

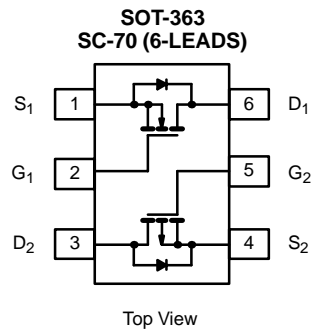


Complementary 2.5-V (G-S) MOSFET

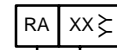
PRODUCT SUMMARY

	V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
N-Channel	20	0.385 @ $V_{GS} = 4.5$ V	± 0.70
		0.630 @ $V_{GS} = 2.5$ V	± 0.54
P-Channel	-20	0.995 @ $V_{GS} = -4.5$ V	± 0.44
		1.800 @ $V_{GS} = -2.5$ V	± 0.32

TrenchFET®
Power MOSFETs
2.5-V Rated



Marking Code



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				
Continuous Drain Current (T _J = 150°C) ^a	T _A = 25°C	I _D	± 0.70	± 0.66	± 0.44	± 0.41	A
	T _A = 85°C		± 0.50	± 0.48	± 0.31	± 0.30	
Pulsed Drain Current		I _{DM}	± 1.0				
Continuous Source Current (Diode Conduction) ^a		I _S	0.25	0.23	-0.25	-0.23	
Maximum Power Dissipation ^a	T _A = 25°C	P _D	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	$t \leq 5$ sec	R_{thJA}	360	415	$^\circ\text{C/W}$
	Steady State		400	460	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	300	350	

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 = 250 μA	N-Ch	0.6			V	
		V _{DS} = V _{GS} , I _D = -250 μA	P-Ch	-0.6				
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 12 V	N-Ch P-Ch			± 100 ± 100	nA	
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	1.0			A	
		V _{DS} ≤ -5 V, V _{GS} = -4.5 V	P-Ch	-1.0				
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 = -0.41 A	P-Ch		0.850	0.995		
		V _{GS} = 2.5 V, I _D = 0.40 A	N-Ch		0.560	0.630		
		V _{GS} = -2.5 V, I _D = -0.25 A	P-Ch		1.4	1.800		
Forward Transconductance ^a	g _{fs}	V _{DS} = 10 V, I _D = 0.66 A	N-Ch		1.5		S	
		V _{DS} = -10 V, I _D = -0.41 A	P-Ch		0.8			
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} = -10 V, V _{GS} = -4.5 V, I _D = -0.41 A	N-Ch P-Ch		0.8 1.2	1.2 1.8	nC	
Gate-Source Charge	Q _{gs}		N-Ch P-Ch		0.06 0.45			
Gate-Drain Charge	Q _{gd}		N-Ch P-Ch		0.30 0.25			
Turn-On Delay Time	t _{d(on)}		N-Ch P-Ch		10 7.5	20 15		
Rise Time	t _r	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 P-Ch		16 20	30 40	ns	
Turn-Off Delay Time	t _{d(off)}		N-Ch P-Ch		10 8.5	20 17		
Fall Time	t _f		N-Ch P-Ch		10 12	20 24		
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		25		40

Notes

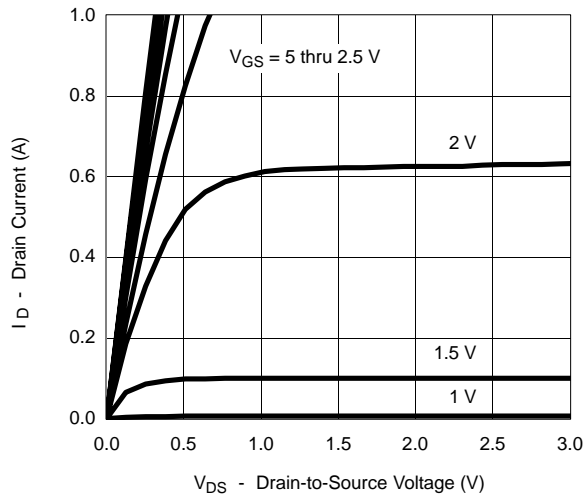
- a. Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.
b. Guaranteed by design, not subject to production testing.



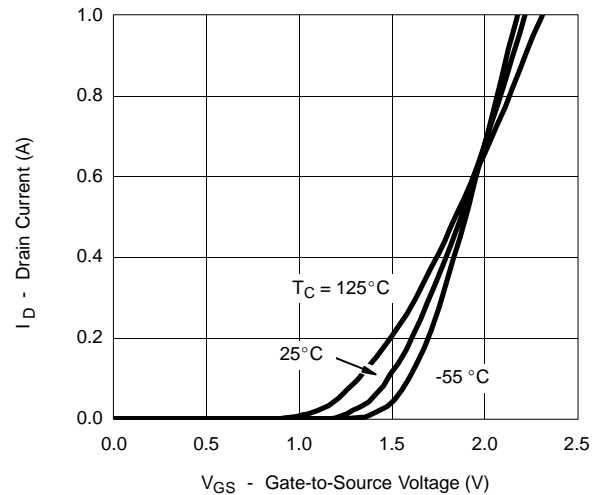
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

N-CHANNEL

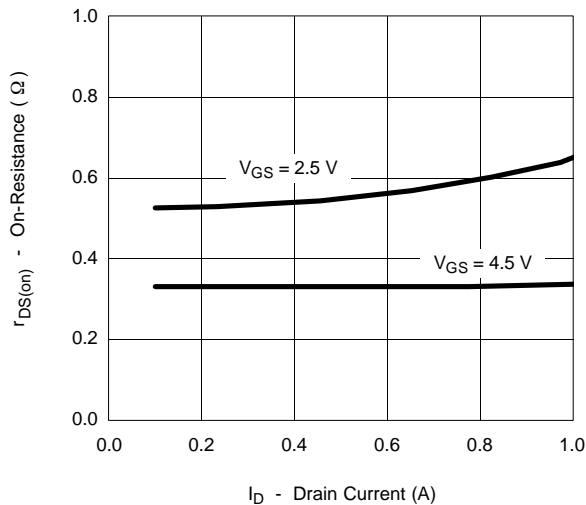
Output Characteristics



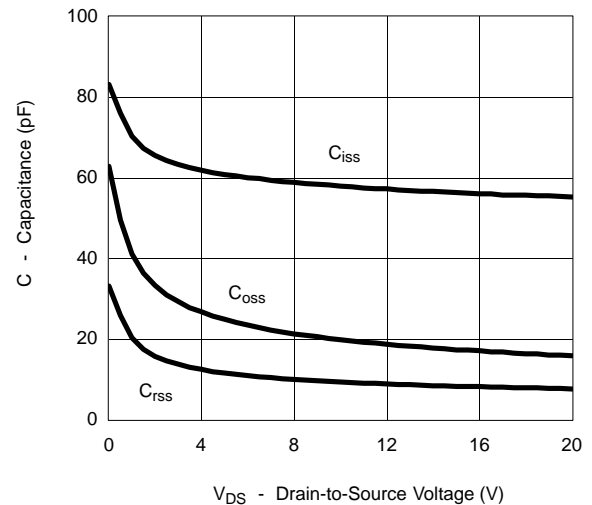
Transfer Characteristics



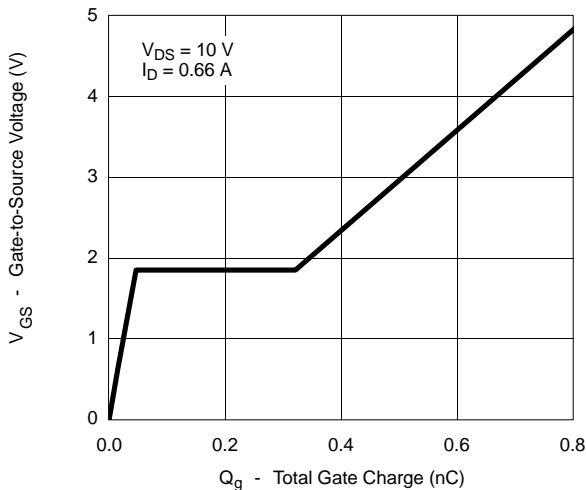
On-Resistance vs. Drain Current



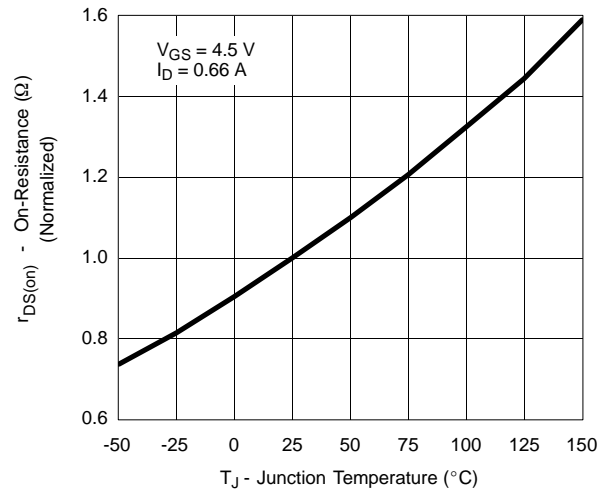
Capacitance



Gate Charge

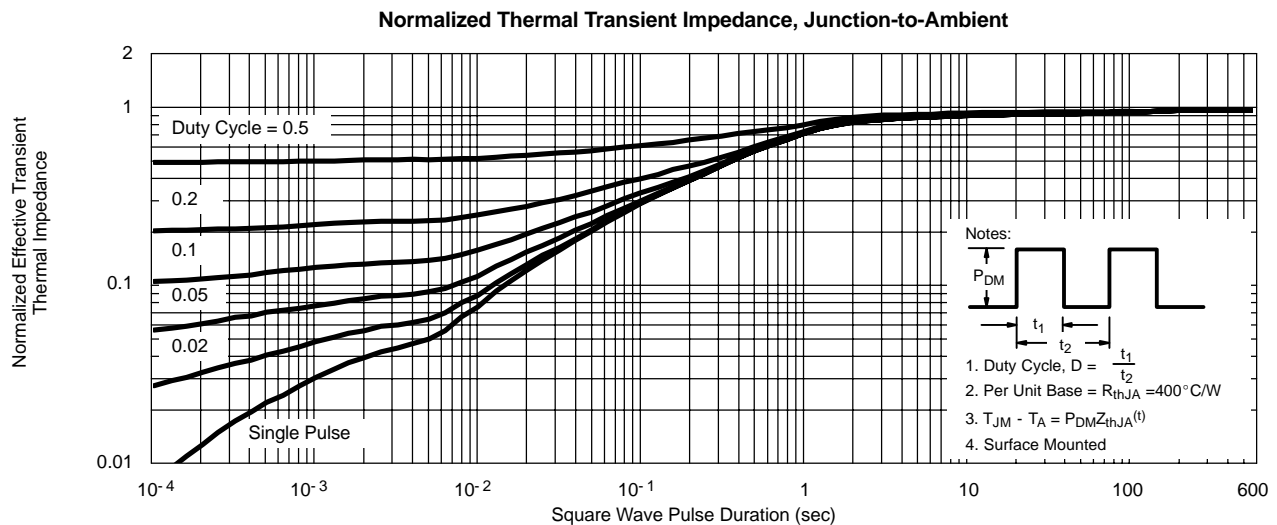
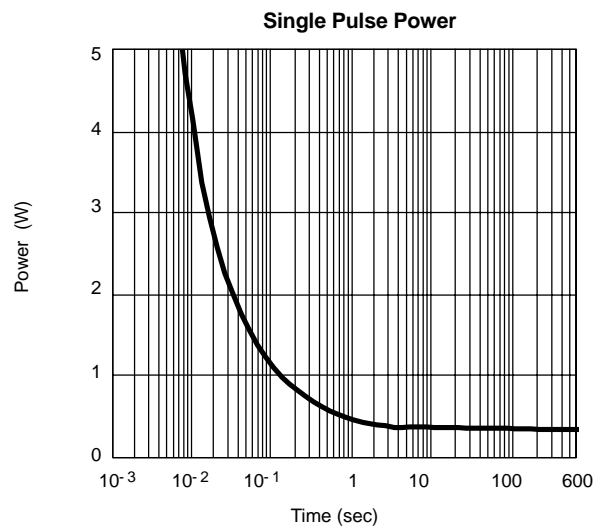
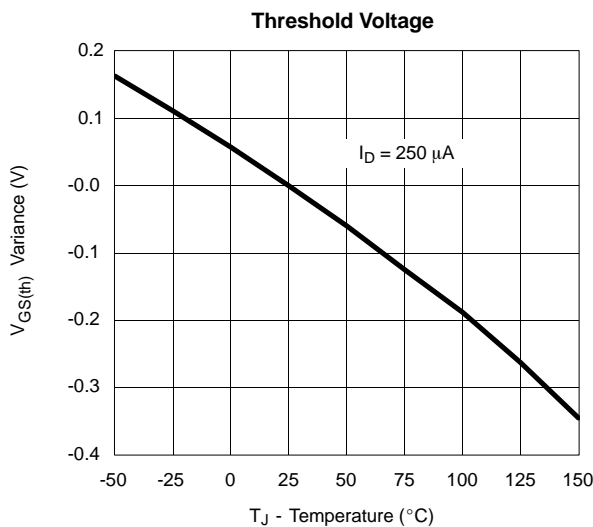
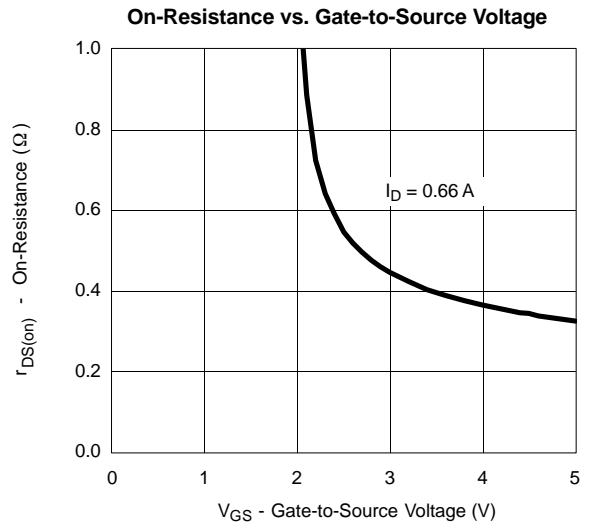
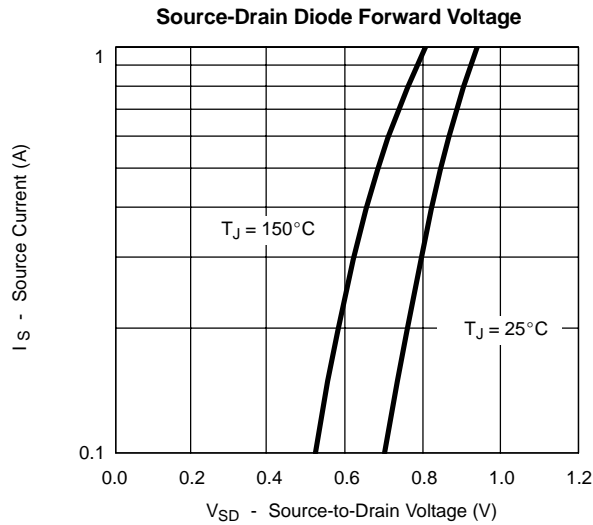


On-Resistance vs. Junction Temperature





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

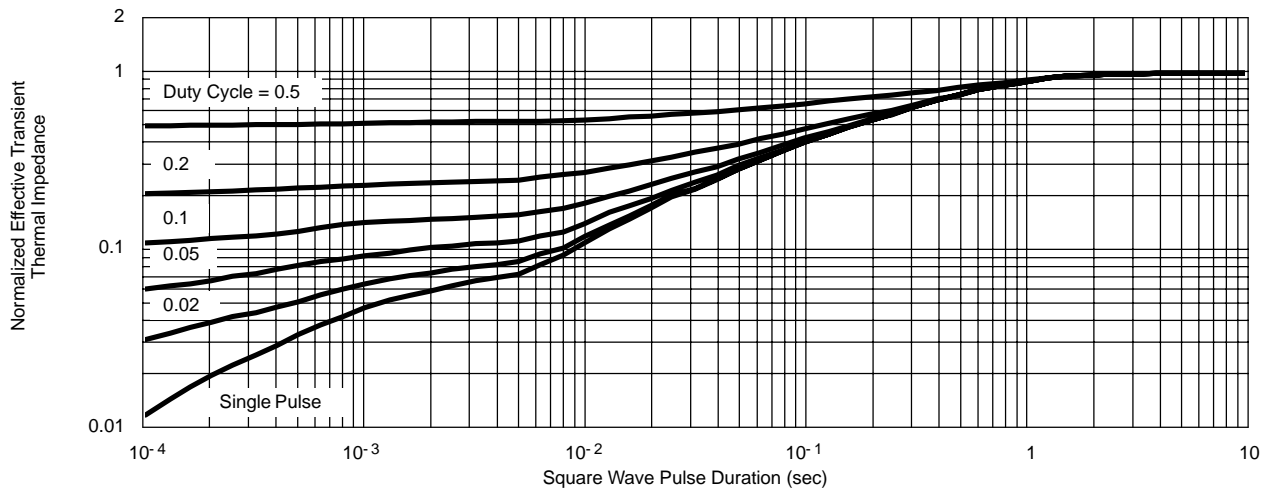




TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

N-CHANNEL

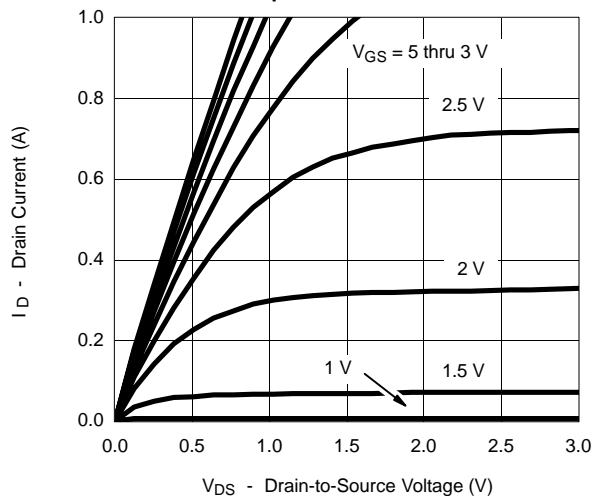
Normalized Thermal Transient Impedance, Junction-to-Foot



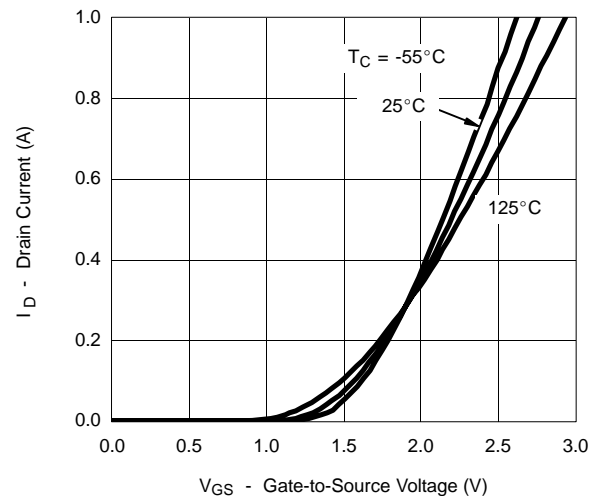
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

P-CHANNEL

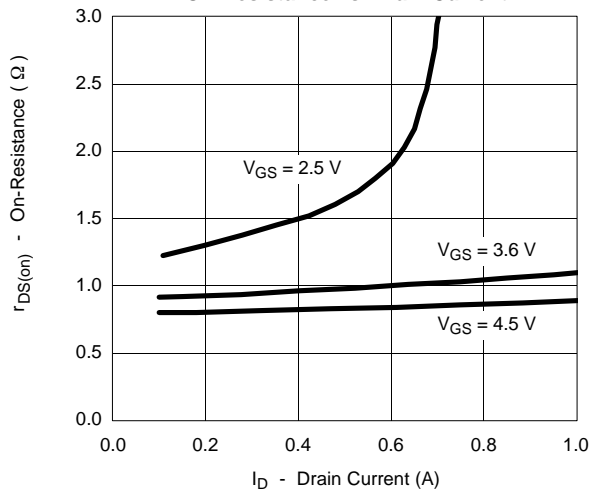
Output Characteristics



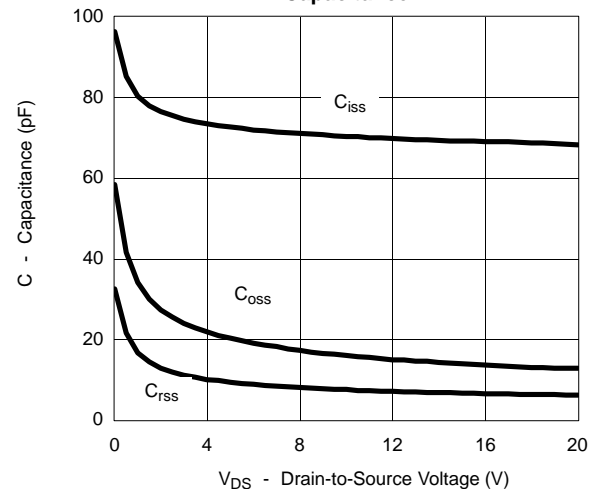
Transfer Characteristics



On-Resistance vs. Drain Current



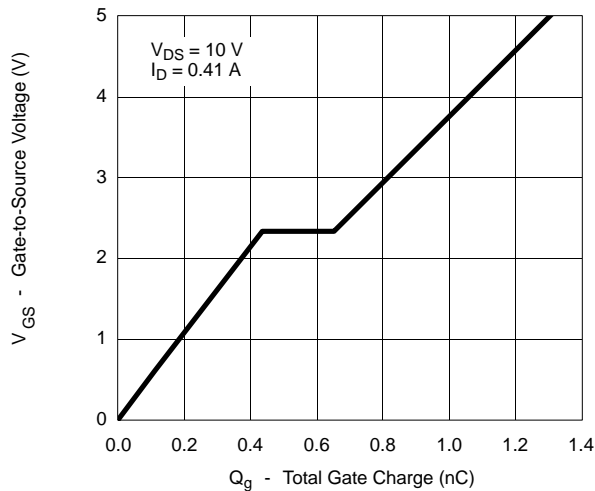
Capacitance



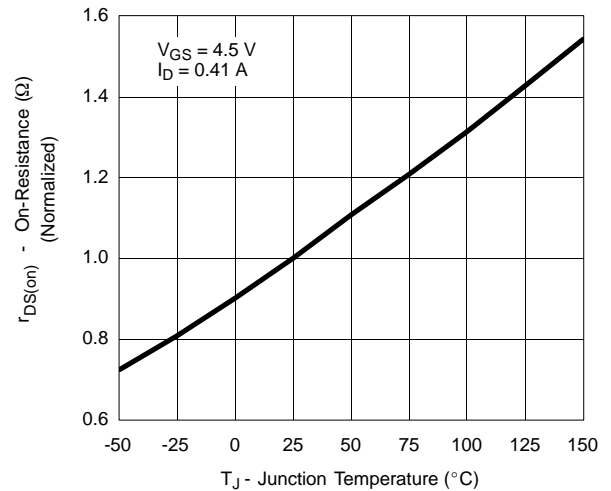
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

P-CHANNEL

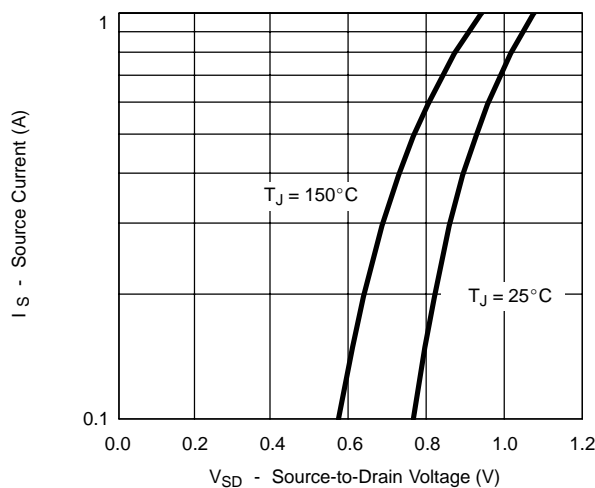
Gate Charge



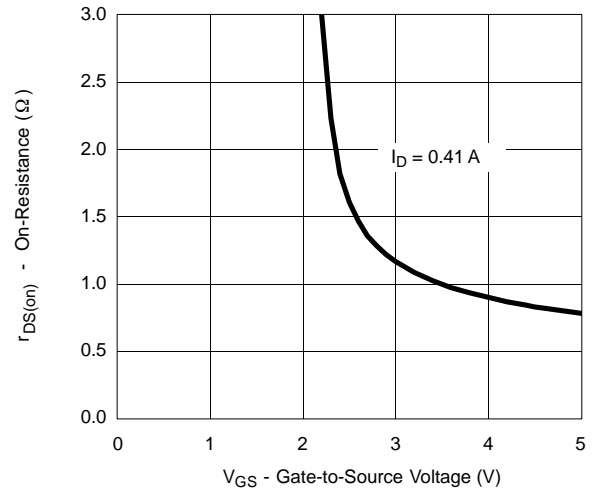
On-Resistance vs. Junction Temperature



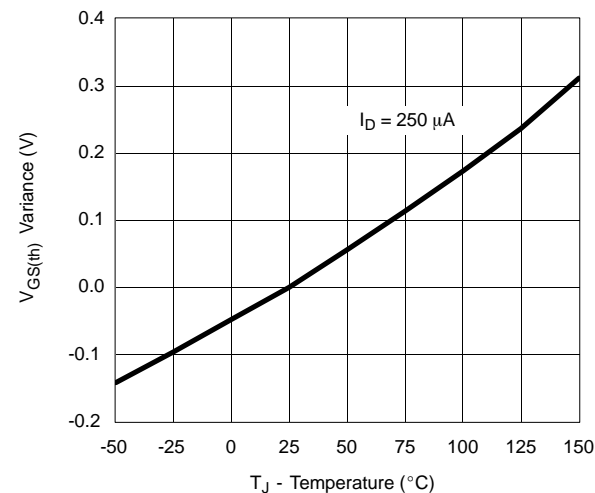
Source-Drain Diode Forward Voltage



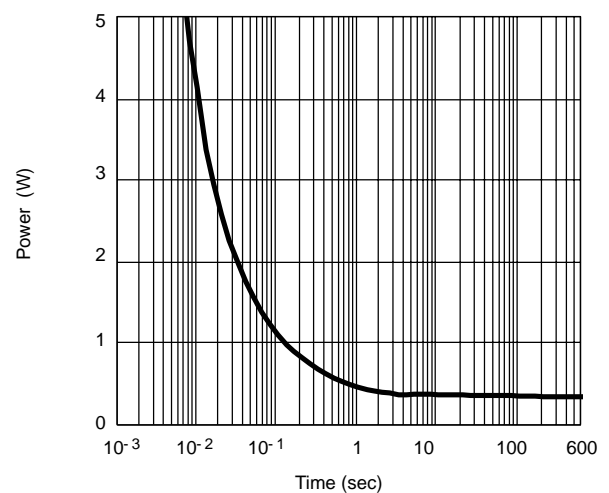
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power

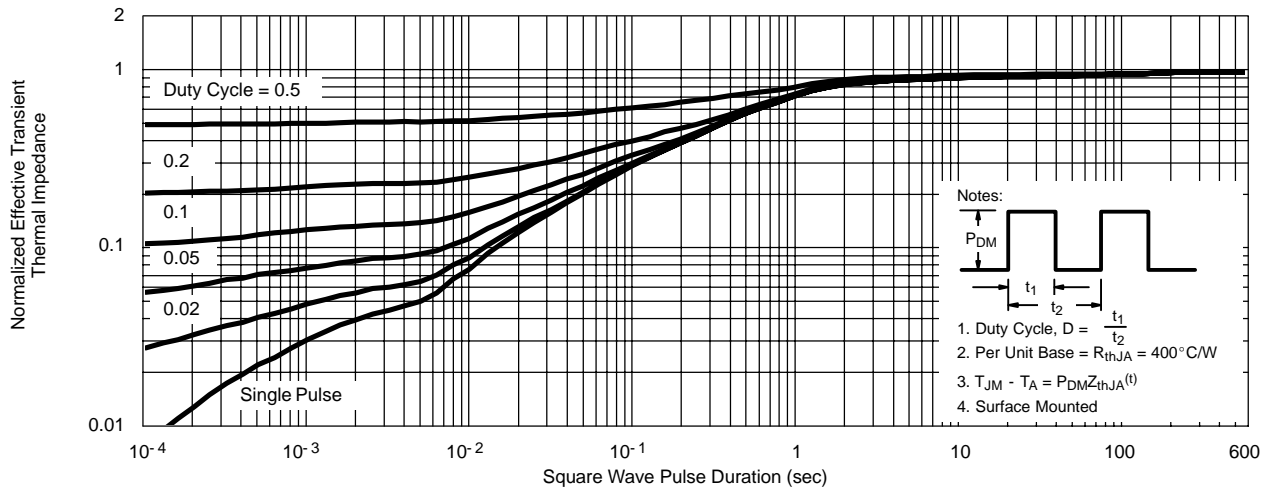




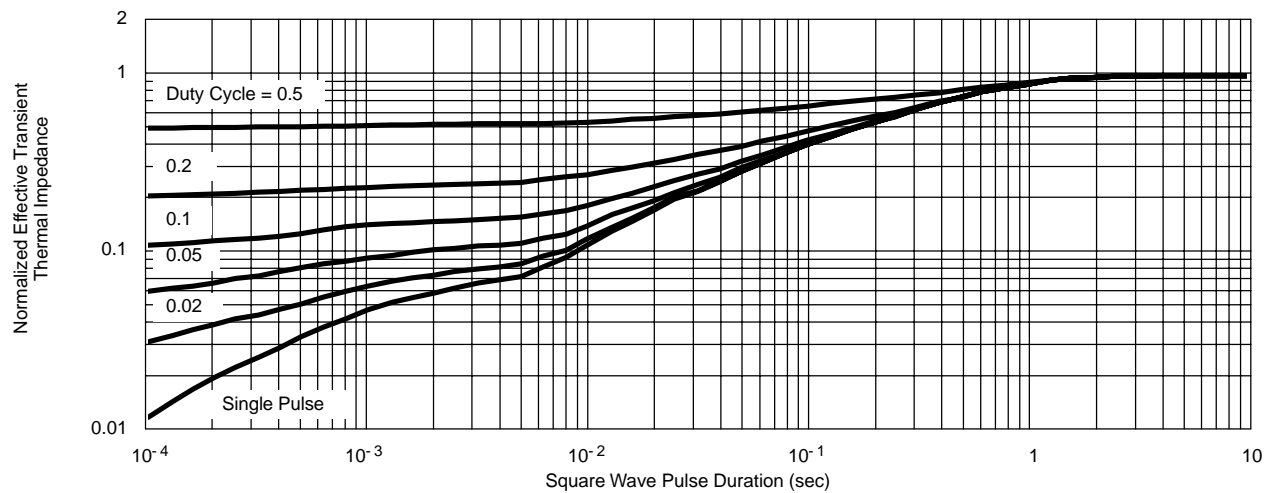
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

P-CHANNEL

Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot





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