

N- and P-Channel 30-V (D-S) MOSFET

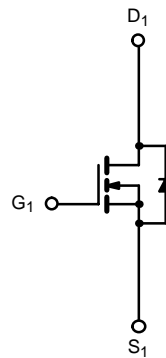
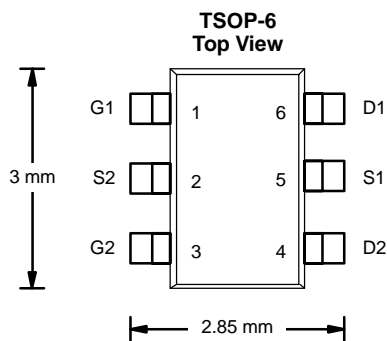
PRODUCT SUMMARY			
	V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A)
N-Channel	30	0.077 @ V _{GS} = 4.5 V	3
		0.120 @ V _{GS} = 2.5 V	2
P-Channel	-30	0.170 @ V _{GS} = -4.5 V	-2
		0.300 @ V _{GS} = -2.5 V	-1.2

FEATURES

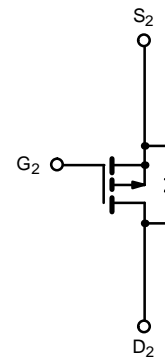
- TrenchFET® Power MOSFET
- Ultra Low r_{DS(on)} N- and P-Channel for High Efficiency
- Optimized for High-Side/Low-Side
- Minimized Conduction Losses

APPLICATIONS

- Portable Devices Including PDAs, Cellular Phones and Pagers



N-Channel MOSFET



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C UNLESS OTHERWISE NOTED)							
Parameter	Symbol	N-Channel		P-Channel		Unit	
		10 secs	Steady State	10 secs	Steady State		
Drain-Source Voltage	V _{DS}	30		-30		V	
Gate-Source Voltage	V _{GS}	± 12		± 12			
Continuous Drain Current (T _J = 150 °C) ^a	I _D	T _A = 25 °C	3	2.5	-2	-1.7	A
		T _A = 70 °C	2.3	2.0	-1.6	-1.3	
Pulsed Drain Current	I _{DM}	8		-8		A	
Continuous Source Current (Diode Conduction) ^a	I _S	1.05	0.75	-1.05	-0.75		
Maximum Power Dissipation ^a	P _D	T _A = 25 °C	1.15	0.83	1.15	0.83	W
		T _A = 70 °C	0.70	0.53	0.70	0.53	
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}	t ≤ 10 sec	93	110	93	110	°C/W
		Steady State	130	150	130	150	
Maximum Junction-to-Foot (Drain)	R _{thJF}	75	90	75	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	0.6		1.5	V
		V _{DS} = V _{GS} , I _D = -250 μA	P-Ch	-0.6		-1.5	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±12 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 = 55 °C	N-Ch			5	
		V _{DS} = -24 V, V _{GS} = 0 V, T _J = 55 °C	P-Ch			-5	
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		0.062	0.077	Ω
		V _{GS} = -4.5 V, I _D = -2 A	P-Ch		0.135	0.170	
		V _{GS} = 2.5 V, I _D = 2 A	N-Ch		0.095	0.120	
		V _{GS} = -2.5 V, I _D = -1.2 A	P-Ch		0.235	0.300	
Forward Transconductance ^a	g _{fs}	V _{DS} = 5 V, I _D = 3 A	N-Ch		10		S
		V _{DS} = -5 V, I _D = -2 A	P-Ch		5		
Diode Forward Voltage ^a	V _{SD}	I _S = 1.05 A, V _{GS} = 0 V	N-Ch		0.80	1.10	V
		I _S = -1.05 A, V _{GS} = 0 V	P-Ch		-0.83	-1.10	
Dynamic^b							
Total Gate Charge	Q _g	N-Channel V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 2 A P-Channel V _{DS} = -15 V, V _{GS} = -4.5 V, I _D = -2 A	N-Ch		3	4.5	nC
Gate-Source Charge	Q _{gs}		P-Ch		3.8	6	
Gate-Drain Charge	Q _{gd}		N-Ch		1.0		
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} = -15 V, R _L = 15 Ω I _D ≅ -1 A, V _{GEN} = -10 V, R _G = 6 Ω	N-Ch		5	8	ns
Rise Time	t _r		P-Ch		5	8	
			N-Ch		12	23	
Turn-Off Delay Time	t _{d(off)}		P-Ch		15	23	
			N-Ch		13	23	
Fall Time	t _f		P-Ch		20	30	
			N-Ch		7	12	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 1.05 A, di/dt = 100 A/μs	N-Ch		15	25	
		I _F = -1.05 A, di/dt = 100 A/μs	P-Ch		18	30	

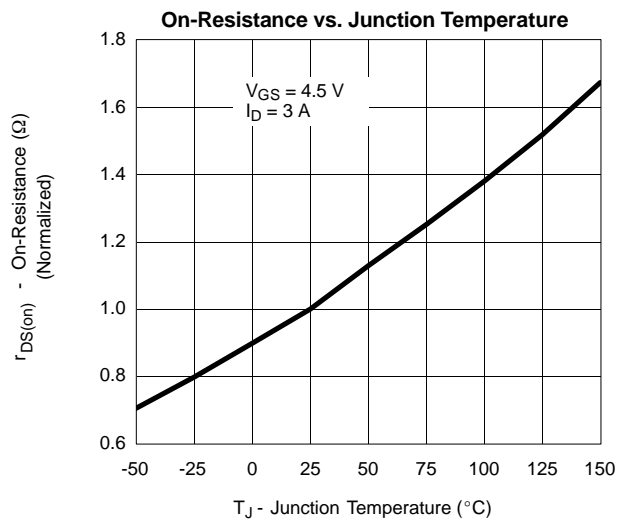
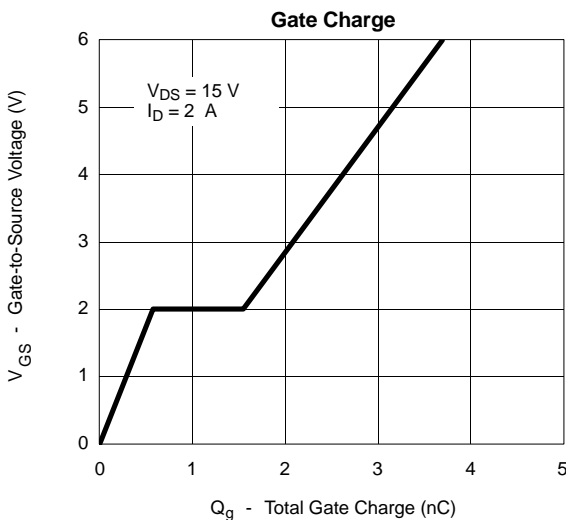
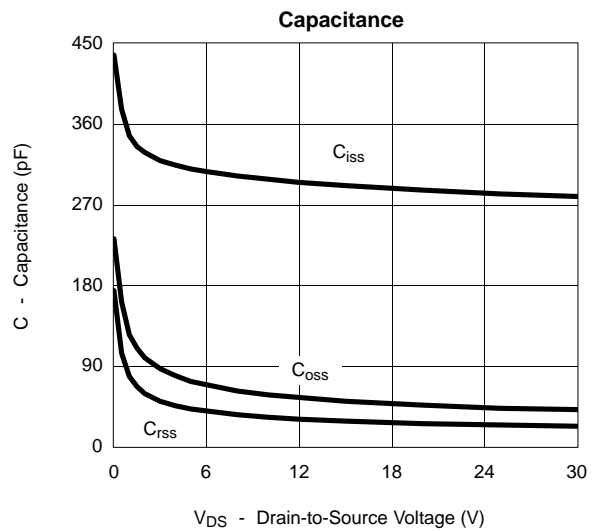
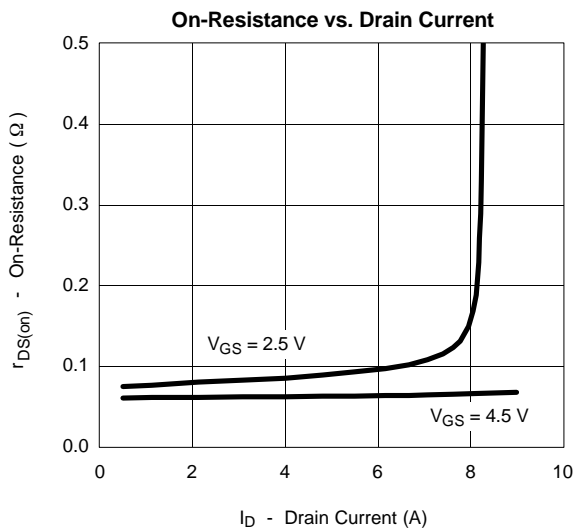
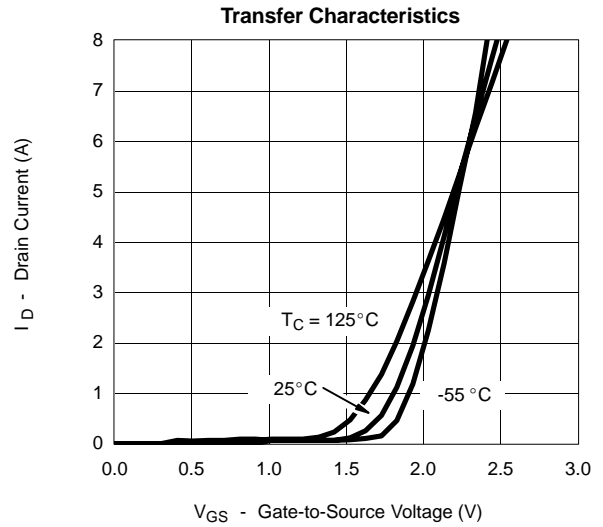
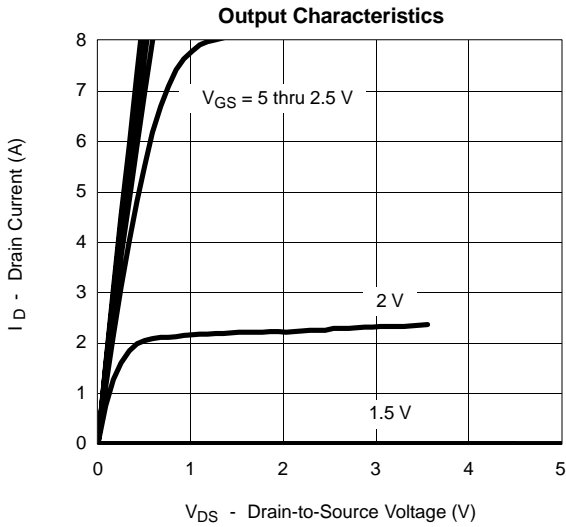
Notes

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



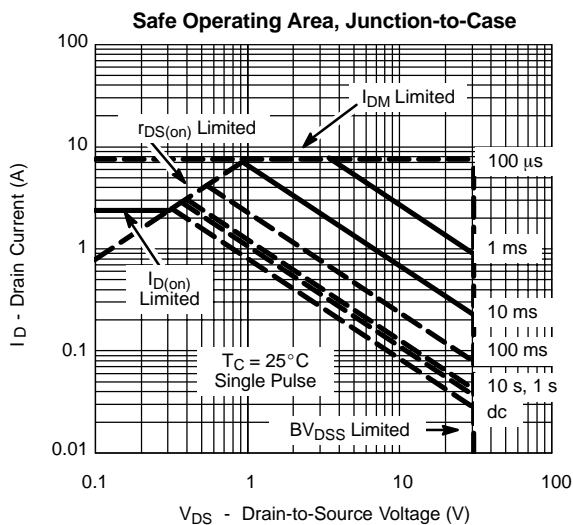
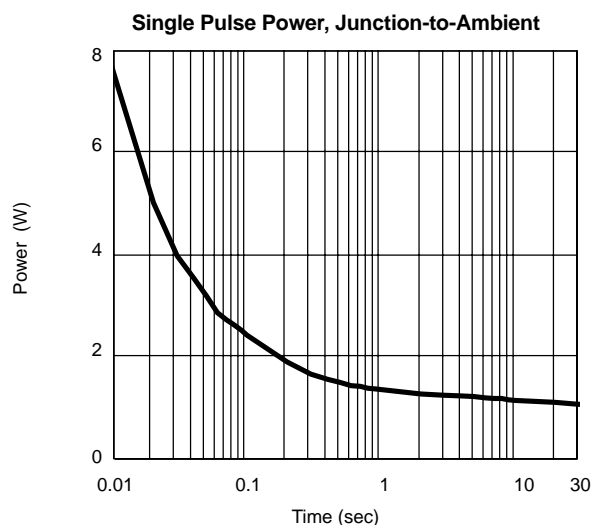
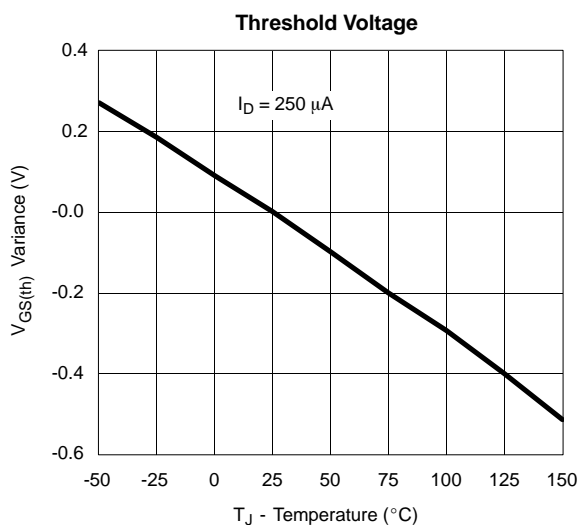
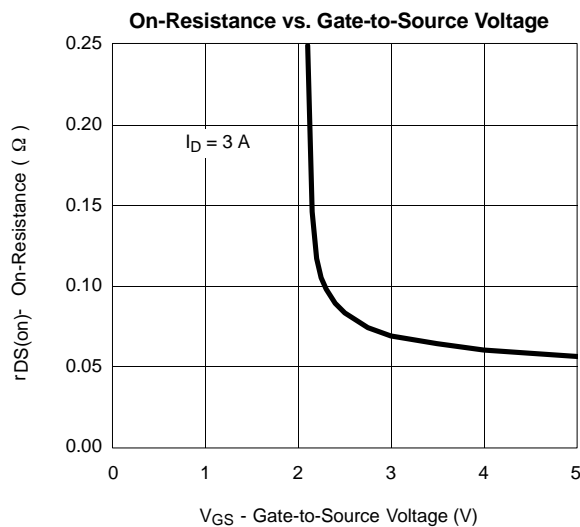
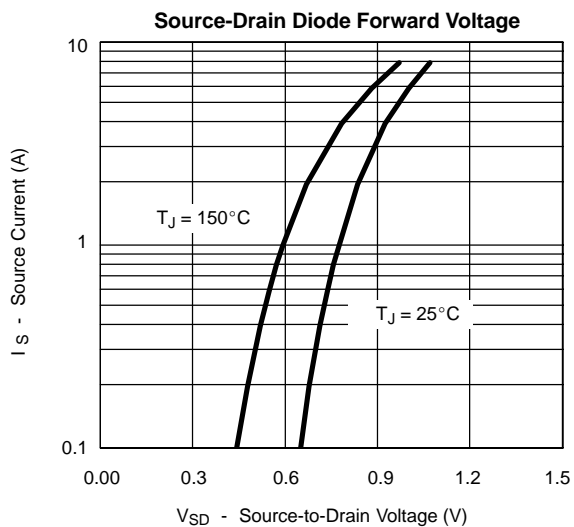
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

N-CHANNEL



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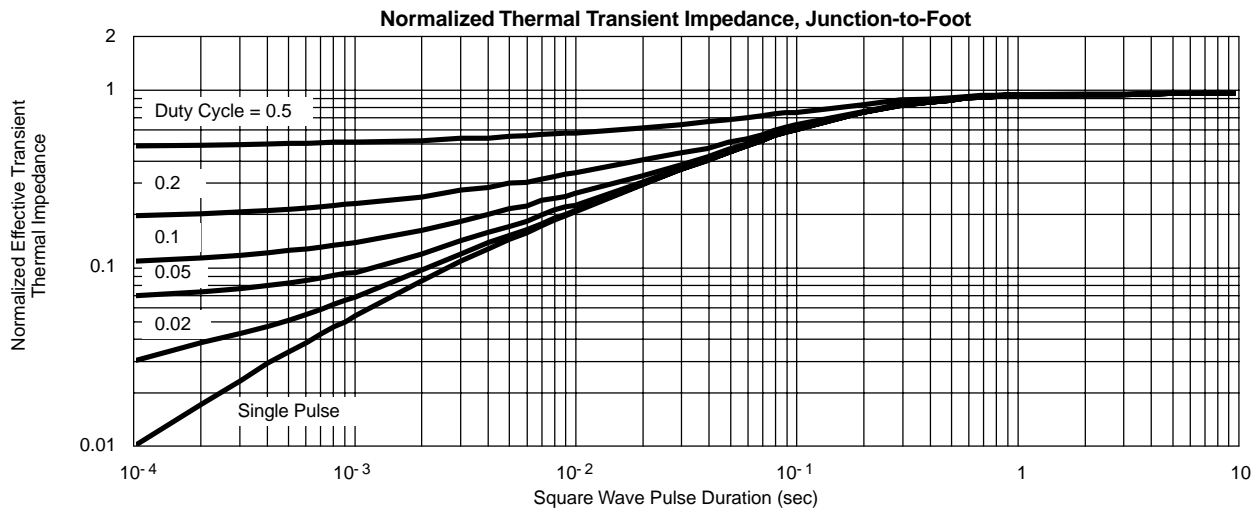
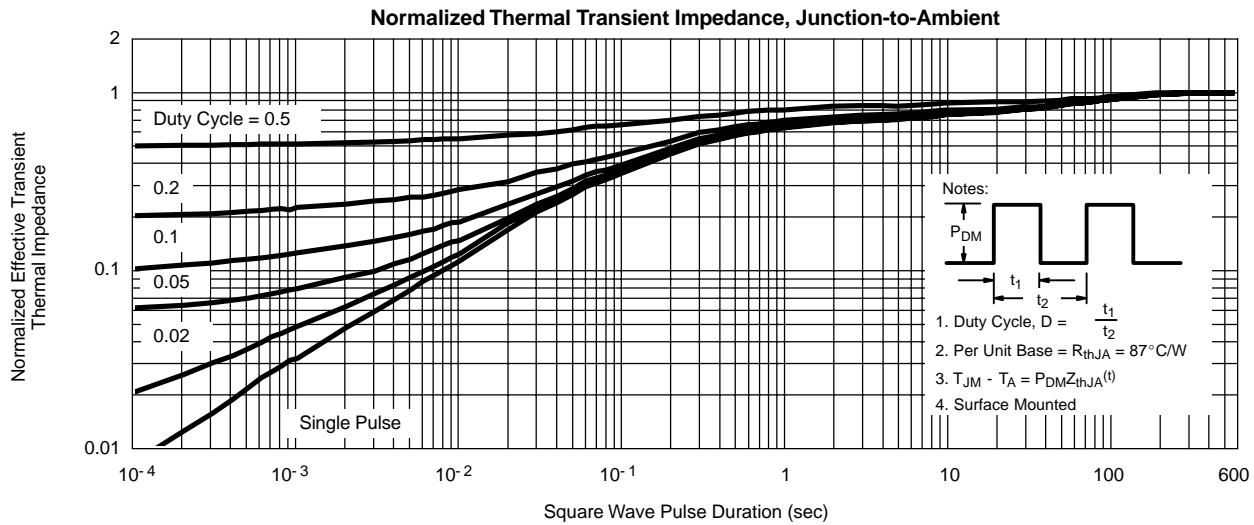
N-CHANNEL





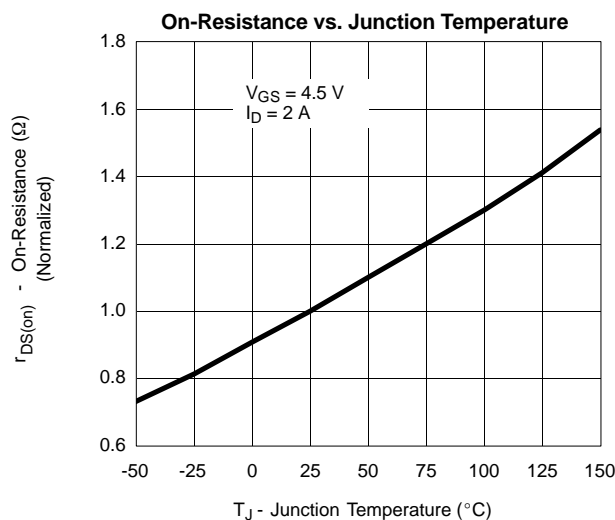
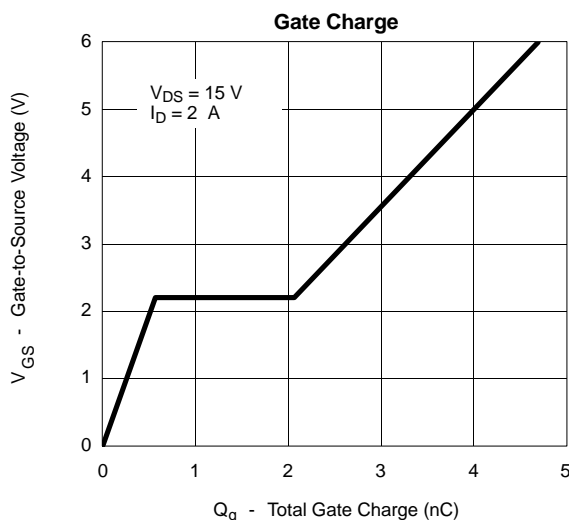
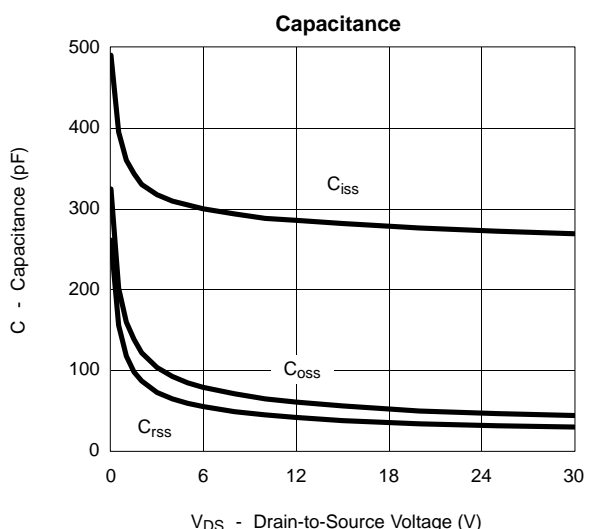
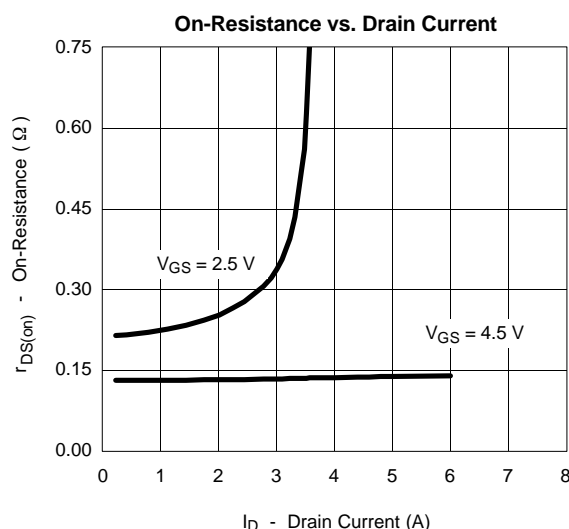
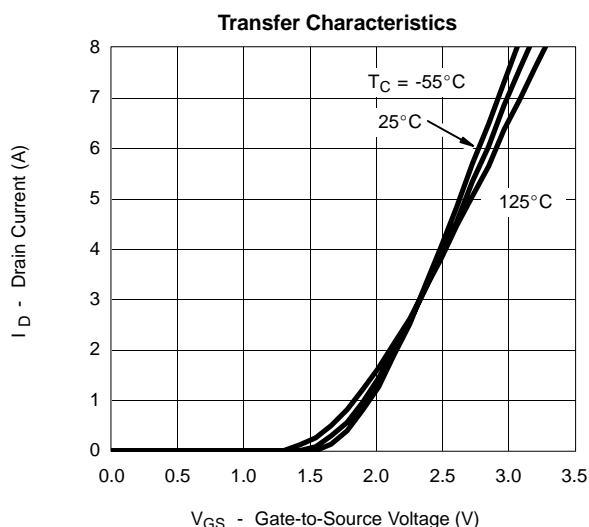
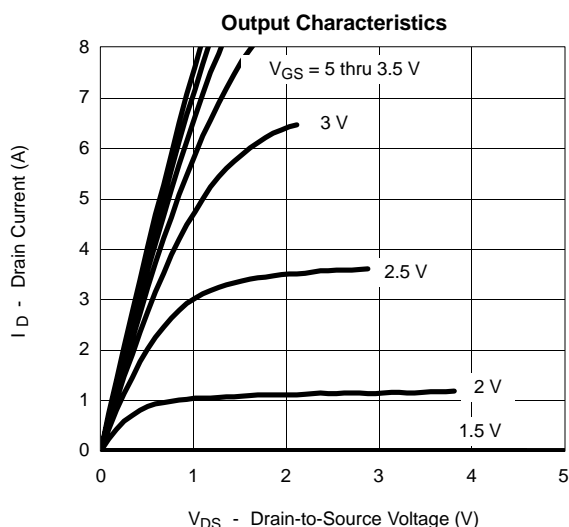
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N-CHANNEL



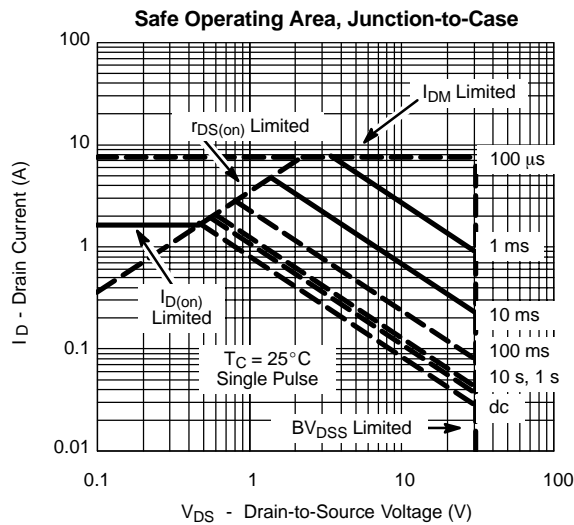
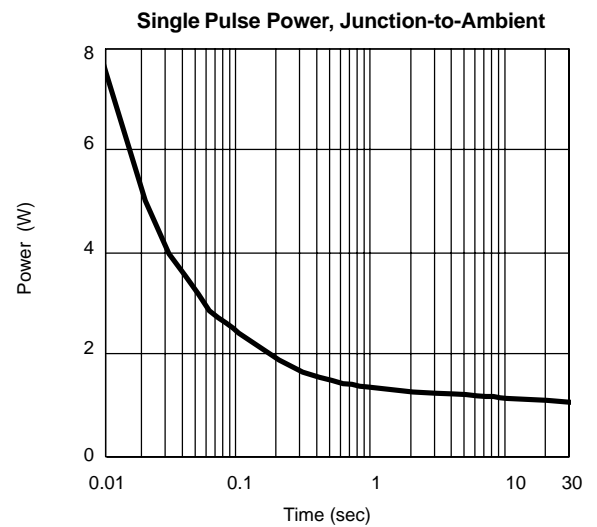
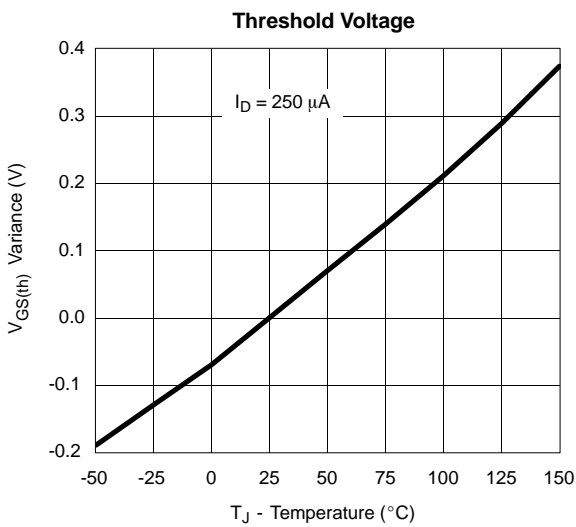
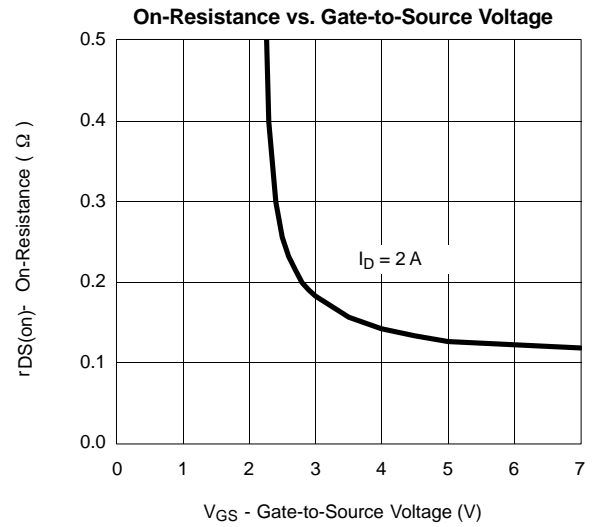
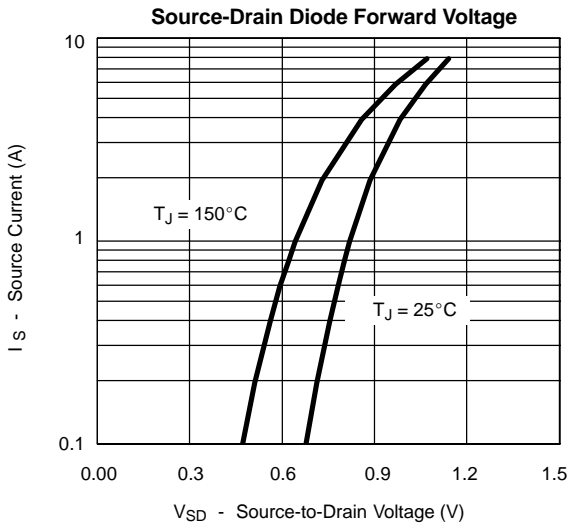
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

P-CHANNEL





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



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P-CHANNEL

