



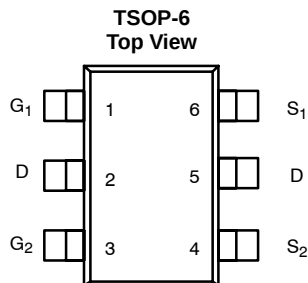
Complementary MOSFET Half-Bridge (N- and P-Channel)

PRODUCT SUMMARY

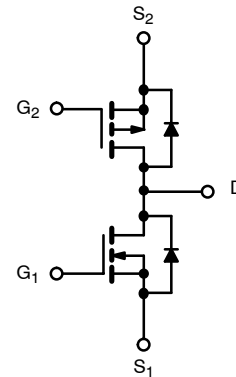
	V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
N-Channel	20	0.500 @ $V_{GS} = 4.5$ V	1.2
		0.750 @ $V_{GS} = 3.0$ V	1.0
P-Channel	-20	1.00 @ $V_{GS} = -4.5$ V	-0.85
		1.30 @ $V_{GS} = -3.0$ V	-0.75

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°C)	T _A = 25°C	I _D	1.2	−0.85	A
	T _A = 70°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°C	P _D	1.25		W
	T _A = 70°C		0.8		
Operating Junction and Storage Temperature Range		T _J , T _{stg}	−55 to 150		°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	$^\circ\text{C/W}$

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}		P-Ch		1.10	2.5	
			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		P-Ch		16	30	
			N-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

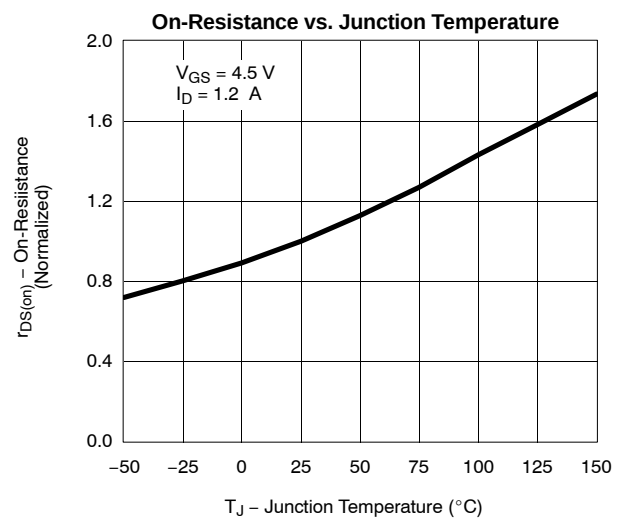
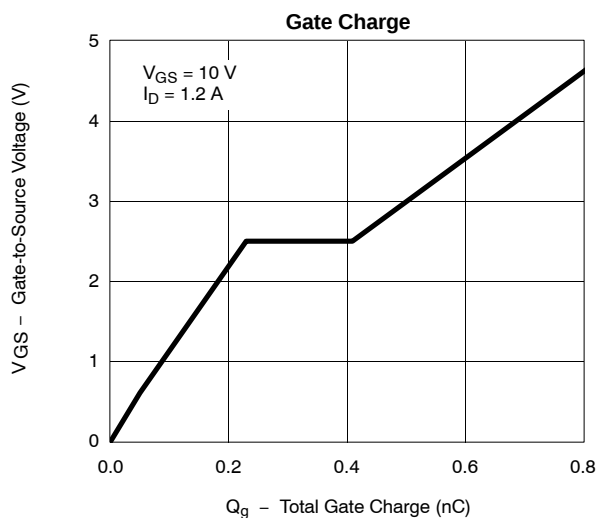
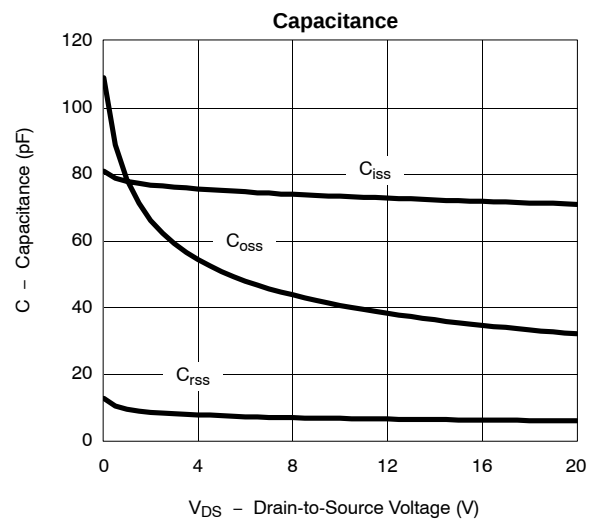
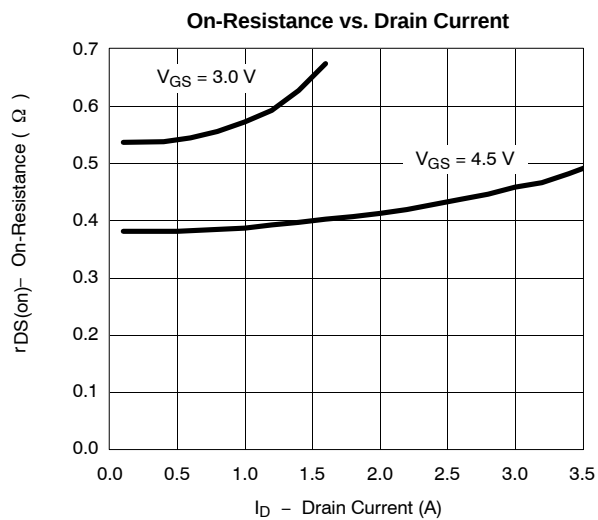
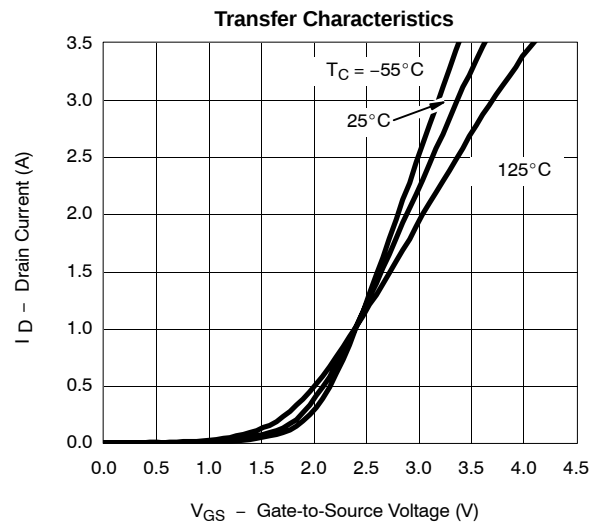
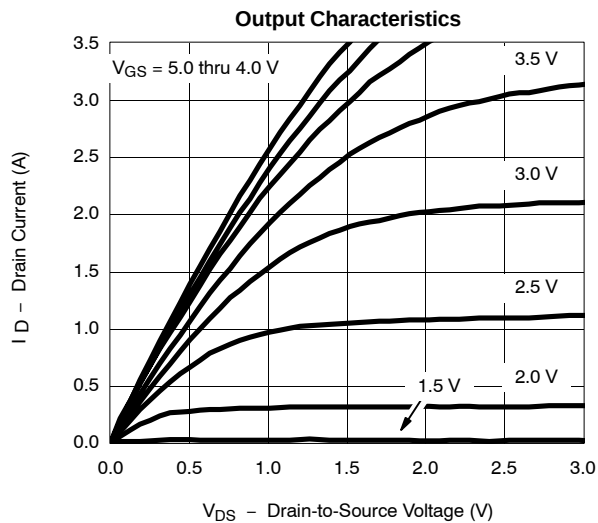
- a. Guaranteed by design, not subject to production testing.
 b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

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.



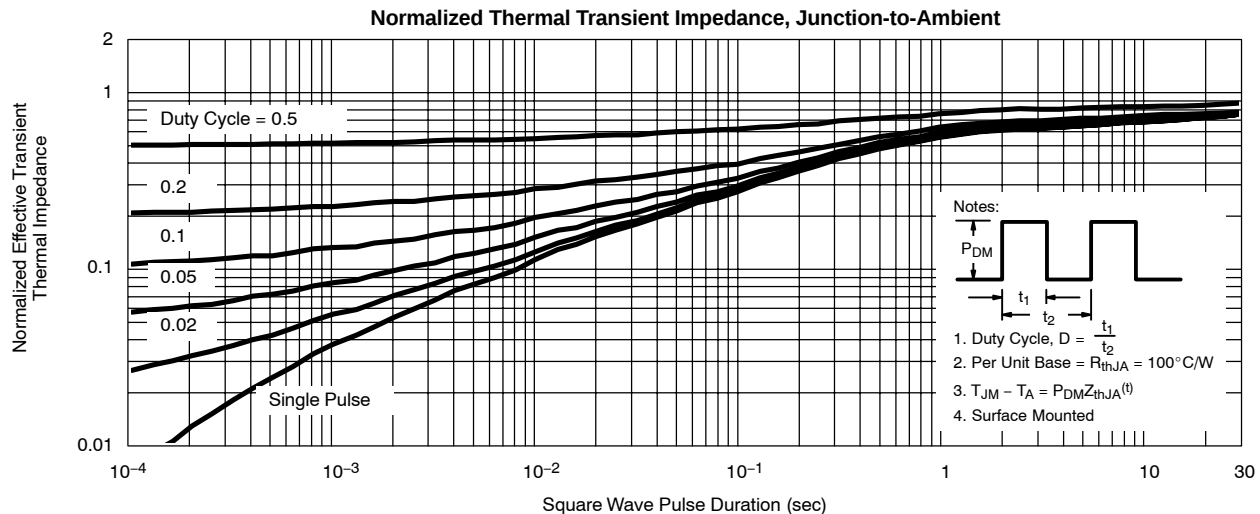
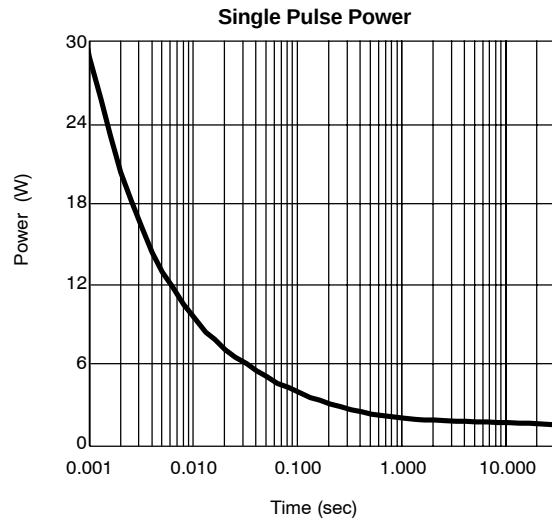
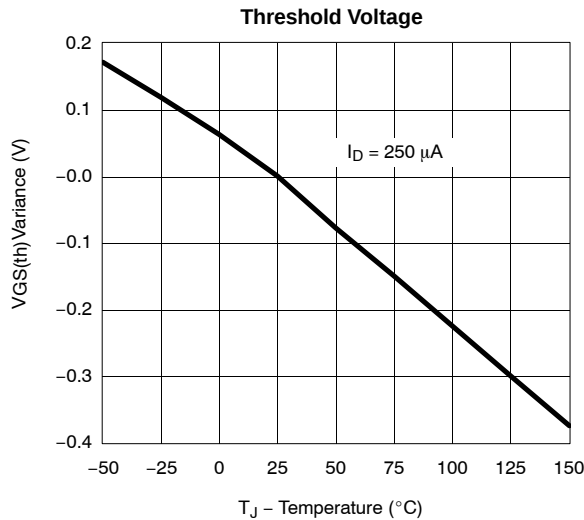
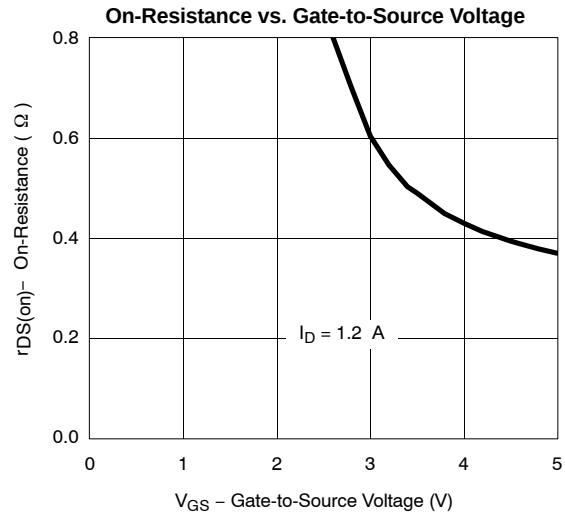
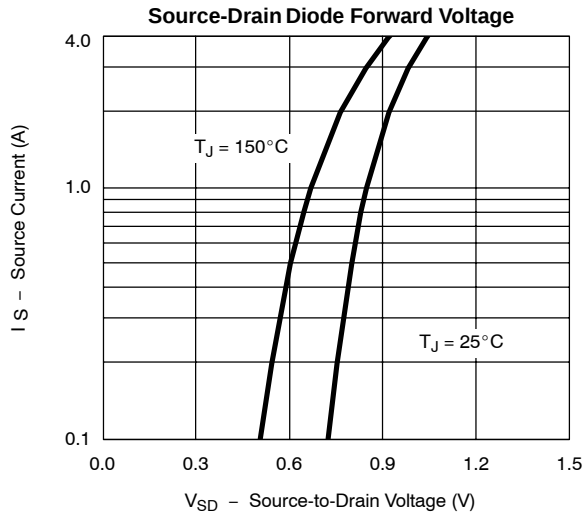
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

N-CHANNEL



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

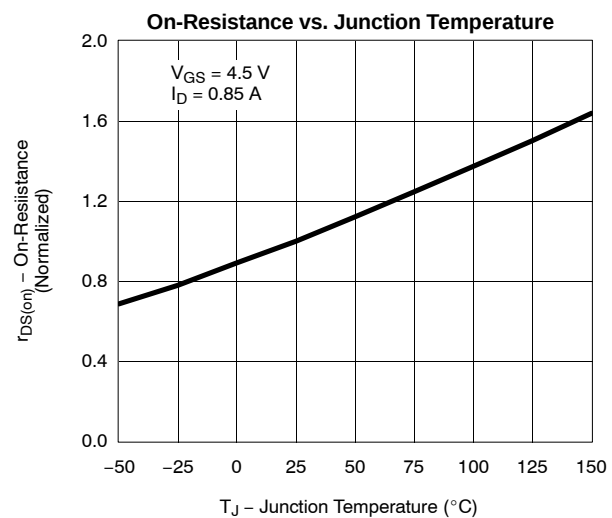
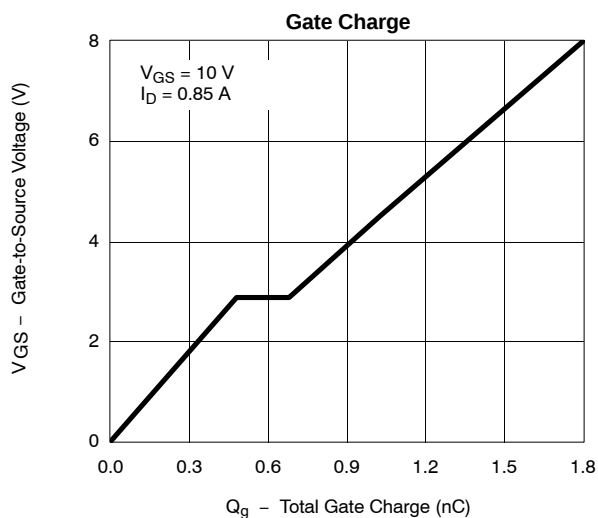
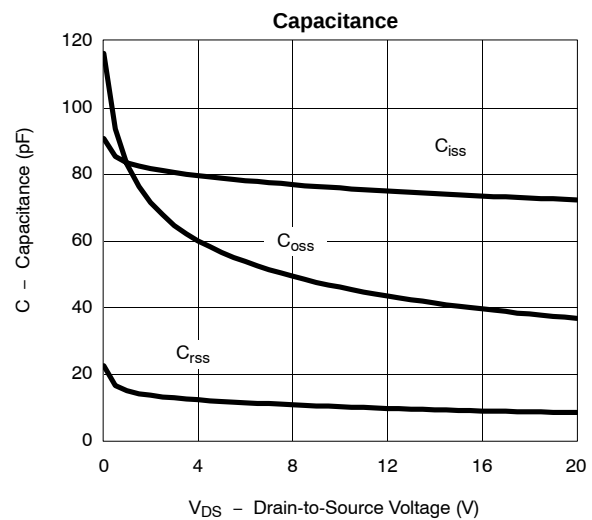
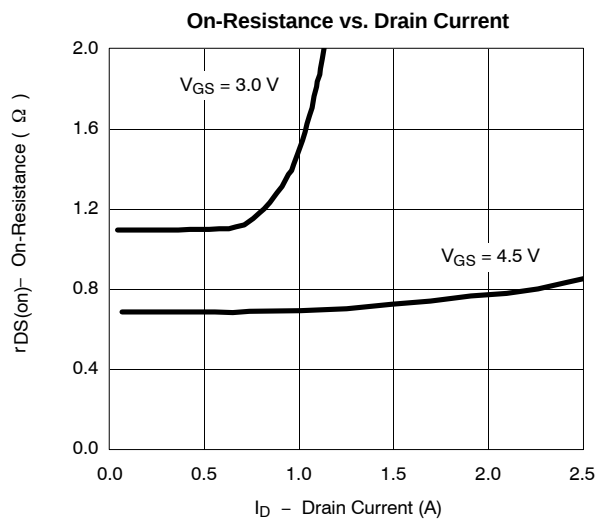
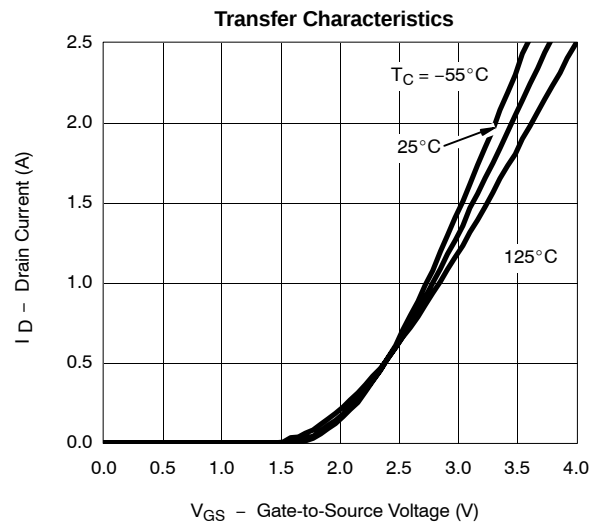
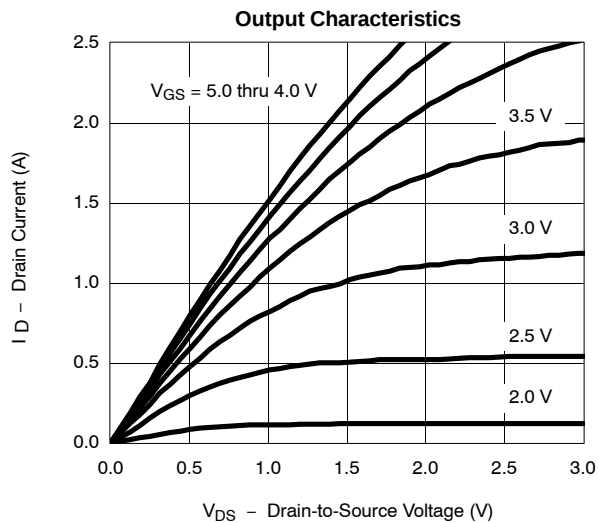
N-CHANNEL





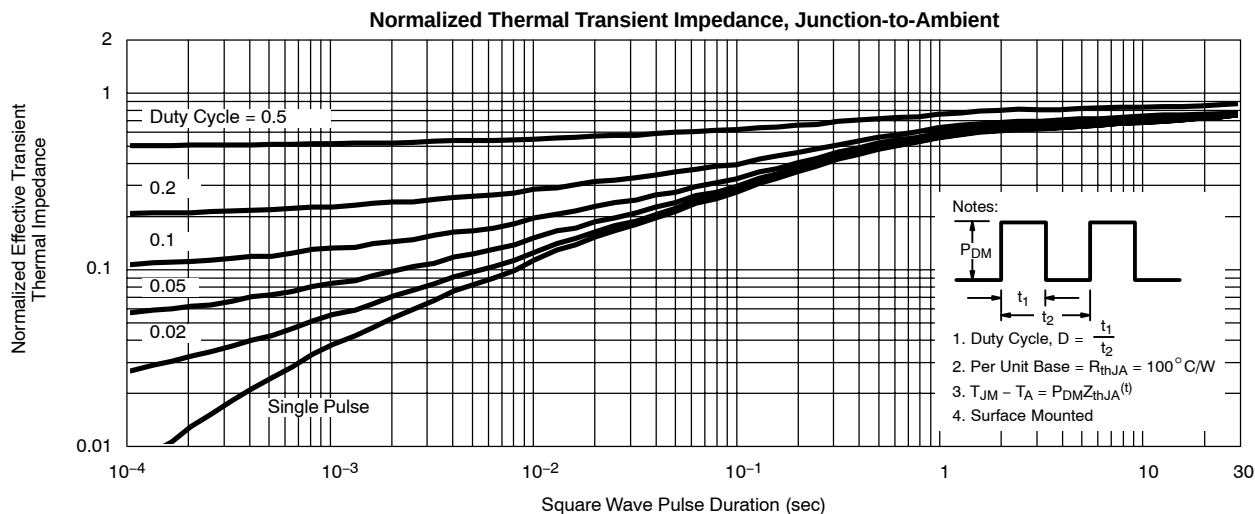
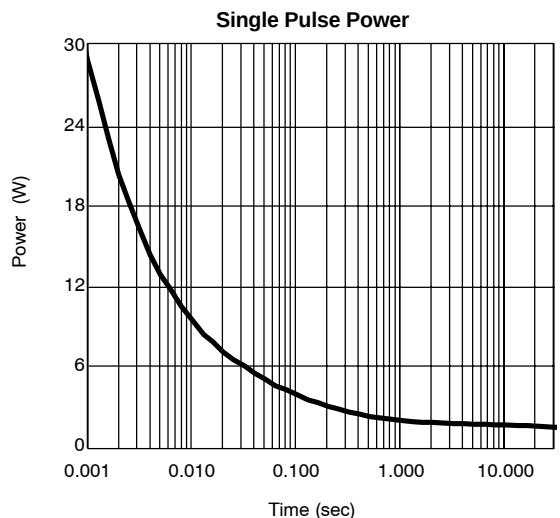
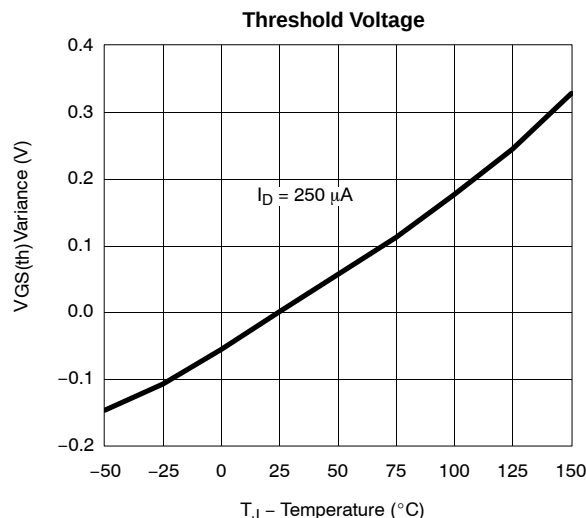
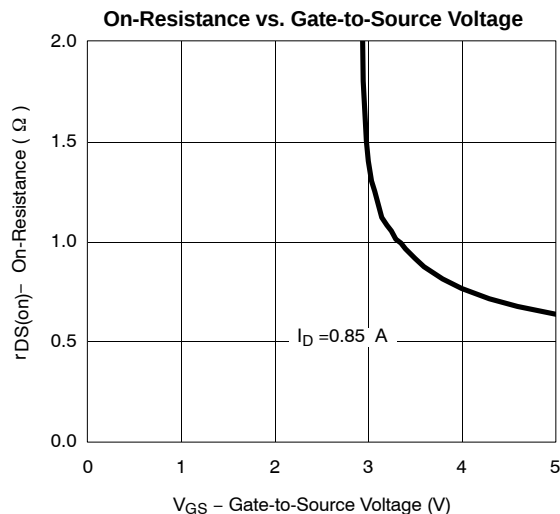
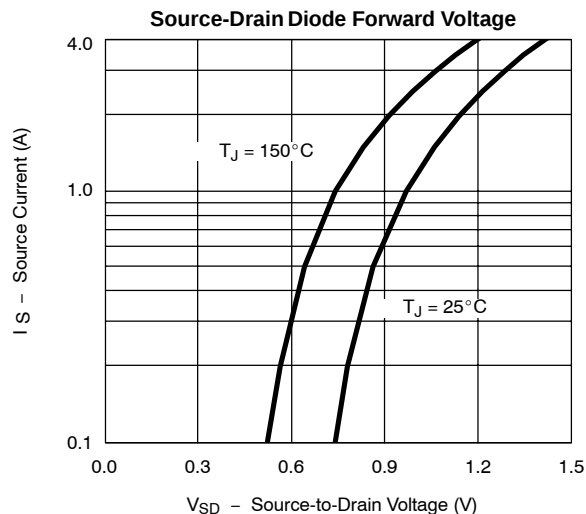
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

P-CHANNEL



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

P-CHANNEL



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