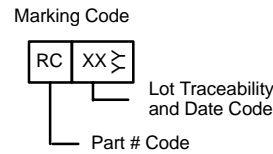
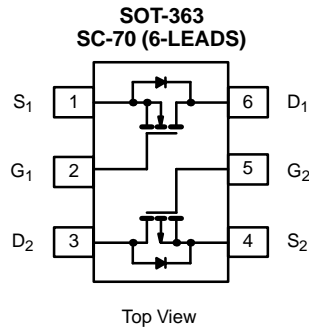




Complementary 30-V (D-S) MOSFET

TrenchFET®
Power MOSFETs

PRODUCT SUMMARY			
	V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
N-Channel	30	0.480 @ $V_{GS} = 10$ V	0.63
		0.700 @ $V_{GS} = 4.5$ V	0.52
P-Channel	-30	0.940 @ $V_{GS} = -10$ V	-0.45
		1.700 @ $V_{GS} = -4.5$ V	-0.33



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}	30		-30		V	
Gate-Source Voltage	V_{GS}	± 20					
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	$T_A = 25^\circ\text{C}$	0.63	0.54	-0.45	-0.42	A	
	$T_A = 85^\circ\text{C}$	0.45	0.43	-0.32	-0.31		
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	$T_A = 25^\circ\text{C}$	0.30	0.27	0.30	0.27	W	
	$T_A = 85^\circ\text{C}$	0.16	0.14	0.16	0.14		
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}	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	1.0			V
		V _{DS} = V _{GS} , I _D = -250 μA	P-Ch	-1.0			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V	N-Ch P-Ch			±100 ±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24 V, V _{GS} = 0 V	N-Ch			1	μA
		V _{DS} = -24 V, V _{GS} = 0 V	P-Ch			-1	
		V _{DS} = 24 V, V _{GS} = 0 V, T _J = 85 °C	N-Ch			5	
		V _{DS} = -24 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} = 10 V	N-Ch	1.0			A
		V _{DS} ≤ -5 V, V _{GS} = -10 V	P-Ch	-1.0			
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 0.59 A	N-Ch		0.410	0.480	Ω
		V _{GS} = -10 V, I _D = -0.42 A	P-Ch		0.800	0.940	
		V _{GS} = 4.5 V, I _D = 0.2 A	N-Ch		0.600	0.700	
		V _{GS} = -4.5 V, I _D = -0.2 A	P-Ch		1.5	1.700	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 0.59 A	N-Ch		0.75		S
		V _{DS} = -15 V, I _D = -0.42 A	P-Ch		0.5		
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		-0.86	-1.2	
Dynamic^b							
Total Gate Charge	Q _g	N-Channel V _{DS} = 15 V, V _{GS} = 10 V, I _D = 0.59 A P-Channel V _{DS} = -15 V, V _{GS} = -10 V, I _D = -0.42 A	N-Ch		0.86	1.4	nC
			P-Ch		0.9	1.4	
Gate-Source Charge	Q _{gs}		N-Ch		0.24		
			P-Ch		0.21		
Gate-Drain Charge	Q _{gd}		N-Ch		0.08		
			P-Ch		0.17		
Turn-On Delay Time	t _{d(on)}	N-Channel V _{DD} = 15 V, R _L = 30 Ω I _D ≅ 0.5 A, V _{GEN} = 10 V, R _G = 6 Ω P-Channel V _{DD} = -15 V, R _L = 30 Ω I _D ≅ -0.5 A, V _{GEN} = -10 V, R _G = 6 Ω	N-Ch		5	10	ns
Rise Time	t _r		P-Ch		4	10	
			N-Ch		8	15	
Turn-Off Delay Time	t _{d(off)}		P-Ch		8	15	
			N-Ch		8	15	
Fall Time	t _f		P-Ch		5	10	
			N-Ch		7	15	
Source-Drain Reverse Recovery Time	t _{rr}		N-Ch		7	15	
		P-Ch		7	15		
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 0.23 A, di/dt = 100 A/μs	N-Ch		15	30	
		I _F = -0.23 A, di/dt = 100 A/μs	P-Ch		20	40	

Notes

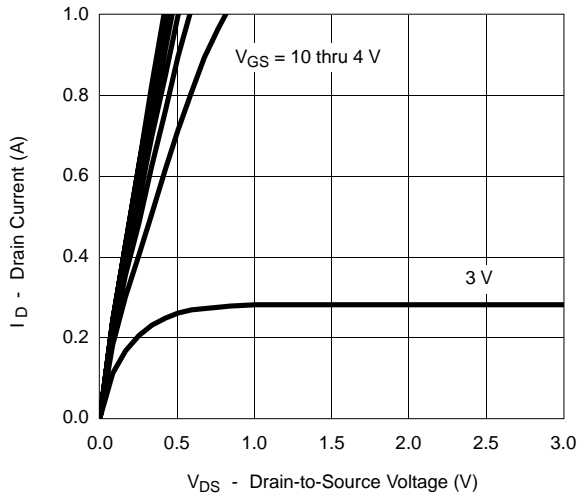
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.



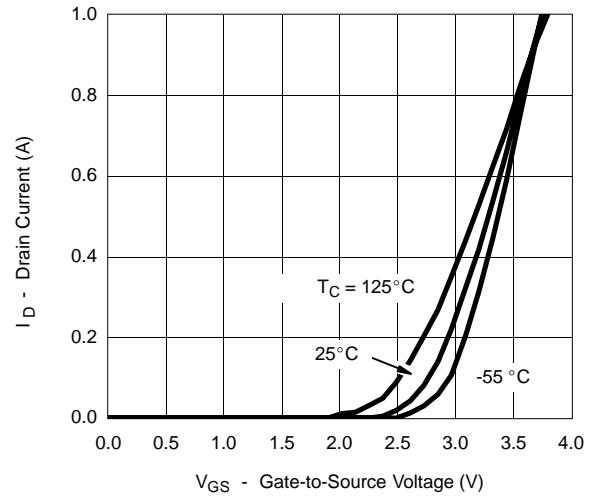
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

N-CHANNEL

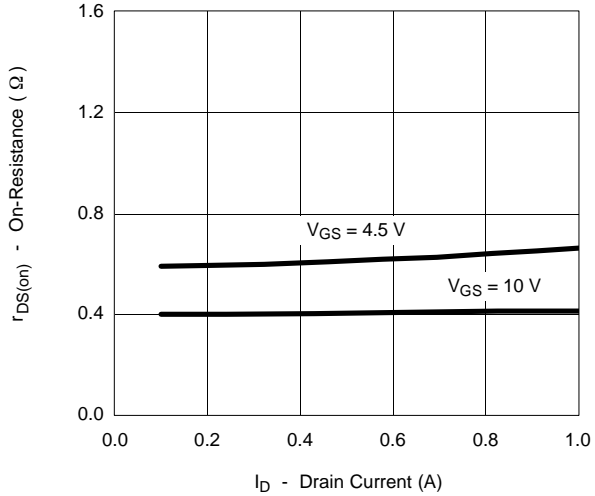
Output Characteristics



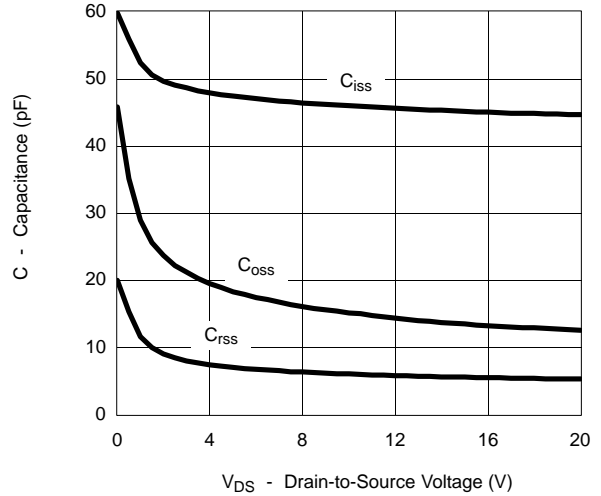
Transfer Characteristics



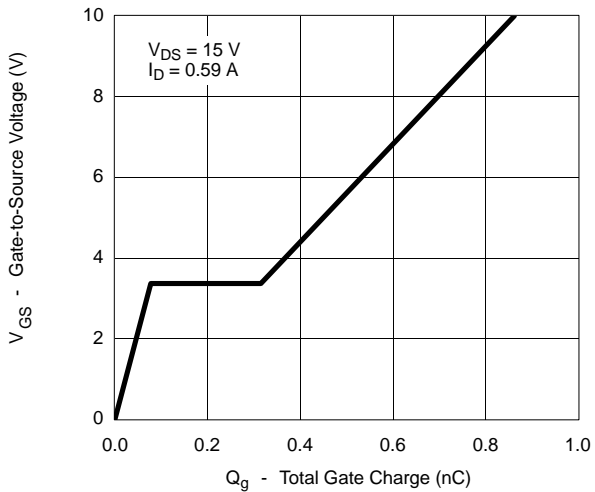
On-Resistance vs. Drain Current



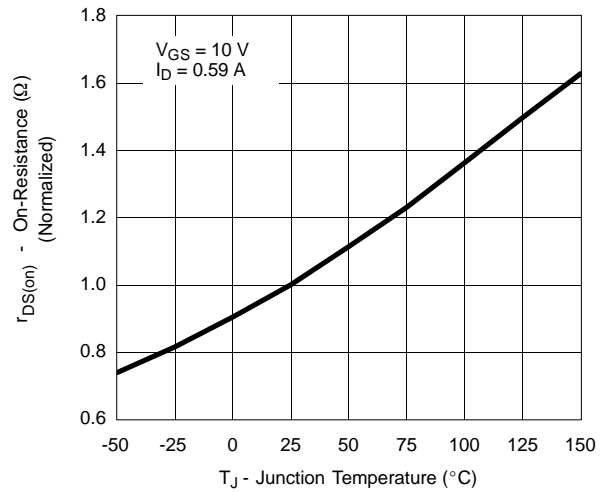
Capacitance



Gate Charge



On-Resistance vs. Junction Temperature

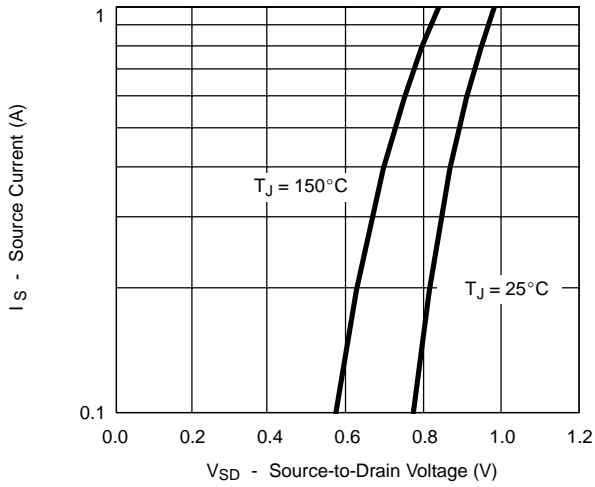




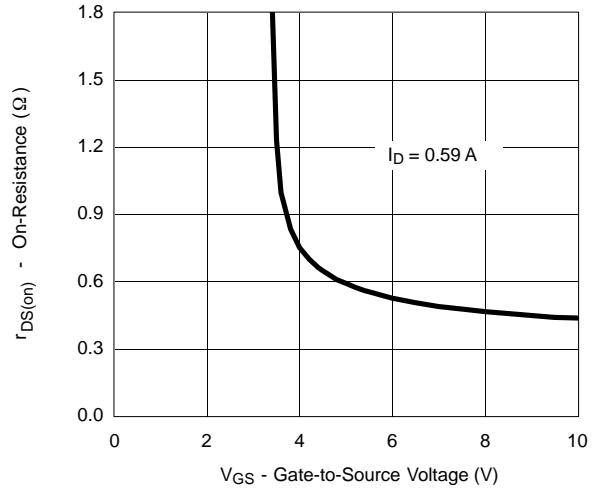
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

N-CHANNEL

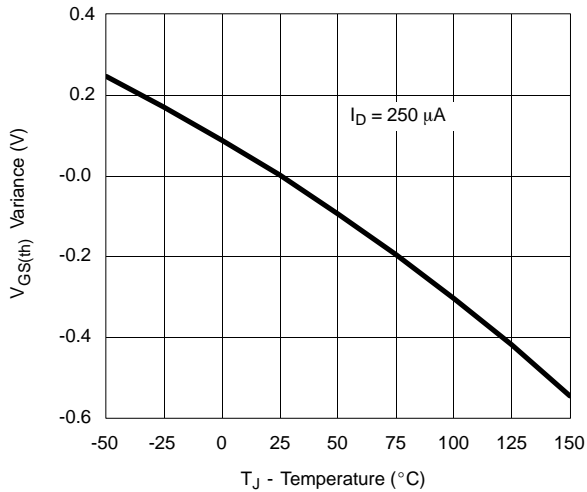
Source-Drain Diode Forward Voltage



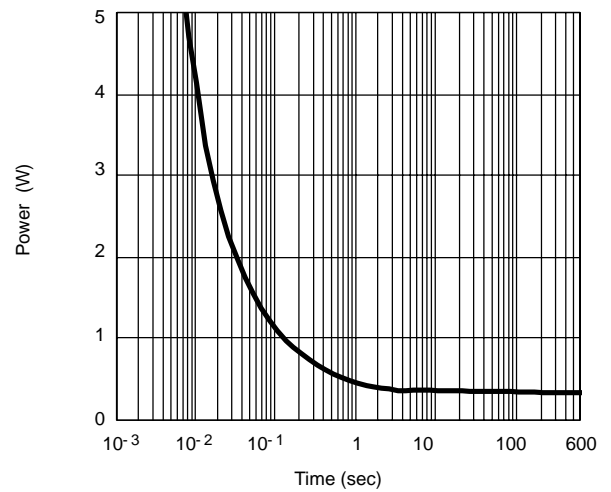
On-Resistance vs. Gate-to-Source Voltage



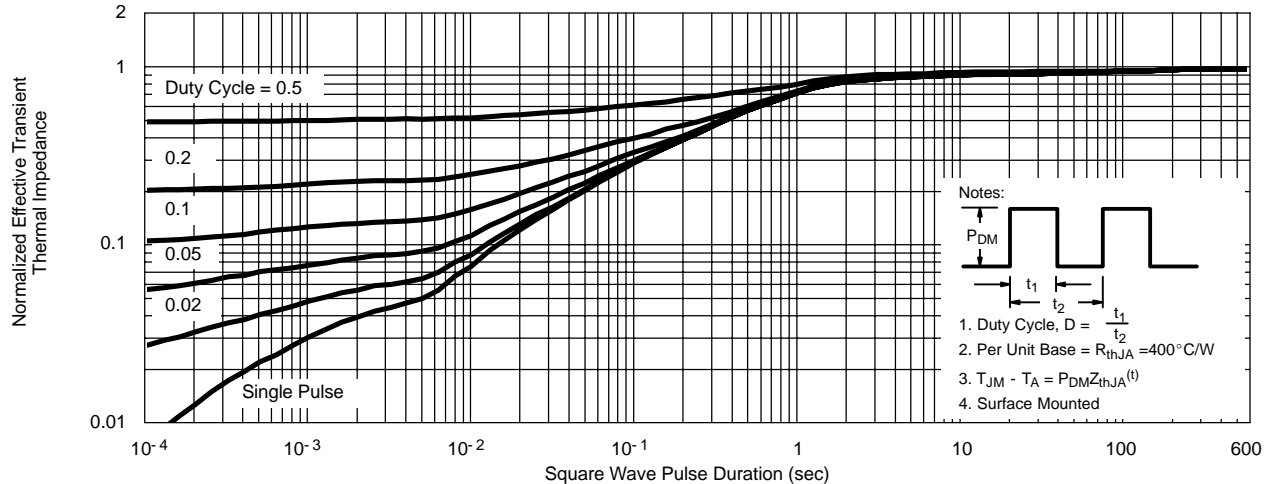
Threshold Voltage



Single Pulse Power



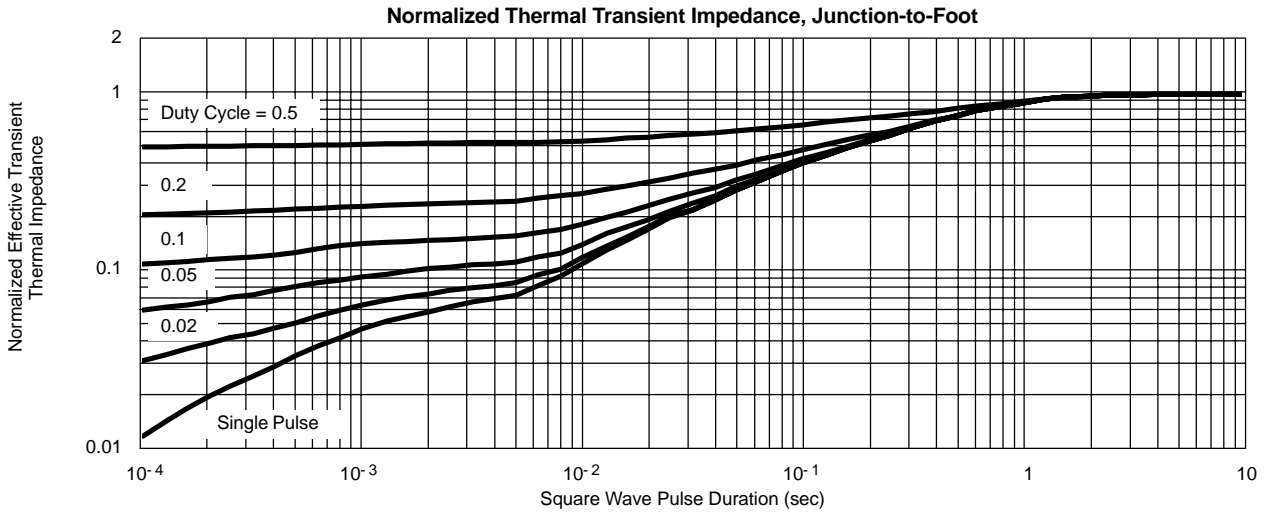
Normalized Thermal Transient Impedance, Junction-to-Ambient





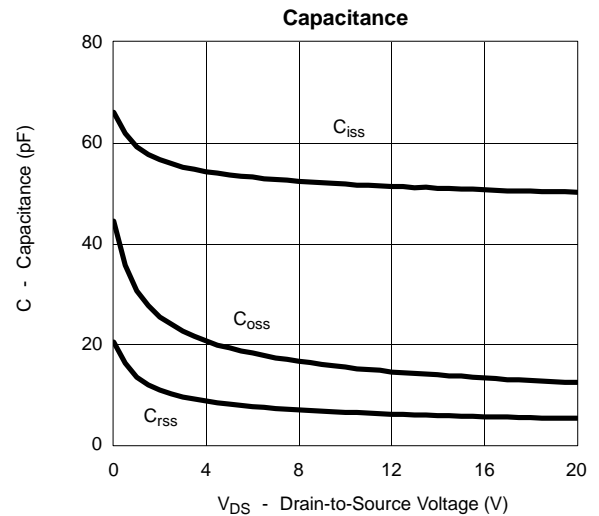
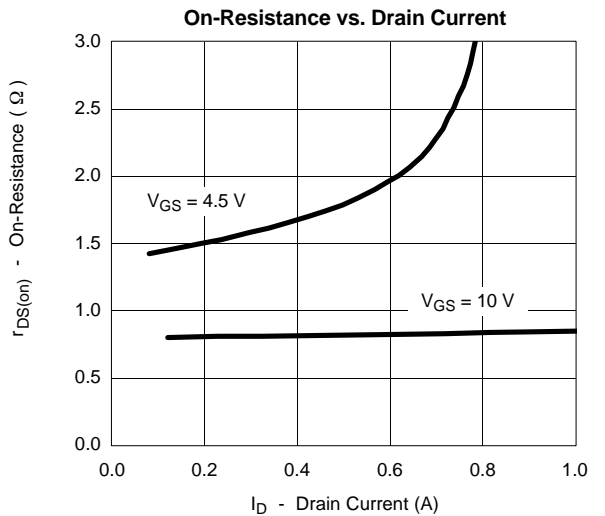
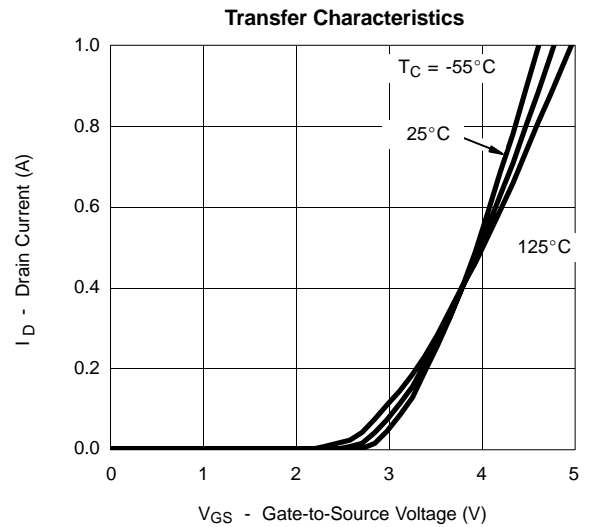
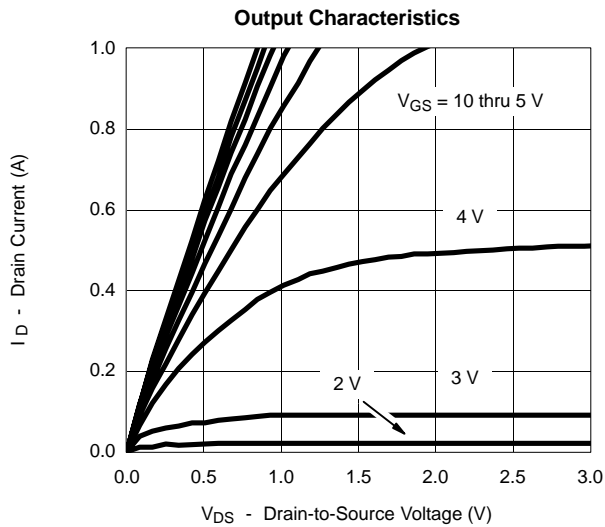
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

N-CHANNEL

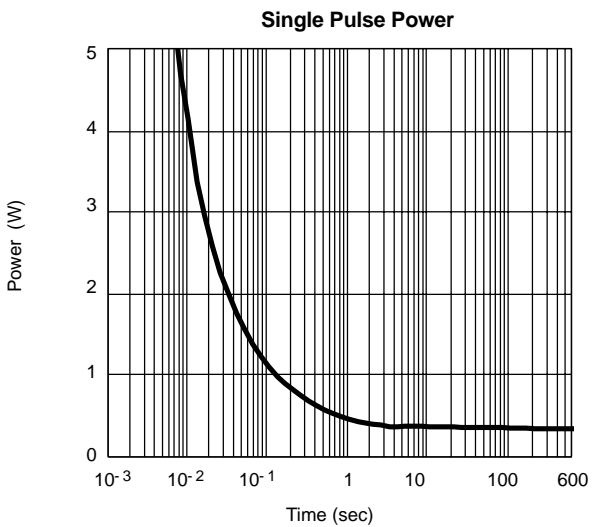
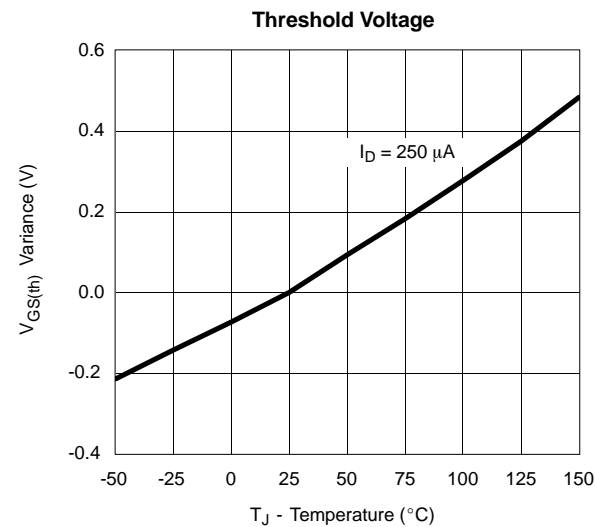
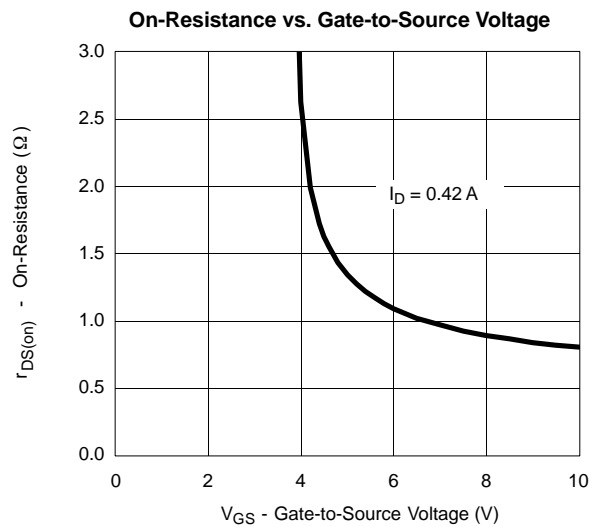
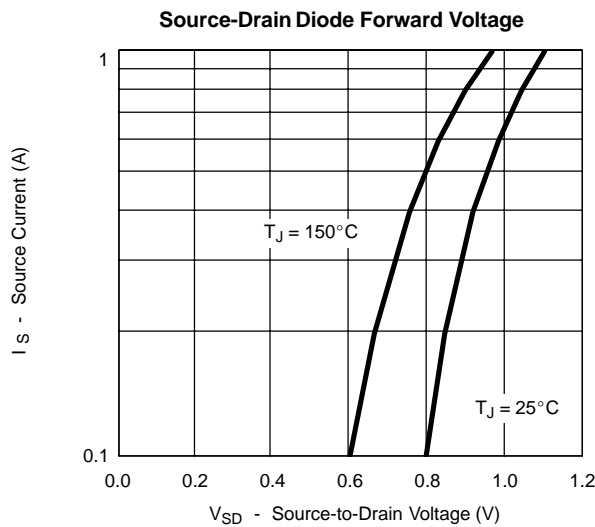
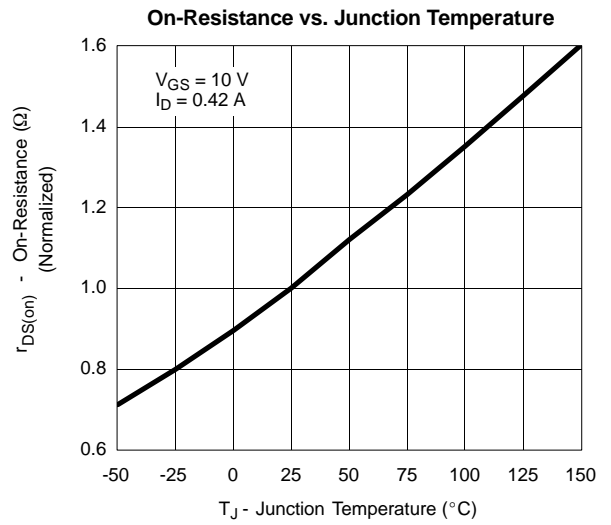
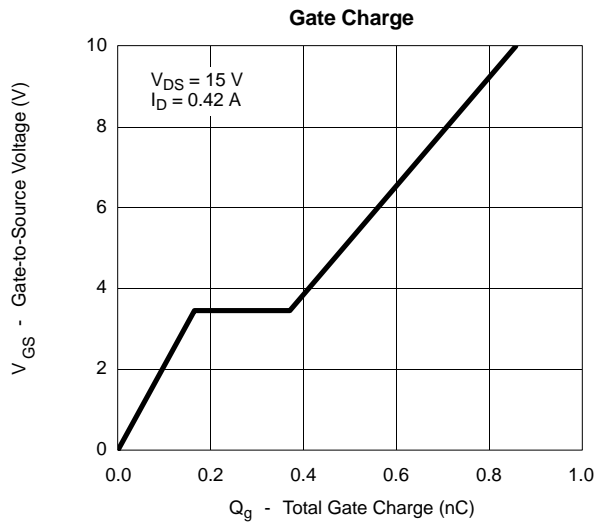


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

P-CHANNEL



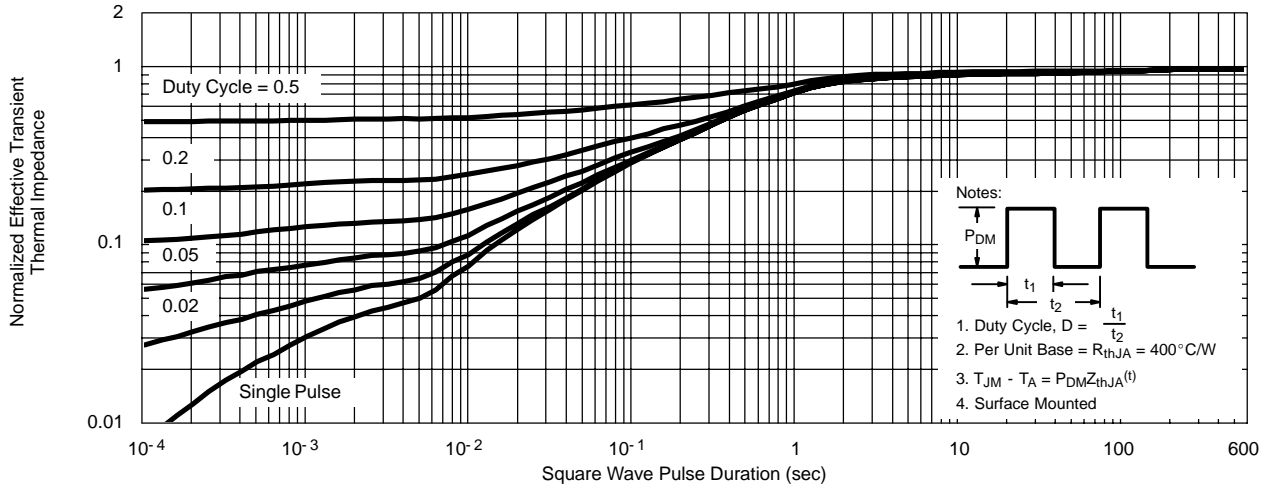
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) P-CHANNEL





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

Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

