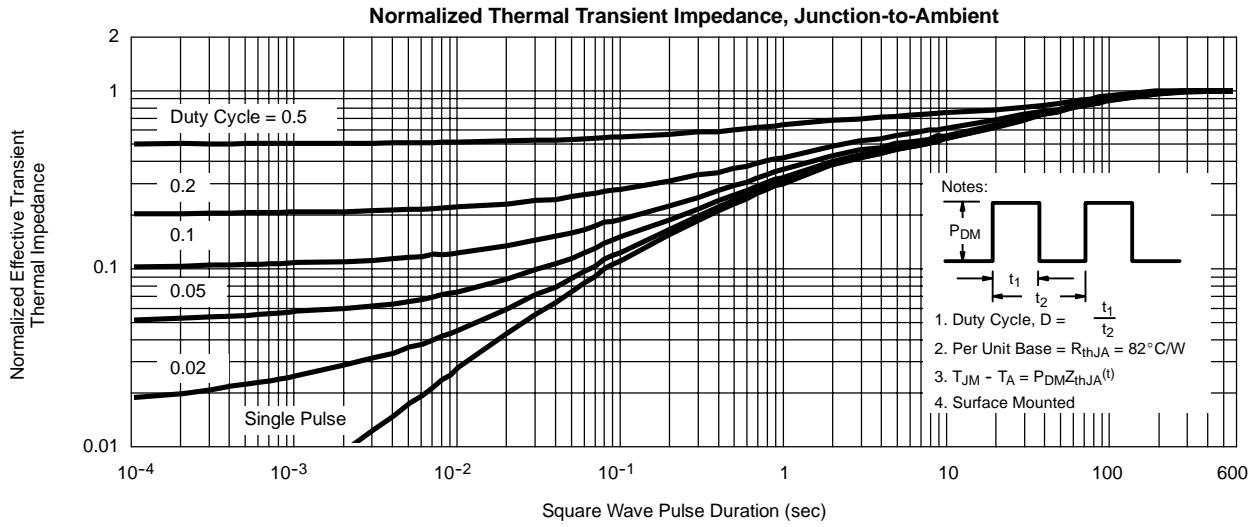
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

CHANNEL-2





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) **CHANNEL-2**



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

SCHOTTKY

