



Complementary 20-V (D-S) Low-Threshold MOSFET

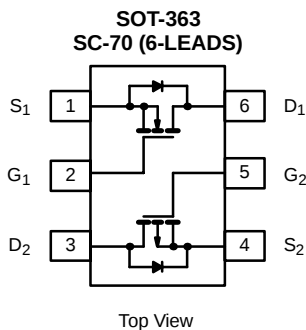
PRODUCT SUMMARY			
	V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
N-Channel	20	0.280 @ $V_{GS} = 4.5$ V	1.28
		0.360 @ $V_{GS} = 2.5$ V	1.13
		0.450 @ $V_{GS} = 1.8$ V	1.00
P-Channel	-20	0.490 @ $V_{GS} = -4.5$ V	-1.00
		0.750 @ $V_{GS} = -2.5$ V	-0.81
		1.10 @ $V_{GS} = -1.8$ V	-0.67

FEATURES

- TrenchFET® Power MOSFETS: 1.8-V Rated
- ESD Protected: 2000 V
- Thermally Enhanced SC-70 Package

APPLICATIONS

- Load Switching
- PA Switch
- Level Switch

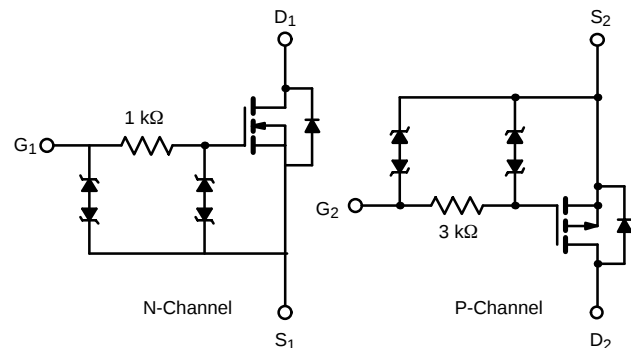


Marking Code

EA XX

Lot Traceability
and Date Code

Part # Code

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	N-Channel		P-Channel		Unit
		5 secs	Steady State	5 secs	Steady State	
Drain-Source Voltage	V_{DS}	20		-20		V
Gate-Source Voltage	V_{GS}	± 12		± 12		
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	I_D	1.28	1.13	-1.00	-0.88	A
		0.92	0.81	-0.72	-0.63	
Pulsed Drain Current	I_{DM}	4.0		-3.0		
Continuous Source Current (Diode Conduction) ^a	I_S	0.61	0.48	-0.61	-0.48	
Maximum Power Dissipation ^a	P_D	0.74	0.57	0.30	0.57	W
		0.38	0.30	0.16	0.3	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150				$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	$t \leq 5$ sec	R_{thJA}	130	170	$^\circ\text{C/W}$
	Steady State		170	220	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	80	100	

Notes

a. Surface Mounted on 1" x 1" FR4 Board.

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 = 100 μA	N-Ch	0.45			V	
		V _{DS} = V _{GS} , I _D = −100 μA	P-Ch	−0.45				
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±4.5 V	N-Ch			±1	μA	
			P-Ch			±1		
		V _{DS} = 0 V, V _{GS} = ±12 V	N-Ch			±10	mA	
			P-Ch			±10		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 16 V, V _{GS} = 0 V	N-Ch			1	μA	
		V _{DS} = −16 V, V _{GS} = 0 V	P-Ch			−1		
		V _{DS} = 16 V, V _{GS} = 0 V, T _J = 85 °C	N-Ch			5		
		V _{DS} = −16 V, V _{GS} = 0 V, T _J = 85 °C	P-Ch			−5		
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 4.5 V	N-Ch	2			A	
		V _{DS} ≤ −5 V, V _{GS} = −4.5 V	P-Ch	−2				
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 4.5 V, I _D = 1.13 A	N-Ch		0.220	0.280	Ω	
		V _{GS} = −4.5 V, I _D = −0.88 A	P-Ch		0.400	0.490		
		V _{GS} = 2.5 V, I _D = 0.99 A	N-Ch		0.281	0.360		
		V _{GS} = −2.5 V, I _D = −0.71 A	P-Ch		0.610	0.750		
		V _{GS} = 1.8 V, I _D = 0.20 A	N-Ch		0.344	0.450		
		V _{GS} = −1.8 V, I _D = −0.20 A	P-Ch		0.850	1.10		
Forward Transconductance ^a	g _{fs}	V _{DS} = 10 V, I _D = 1.13 A	N-Ch		2.6		S	
		V _{DS} = −10 V, I _D = −0.88 A	P-Ch		1.5			
Diode Forward Voltage ^a	V _{SD}	I _S = 0.48 A, V _{GS} = 0 V	N-Ch		0.8	1.2	V	
		I _S = −0.48 A, V _{GS} = 0 V	P-Ch		−0.8	−1.2		
Dynamic ^b								
Total Gate Charge	Q _g	N-Channel V _{DS} = 10 V, V _{GS} = 4.5 V, I _D = 1.13 A P-Channel V _{DS} = −10 V, V _{GS} = −4.5 V, I _D = −0.88 A	N-Ch		0.65	1.0	nC	
Gate-Source Charge	Q _{gs}		P-Ch		1.2	1.8		
			N-Ch		0.2			
Gate-Drain Charge	Q _{gd}	P-Ch		0.3				
			N-Ch		0.23			
			P-Ch		0.3			
Turn-On Delay Time	t _{d(on)}	N-Channel V _{DD} = 10 V, R _L = 20 Ω I _D ≅ 0.5 A, V _{GEN} = 4.5 V, R _G = 6 Ω P-Channel V _{DD} = −10 V, R _L = 20 Ω I _D ≅ −0.5 A, V _{GEN} = −4.5 V, R _G = 6 Ω	N-Ch		45	70	ns	
			P-Ch		150	230		
			N-Ch		85	130		
Rise Time	t _r		P-Ch		480	720		
				N-Ch		350		530
				P-Ch		840		1200
Turn-Off Delay Time	t _{d(off)}		N-Ch		210	320		
Fall Time	t _f		P-Ch		850	1200		

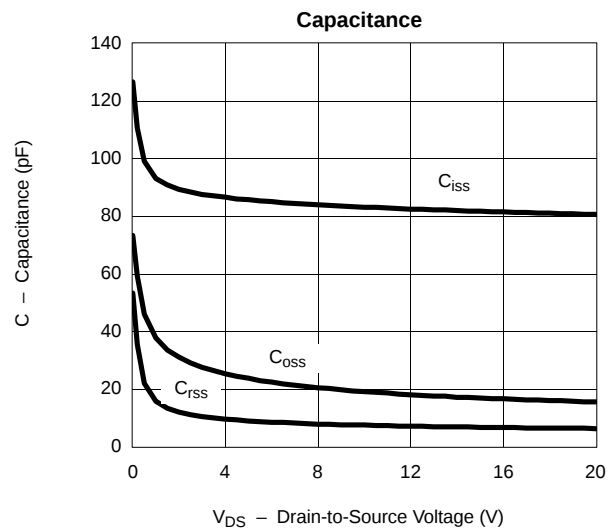
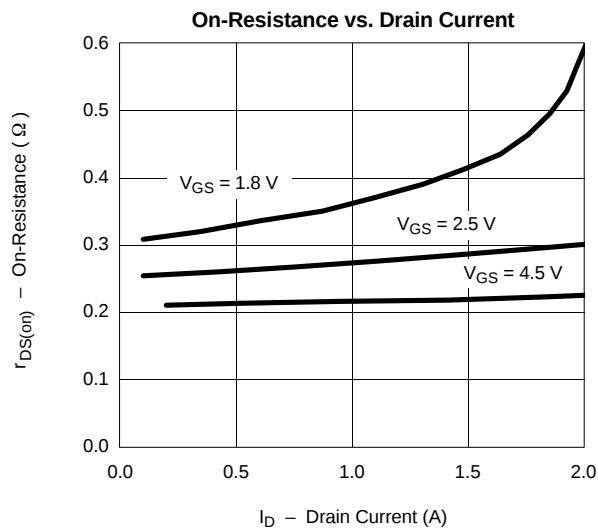
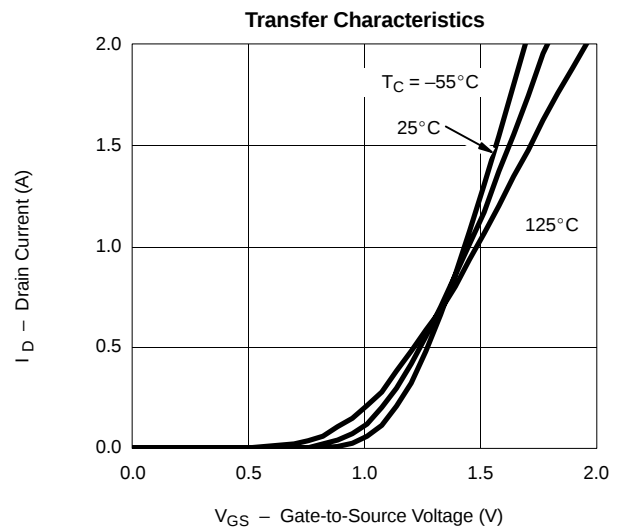
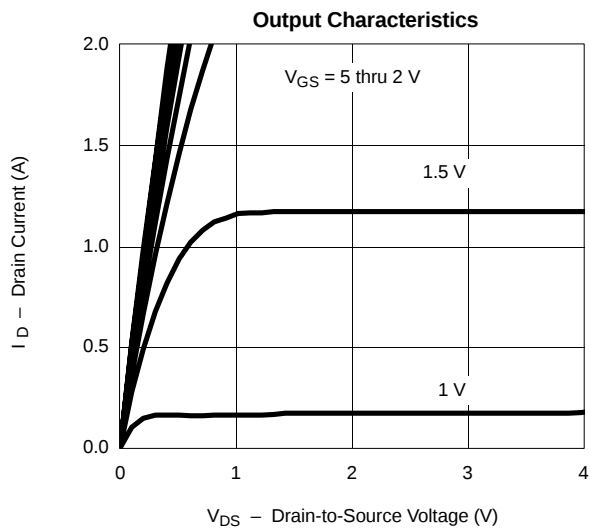
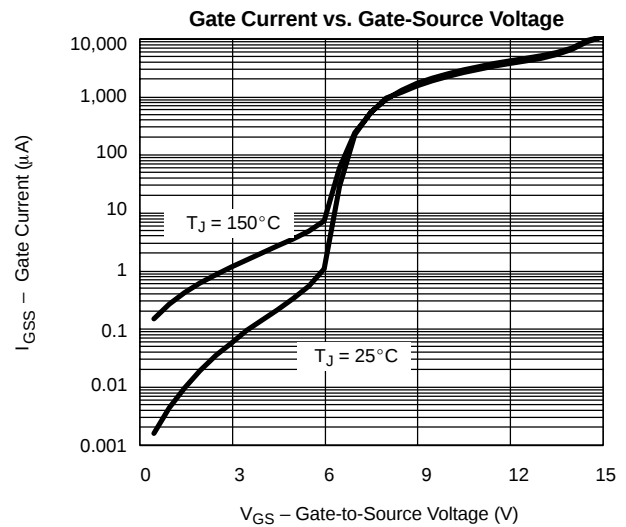
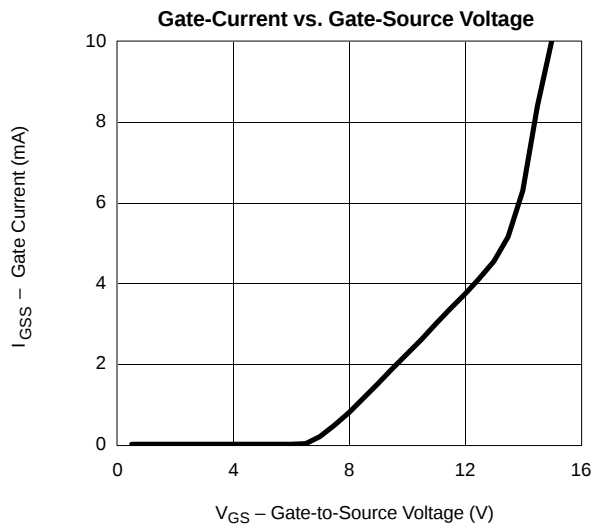
Notes

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



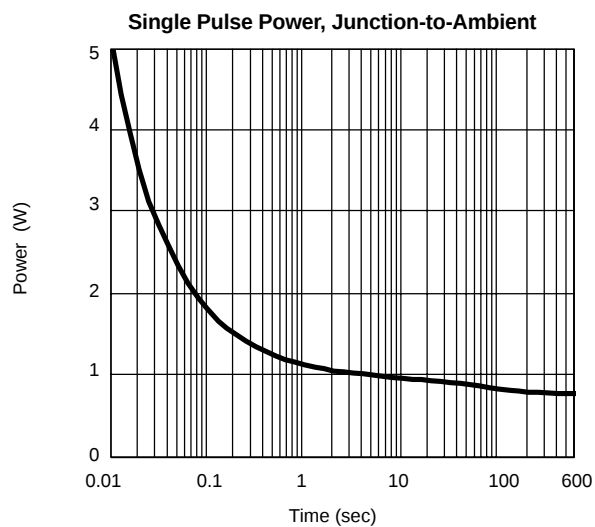
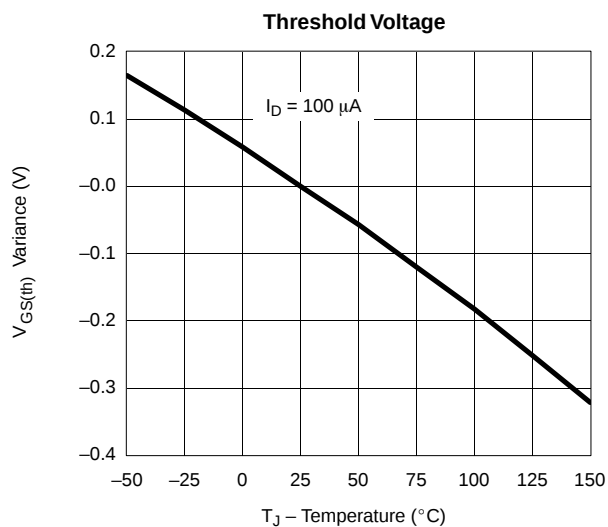
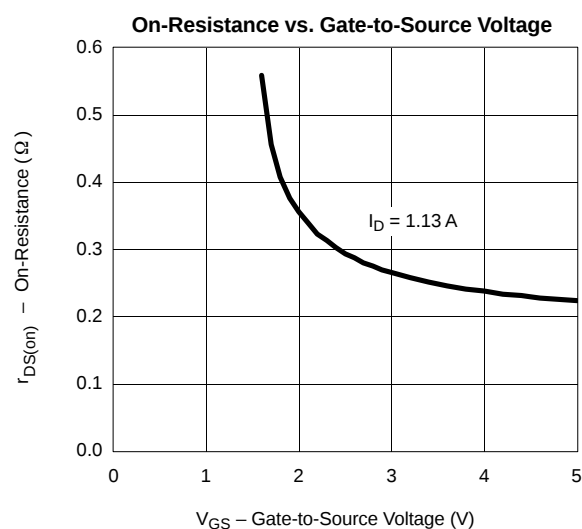
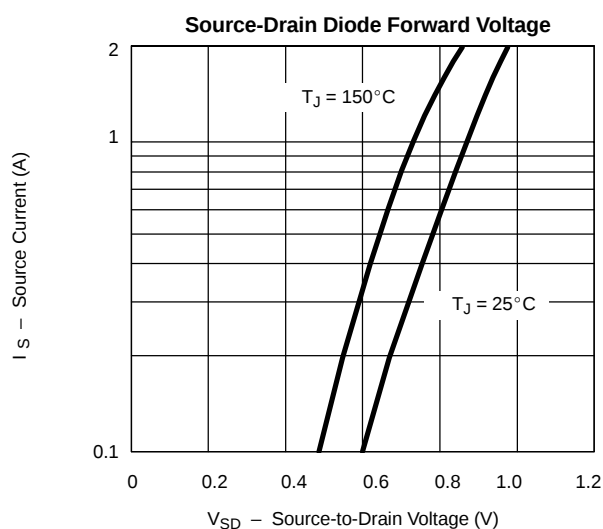
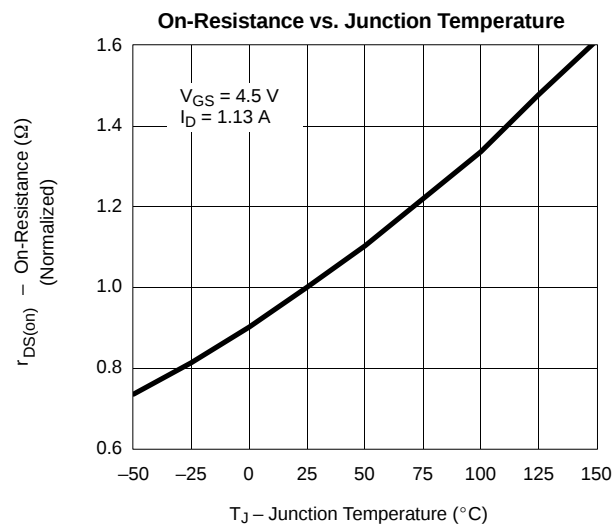
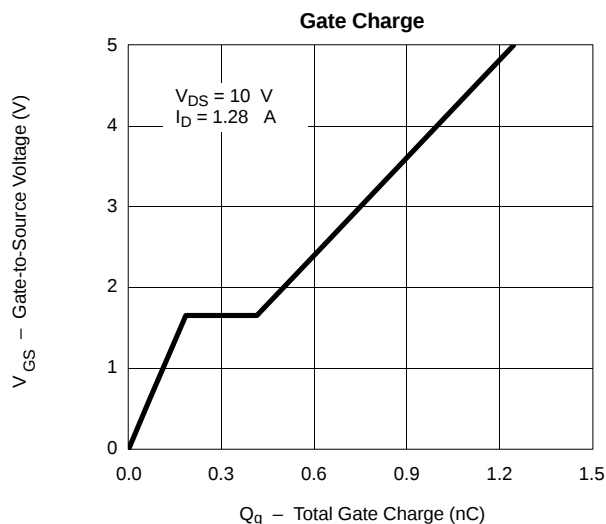
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

N-CHANNEL



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N-CHANNEL

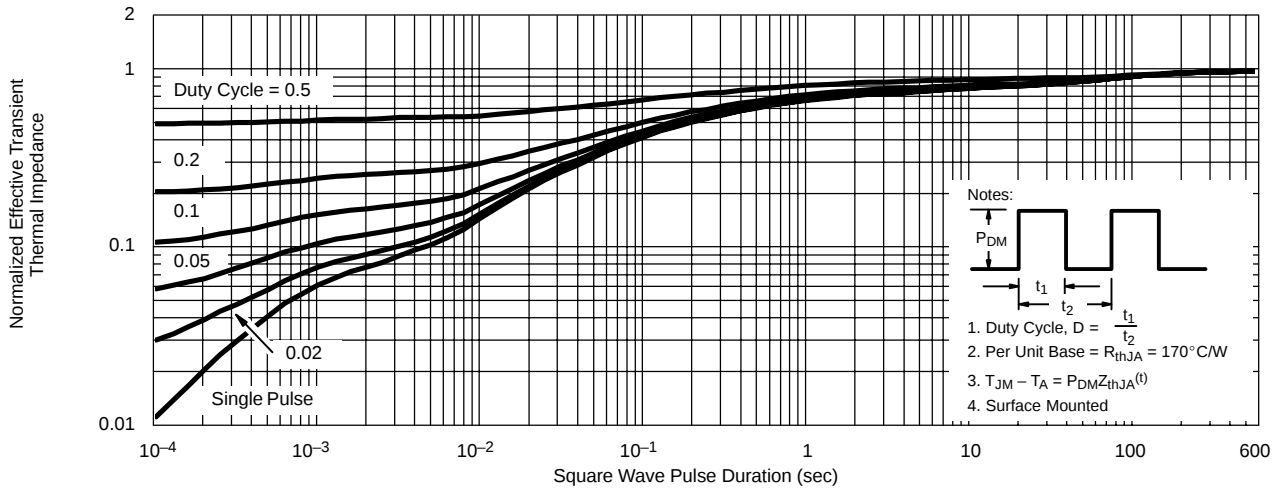




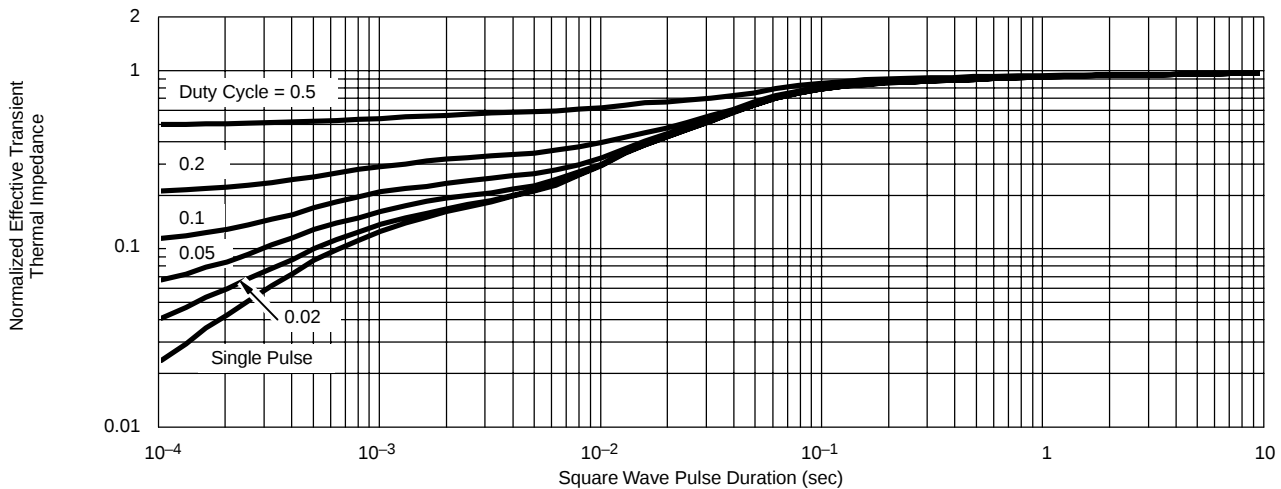
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

N-CHANNEL

Normalized Thermal Transient Impedance, Junction-to-Ambient



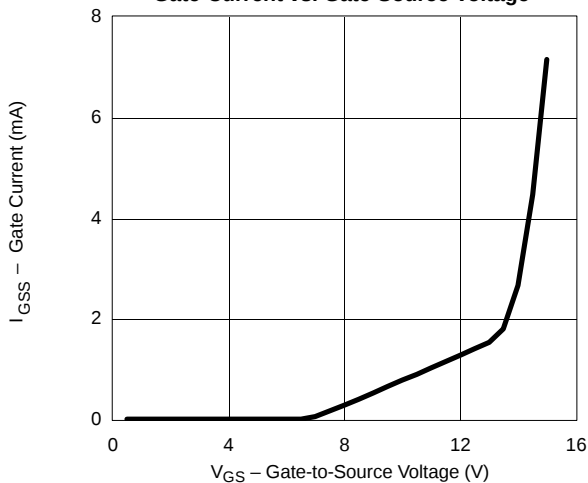
Normalized Thermal Transient Impedance, Junction-to-Foot



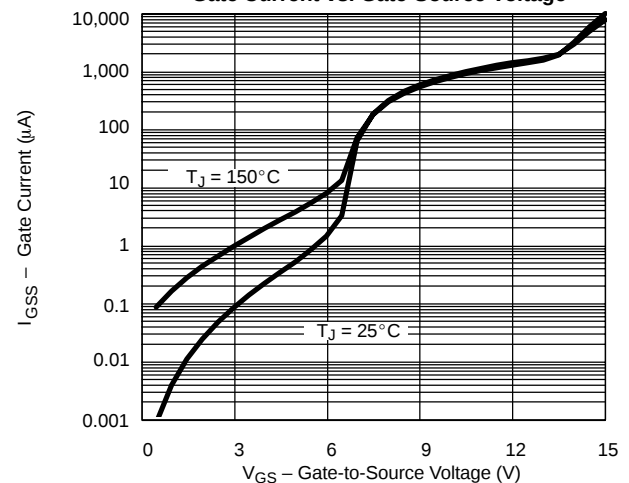
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

P-CHANNEL

Gate-Current vs. Gate-Source Voltage

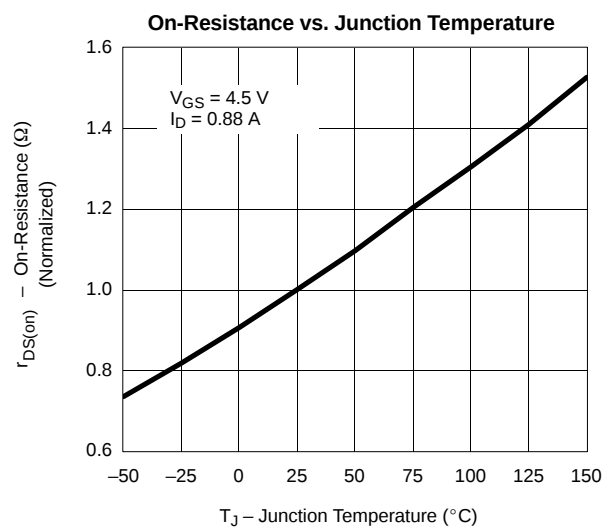
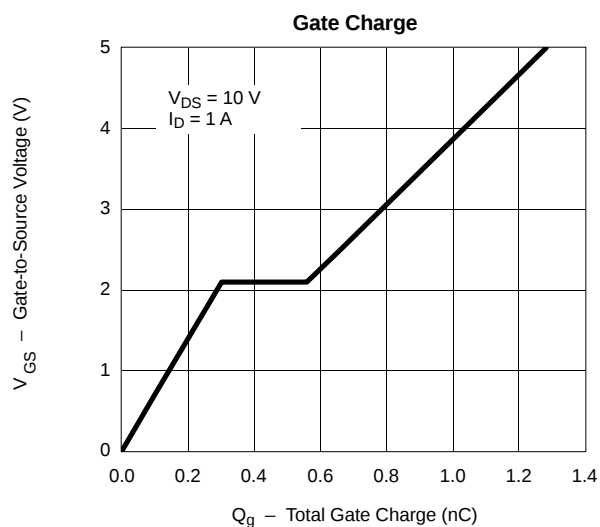
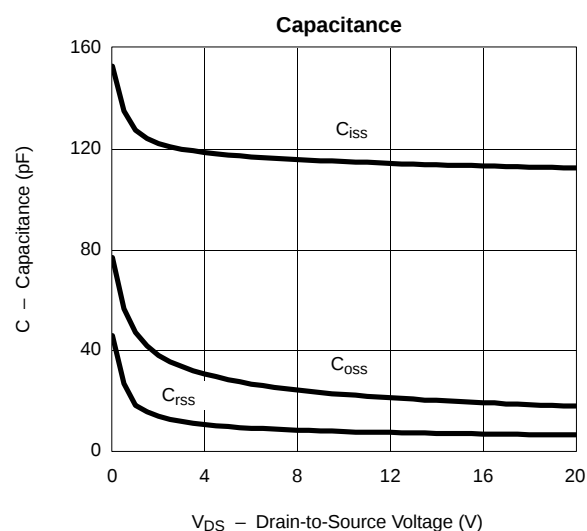
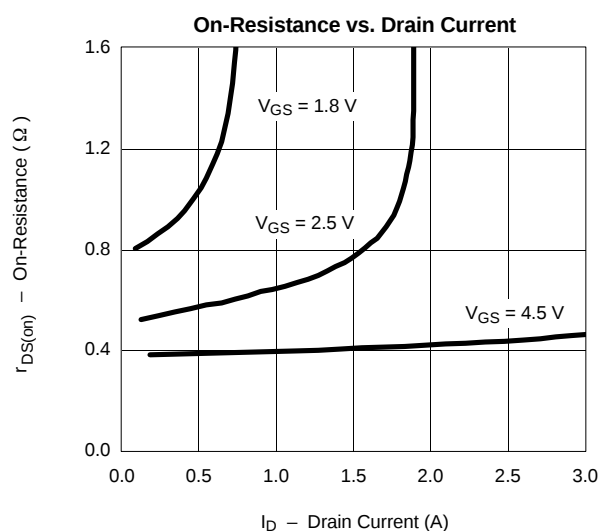
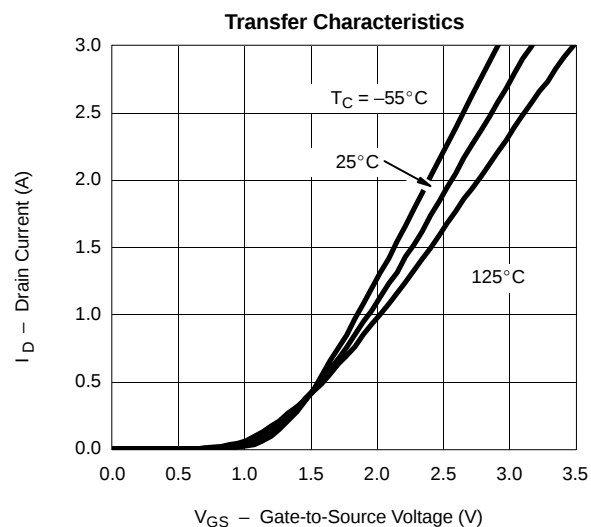
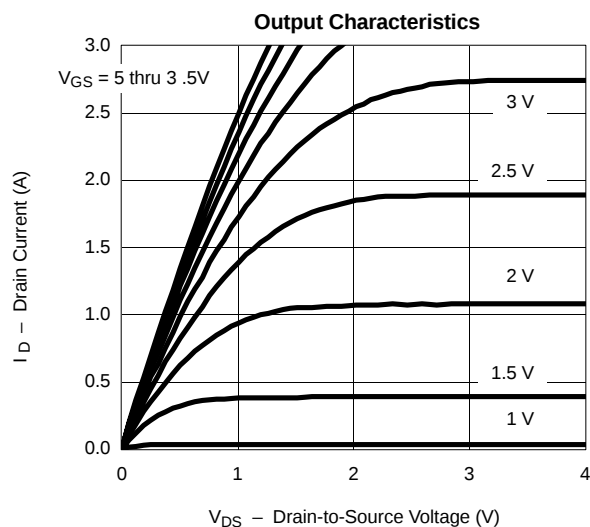


Gate Current vs. Gate-Source Voltage



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

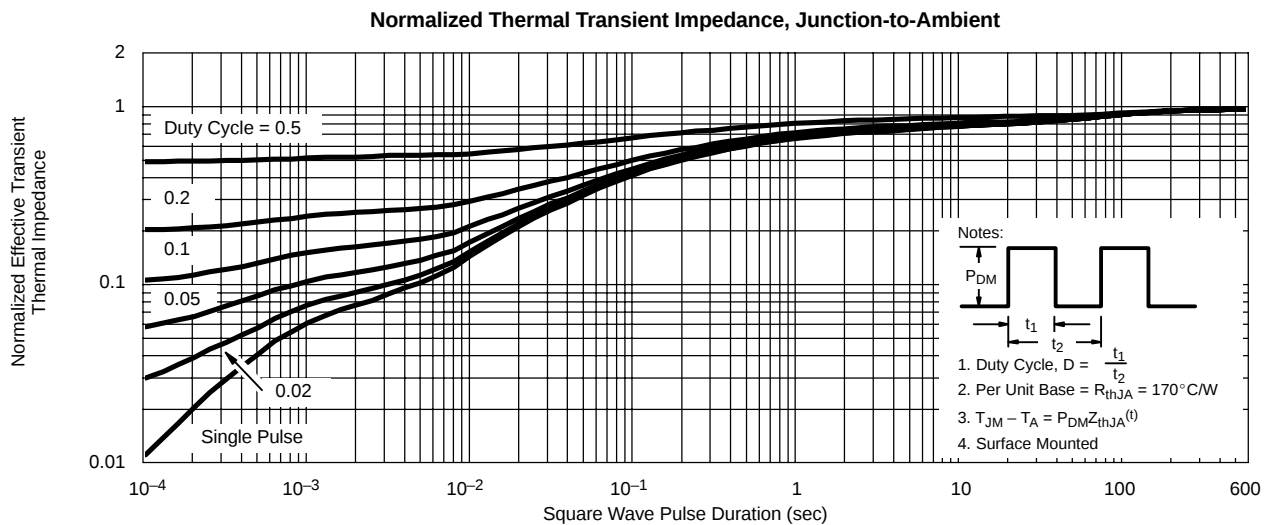
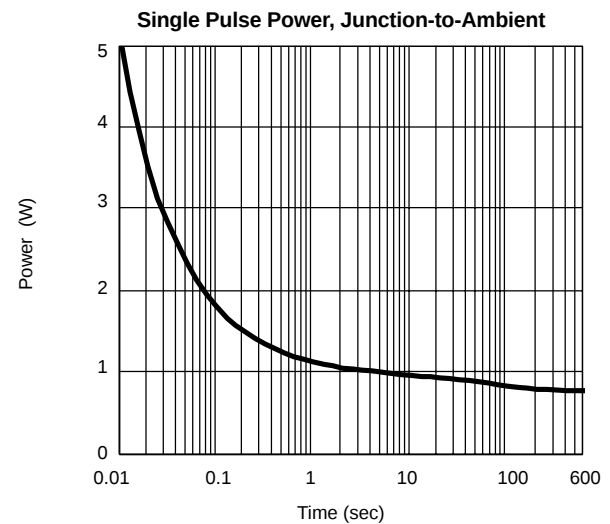
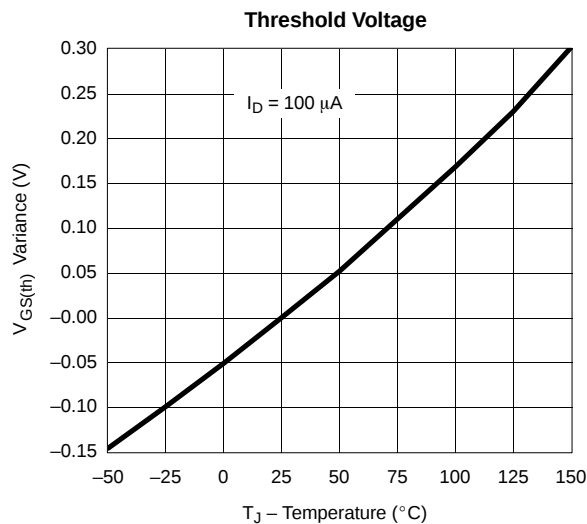
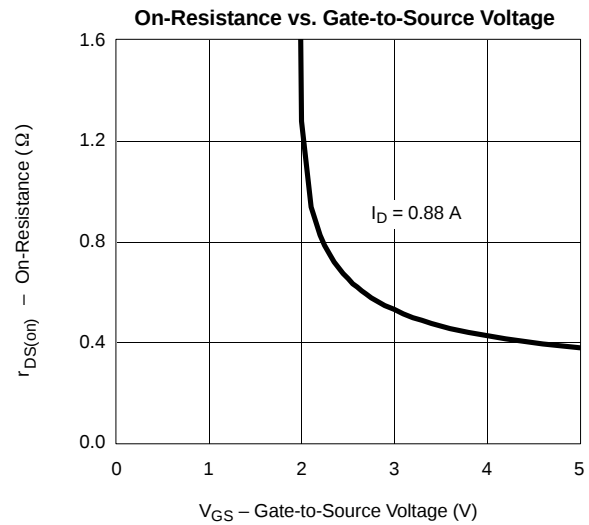
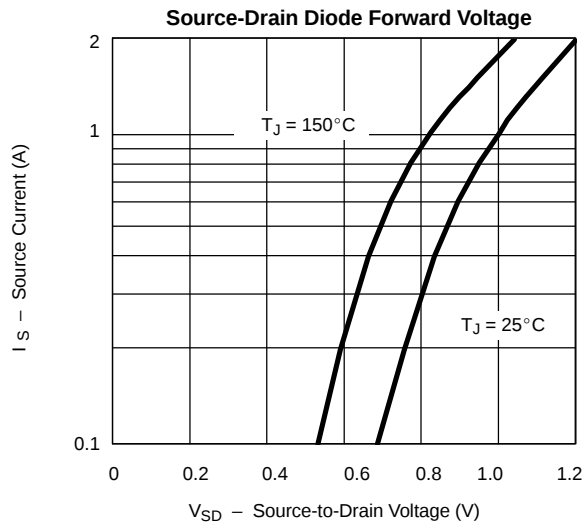
P-CHANNEL

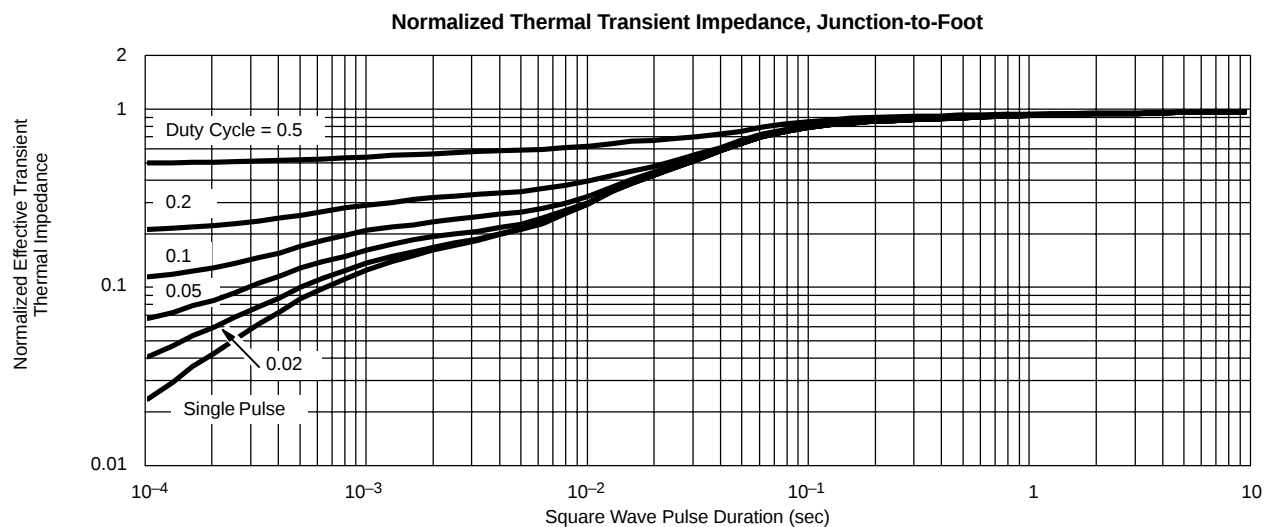




TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

P-CHANNEL



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