



N- and P-Channel MOSFET

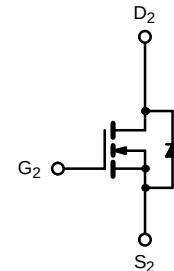
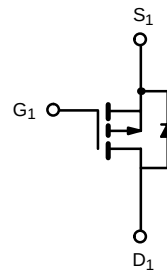
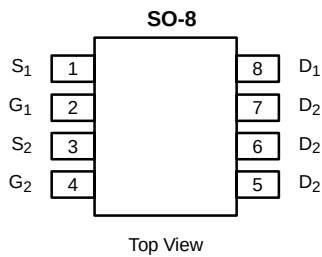
PRODUCT SUMMARY			
	V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
N-Channel (Channel 2)	30	0.018 @ $V_{GS} = 10$ V	8.8
		0.027 @ $V_{GS} = 4.5$ V	7.2
P-Channel (Channel 1)	-8	0.042 @ $V_{GS} = -4.5$ V	-4.5
		0.060 @ $V_{GS} = -2.5$ V	-3.7

FEATURES

- TrenchFET® Power MOSFET

APPLICATIONS

- Level Shift
- Load Switch



ABSOLUTE MAXIMUM RATINGS (T _A = 25°C UNLESS OTHERWISE NOTED)							
Parameter		Symbol	N-Channel		P-Channel		Unit
			10 sec.	Steady State	10 sec.	Steady State	
Drain-Source Voltage		V _{DS}	30		−8		V
Gate-Source Voltage		V _{GS}	± 20		± 8		
Continuous Drain Current (T _J = 150°C) ^{a, b}	T _A = 25°C	I _D	8.8	6.5	−4.5	−3.8	A
	T _A = 70°C		7.0	5.2	−3.6	−3.0	
Pulsed Drain Current		I _{DM}	30		−20		
Continuous Source Current (Diode Conduction) ^{a, b}		I _S	2.0	1.1	−1.2	0.9	
Maximum Power Dissipation ^{a, b}	T _A = 25°C	P _D	2.27	1.25	1.38	1.0	W
	T _A = 70°C		1.45	0.8	0.88	0.64	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	−55 to 150				°C

THERMAL RESISTANCE RATINGS							
Parameter		Symbol	N-Channel		P-Channel		Unit
			Typ	Max	Typ	Max	
Maximum Junction-to-Ambient ^a	$t \leq 10$ sec	R_{thJA}	45	55	75	90	$^\circ\text{C/W}$
	Steady-State		85	100	100	125	
Maximum Junction-to-Foot (Drain)	Steady-State	R_{thJF}	25	30	53	65	

Notes

- a. Surface Mounted on FR4 Board.
b. $t \leq 10$ sec

SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition		Min	Typ ^a	Max	Unit
Static							
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	N-Ch	0.8			V
		V _{DS} = V _{GS} , I _D = −250 μA	P-Ch	−0.45			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 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} = 24 V, V _{GS} = 0 V	N-Ch			1	μA
		V _{DS} = −6.4 V, V _{GS} = 0 V	P-Ch			−1	
		V _{DS} = 24 V, V _{GS} = 0 V, T _J = 55°C	N-Ch			5	
		V _{DS} = −6.4 V, V _{GS} = 0 V, T _J = 55°C	P-Ch			−5	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	N-Ch	30			A
		V _{DS} = −5 V, V _{GS} = −4.5 V	P-Ch	−20			
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 8.8 A	N-Ch		0.015	0.018	Ω
		V _{GS} = −4.5 V, I _D = −4.5 A	P-Ch		0.034	0.042	
		V _{GS} = 4.5 V, I _D = 7.2 A	N-Ch		0.022	0.027	
		V _{GS} = −2.5 V, I _D = −3.7 A	P-Ch		0.048	0.060	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 8.8 A	N-Ch		20		S
		V _{DS} = −15 V, I _D = −4.5 A	P-Ch		13		
Diode Forward Voltage ^b	V _{SD}	I _S = 2.0 A, V _{GS} = 0 V	N-Ch		0.71	1.1	V
		I _S = −1.2 A, V _{GS} = 0 V	P-Ch		−0.70	−1.1	
Dynamic ^a							
Total Gate Charge	Q _g	N-Channel V _{DS} = 15 V, V _{GS} = 5 V, I _D = 8.8 A P-Channel V _{DS} = −4 V, V _{GS} = −5 V, I _D = −4.5 A	N-Ch		14.5	20	nC
Gate-Source Charge	Q _{gs}		P-Ch		15	25	
			N-Ch		3.3		
Gate-Drain Charge	Q _{gd}		P-Ch		3.0		
			N-Ch		6.6		
			P-Ch		2.0		
Turn-On Delay Time	t _{d(on)}	N-Channel V _{DD} = 15 V, R _L = 15 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _G = 6 Ω P-Channel V _{DD} = −4 V, R _L = 4 Ω I _D ≅ −1 A, V _{GEN} = −4.5 V, R _G = 6 Ω	N-Ch		13	20	ns
Rise Time	t _r		P-Ch		20	40	
			N-Ch		9	18	
Turn-Off Delay Time	t _{d(off)}		P-Ch		50	100	
			N-Ch		35	50	
Fall Time	t _f		P-Ch		110	220	
			N-Ch		17	30	
Source-Drain Reverse Recovery Time	t _{rr}		P-Ch		60	120	
		N-Ch		35	70		
			P-Ch		60	100	

Notes

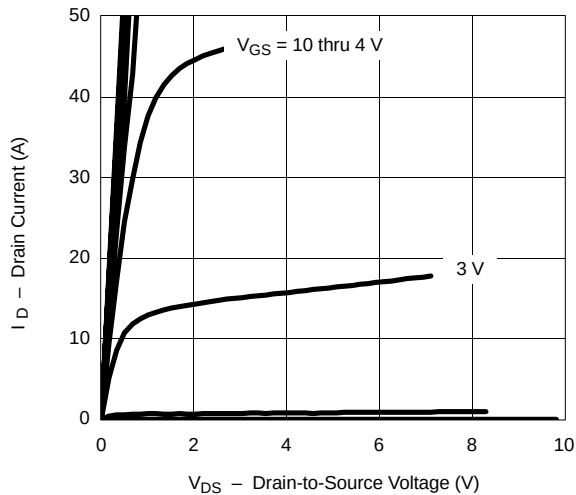
- a. Guaranteed by design, not subject to production testing.
 b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.



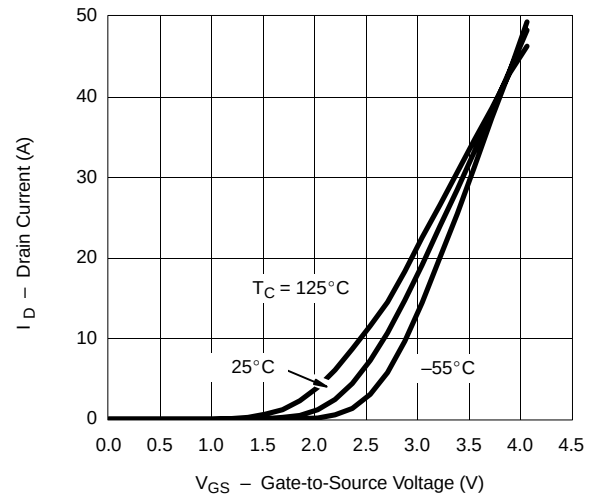
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

N-CHANNEL

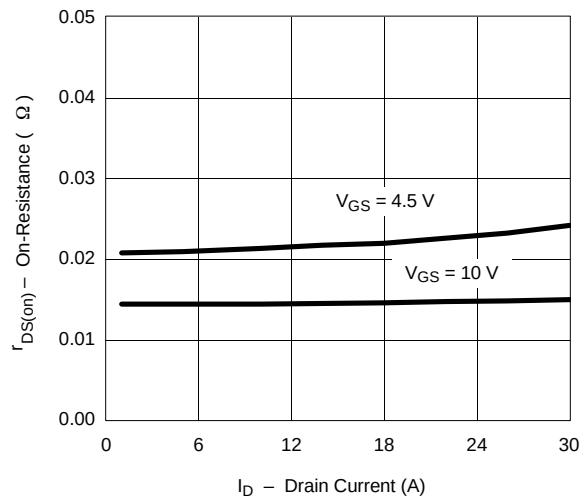
Output Characteristics



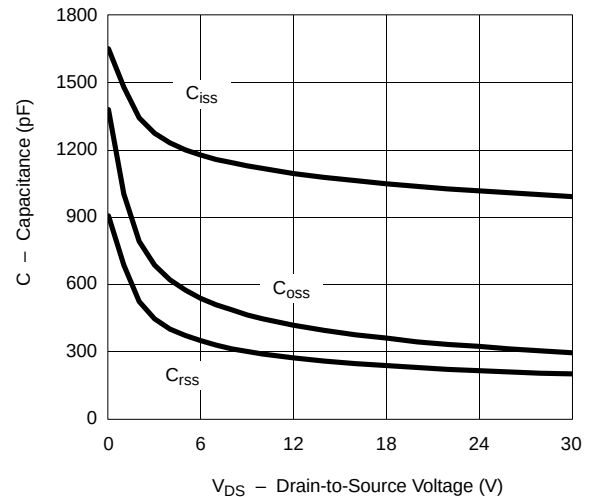
Transfer Characteristics



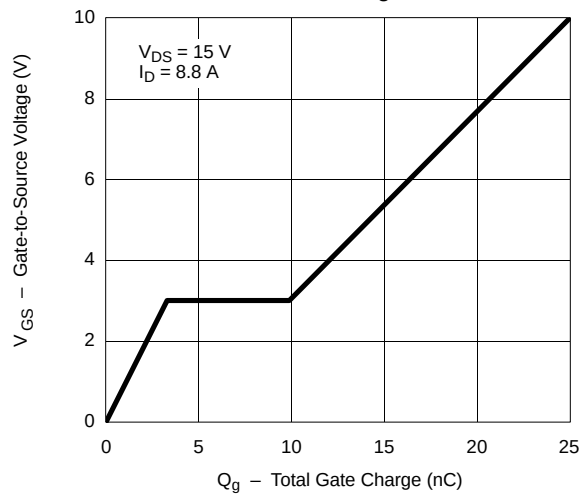
On-Resistance vs. Drain Current



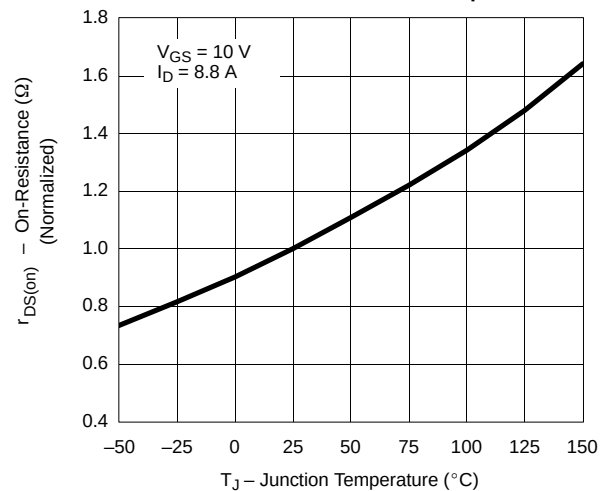
Capacitance



Gate Charge

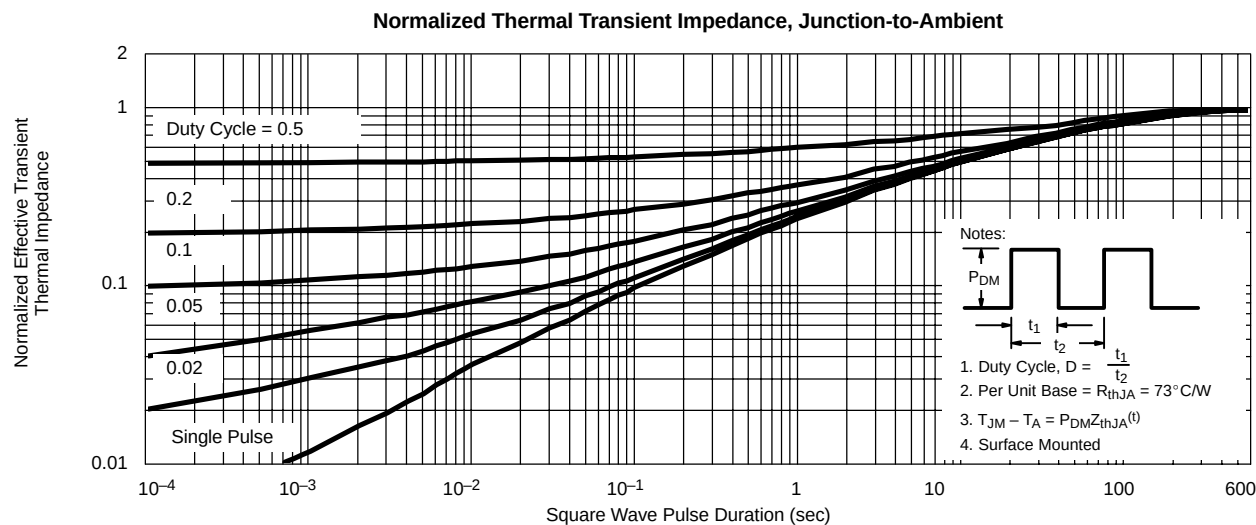
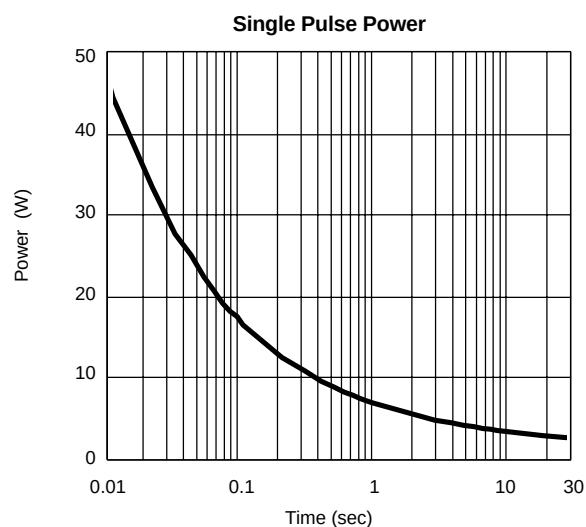
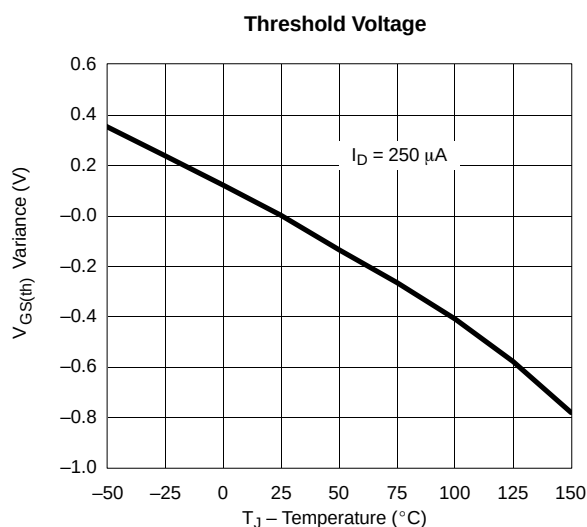
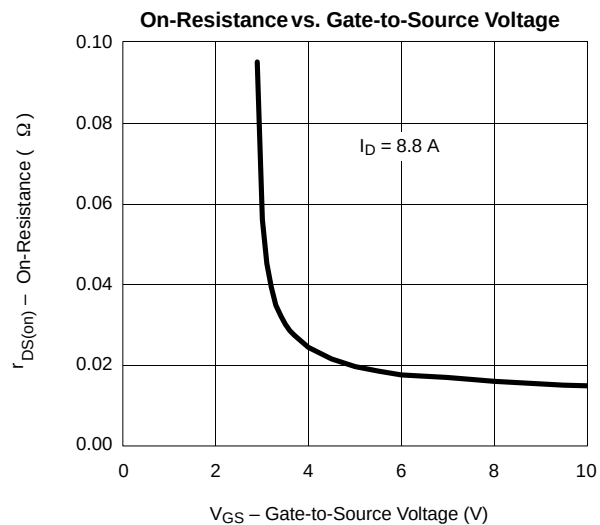
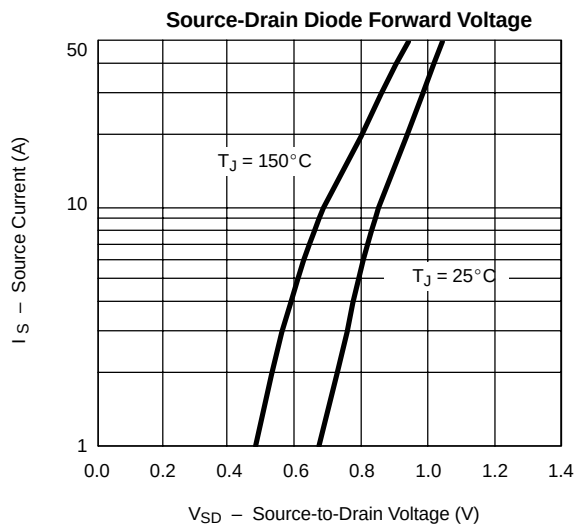


On-Resistance vs. Junction Temperature



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

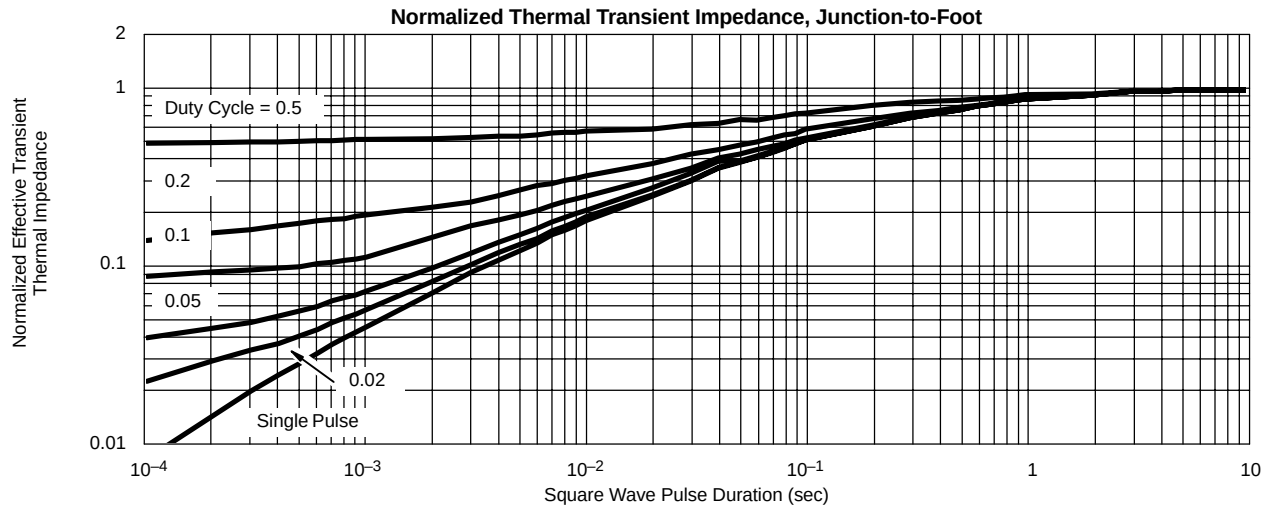
N-CHANNEL





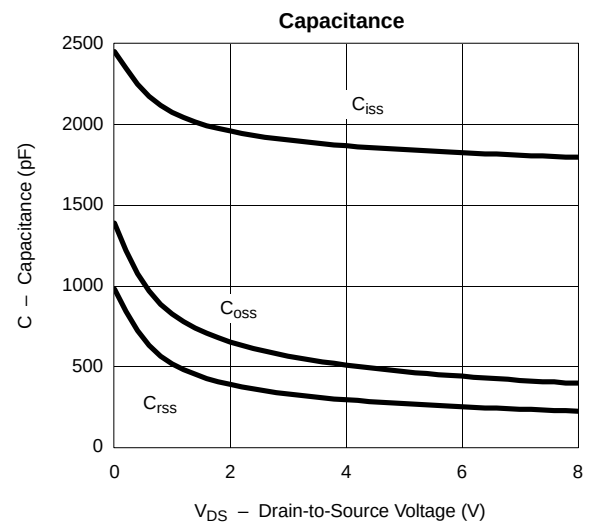
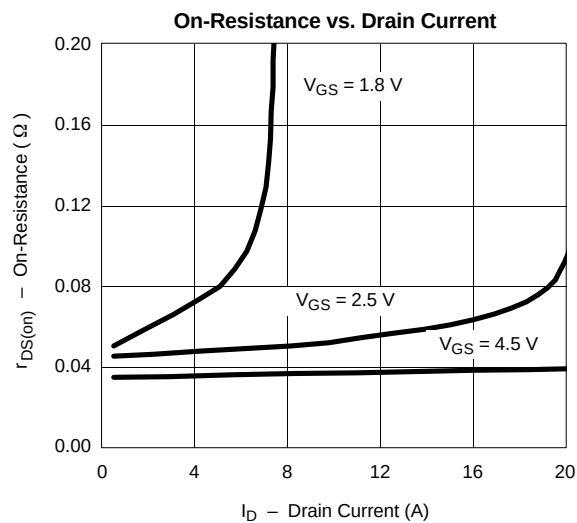
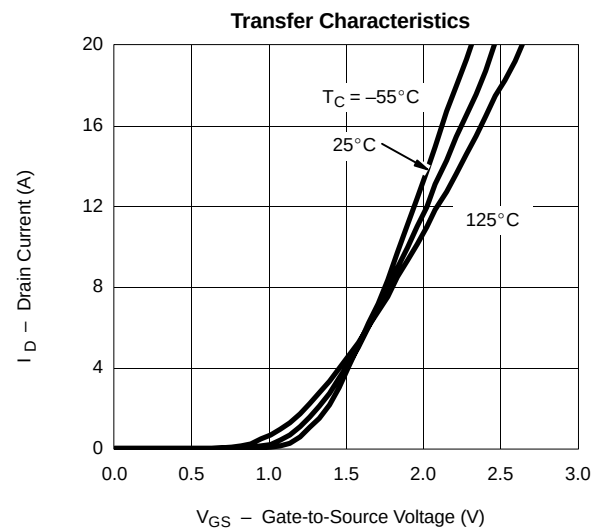
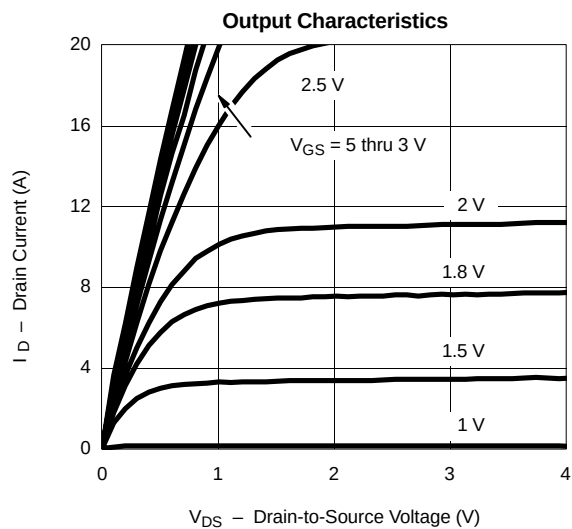
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N-CHANNEL



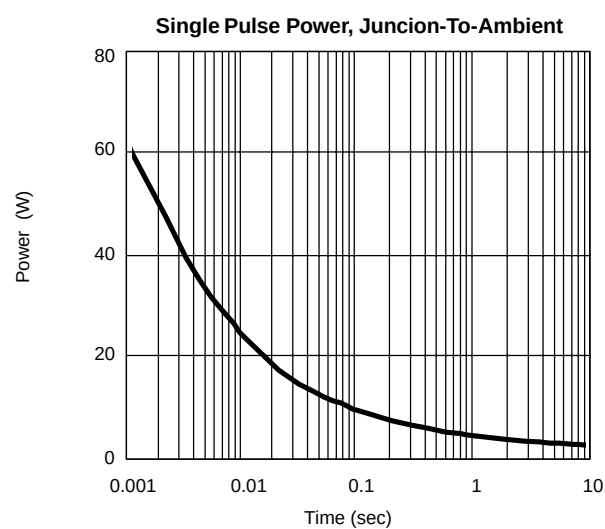
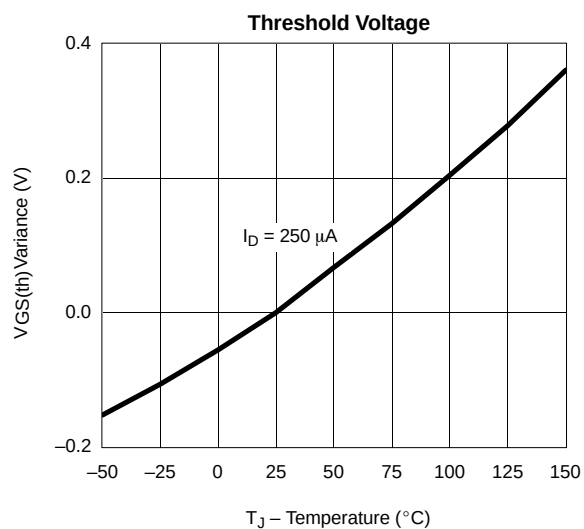
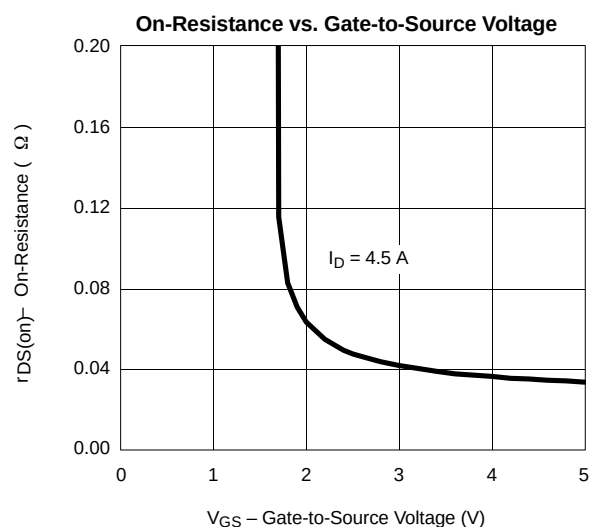
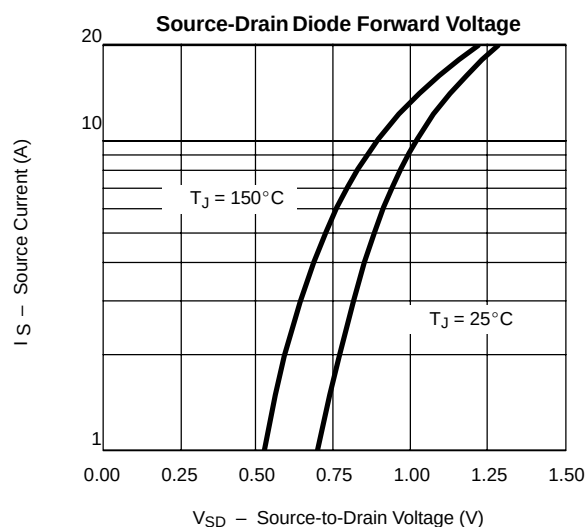
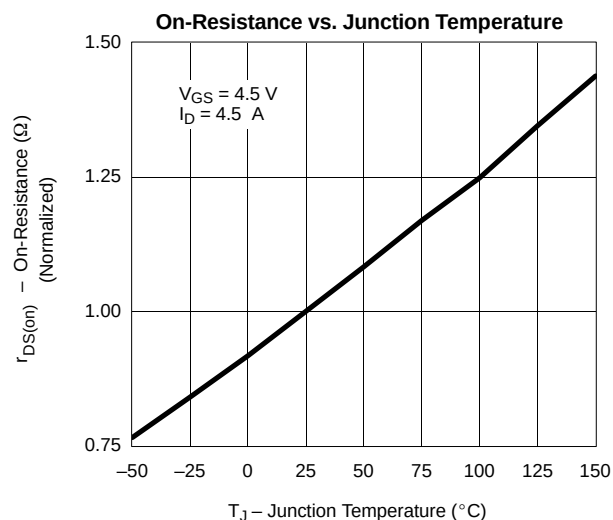
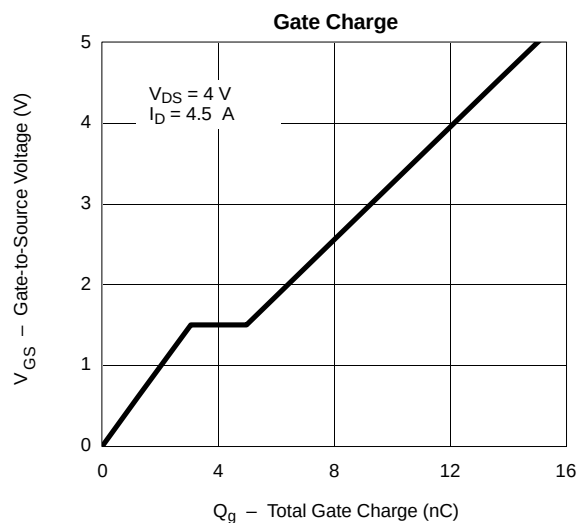
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

P-CHANNEL



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P-CHANNEL





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

P-CHANNEL

