



N- and P-Channel MOSFET

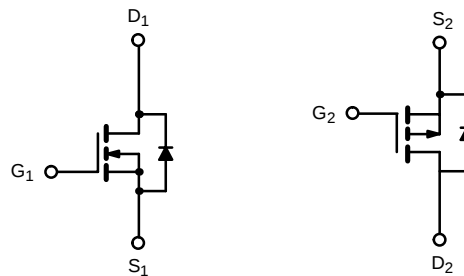
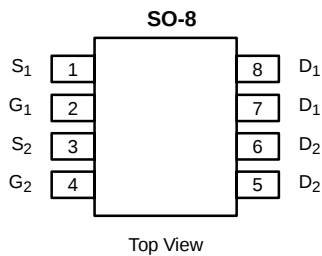
PRODUCT SUMMARY			
	V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
N-Channel	30	0.018 @ $V_{GS} = 10$ V	7.8
		0.027 @ $V_{GS} = 4.5$ V	6.4
P-Channel	-8	0.042 @ $V_{GS} = -4.5$ V	-5.0
		0.060 @ $V_{GS} = -2.5$ V	-4.0

FEATURES

- TrenchFET® Power MOSFET

APPLICATIONS

- Level Shift
- Load Switch

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ 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	7.8	6.0	−5.0	−3.8	A
	T _A = 70°C		6.0	5.2	−3.6	−3.0	
Pulsed Drain Current		I _{DM}	30		−30		
Continuous Source Current (Diode Conduction) ^{a, b}		I _S	1.8	1.0	−1.8	1.0	
Maximum Power Dissipation ^{a, b}	T _A = 25°C	P _D	2	1.20	2	1.2	W
	T _A = 70°C		1.3	0.75	1.3	0.75	
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	R_{thJA}	50	62.5	50	62.5	$^\circ\text{C/W}$
		85	105	85	105	
Maximum Junction-to-Foot (Drain)	R_{thJF}	30	40	30	40	

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		1.8	V
		V _{DS} = V _{GS} , I _D = −250 μA	P-Ch	−0.45		1.0	
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	20			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 = 7.8 A	N-Ch		0.015	0.018	Ω
		V _{GS} = −4.5 V, I _D = −5.0 A	P-Ch		0.030	0.042	
		V _{GS} = 4.5 V, I _D = 6.4 A	N-Ch		0.022	0.027	
		V _{GS} = −2.5 V, I _D = −4.0 A	P-Ch		0.048	0.060	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 7.8 A	N-Ch		18		S
		V _{DS} = −15 V, I _D = −5.0 A	P-Ch		12		
Diode Forward Voltage ^b	V _{SD}	I _S = 1.8 A, V _{GS} = 0 V	N-Ch		0.73	1.1	V
		I _S = −1.8 A, V _{GS} = 0 V	P-Ch		−0.75	−1.1	
Dynamic ^a							
Total Gate Charge	Q _g	N-Channel V _{DS} = 15 V, V _{GS} = 5 V, I _D = 7.8 A P-Channel V _{DS} = −4 V, V _{GS} = −5 V, I _D = −5.0 A	N-Ch		11.5	20	nC
Gate-Source Charge	Q _{gs}		P-Ch		13.5	20	
			N-Ch		3		
Gate-Drain Charge	Q _{gd}		P-Ch		2.2		
			N-Ch		4		
			P-Ch		3		
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		15	25	ns
Rise Time	t _r		P-Ch		21	40	
			N-Ch		8	15	
Turn-Off Delay Time	t _{d(off)}		P-Ch		45	70	
			N-Ch		35	55	
Fall Time	t _f		P-Ch		60	100	
			N-Ch		10	20	
Source-Drain Reverse Recovery Time	t _{rr}		P-Ch		55	85	
		N-Ch		30	60		
			P-Ch		50	100	

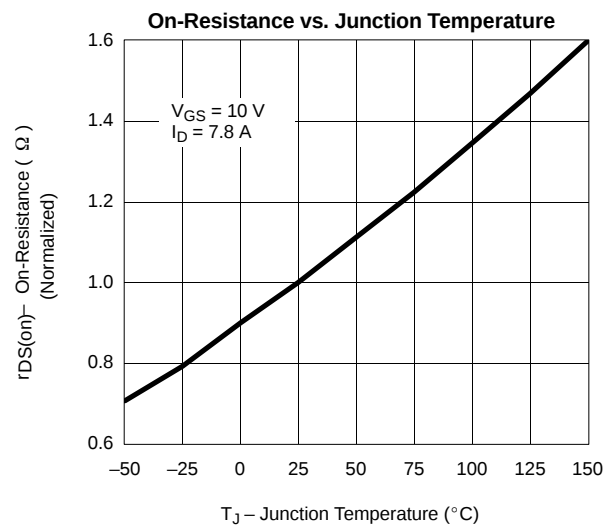
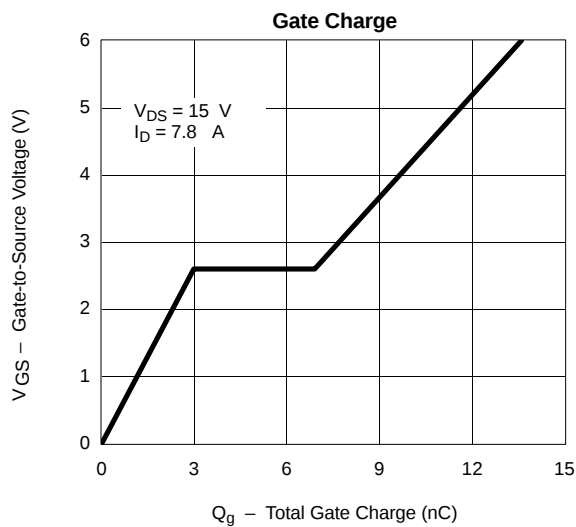
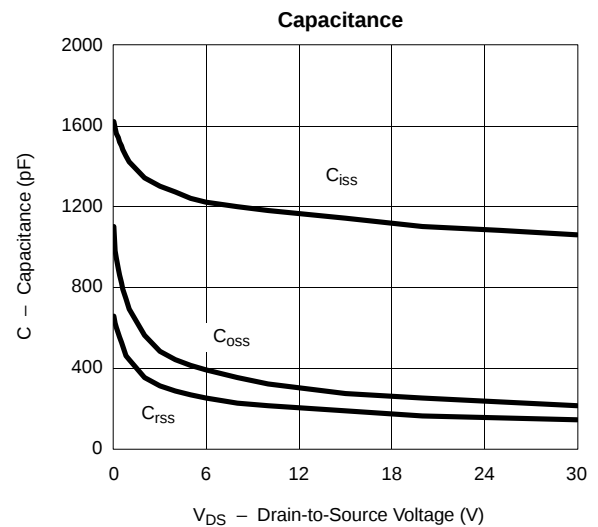
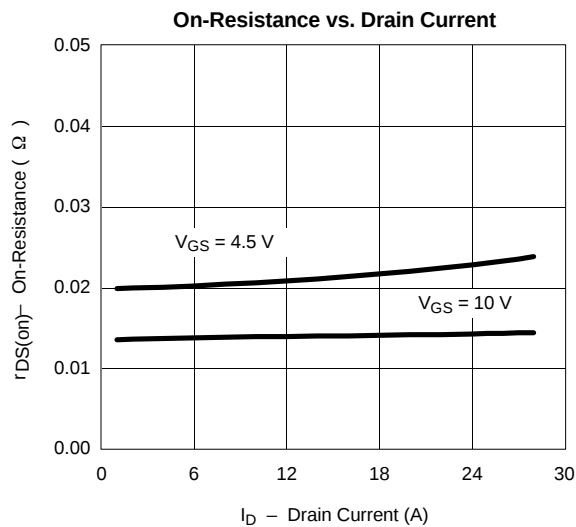
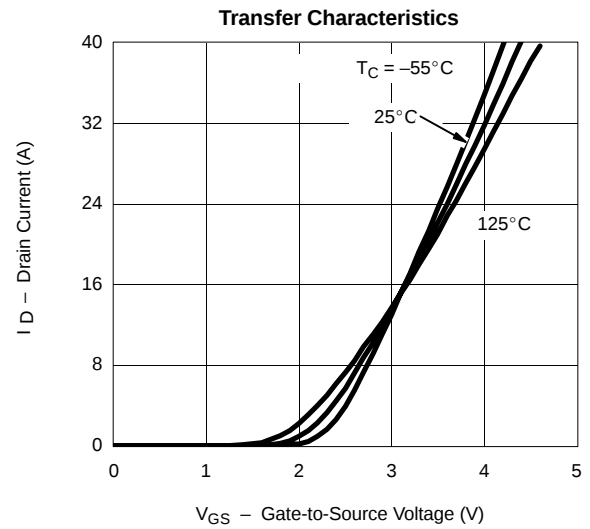
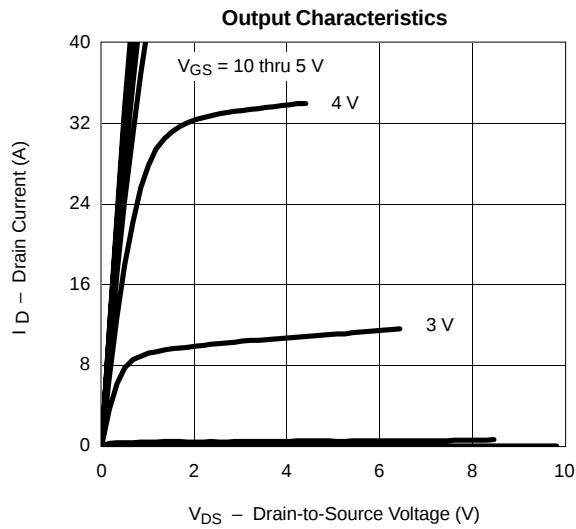
Notes

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



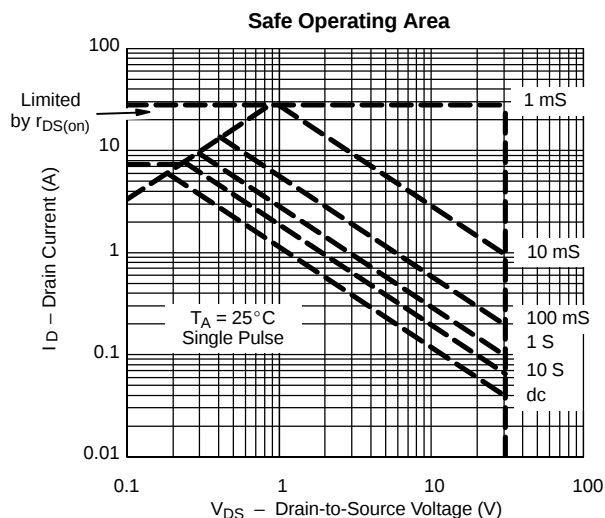
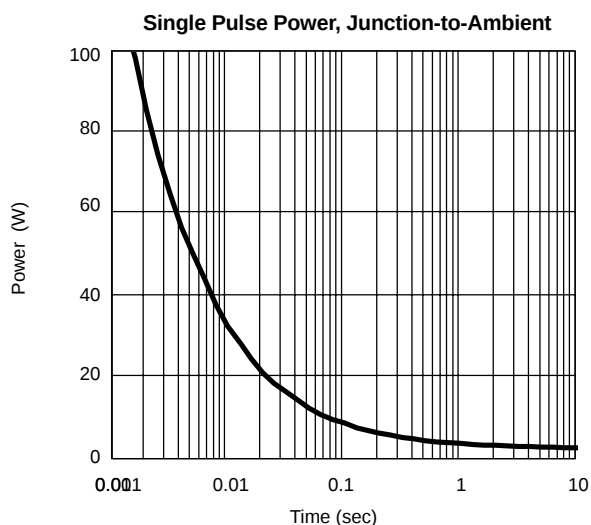
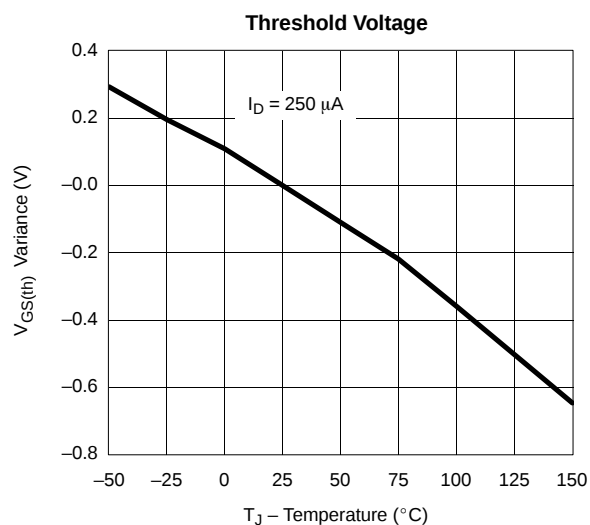
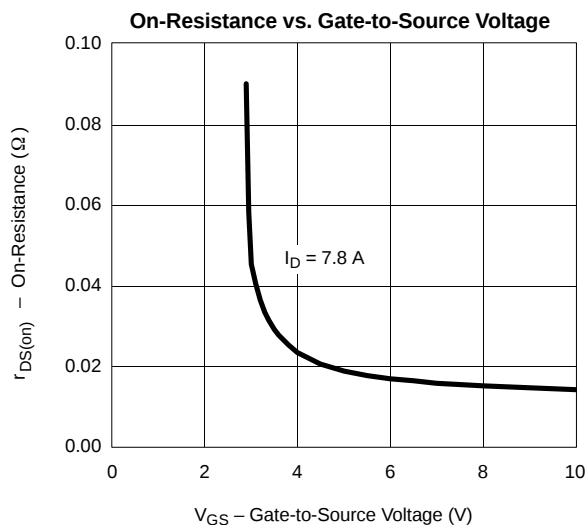
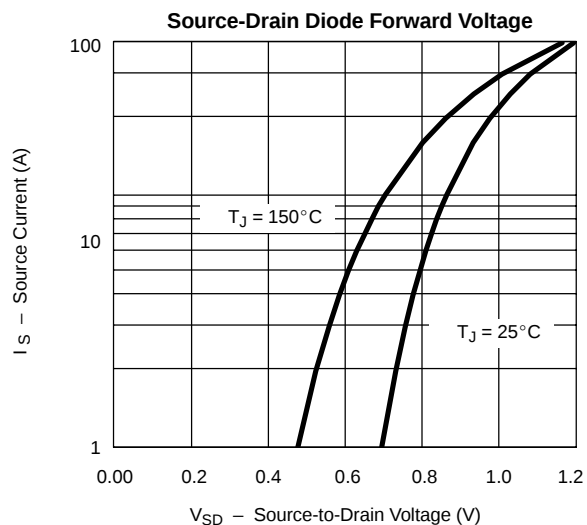
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

N-CHANNEL



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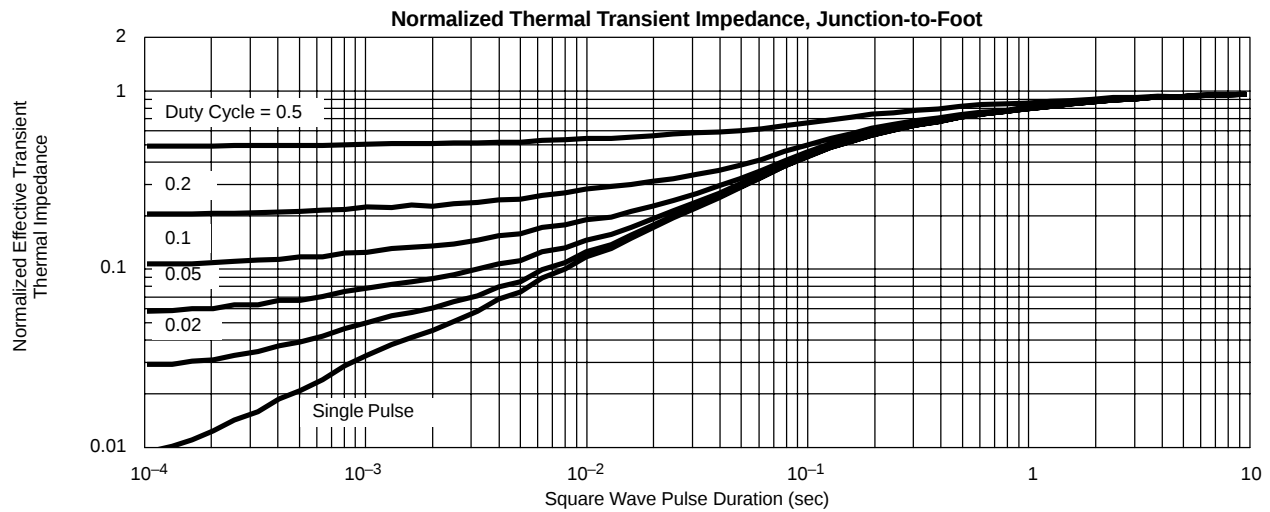
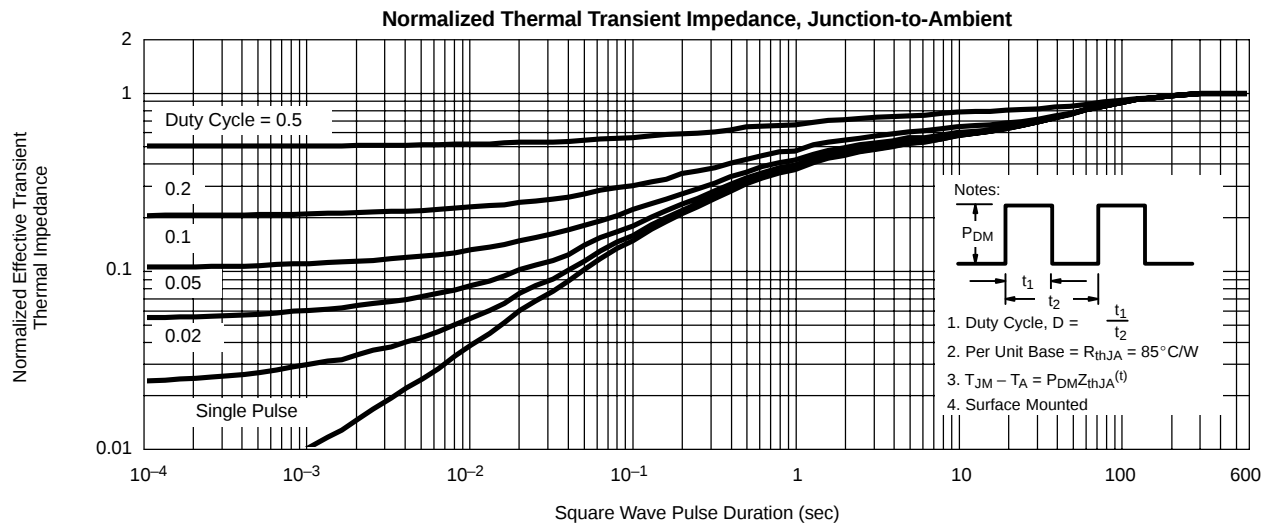
N-CHANNEL





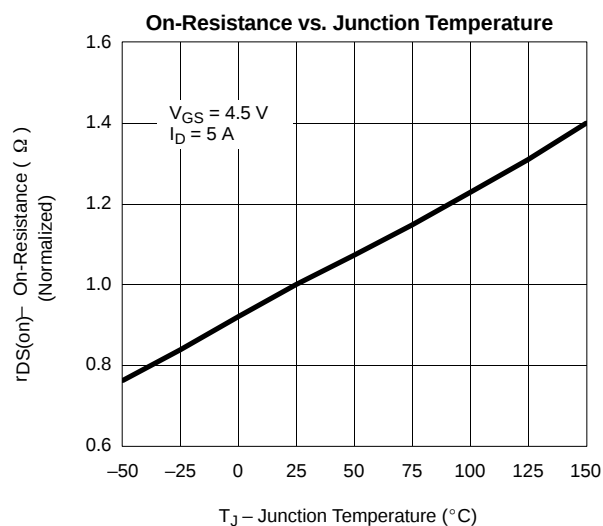
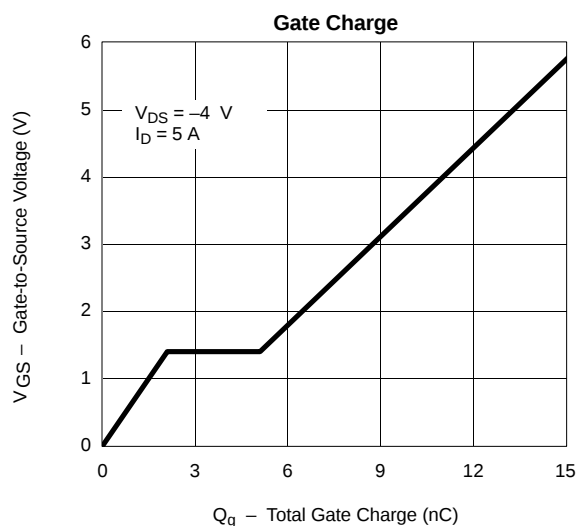
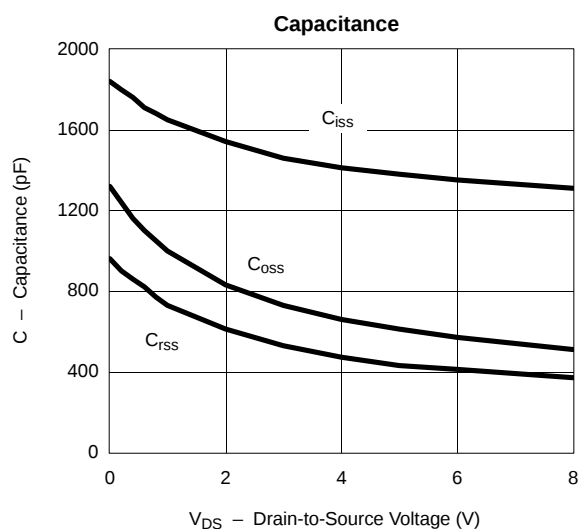
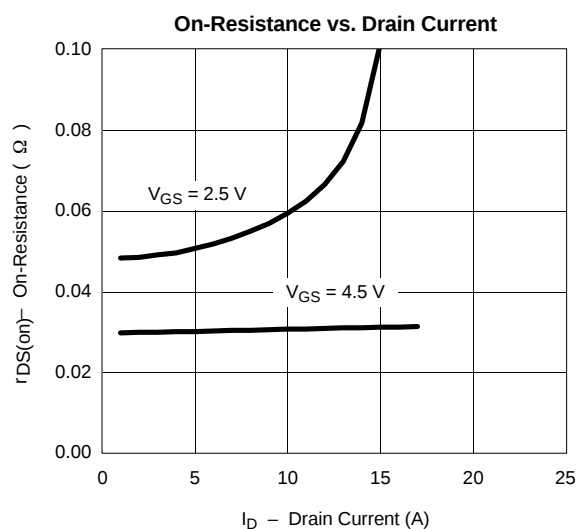
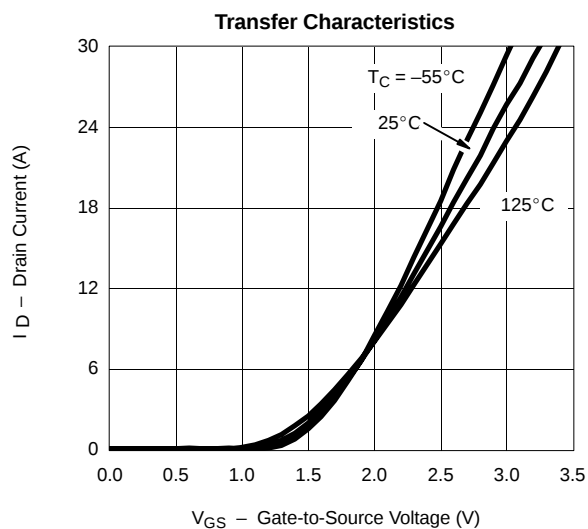
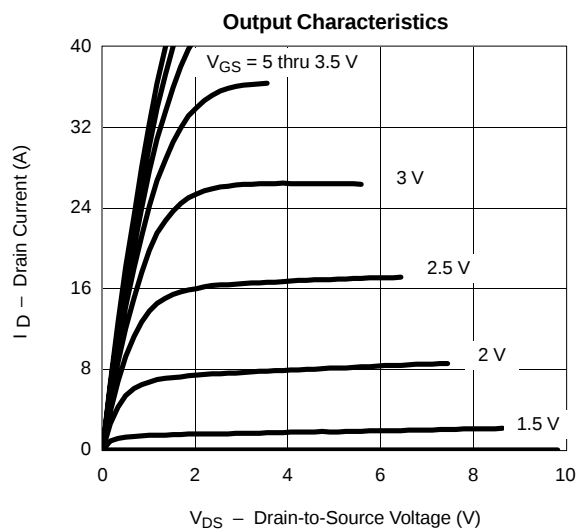
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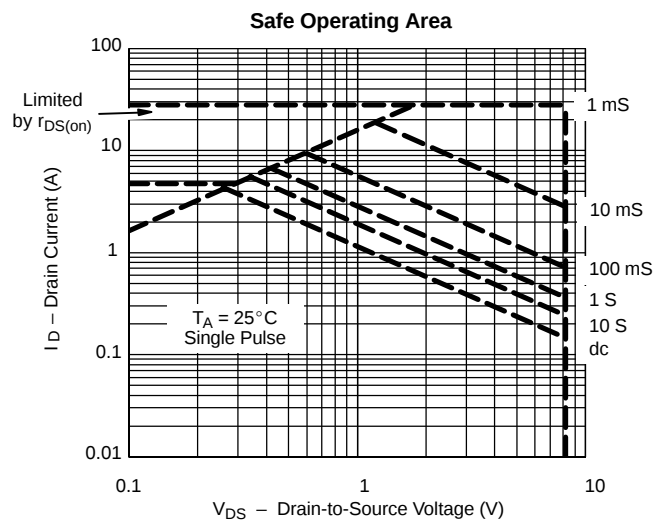
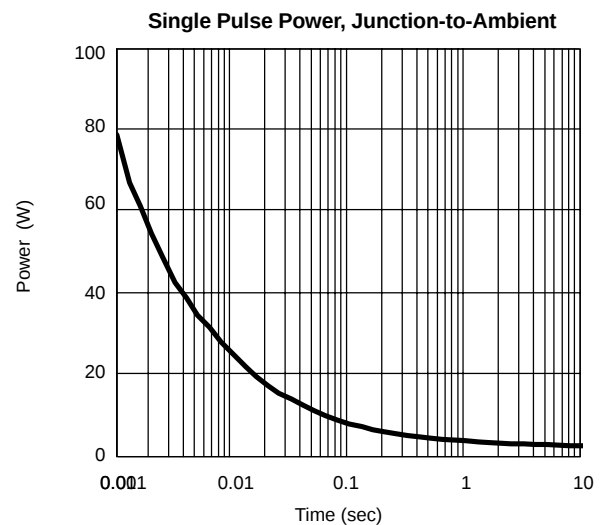
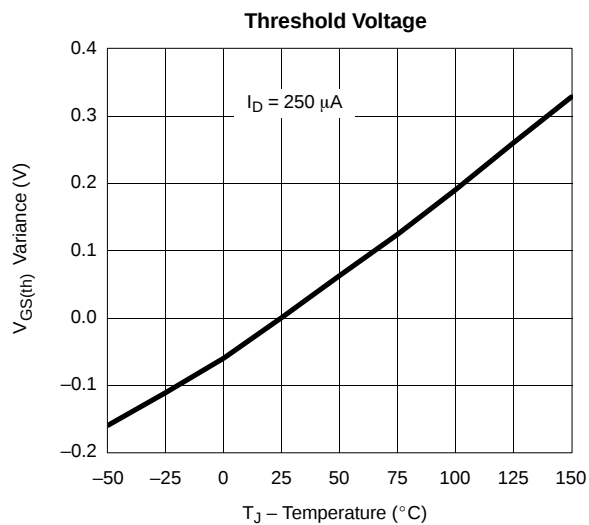
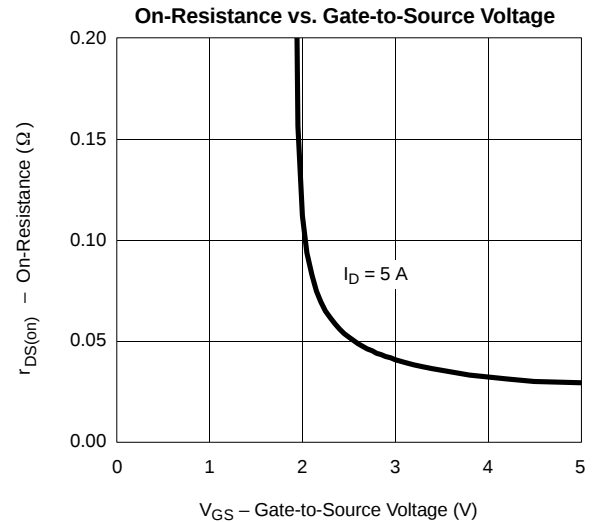
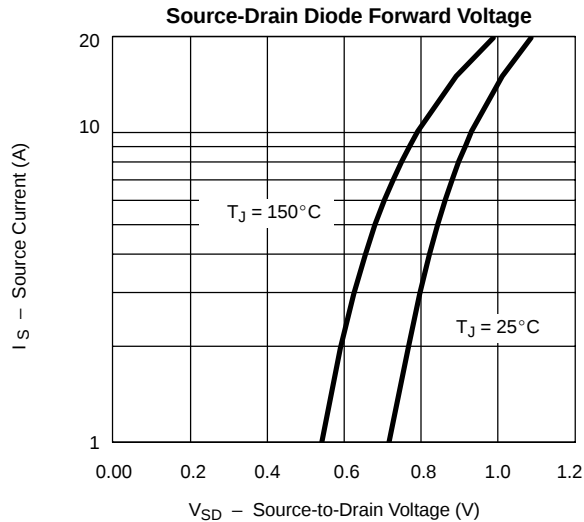
P-CHANNEL





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