

Complementary Low-Threshold MOSFET Pair

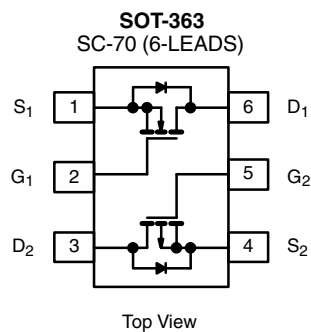
PRODUCT SUMMARY			
	V _{DS} (V)	R _{DS(on)} (Ω)	I _D (A)
N-Channel	20	0.385 at V _{GS} = 4.5 V	0.70
		0.630 at V _{GS} = 2.5 V	0.54
P-Channel	- 8	0.600 at V _{GS} = - 4.5 V	- 0.60
		0.850 at V _{GS} = - 2.5 V	- 0.50
		1.200 at V _{GS} = - 1.8 V	- 0.42

FEATURES

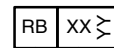
- TrenchFET® Power MOSFET
- Material categorization:
For definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE



Marking Code



Lot Traceability
and Date Code
Part # Code

Ordering Information: Si1555DL-T1-GE3 (Lead (Pb)-free and Halogen-free)

ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C, unless otherwise noted)							
Parameter	Symbol	N-Channel		P-Channel		Unit	
		5 s	Steady State	5 s	Steady State		
Drain-Source Voltage	V _{DS}	20		- 8		V	
Gate-Source Voltage	V _{GS}	± 12		± 8			
Continuous Drain Current (T _J = 150 °C) ^a	I _D	T _A = 25 °C	± 0.70	± 0.66	- 0.60	- 0.57	A
		T _A = 85 °C	± 0.50	± 0.48	- 0.43	- 0.41	
Pulsed Drain Current	I _{DM}	± 1					
Continuous Source Current (Diode Conduction) ^a	I _S	0.25	0.23	- 0.25	- 0.23		
Maximum Power Dissipation ^a	P _D	T _A = 25 °C	0.30	0.27	0.30	0.27	W
		T _A = 85 °C	0.16	0.14	0.16	0.14	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to 150				°C	

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	t ≤ 5 s	R _{thJA}	360	415	°C/W
	Steady State		400	460	
Maximum Junction-to-Foot (Drain)	Steady State	R _{thJF}	300	350	

Note:

a. Surface mounted on 1" x 1" FR4 board.

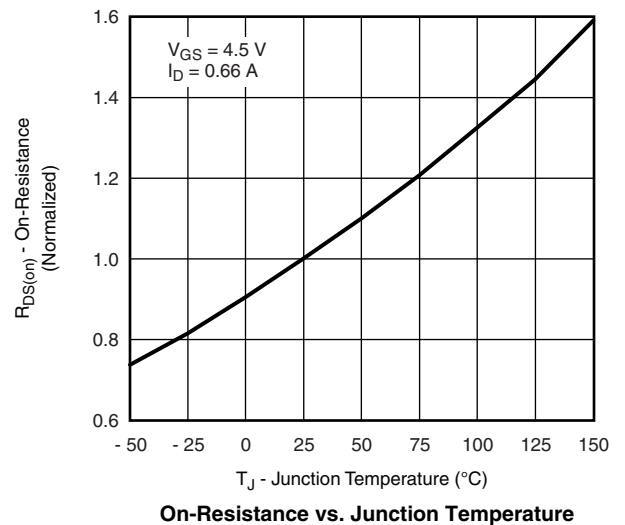
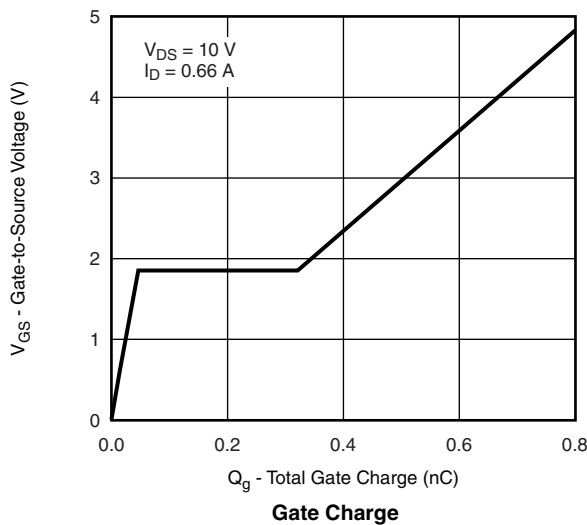
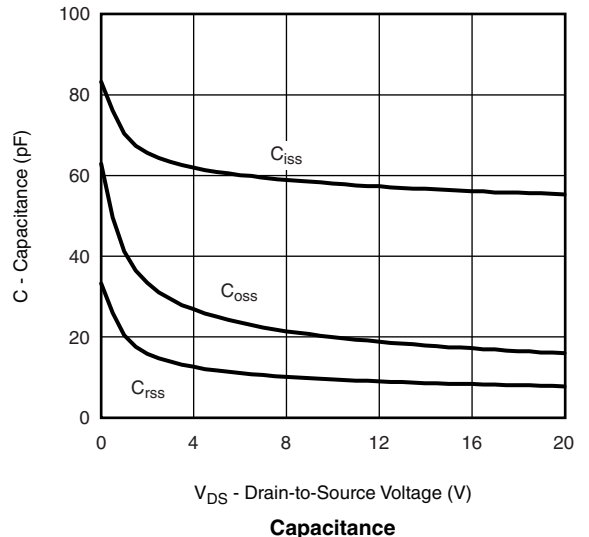
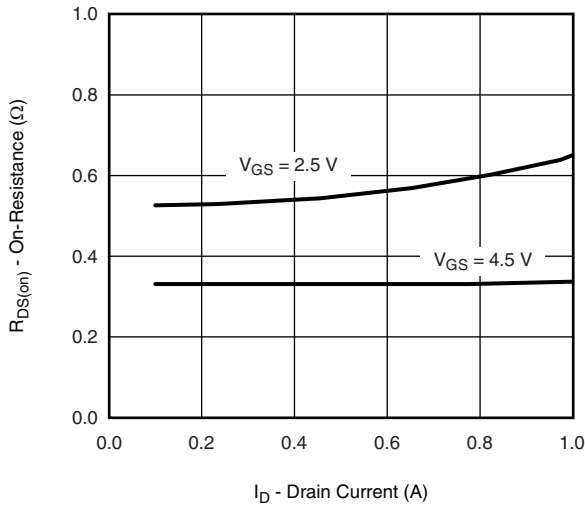
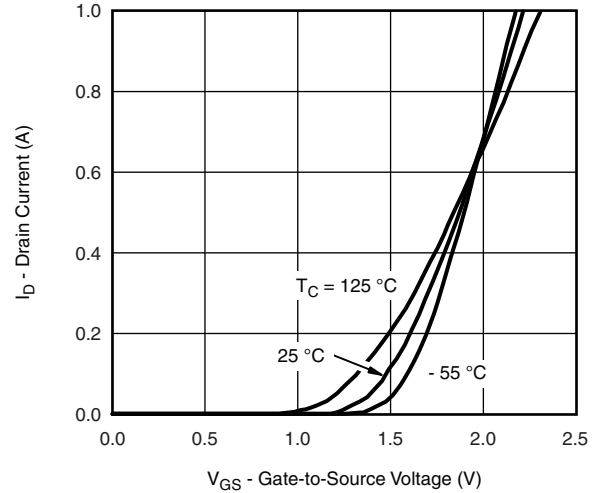
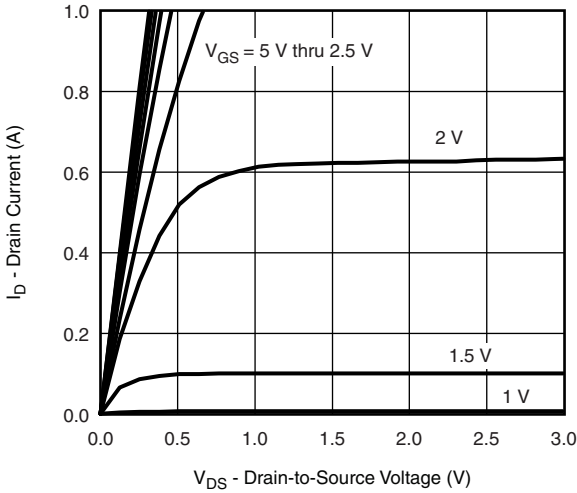
SPECIFICATIONS (T _J = 25 °C, unless otherwise noted)								
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit		
Static								
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	N-Ch	0.6		1.4	V	
		V _{DS} = V _{GS} , I _D = - 250 μA	P-Ch	- 0.45		- 1		
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 12 V	N-Ch			± 100	nA	
		V _{DS} = 0 V, V _{GS} = ± 8 V	P-Ch			± 100		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20 V, V _{GS} = 0 V	N-Ch			1	μA	
		V _{DS} = - 8 V, V _{GS} = 0 V	P-Ch			- 1		
		V _{DS} = 20 V, V _{GS} = 0 V, T _J = 85 °C	N-Ch			5		
		V _{DS} = - 8 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	1			A	
		V _{DS} ≤ - 5 V, V _{GS} = - 4.5 V	P-Ch	- 1				
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 4.5 V, I _D = 0.66 A	N-Ch		0.320	0.385	Ω	
		V _{GS} = - 4.5 V, I _D = - 0.57 A	P-Ch		0.510	0.600		
		V _{GS} = 2.5 V, I _D = 0.40 A	N-Ch		0.560	0.630		
		V _{GS} = - 2.5 V, I _D = - 0.48 A	P-Ch		0.720	0.850		
		V _{GS} = - 1.8 V, I _D = - 0.20 A	P-Ch		1.000	1.200		
Forward Transconductance ^a	g _{fs}	V _{DS} = 10 V, I _D = 0.66 A	N-Ch		1.5		S	
		V _{DS} = - 4 V, I _D = - 0.57 A	P-Ch		1.2			
Diode Forward Voltage ^a	V _{SD}	I _S = 0.23 A, V _{GS} = 0 V	N-Ch		0.8	1.2	V	
		I _S = - 0.23 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 = 0.66 A P-Channel V _{DS} = - 4 V, V _{GS} = - 4.5 V, I _D = - 0.57 A	N-Ch		0.8	1.2	nC	
			P-Ch		1.5	2.3		
Gate-Source Charge	Q _{gs}		N-Ch		0.06			
			P-Ch		0.17			
Gate-Drain Charge	Q _{gd}		N-Ch		0.30			
			P-Ch		0.16			
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} = - 4 V, R _L = 8 Ω I _D ≅ - 0.5 A, V _{GEN} = - 4.5 V, R _g = 6 Ω	N-Ch		10	20	ns	
			P-Ch		6	12		
Rise Time	t _r		N-Ch		16	30		
			P-Ch		25	50		
Turn-Off Delay Time	t _{d(off)}		N-Ch		10	20		
			P-Ch		10	20		
Fall Time	t _f		N-Ch		10	20		
			P-Ch		10	20		
Source-Drain Reverse Recovery Time	t _{rr}		I _F = 0.23 A, di/dt = 100 A/μs	N-Ch		20		40
			I _F = - 0.23 A, di/dt = 100 A/μs	P-Ch		20		40

Notes:

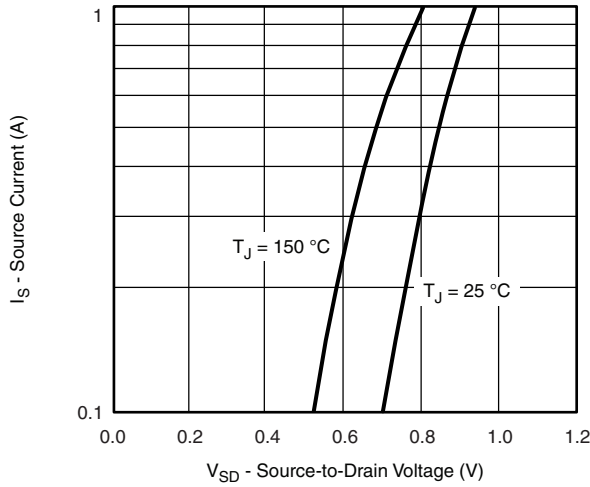
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %.
b. Guaranteed by design, not subject to production testing.

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.

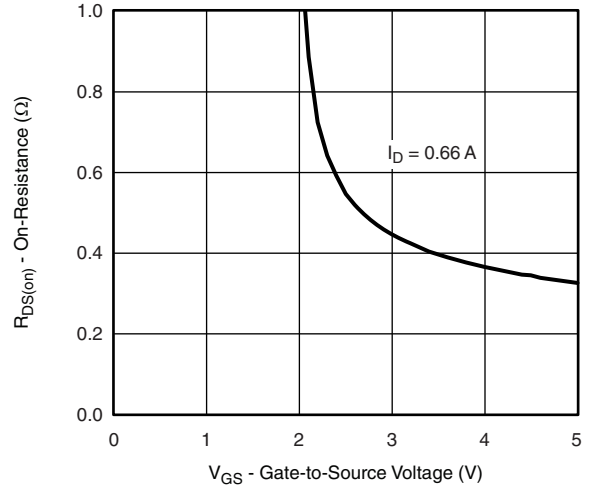
N-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



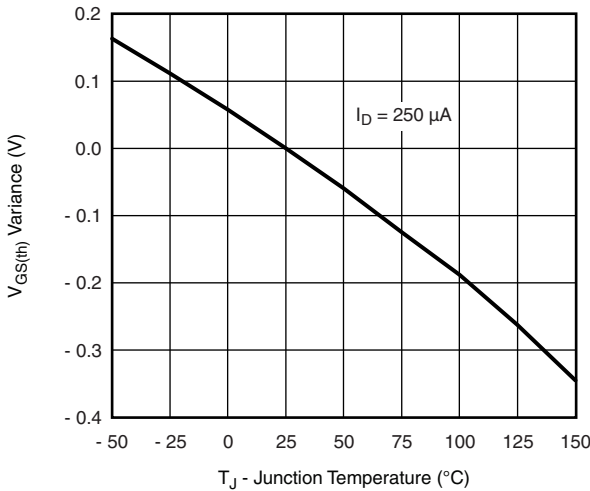
N-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



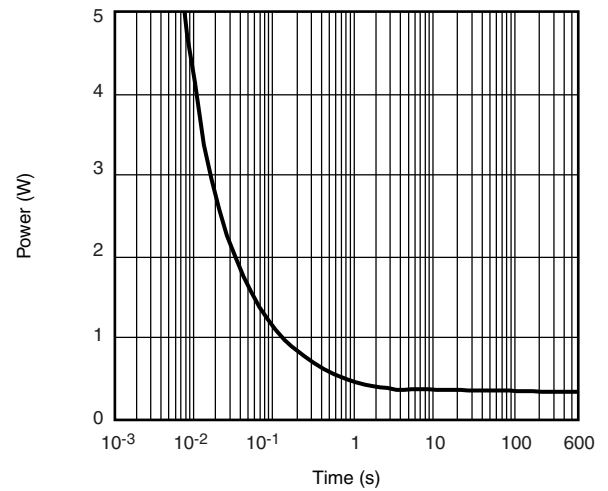
Source-Drain Diode Forward Voltage



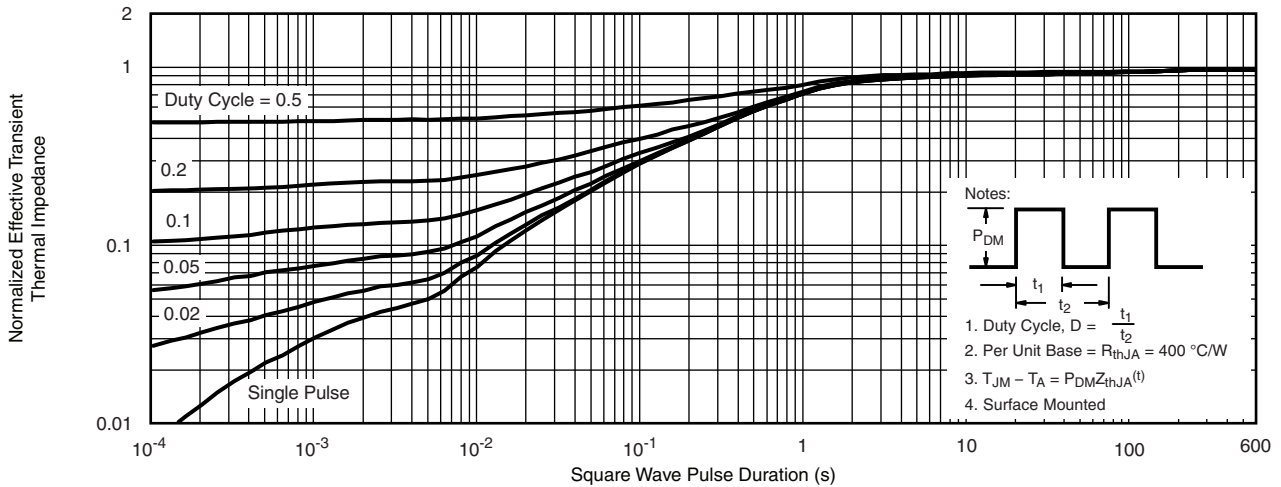
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power

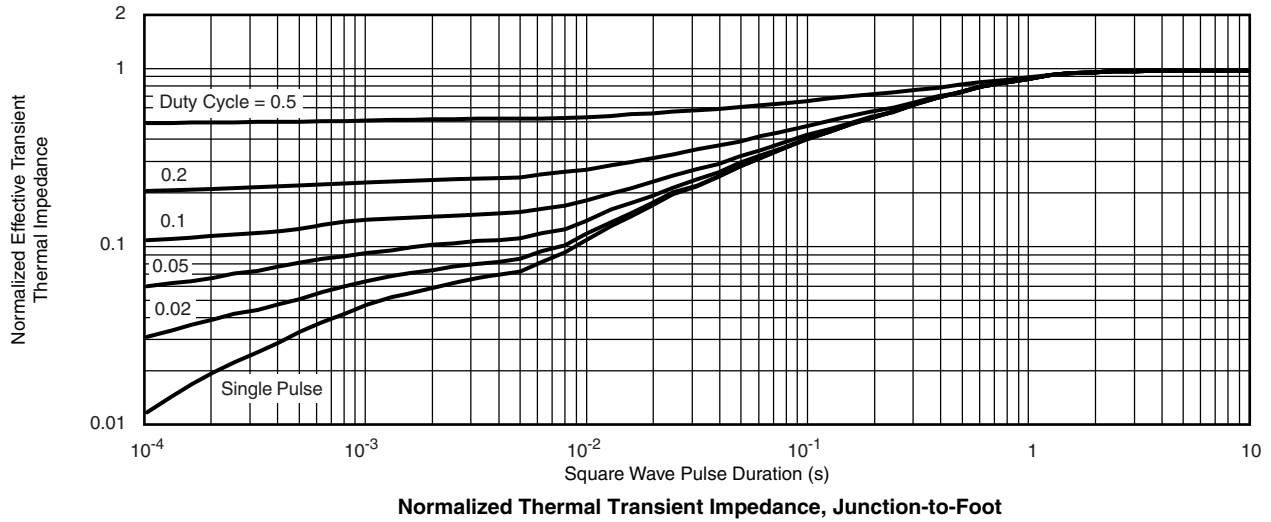


Normalized Thermal Transient Impedance, Junction-to-Ambient

Notes:

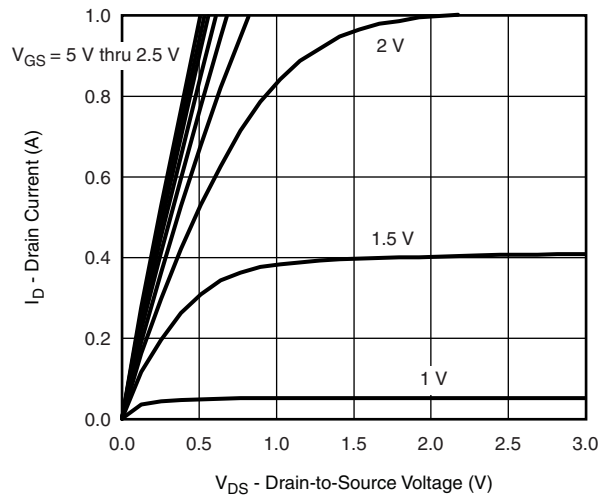
 1. Duty Cycle, $D = \frac{t_1}{t_2}$
 2. Per Unit Base = $R_{thJA} = 400 \text{ } ^\circ\text{C/W}$
 3. $T_{JM} - T_A = P_{DM}Z_{thJA}(t)$
 4. Surface Mounted

N-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

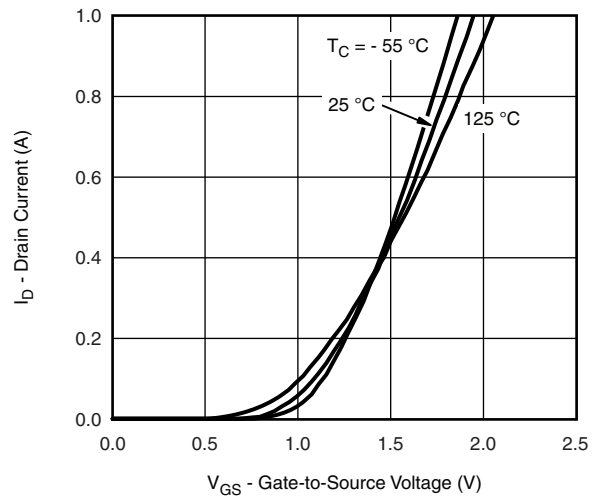


Normalized Thermal Transient Impedance, Junction-to-Foot

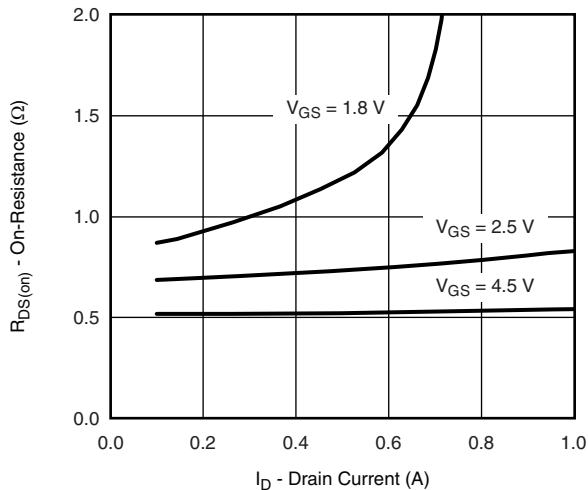
P-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



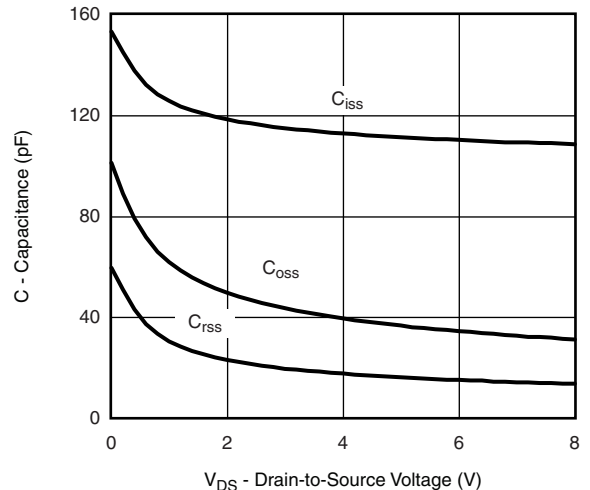
Output Characteristics



Transfer Characteristics

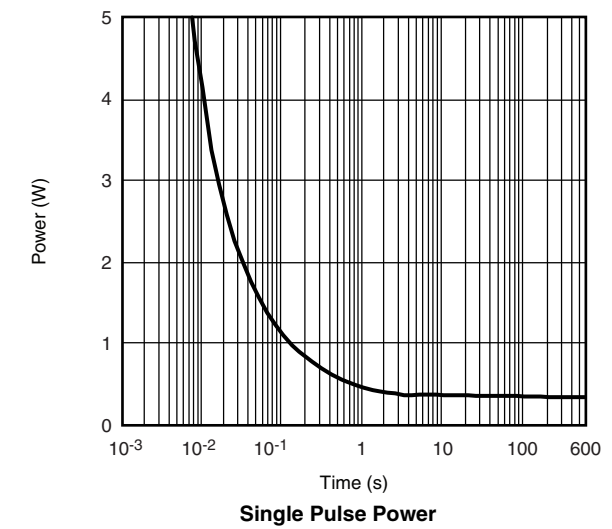
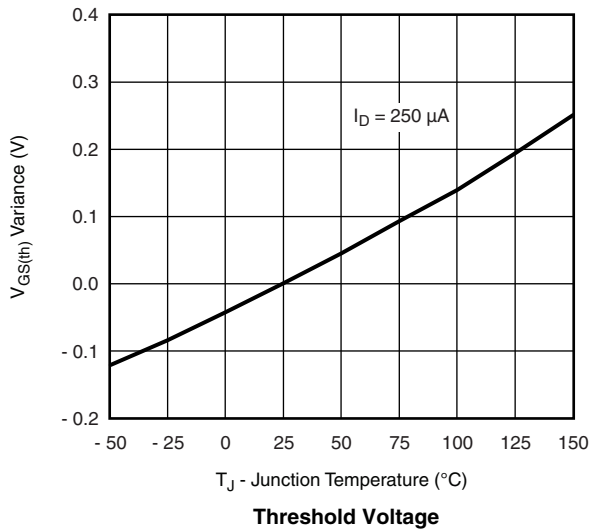
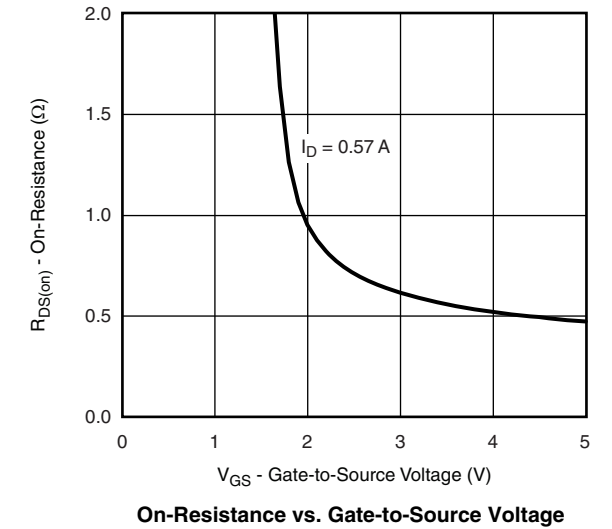
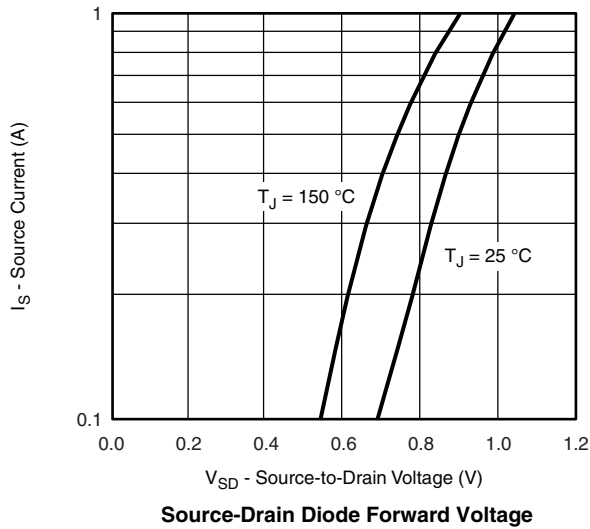
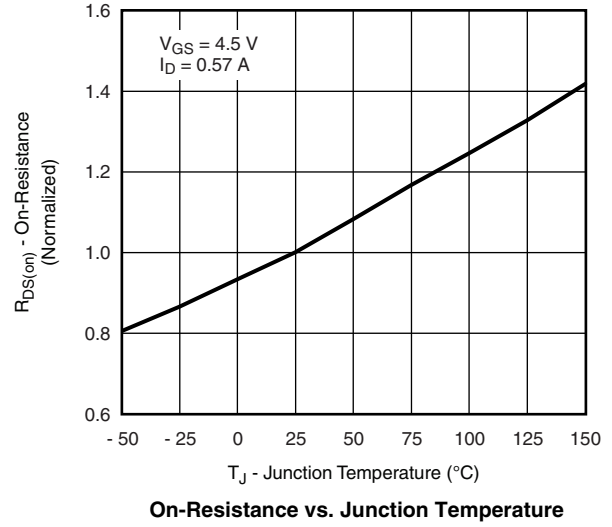
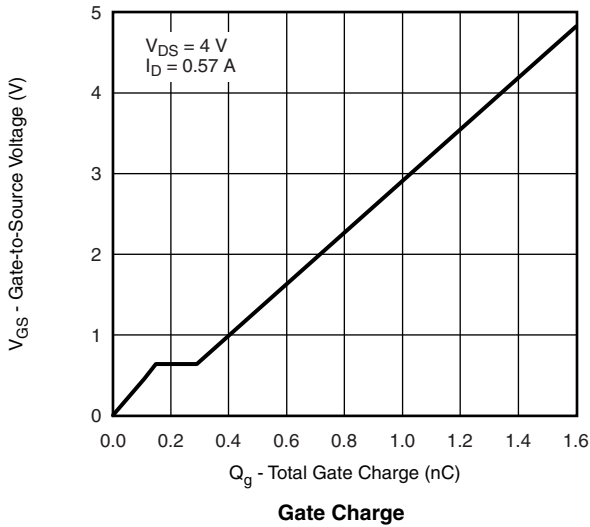


On-Resistance vs. Drain Current

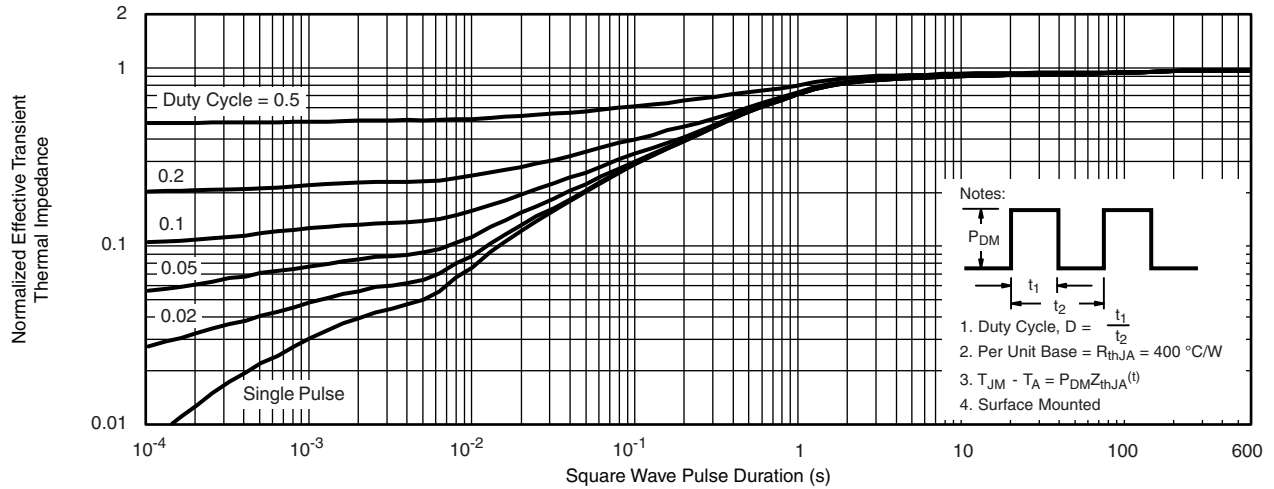


Capacitance

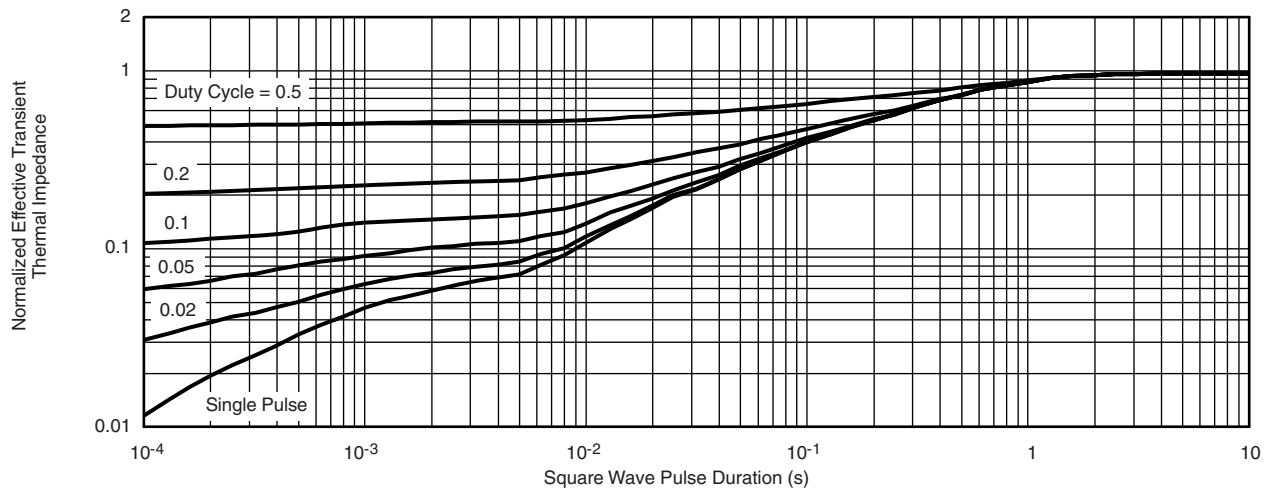
P-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



P-CHANNEL TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

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