

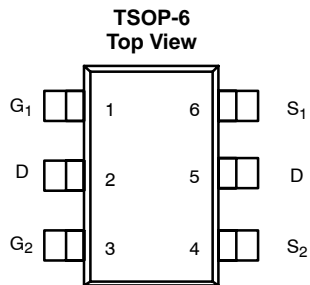


Complementary MOSFET Half-Bridge (N- and P-Channel)

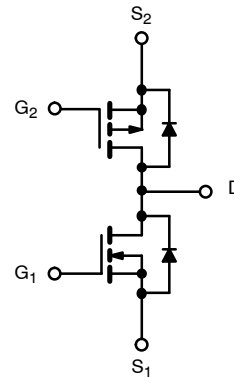
PRODUCT SUMMARY			
	V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
N-Channel	20	0.500 @ $V_{GS} = 4.5$ V	1.2
		0.750 @ $V_{GS} = 3.0$ V	1.0
P-Channel	-20	1.00 @ $V_{GS} = -4.5$ V	-0.85
		1.30 @ $V_{GS} = -3.0$ V	-0.75

FEATURES

- 100% R_g Tested



Ordering Information: Si3850DV-T1
Si3850DV-T1—E3 (Lead (Pb)-Free)



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	20	-20	V
Gate-Source Voltage	V_{GS}	± 12		
Continuous Drain Current ($T_J = 150^\circ\text{C}$)	$T_A = 25^\circ\text{C}$	1.2	-0.85	A
	$T_A = 70^\circ\text{C}$	0.95	-0.65	
Pulsed Drain Current	I_{DM}	3.5	-2.5	
Continuous Source Current (Diode Conduction)	I_S	1	-1	
Maximum Power Dissipation (Surface Mounted on FR4 Board)	$T_A = 25^\circ\text{C}$	1.25		W
	$T_A = 70^\circ\text{C}$	0.8		
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150		$^\circ\text{C}$

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	N- or P- Channel	Unit
Maximum Junction-to-Ambient (Surface Mounted on FR4 Board, $\pm \leq 10$ sec)	R_{thJA}	100	$^\circ\text{C}/\text{W}$

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

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	N-Ch	0.6		1.5	V
		V _{DS} = V _{GS} , I _D = -250 μA	P-Ch	-0.6		-1.5	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±12 V				±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20 V, V _{GS} = 0 V	N-Ch			1	μA
		V _{DS} = -20 V, V _{GS} = 0 V	P-Ch			-1	
		V _{DS} = 20 V, V _{GS} = 0 V, T _J = 70 °C	N-Ch			10	
		V _{DS} = -20 V, V _{GS} = 0 V, T _J = 70 °C	P-Ch			-10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 4.5 V	N-Ch	3.0			A
		V _{DS} = -5 V, V _{GS} = -4.5 V	P-Ch	-2.0			
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 4.5 V, I _D = 0.5 A	N-Ch		0.38	0.500	Ω
		V _{GS} = -4.5 V, I _D = -0.5 A	P-Ch		0.70	1.00	
		V _{GS} = 3.0 V, I _D = 0.5 A	N-Ch		0.55	0.750	
		V _{GS} = -3.0 V, I _D = -0.5 A	P-Ch		1.10	1.30	
Forward Transconductance ^a	g _{fs}	V _{DS} = 10 V, I _D = 1.2 A	N-Ch		2.7		S
		V _{DS} = -10 V, I _D = -0.85 A	P-Ch		1.2		
Diode Forward Voltage ^a	V _{SD}	I _S = 1 A, V _{GS} = 0 V	N-Ch			1.2	V
		I _S = -1 A, V _{GS} = 0 V	P-Ch			-1.2	
Dynamic^b							
Total Gate Charge	Q _g	N-Channel V _{DS} = 10 V, V _{GS} = 4.5 V, I _D = 1.2 A P-Channel V _{DS} = -10 V, V _{GS} = -4.5 V I _D = -0.85 A	N-Ch		0.8	2.0	nC
Gate-Source Charge	Q _{gs}		N-Ch		0.25		
Gate-Drain Charge	Q _{gd}		P-Ch		0.50		
Gate Resistance	R _g		N-Ch	0.3		1.5	Ω
			P-Ch	3		16	
Turn-On Delay Time	t _{d(on)}	N-Channel V _{DD} = 10 V, R _L = 10 Ω I _D ≅ 1 A, V _{GEN} = 4.5 V, R _g = 6 Ω P-Channel V _{DD} = -10 V, R _L = 10 Ω I _D ≅ -1 A, V _{GEN} = -4.5 V, R _g = 6 Ω	N-Ch		10	20	ns
Rise Time	t _r		P-Ch		8	15	
			N-Ch		20	40	
Turn-Off Delay Time	t _{d(off)}		P-Ch		20	40	
			N-Ch		10	20	
Fall Time	t _f		N-Ch		16	30	
			P-Ch		8	15	
Source-Drain Reverse Recovery Time	t _{rr}		I _F = 1 A, di/dt = 100 A/μs	N-Ch		40	
		I _F = -1 A, di/dt = 100 A/μs	P-Ch		40	80	

Notes

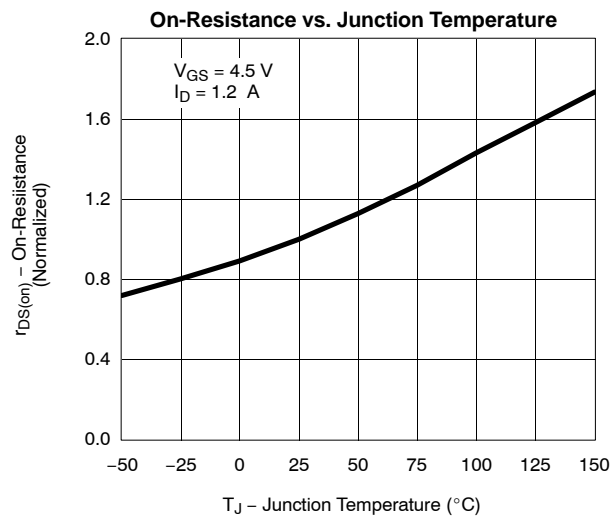
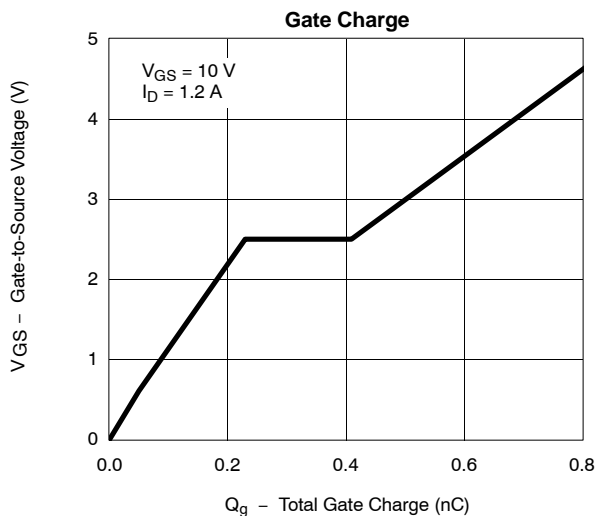
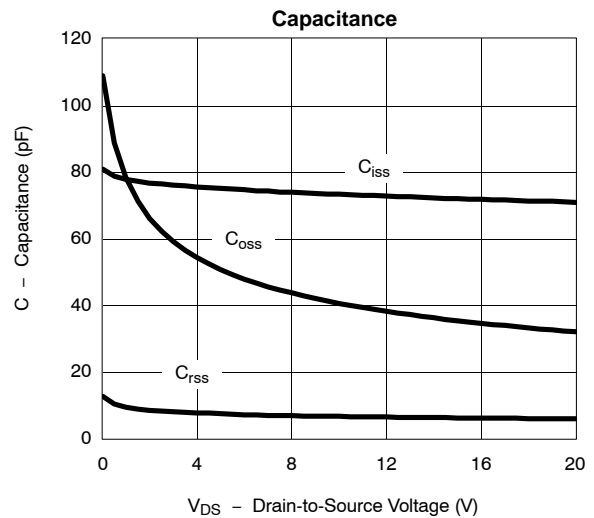
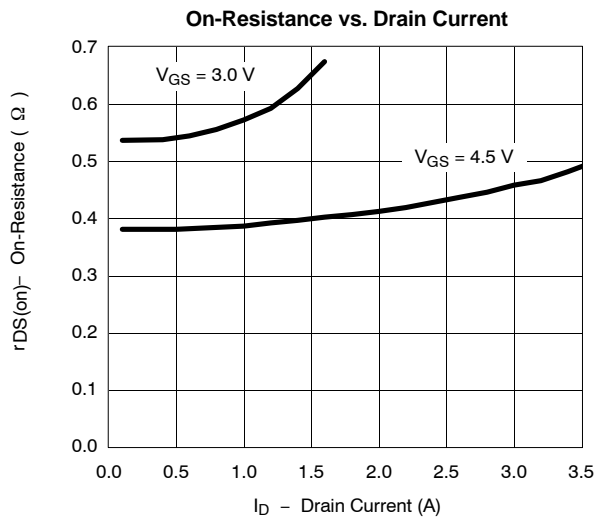
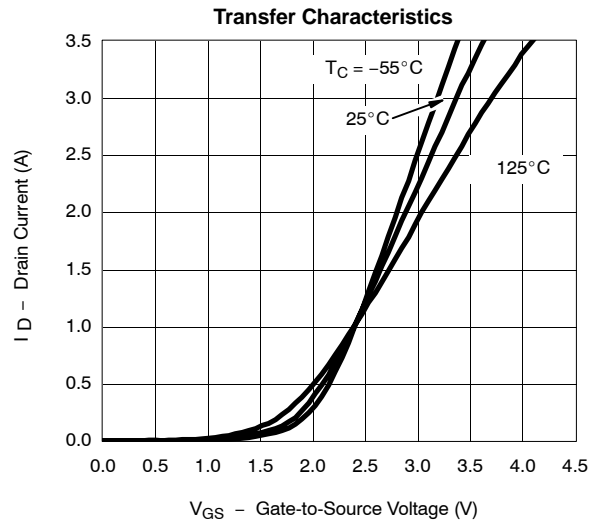
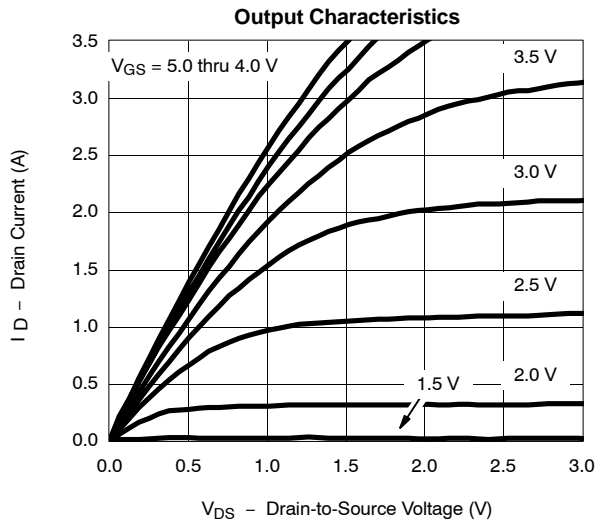
- a. Guaranteed by design, not subject to production testing.
b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



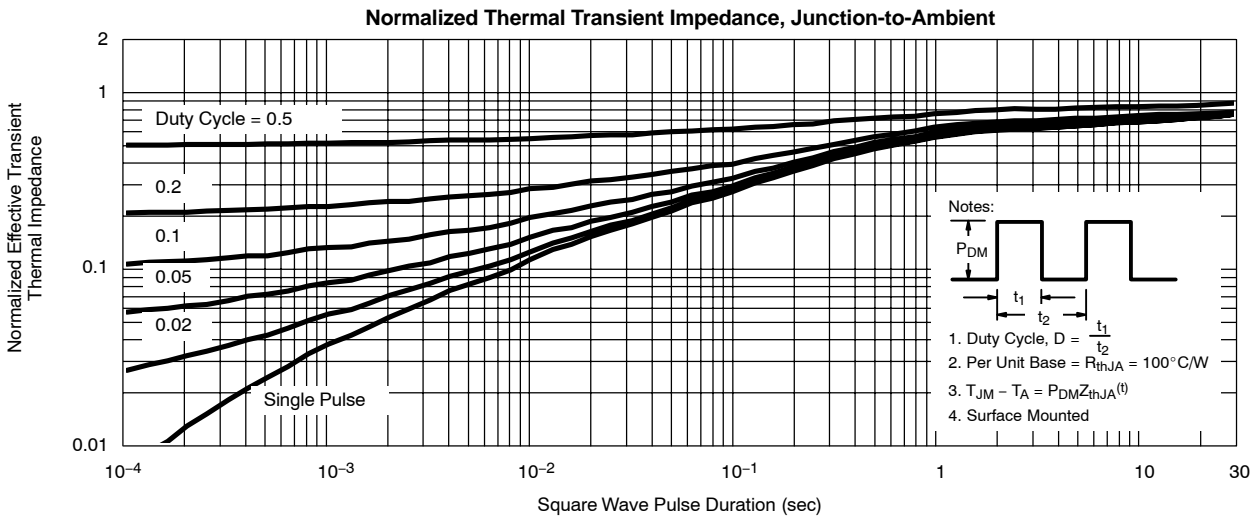
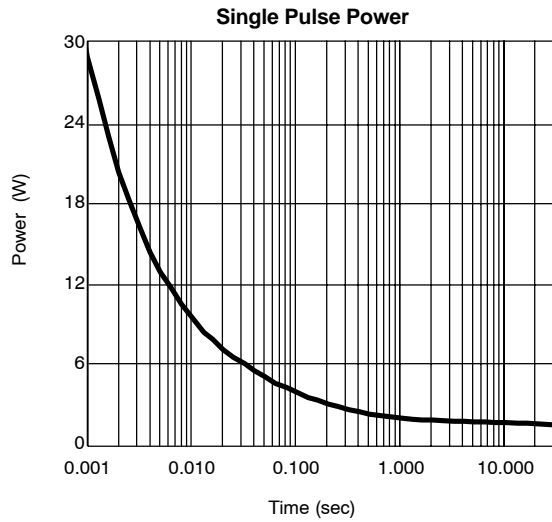
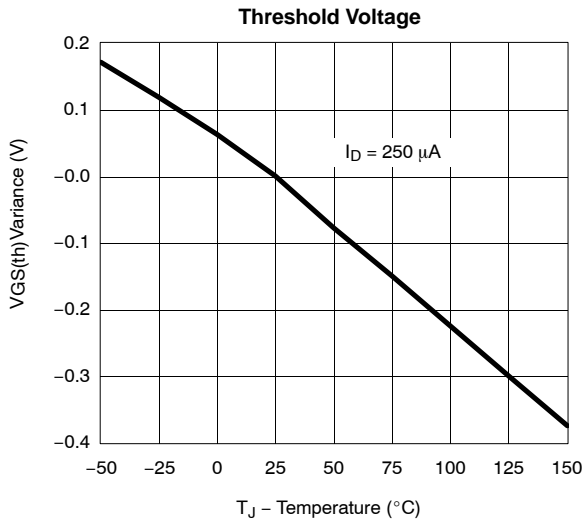
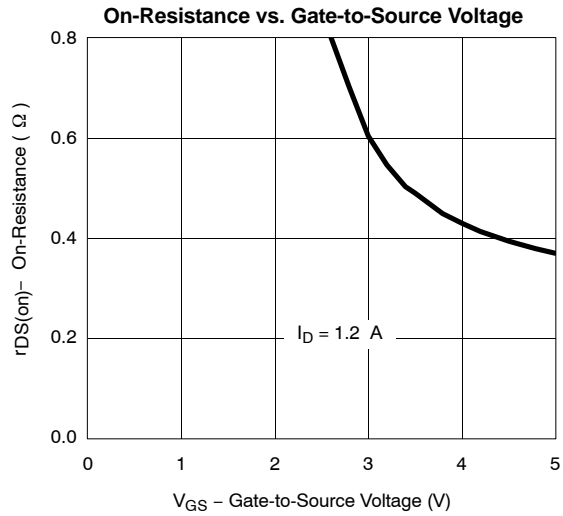
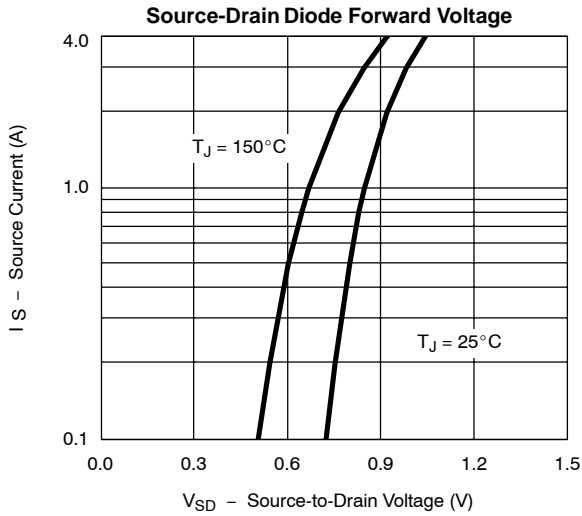
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

N-CHANNEL



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N-CHANNEL

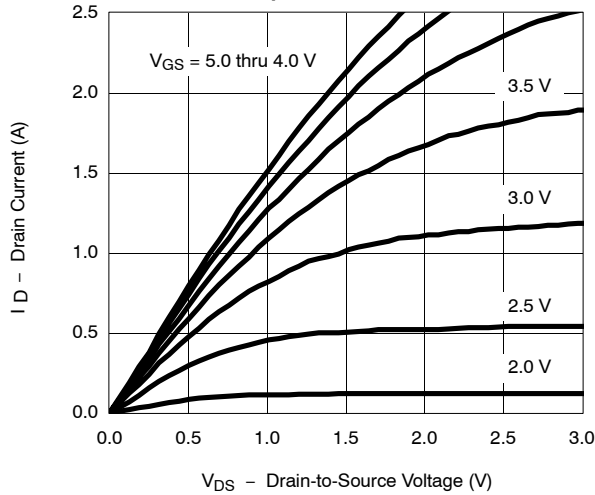




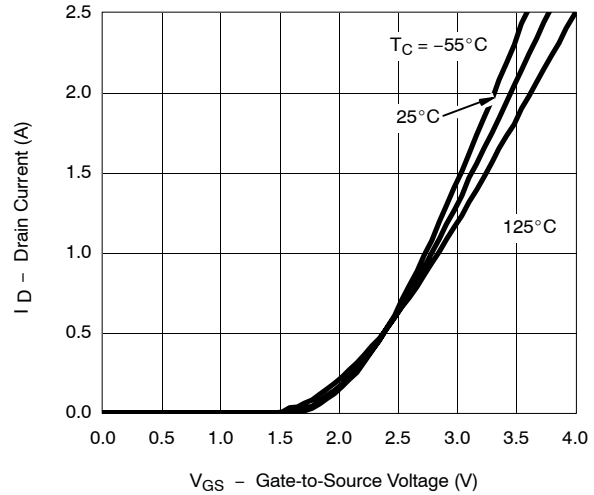
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

P-CHANNEL

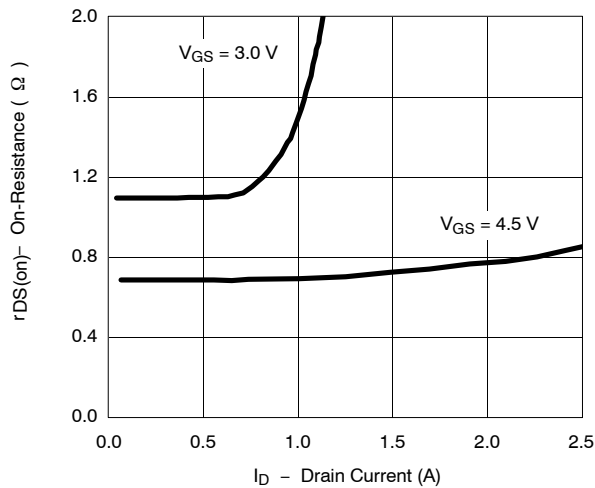
Output Characteristics



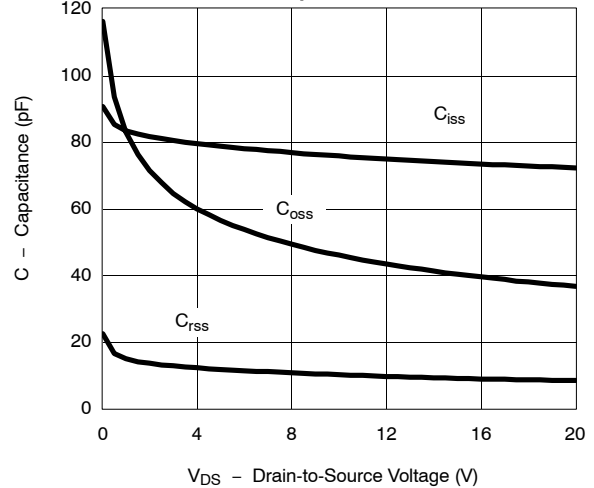
Transfer Characteristics



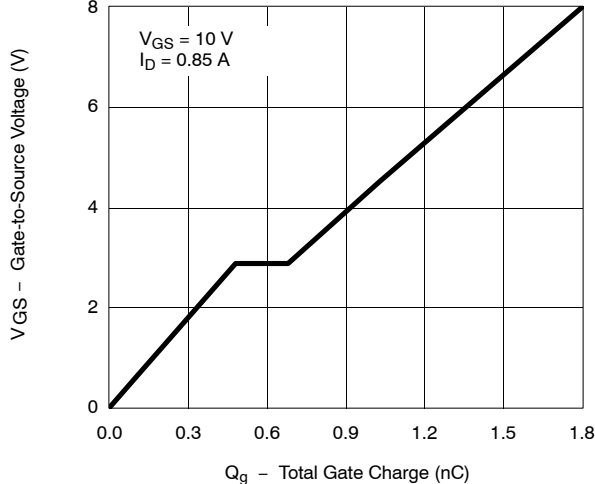
On-Resistance vs. Drain Current



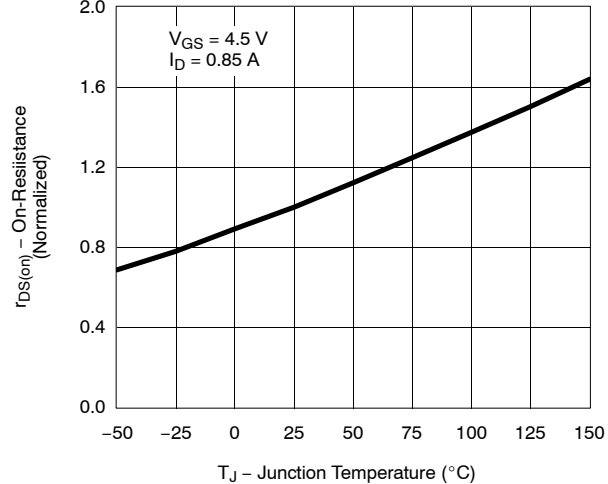
Capacitance



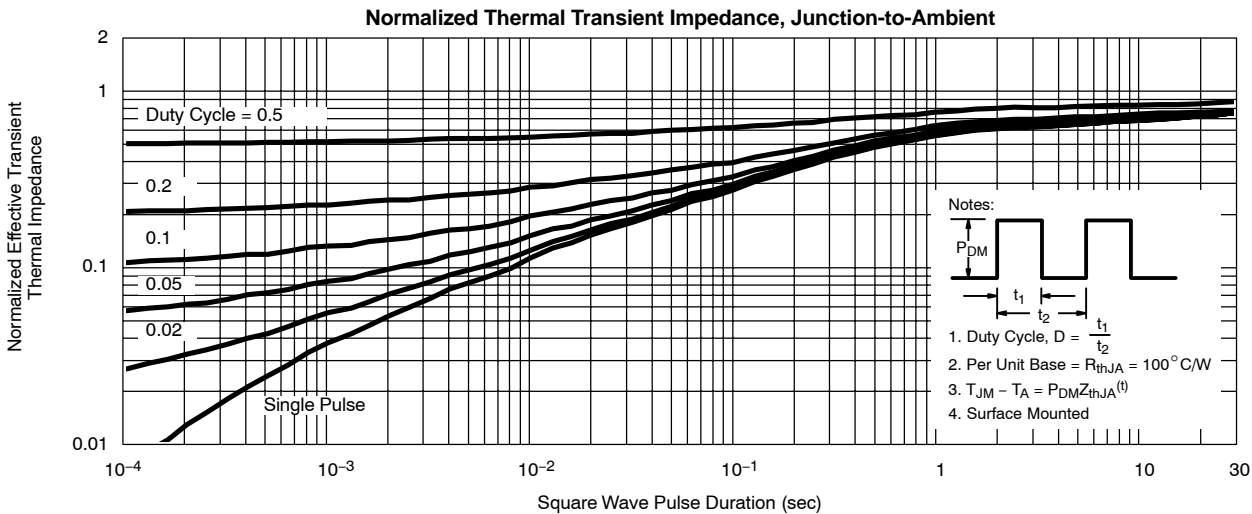
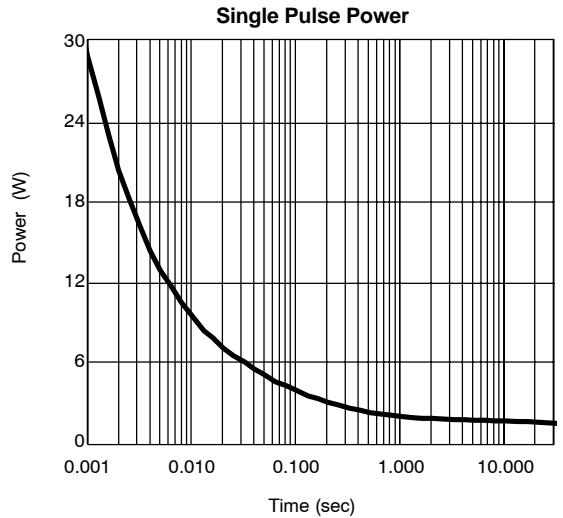
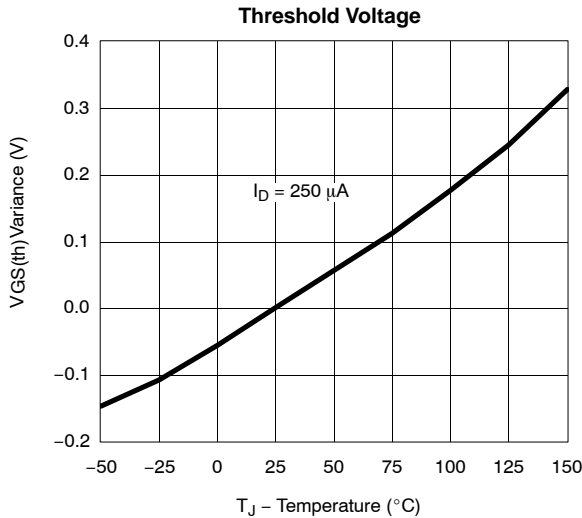
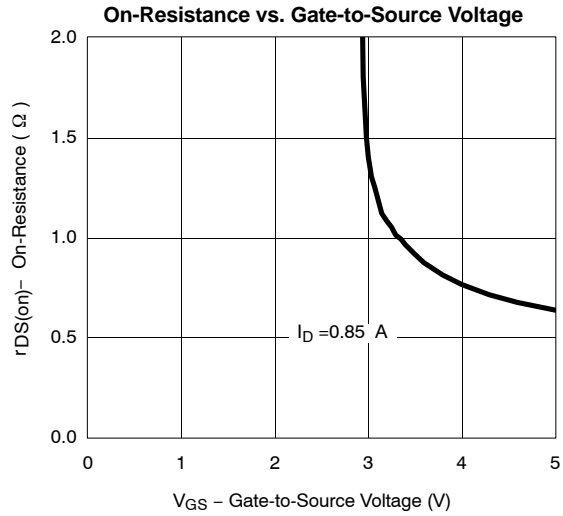
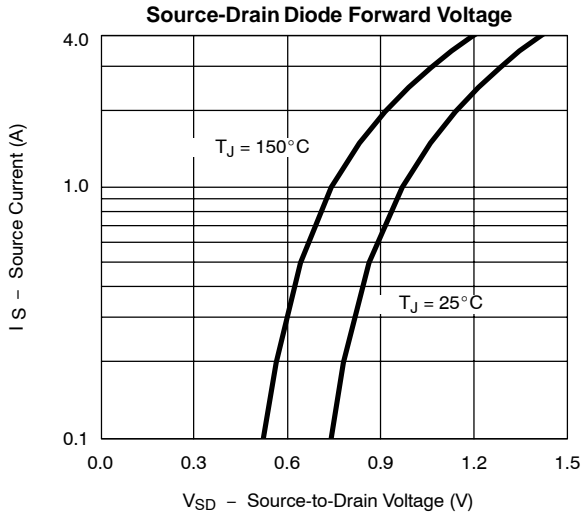
Gate Charge



On-Resistance vs. Junction Temperature



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



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