

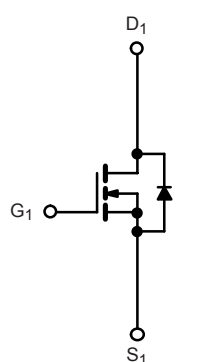
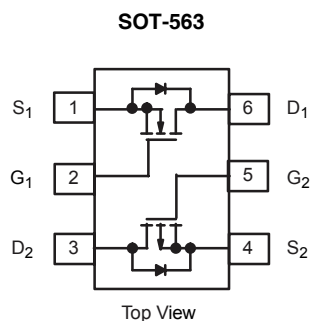
N- and P-Channel 20 V (D-S) MOSFET

PRODUCT SUMMARY

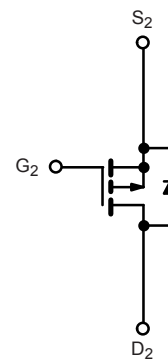
	V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)
N-Channel	20	0.299 at $V_{GS} = 4.5$ V	1.2
		0.426 at $V_{GS} = 2.5$ V	0.9
P-Channel	- 20	0.689 at $V_{GS} = - 4.5$ V	- 0.5
		0.873 at $V_{GS} = - 2.5$ V	- 0.4

FEATURES

- DT-Trench Power MOSFET
- 100 % R_g Tested
- Compliant to RoHS Directive 2002/95/EC


RoHS
 COMPLIANT


N-Channel MOSFET



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS $T_A = 25$ °C, unless otherwise noted

Parameter		Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage		V _{DS}	20	- 20	V
Gate-Source Voltage		V _{GS}	12	-12	
Continuous Drain Current (T _J = 150 °C) ^{a, b}	T _A = 25 °C	I _D	1.2	- 0.5	A
	T _A = 70 °C		0.9	- 0.4	
Pulsed Drain Current		I _{DM}	3.5	- 2	
Maximum Power Dissipation ^{a, b}	T _A = 25 °C	P _D	1.15		W
	T _A = 70 °C		0.3		
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	R_{thJA}	130	200	°C/W
Maximum Junction-to-Lead	R_{thJL}	85	190	

Notes:

a. Surface Mounted on FR4 board.

 b. $t \leq 10$ s.

SPECIFICATIONS T _J = 25 °C, unless otherwise noted							
Parameter	Symbol	Test Conditions		Min.	Typ.	Max.	Unit
Static							
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	N-Ch	0.4		1.2	V
		V _{DS} = V _{GS} , I _D = - 250 μA	P-Ch	- 0.4		- 1.2	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 12 V	N-Ch			± 100	nA
			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} = 16V, V _{GS} = 0 V, T _J = 55 °C	N-Ch			10	
		V _{DS} = - 16V, 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} = 10 V	N-Ch	3.5			A
		V _{DS} = - 5 V, V _{GS} = - 10 V	P-Ch	- 2			
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 4.5 V, I _D = 0.8 A	N-Ch		0.299	0.331	Ω
		V _{GS} = - 4.5 V, I _D = - 0.4 A	P-Ch		0.689	0.760	
		V _{GS} = 2.5 V, I _D = 0.5 A	N-Ch		0.426	0.470	
		V _{GS} = - 2.5 V, I _D = - 0.2 A	P-Ch		0.873	0.997	
Forward Transconductance ^a	g _{fs}	V _{DS} = 10 V, I _D = 0.8 A	N-Ch		3.1		S
		V _{DS} = - 15 V, I _D = - 0.5 A	P-Ch		2.8		
Diode Forward Voltage ^a	V _{SD}	I _S = 0.8 A, V _{GS} = 0 V	N-Ch		0.8	1.10	V
		I _S = - 0.6 A, V _{GS} = 0 V	P-Ch		- 0.75	- 1.2	
Dynamic ^b							
Total Gate Charge	Q _g	N-Channel V _{DS} = 10 V, V _{GS} = 4.5 V, I _D = 0.5 A P-Channel V _{DS} = - 10 V, V _{GS} = - 4.5 V, I _D = - 0.3 A	N-Ch		1.6	2.2	nC
Gate-Source Charge	Q _{gs}		P-Ch		2.1	2.6	
			N-Ch		0.1		
Gate-Drain Charge	Q _{gd}		P-Ch		0.4		
		N-Ch		0.2			
Gate Resistance	R _g		P-Ch		0.5		
			N-Ch	2.5		3.9	
Turn-On Delay Time	t _{d(on)}	N-Channel V _{DD} = 15 V, R _L = 15 Ω I _D ≅ 0.5 A, V _{GEN} = 10 V, R _g = 6 Ω	P-Ch				ns
			P-Ch		9		
Rise Time	t _r		N-Ch		8		
			P-Ch		19		
Turn-Off Delay Time	t _{d(off)}	P-Channel V _{DD} = - 15 V, R _L = 15 Ω I _D ≅ - 0.5 A, V _{GEN} = - 10 V, R _g = 6 Ω	N-Ch		0.2		
			P-Ch		0.5		
Fall Time	t _f		N-Ch		23		
			P-Ch		12		
Source-Drain Reverse Recovery Time	t _{rr}		N-Ch		7		
			P-Ch		6.9		
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 0.6 A, dI/dt = 100 A/μs	N-Ch		6.3		
		I _F = - 0.6 A, dI/dt = 100 A/μs	P-Ch		11		

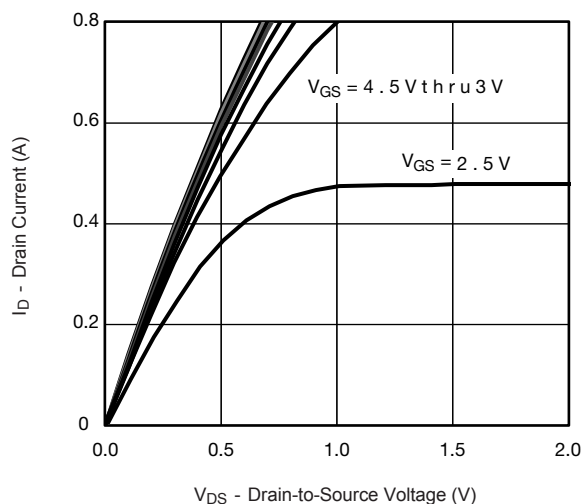
Notes:

 a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

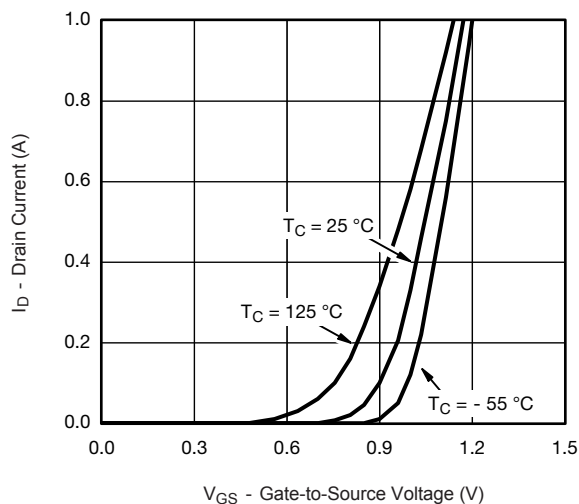
b. Guaranteed by design, not subject to production testing.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

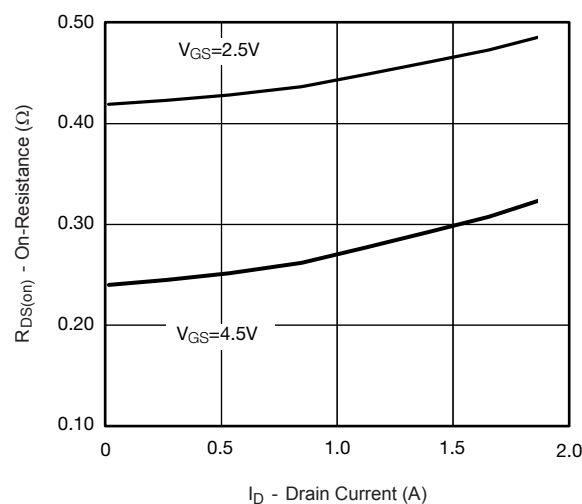
N-CHANNEL TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



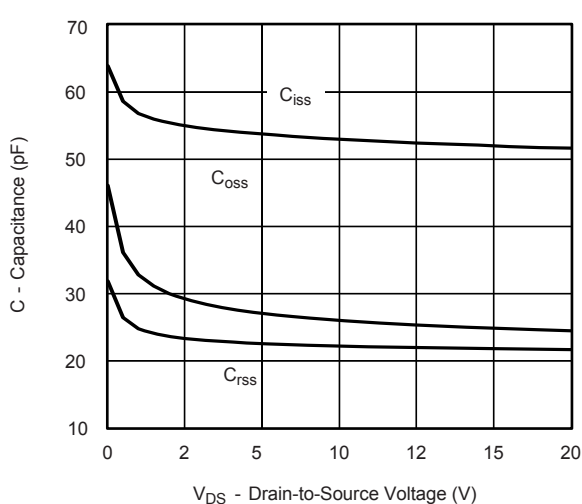
Output Characteristics



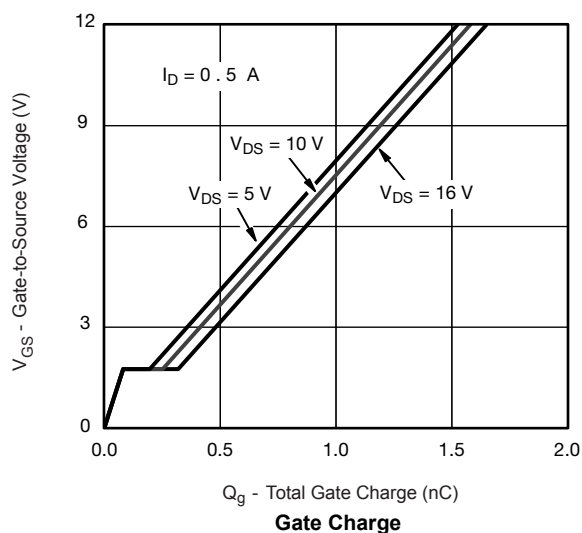
Transfer Characteristics



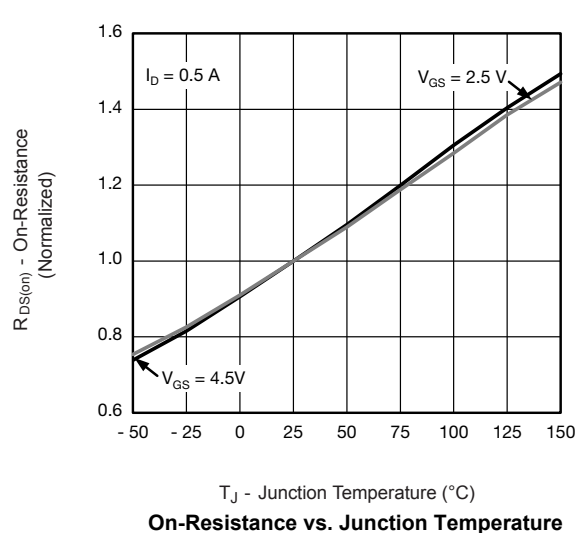
On-Resistance vs. Drain Current



Capacitance

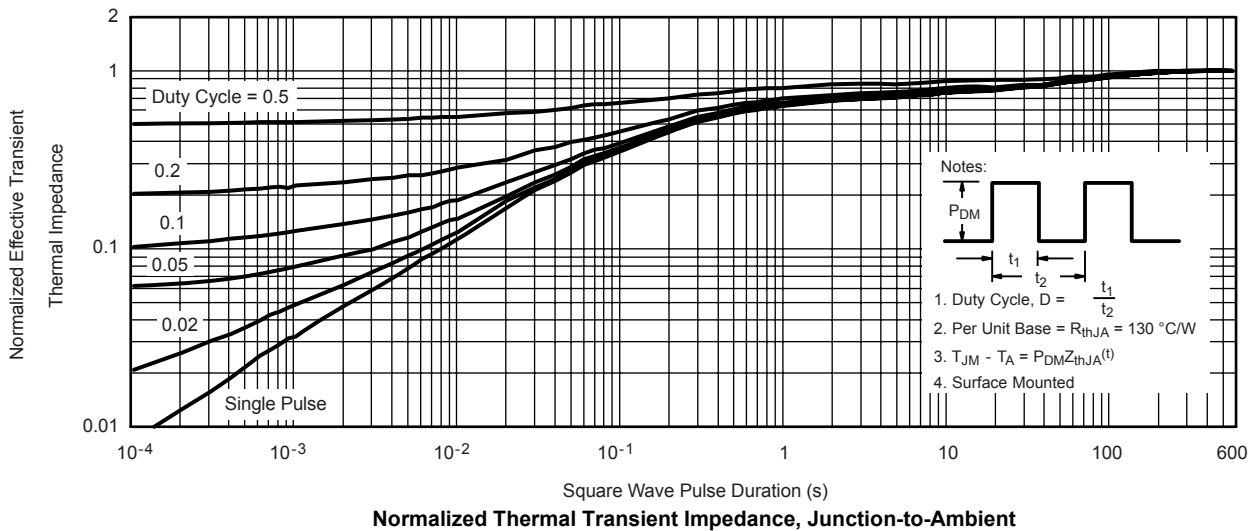
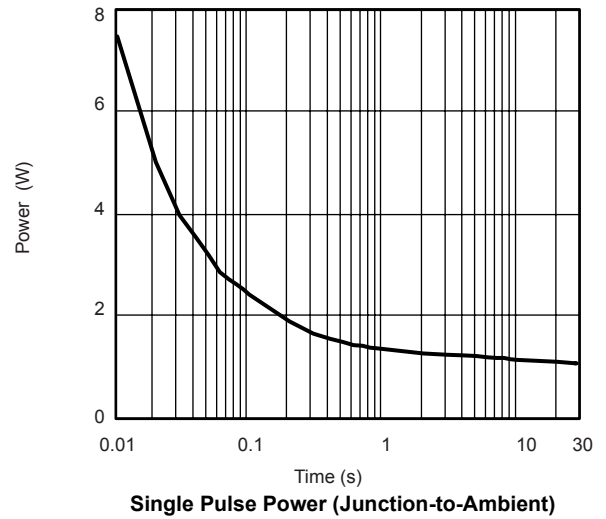
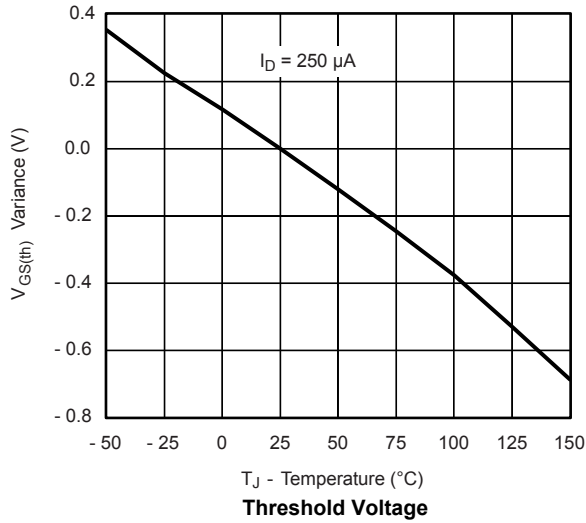
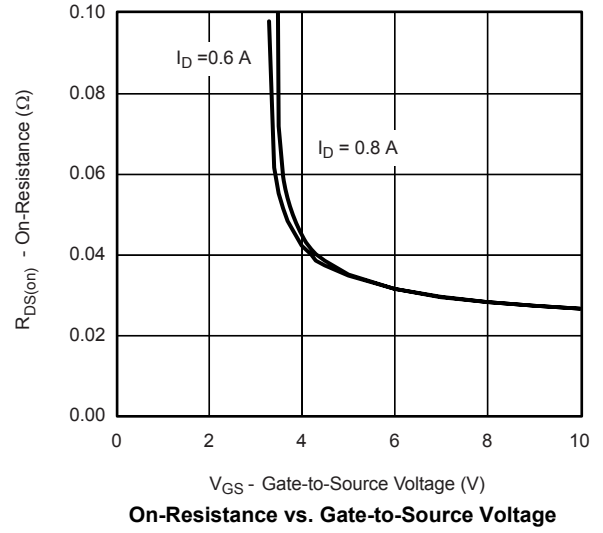
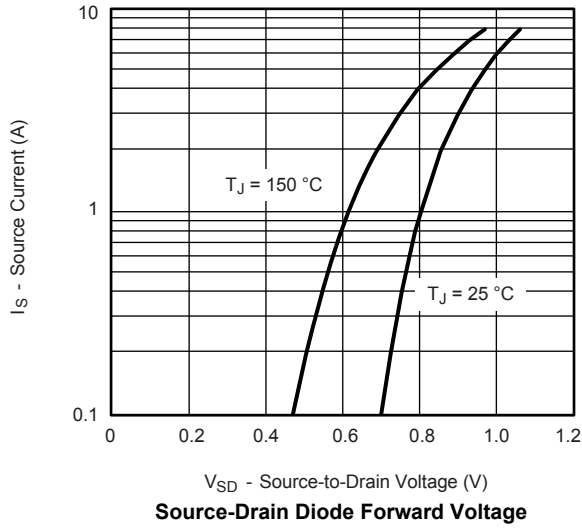


Gate Charge

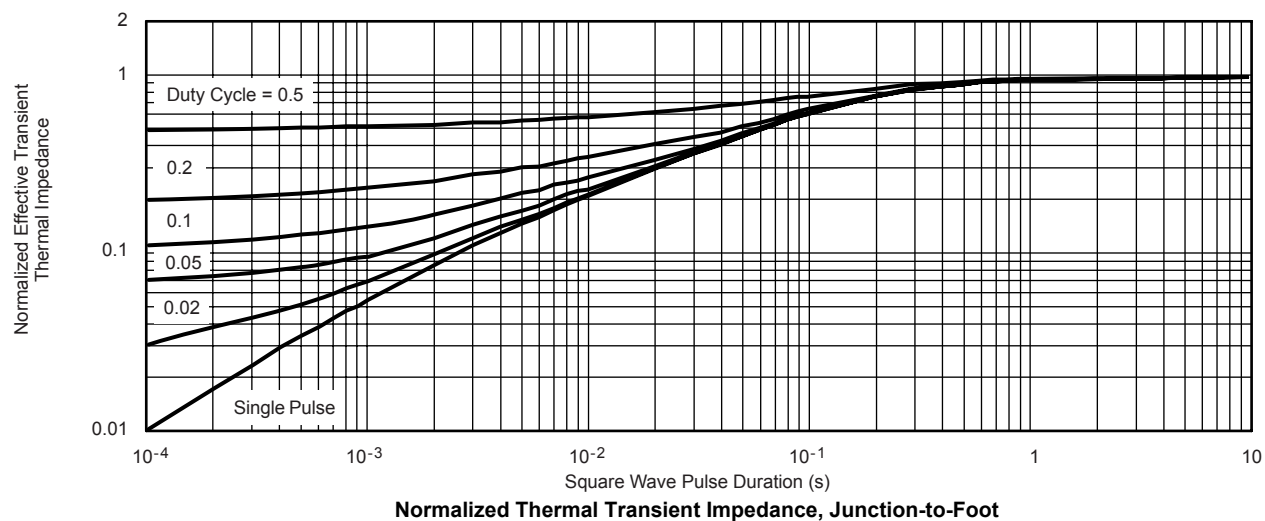


On-Resistance vs. Junction Temperature

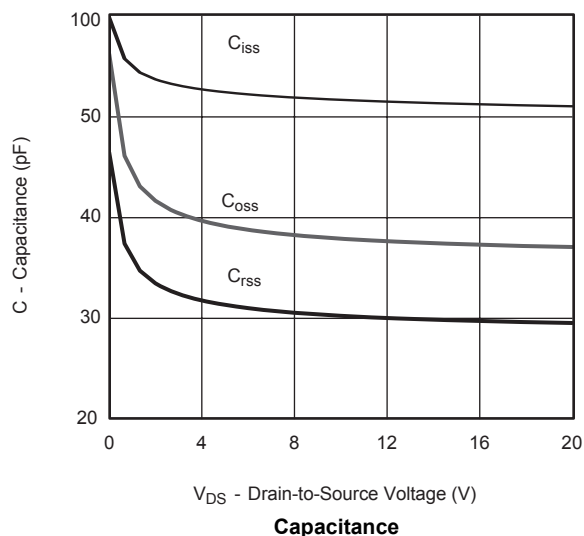
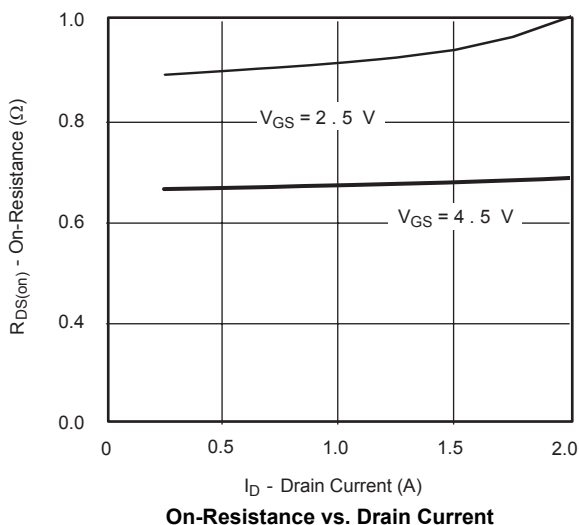
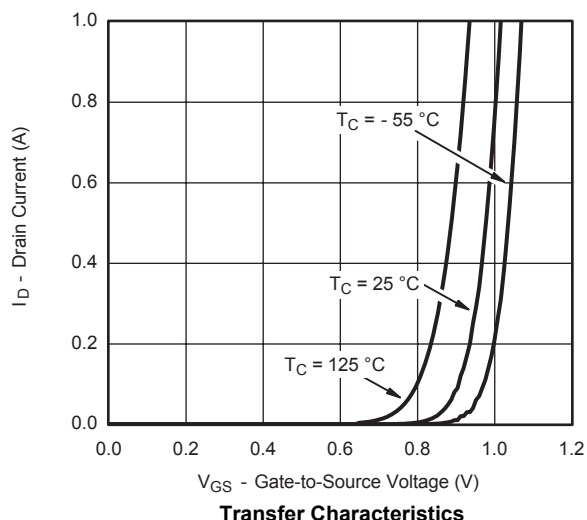
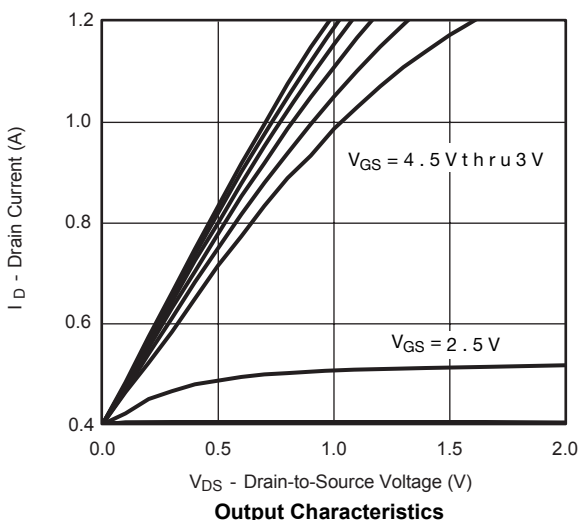
N-CHANNEL TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



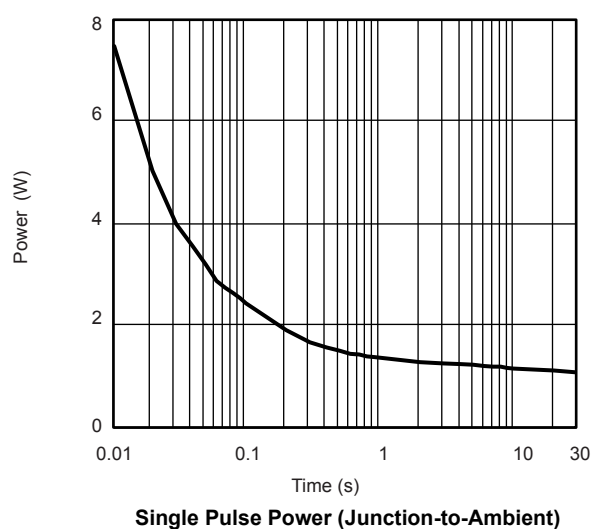
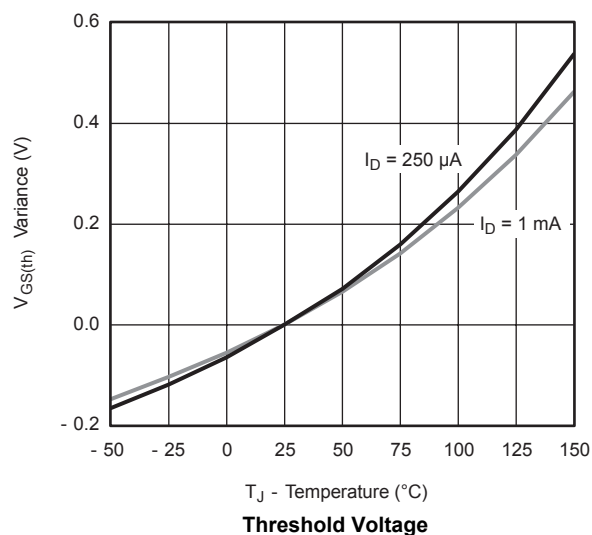
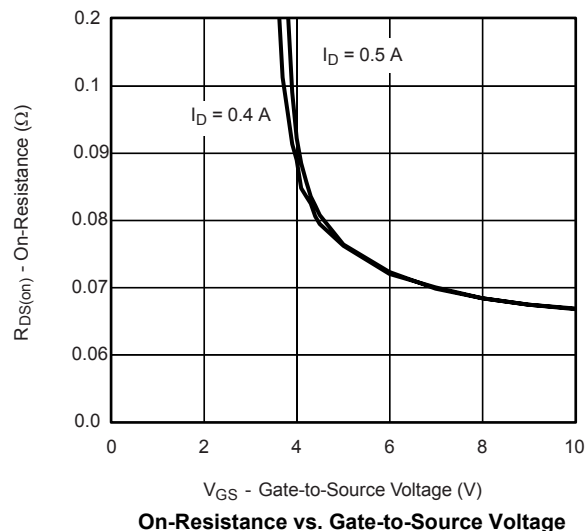
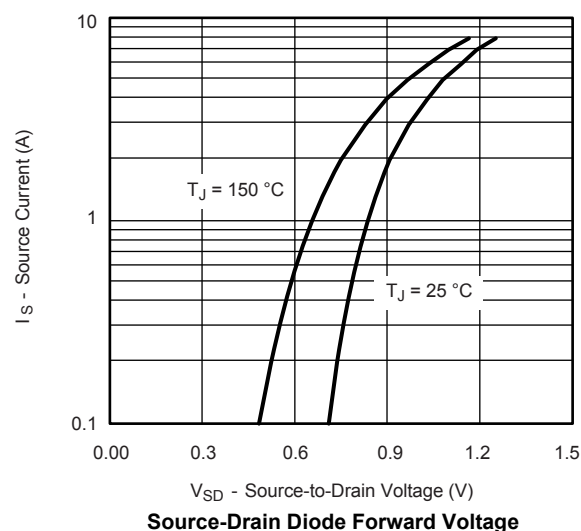
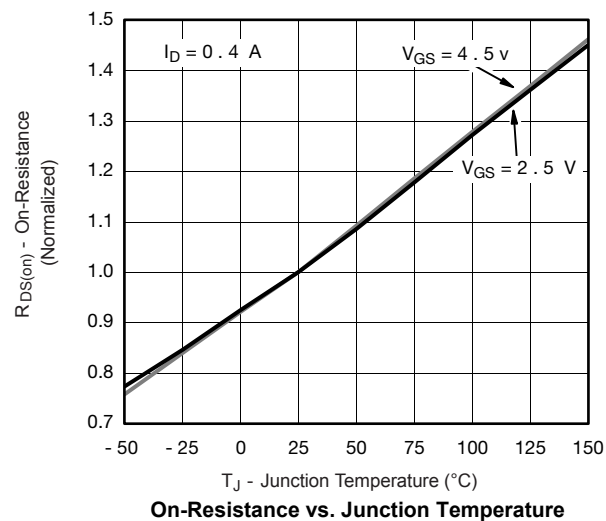
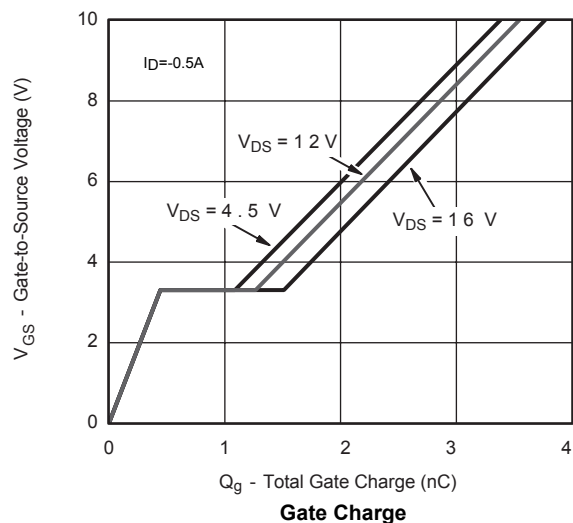
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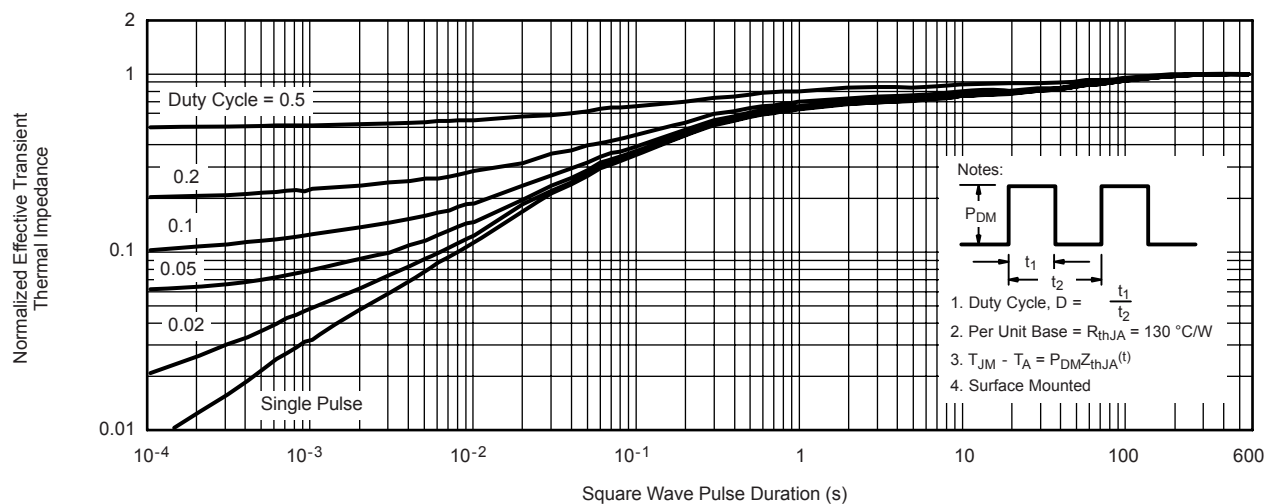
P-CHANNEL TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



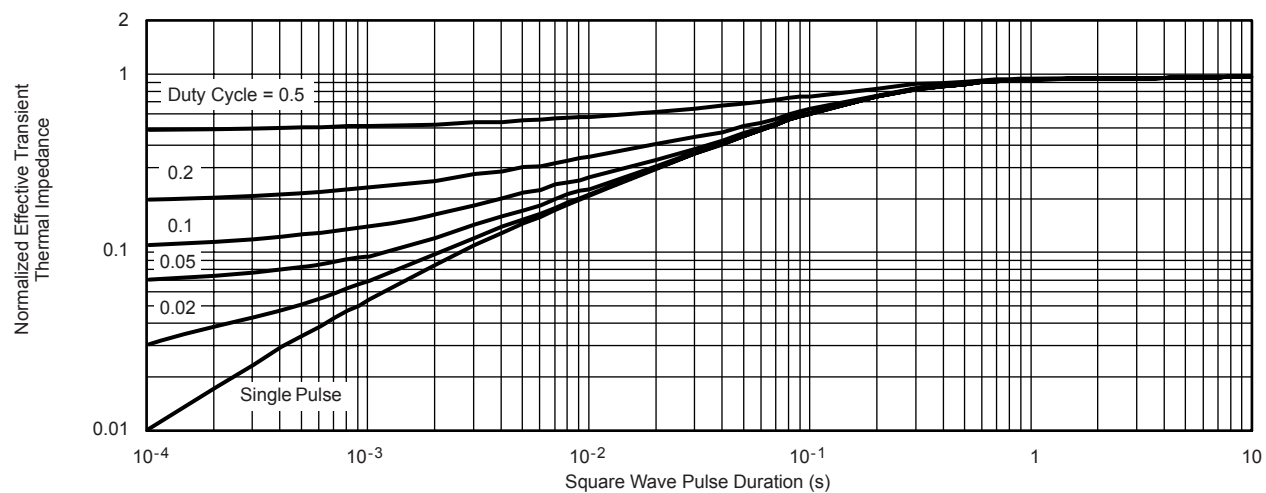
P-CHANNEL TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



P-CHANNEL TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

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