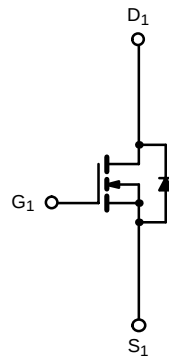
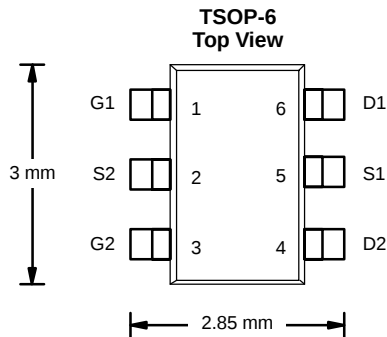


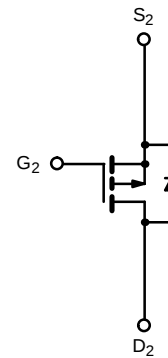


N- and P-Channel 20-V (D-S) MOSFET

PRODUCT SUMMARY			
	V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
N-Channel	20	0.080 @ $V_{GS} = 4.5$ V	3.0
		0.100 @ $V_{GS} = 2.5$ V	2.6
		0.128 @ $V_{GS} = 1.8$ V	2.3
P-Channel	-20	0.145 @ $V_{GS} = -4.5$ V	-2.2
		0.200 @ $V_{GS} = -2.5$ V	-1.8
		0.300 @ $V_{GS} = -1.8$ V	-1.5

TrenchFET®
Power MOSFETs
1.8-V Rated

N-Channel MOSFET



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T _A = 25°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}	± 8				
Continuous Drain Current (T _J = 150°C) ^a	T _A = 25°C	I _D	3.0	2.5	−2.2	−0.57	A
	T _A = 70°C		2.3	2.0	−1.8	−1.5	
Pulsed Drain Current		I _{DM}	± 8				
Continuous Source Current (Diode Conduction) ^a		I _S	1.05	0.75	−1.05	−0.75	
Maximum Power Dissipation ^a	T _A = 25°C	P _D	1.15	0.83	1.15	0.083	W
	T _A = 70°C		0.73	0.53	0.73	0.53	
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}	93	110	$^\circ\text{C/W}$
	Steady State		130	150	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	90	90	

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	0.45		V	
		V _{DS} = V _{GS} , I _D = −250 μA	P-Ch	−0.45			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±8 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} = 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			10	
		V _{DS} = −16 V, V _{GS} = 0 V, T _J = 85°C	P-Ch			−10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 4.5 V	N-Ch	5			A
		V _{DS} ≤ −5 V, V _{GS} = −4.5 V	P-Ch	−5			
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 4.5 V, I _D = 3 A	N-Ch		0.064	0.080	Ω
		V _{GS} = −4.5 V, I _D = −2.2 A	P-Ch		0.115	0.145	
		V _{GS} = 2.5 V, I _D = 2.6 A	N-Ch		0.080	0.100	
		V _{GS} = −2.5 V, I _D = −1.8 A	P-Ch		0.163	0.200	
		V _{GS} = 1.8 V, I _D = 2.3 A	N-Ch		0.104	0.128	
		V _{GS} = −1.8 V, I _D = −1.0 A	P-Ch		0.240	0.300	
Forward Transconductance ^a	g _{fs}	V _{DS} = 5 V, I _D = 3 A	N-Ch		9		S
		V _{DS} = −5 V, I _D = −2.2 A	P-Ch		5		
Diode Forward Voltage ^a	V _{SD}	I _S = 1.05 A, V _{GS} = 0 V	N-Ch		0.8	1.1	V
		I _S = −1.05 A, V _{GS} = 0 V	P-Ch		−0.8	−1.1	
Dynamic ^b							
Total Gate Charge	Q _g	N-Channel V _{DS} = 10 V, V _{GS} = 4.5 V, I _D = 3 A P-Channel V _{DS} = −10 V, V _{GS} = −4.5 V, I _D = −2.2 A	N-Ch		5	7.5	nC
Gate-Source Charge	Q _{gs}		P-Ch		5	7.5	
			N-Ch		0.65		
Gate-Drain Charge	Q _{gd}		P-Ch		1.0		
		N-Ch		0.9			
Turn-On Delay Time	t _{d(on)}	P-Ch		0.9			
		N-Channel V _{DD} = 10 V, R _L = 10 Ω I _D ≅ 1 A, V _{GEN} = 4.5 V, R _G = 6 Ω P-Channel V _{DD} = −4 V, R _L = 8 Ω I _D ≅ −1 A, V _{GEN} = −4.5 V, R _G = 6 Ω	N-Ch		12	20	ns
P-Ch			12	20			
Rise Time	t _r		N-Ch		30	50	
			P-Ch		29	50	
Turn-Off Delay Time	t _{d(off)}		N-Ch		28	50	
			P-Ch		24	45	
Fall Time	t _f	N-Ch		12	20		
		P-Ch		30	50		
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 1.05 A, di/dt = 100 A/μs	N-Ch		20	40	
		I _F = −1.05 A, di/dt = 100 A/μs	P-Ch		20	40	

Notes

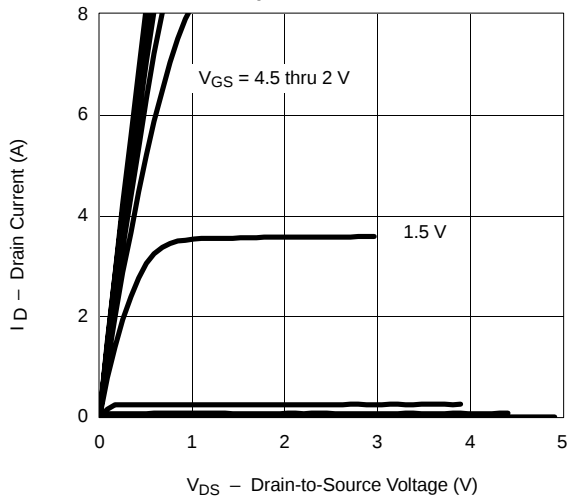
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.



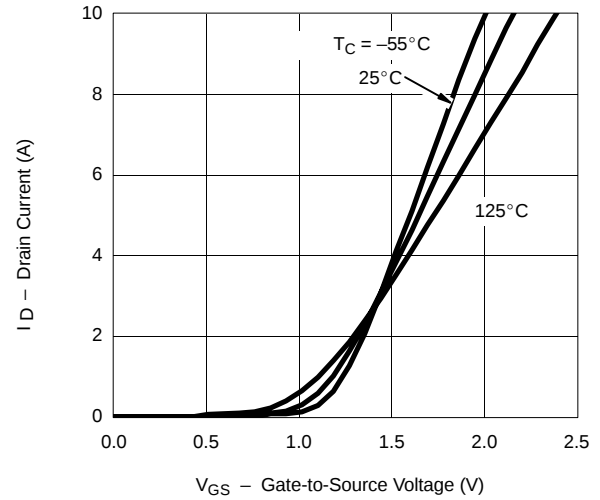
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

N-CHANNEL

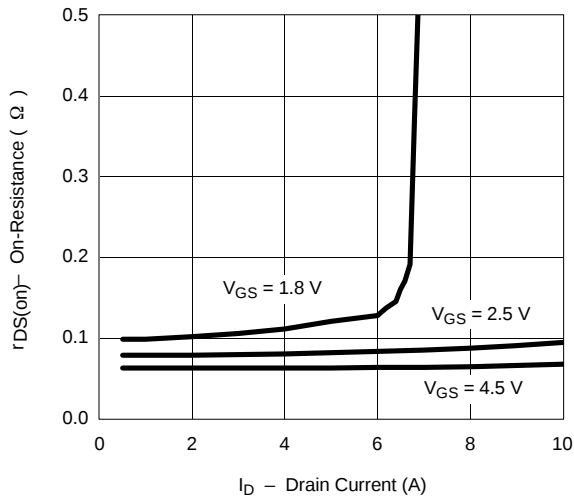
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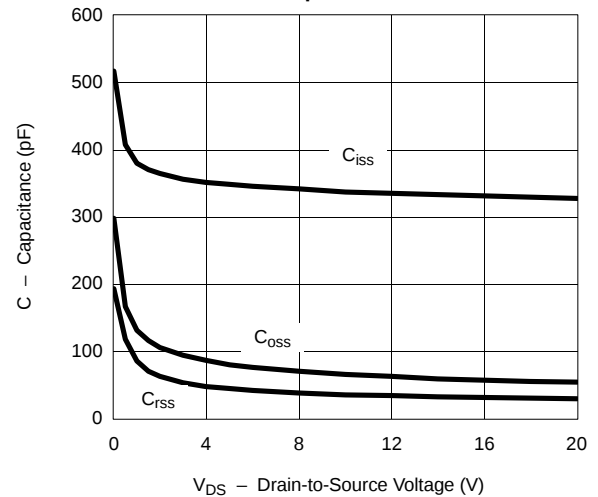
Transfer Characteristics



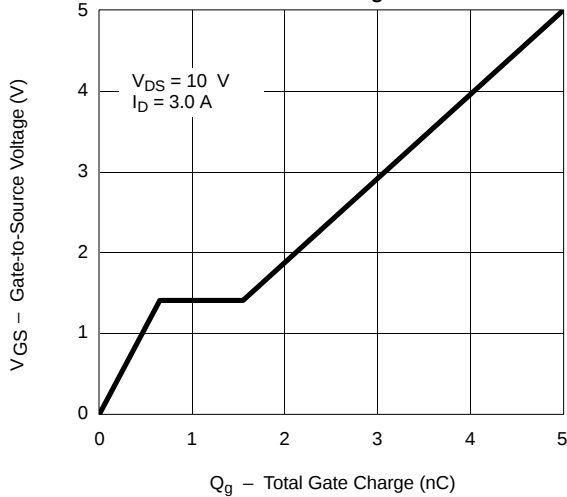
On-Resistance vs. Drain Current



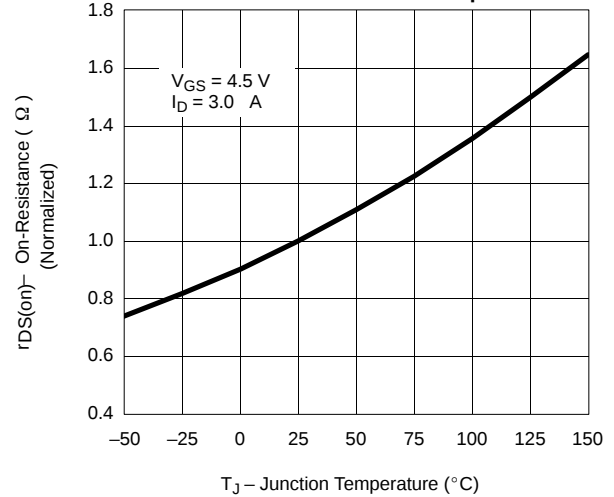
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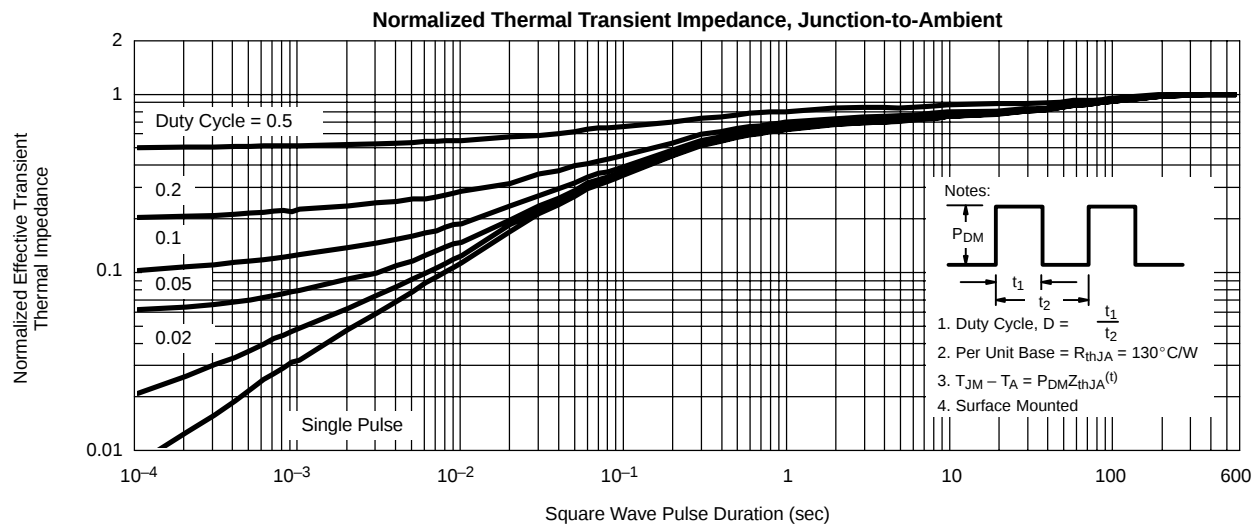
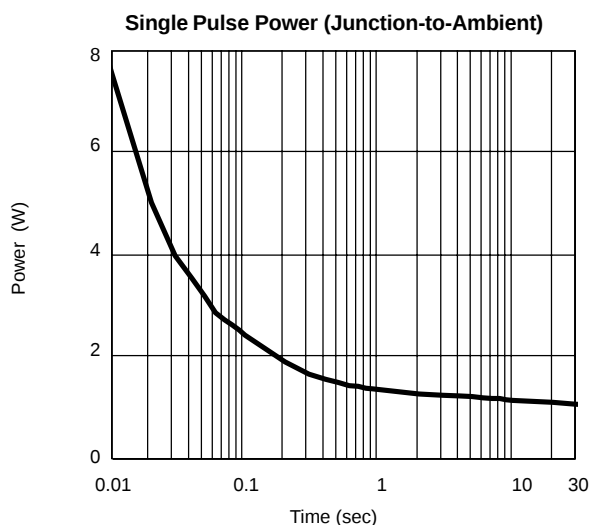
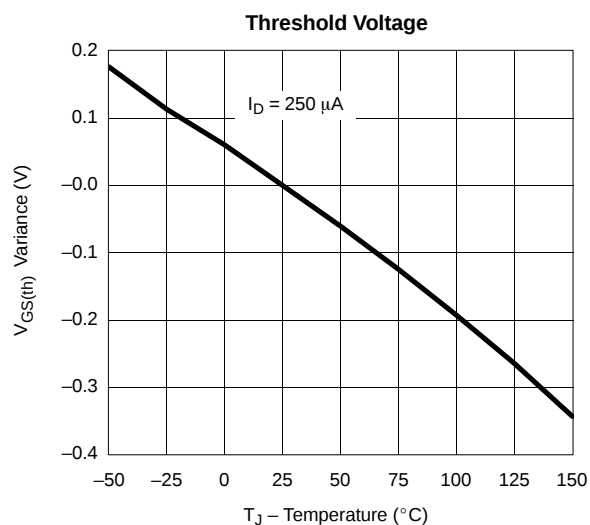
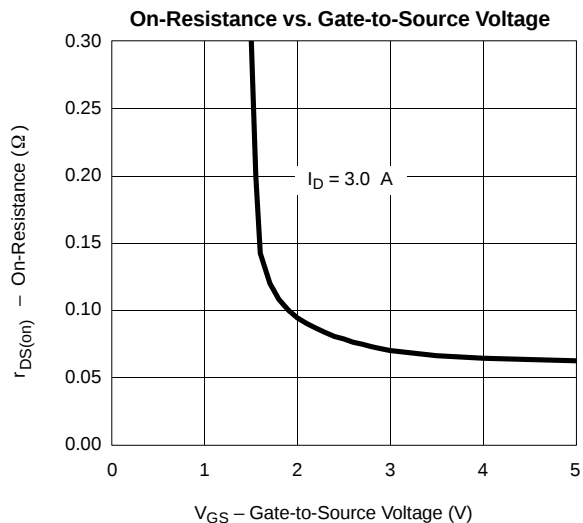
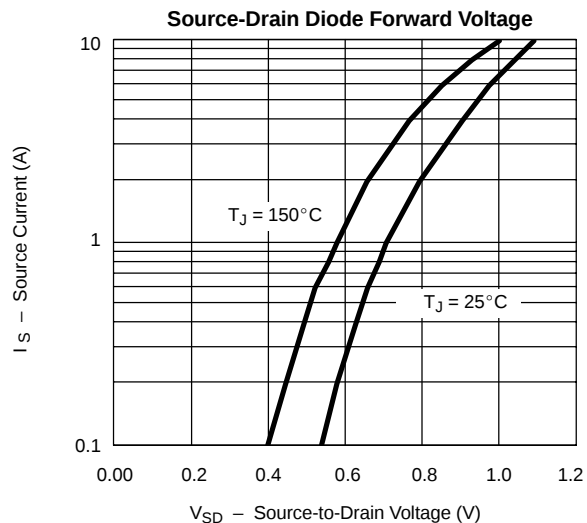


Gate Charge



On-Resistance vs. Junction Temperature

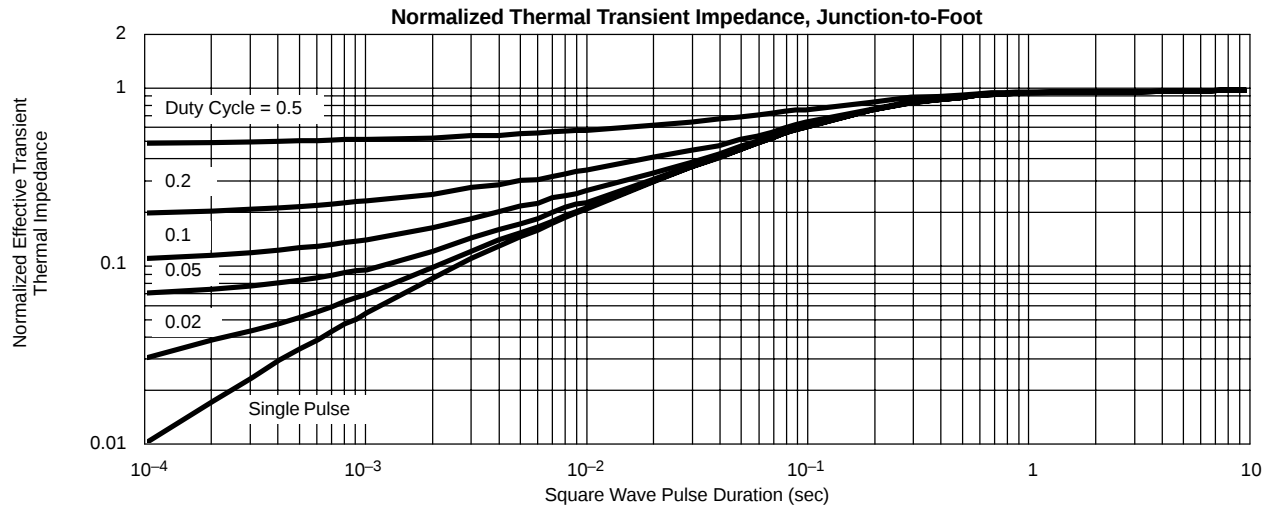


TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**N-CHANNEL**



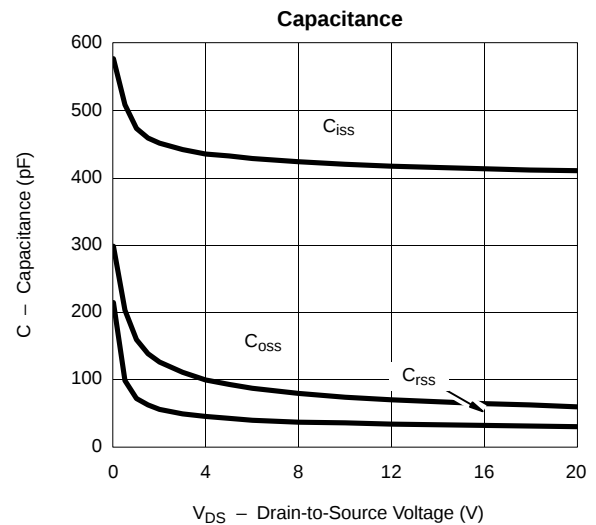
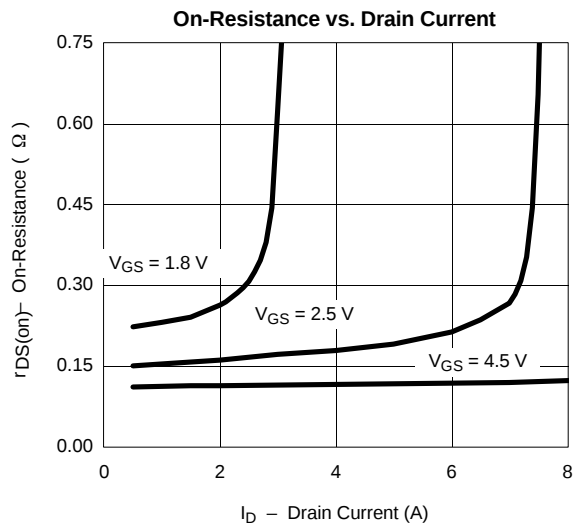
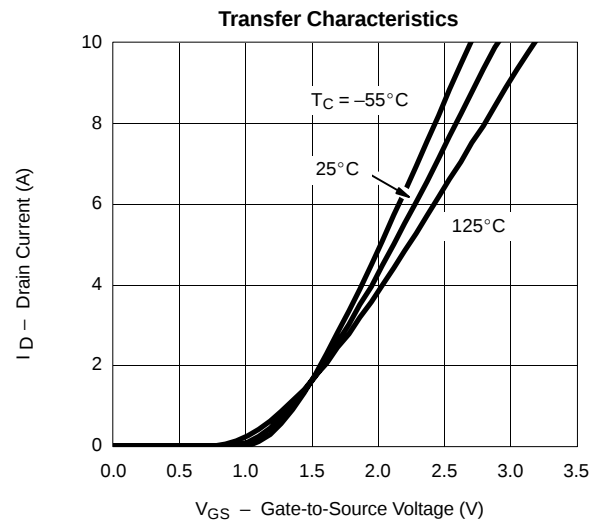
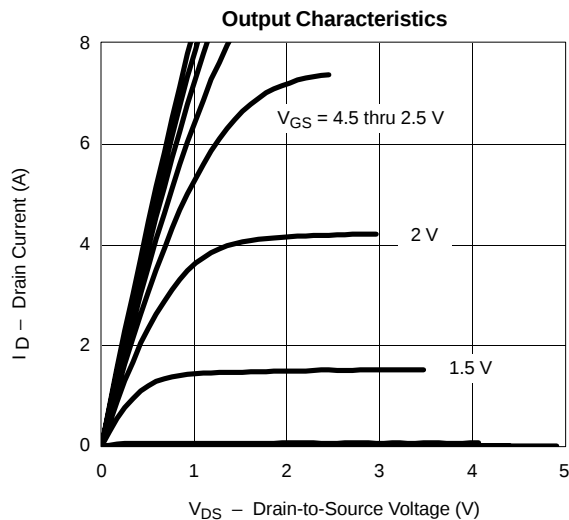
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

N-CHANNEL



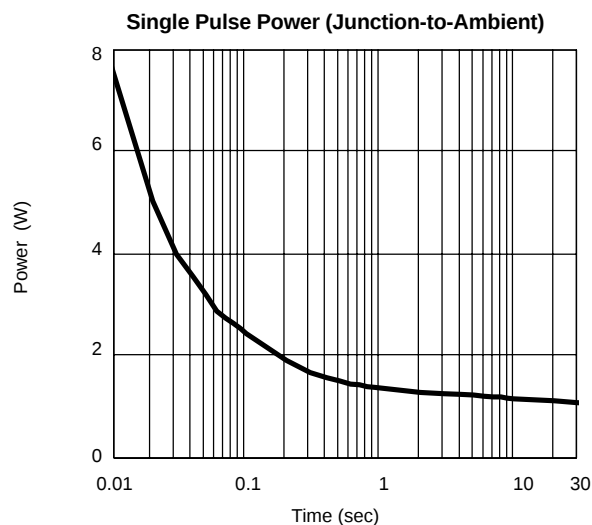
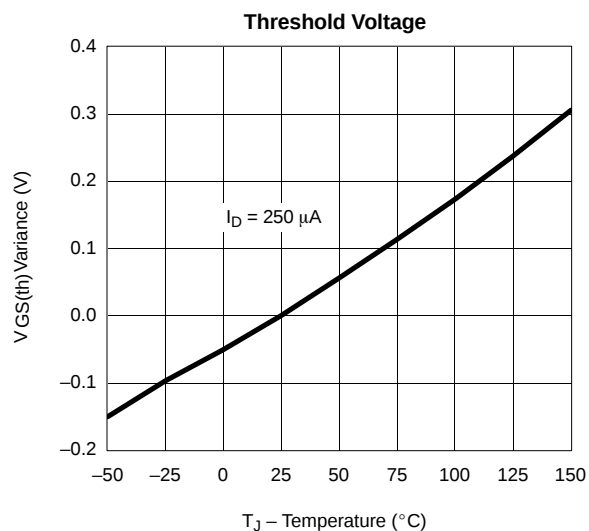
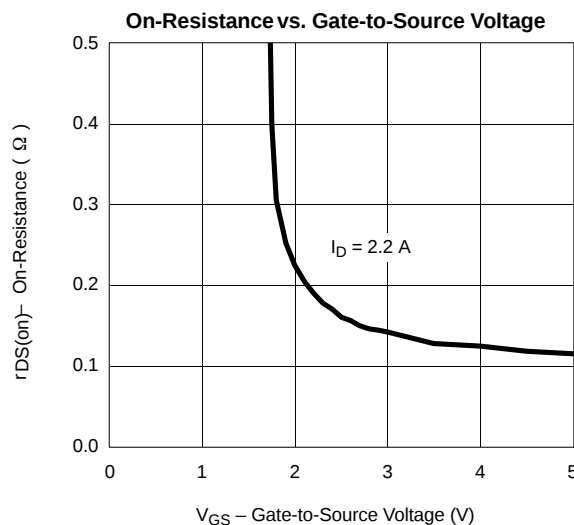
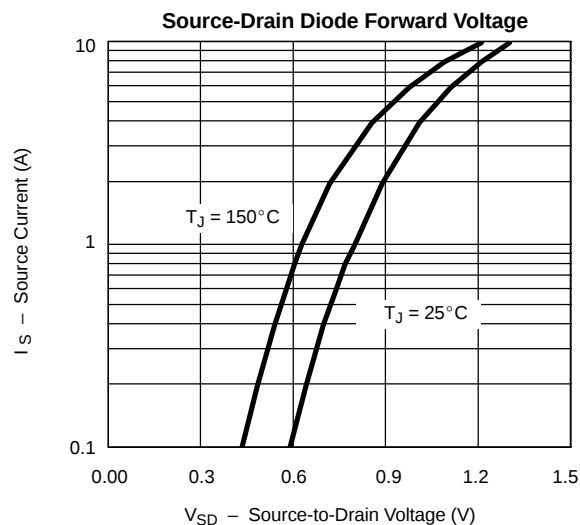
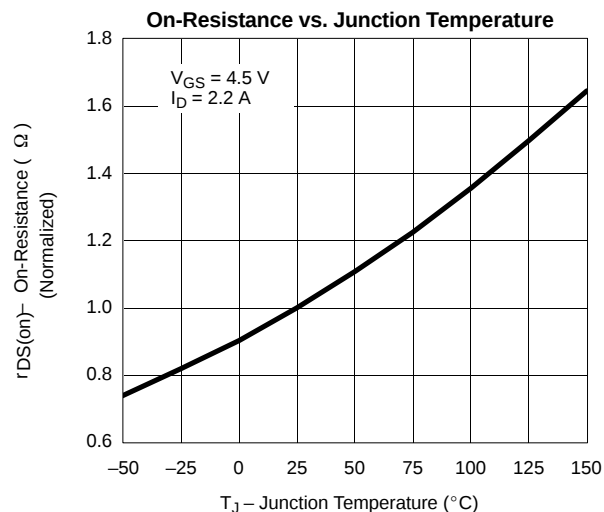
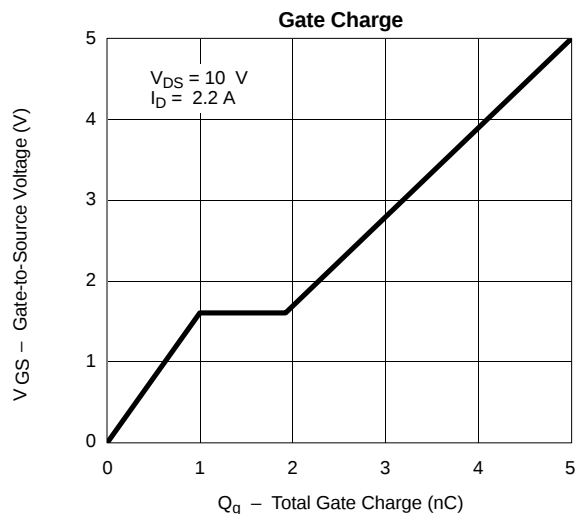
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

P-CHANNEL



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

P-CHANNEL





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

P-CHANNEL

