

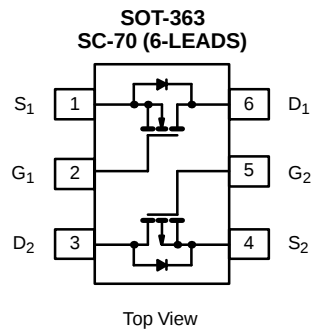


Complementary 30-V (D-S) MOSFET

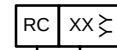
PRODUCT SUMMARY

	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

TrenchFET®
Power MOSFETs



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}	30		-30		V
Gate-Source Voltage		V _{GS}	± 20				
Continuous Drain Current (T _J = 150°C) ^a	T _A = 25°C	I _D	0.63	0.54	- 0.45	-0.42	A
	T _A = 85°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°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	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	
			P-Ch		4	10		
Rise Time	t _r		N-Ch		8	15		
			P-Ch		8	15		
Turn-Off Delay Time	t _{d(off)}		N-Ch		8	15		
			P-Ch		5	10		
Fall Time	t _f		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

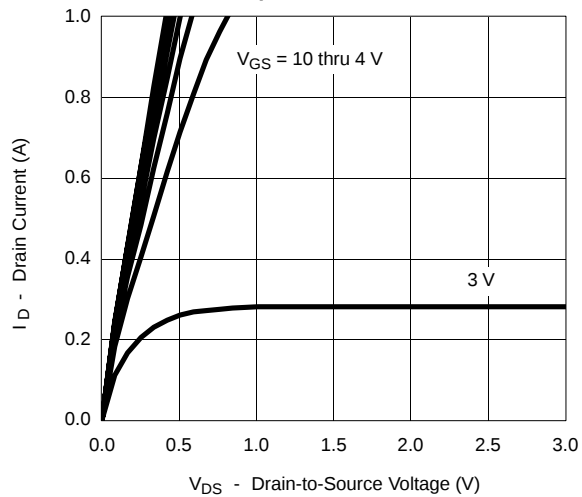
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
 b. Guaranteed by design, not subject to production testing.



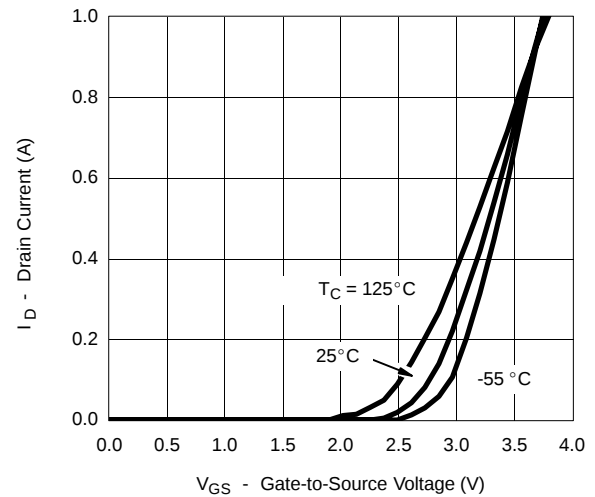
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

N-CHANNEL

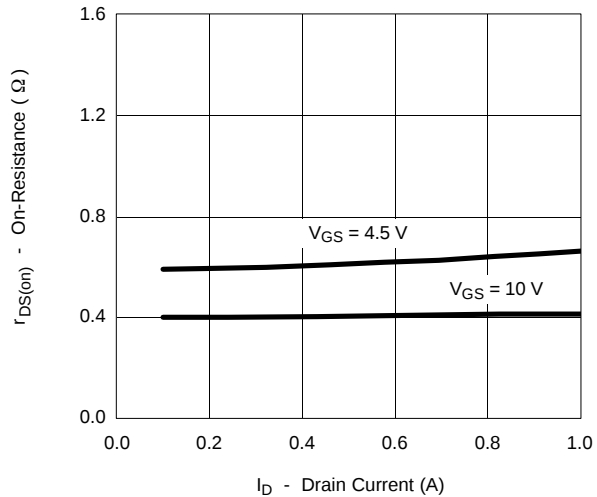
Output Characteristics



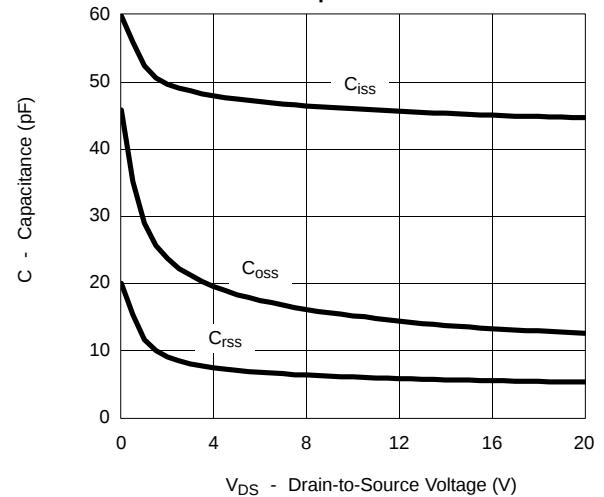
Transfer Characteristics



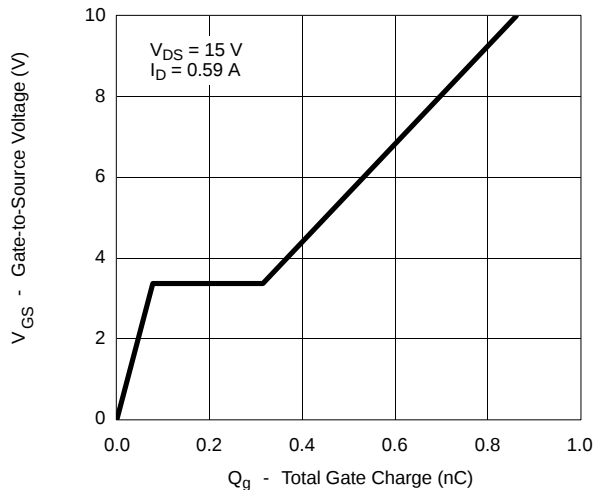
On-Resistance vs. Drain Current



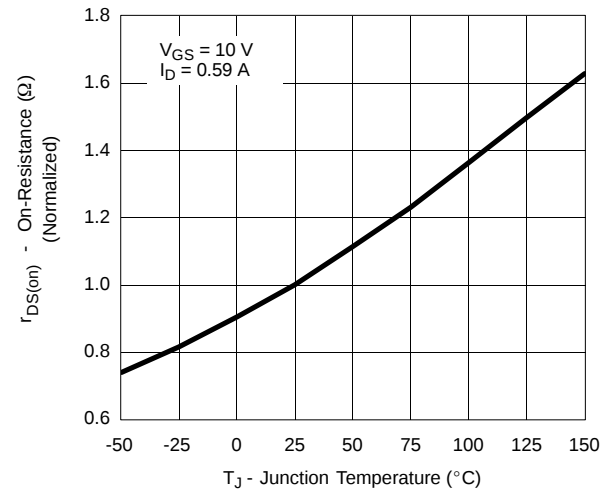
Capacitance



Gate Charge



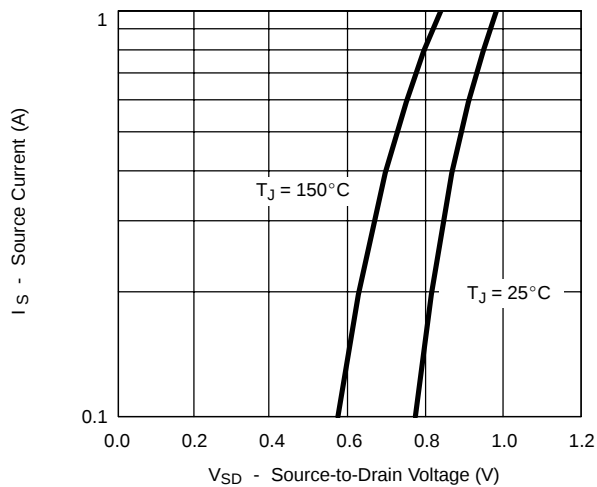
On-Resistance vs. Junction Temperature



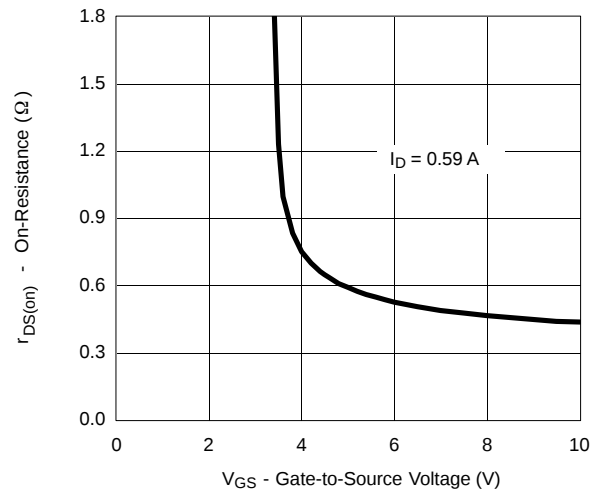
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

N-CHANNEL

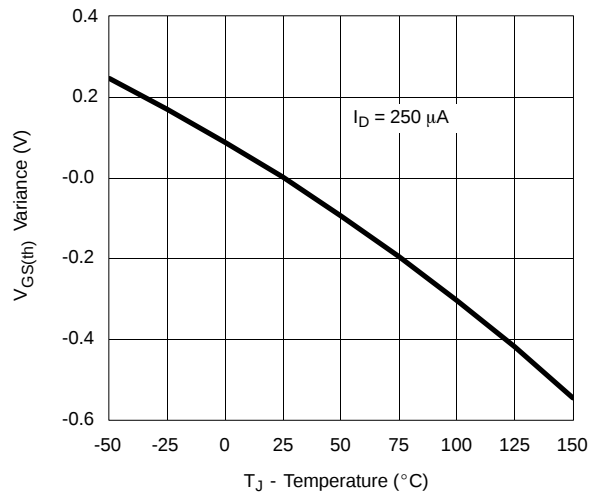
Source-Drain Diode Forward Voltage



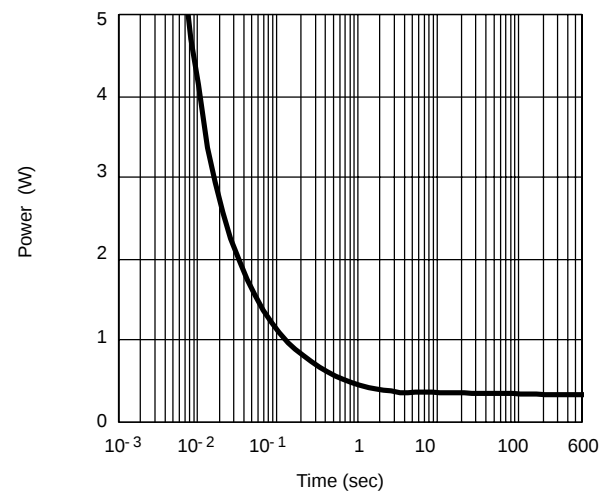
On-Resistance vs. Gate-to-Source Voltage



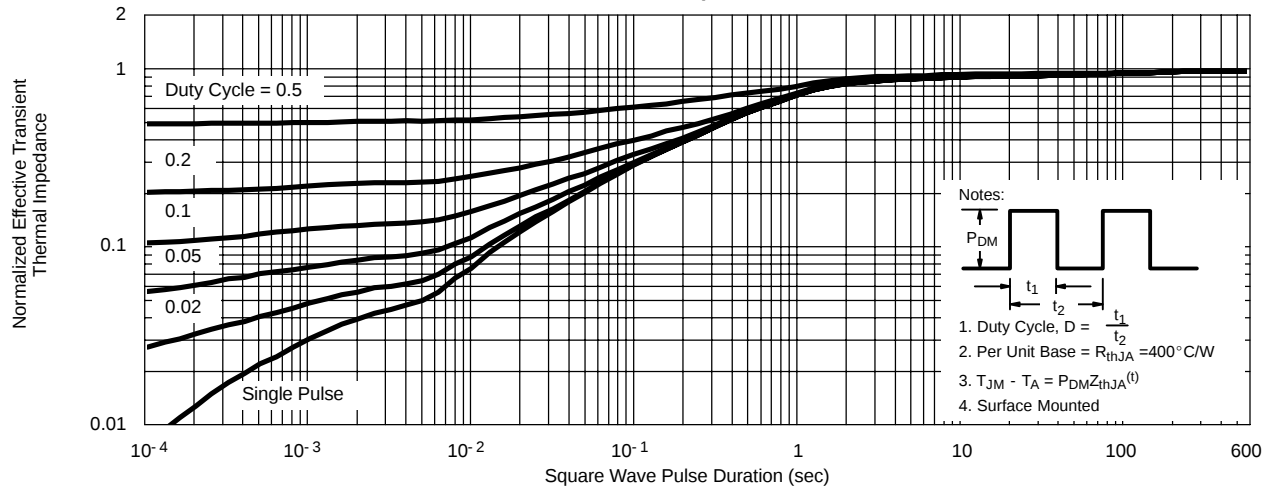
Threshold Voltage



Single Pulse Power



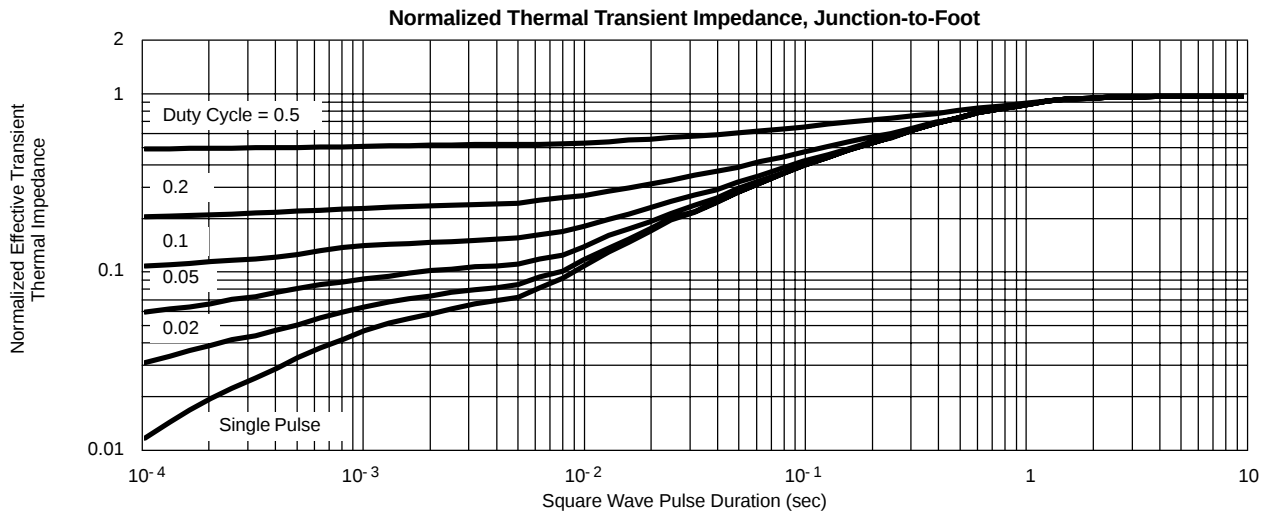
Normalized Thermal Transient Impedance, Junction-to-Ambient





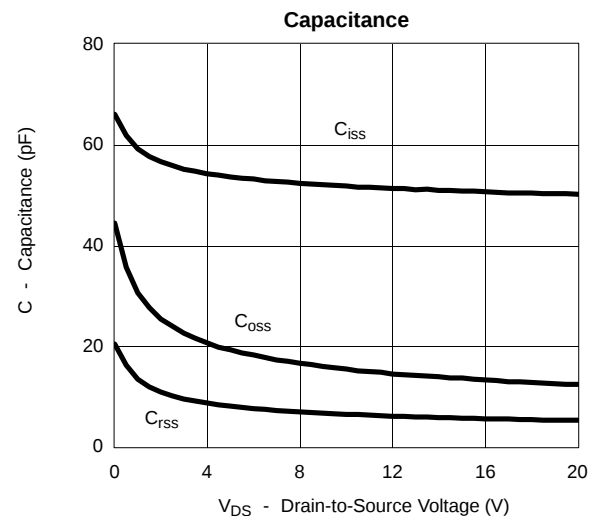
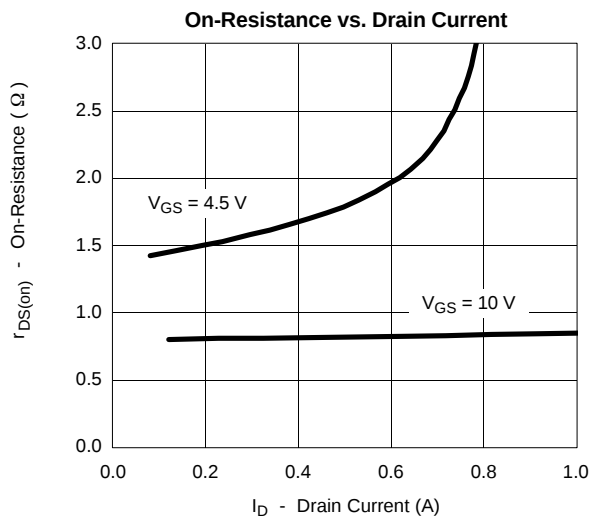
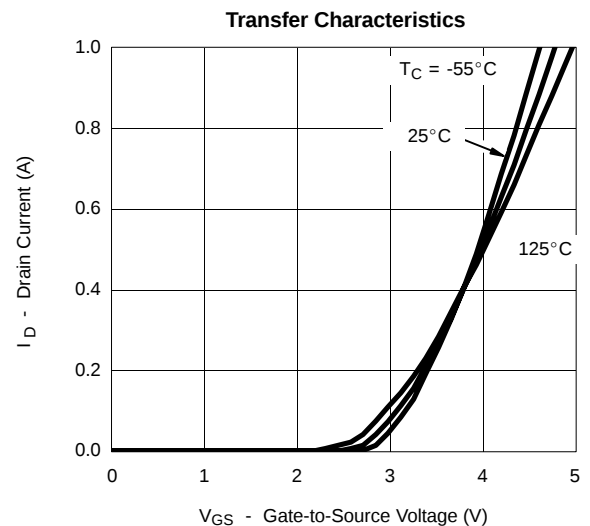
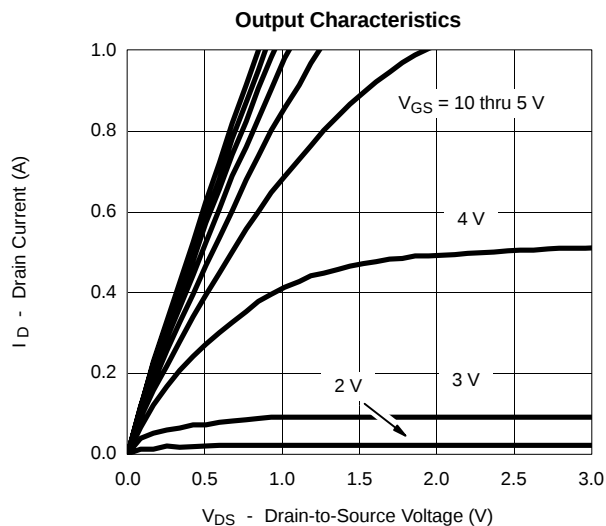
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

N-CHANNEL



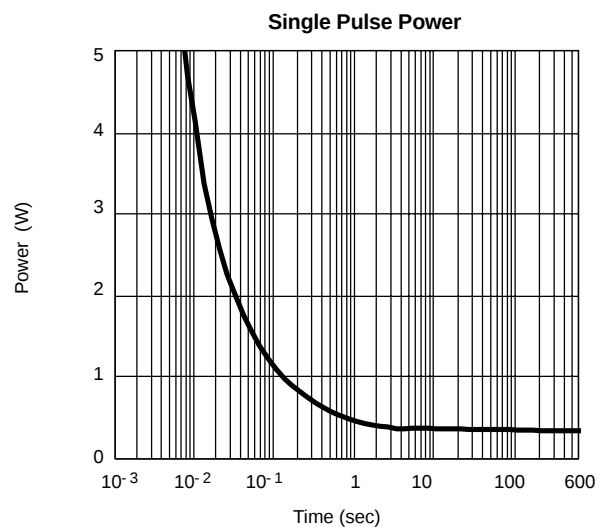
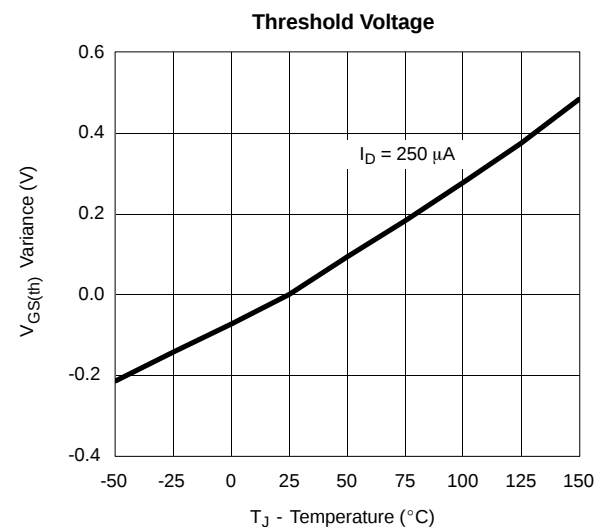
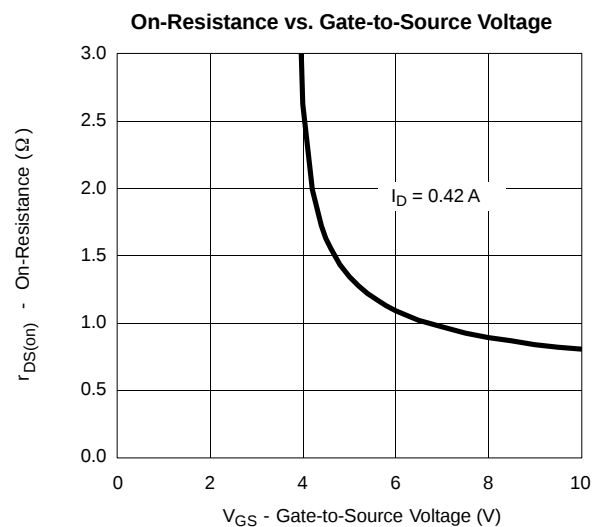
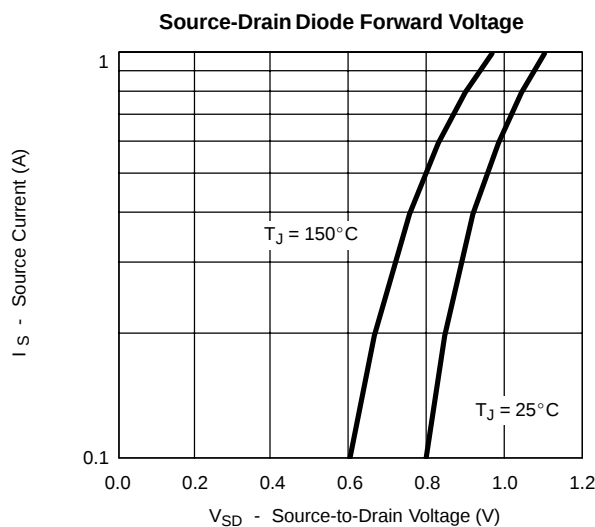
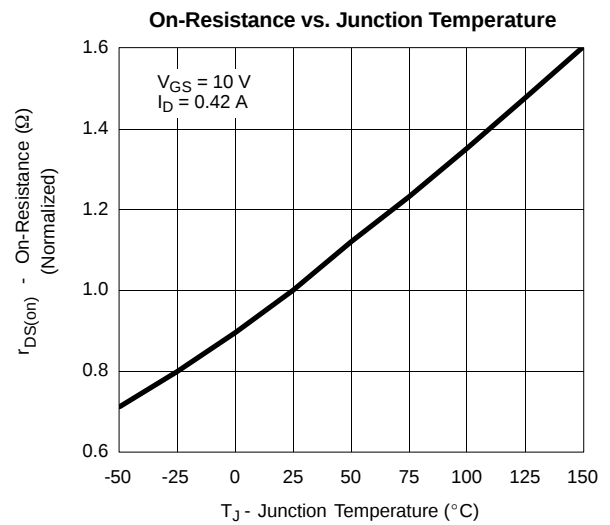
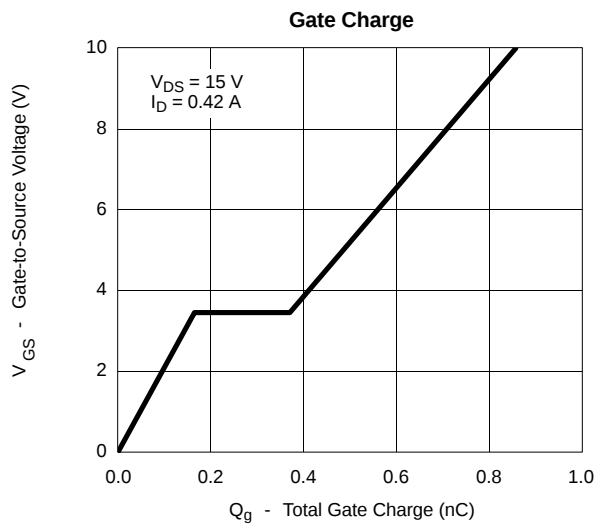
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

P-CHANNEL



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

P-CHANNEL

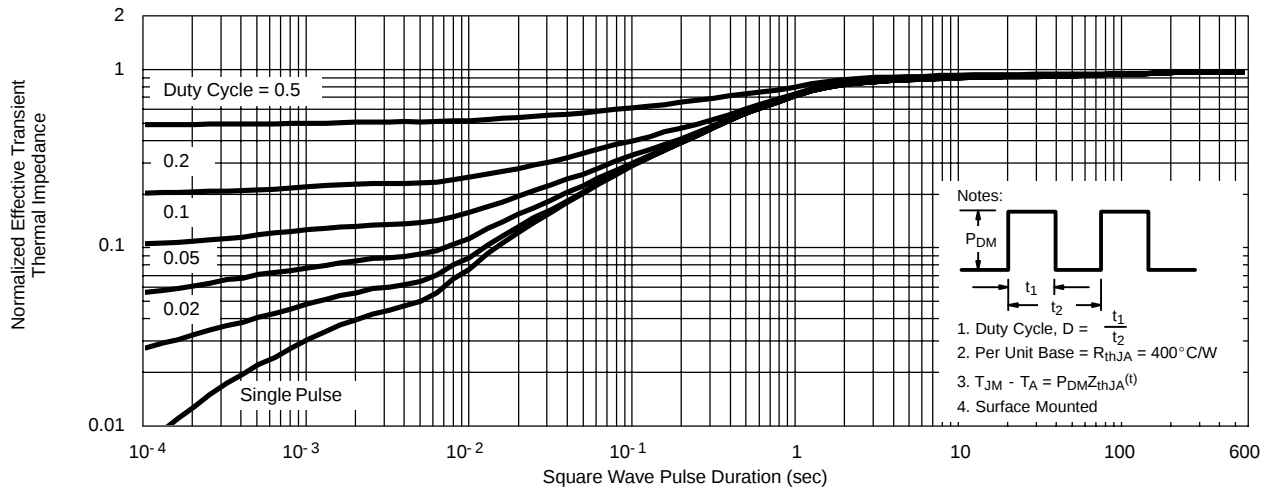




TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

P-CHANNEL

Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

