

N-Channel 100 V (D-S) MOSFET

PRODUCT SUMMARY

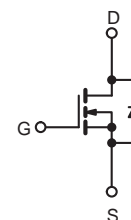
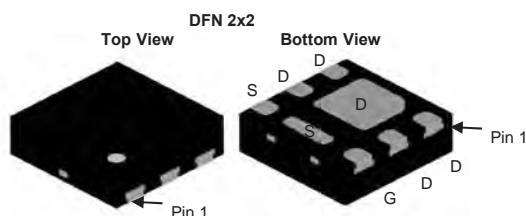
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)
100	0.030 at $V_{GS} = 10$ V	8.0
	0.045 at $V_{GS} = 4.5$ V	6.5

FEATURES

- DT-Trench Power MOSFET
- 100 % R_g Tested
- 100 % UIS Tested

APPLICATIONS

- Primary Side Switch
- Synchronous Rectification


RoHS
 COMPLIANT


N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS $T_A = 25^\circ\text{C}$, unless otherwise noted

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 150^\circ\text{C}$)	I_D	8.0	A
		5.2	
Pulsed Drain Current	I_{DM}	32	
Continuous Source Current (Diode Conduction) ^a	I_S	8.0	
Maximum Power Dissipation ^a	P_D	4.5	W
		2.9	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to 150	$^\circ\text{C}$
Soldering Recommendations (Peak Temperature) ^{b, c}		260	

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	R_{thJA}	26	33	$^\circ\text{C/W}$
		40	60	

Notes:

- Surface mounted on 1" x 1" FR4 board.
- The DFN2X2 is a leadless package. The end of the lead terminal is exposed copper (not plated) as a result of the singulation process in manufacturing. A solder fillet at the exposed copper tip cannot be guaranteed and is not required to ensure adequate bottom side solder interconnection.
- Rework conditions: manual soldering with a soldering iron is not recommended for leadless components.

SPECIFICATIONS $T_J = 25\text{ }^{\circ}\text{C}$, unless otherwise noted

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\text{ }\mu\text{A}$	1		3	V
Gate Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}$, $V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 100\text{ V}$, $V_{GS} = 0\text{ V}$			1	μA
		$V_{DS} = 80\text{ V}$, $V_{GS} = 0\text{ V}$, $T_J = 55\text{ }^{\circ}\text{C}$			5	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 5\text{ V}$, $V_{GS} = 10\text{ V}$	8			A
Drain-Source On-State Resistance ^a	$R_{DS(on)}$	$V_{GS} = 10\text{ V}$, $I_D = 8\text{ A}$		0.030	0.036	Ω
		$V_{GS} = 4.5\text{ V}$, $I_D = 6\text{ A}$		0.045	0.060	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15\text{ V}$, $I_D = 8\text{ A}$		25		S
Diode Forward Voltage ^a	V_{SD}	$I_S = 1\text{ A}$, $V_{GS} = 0\text{ V}$		0.75	1.2	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = 50\text{ V}$, $V_{GS} = 10\text{ V}$, $I_D = 8\text{ A}$		15	45	nC
Gate-Source Charge	Q_{gs}			2.9		
Gate-Drain Charge	Q_{gd}			1.8		
Gate Resistance	R_g			1.5		Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 50\text{ V}$, $R_L = 30\text{ }\Omega$, $V_{GEN} = 10\text{ V}$, $R_g = 6\text{ }\Omega$		14		ns
Rise Time	t_r			12		
Turn-Off Delay Time	$t_{d(off)}$			50		
Fall Time	t_f			12		
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 3.2\text{ A}$, $dI/dt = 100\text{ A}/\mu\text{s}$		60		

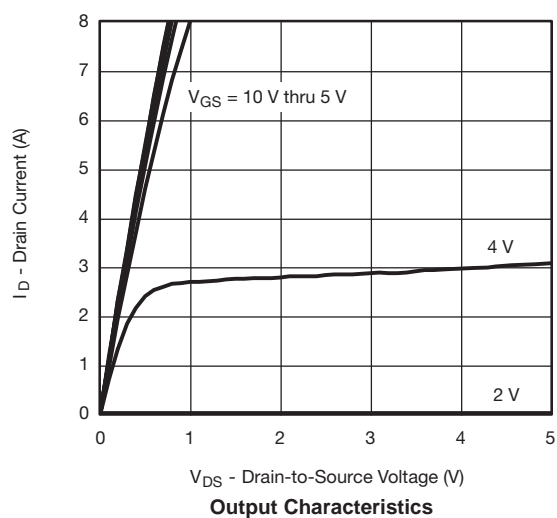
Notes:

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

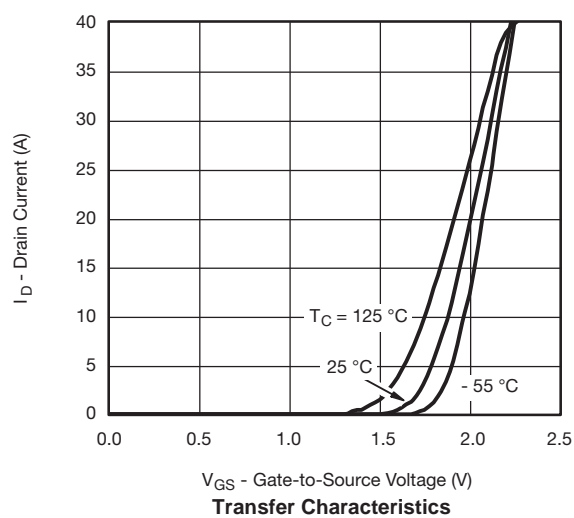
b. Guaranteed by design, not subject to production testing.

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.

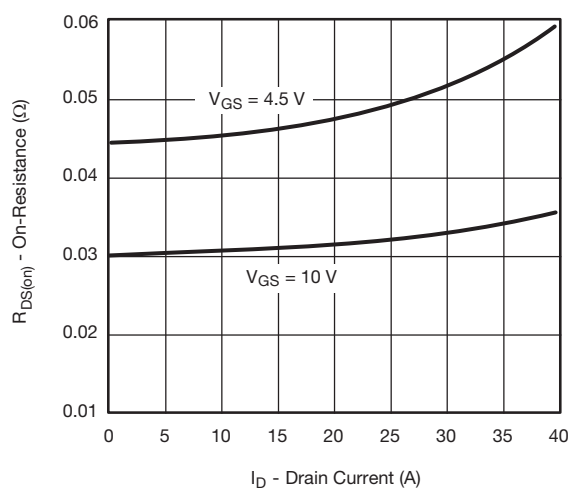
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



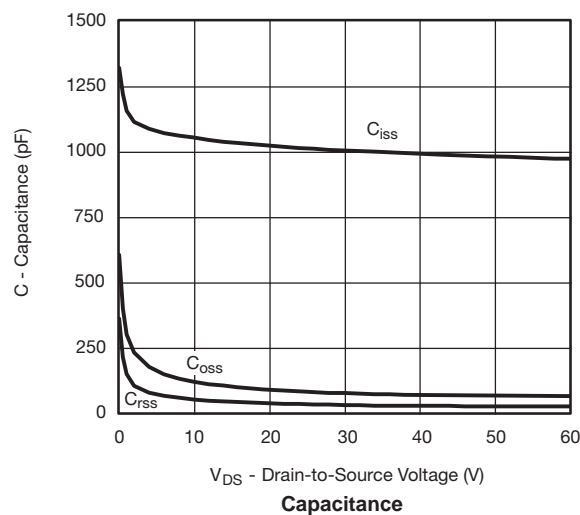
Output Characteristics



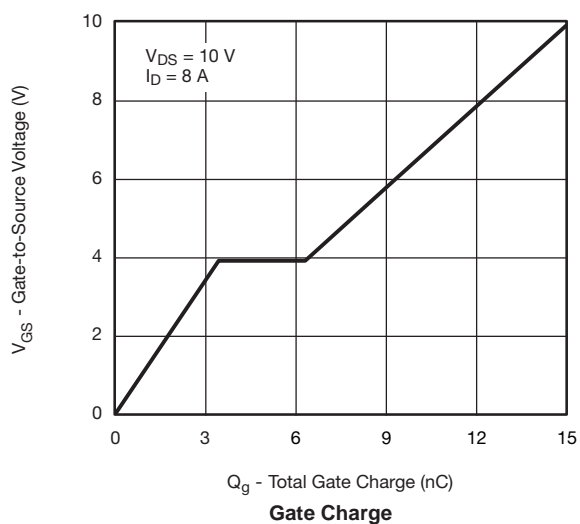
Transfer Characteristics



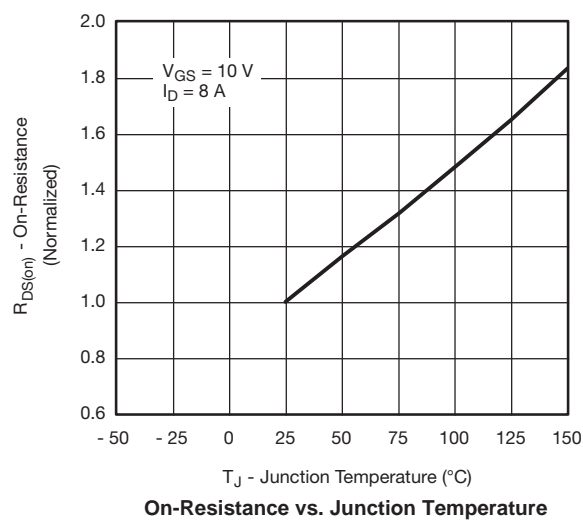
On-Resistance vs. Drain Current



Capacitance

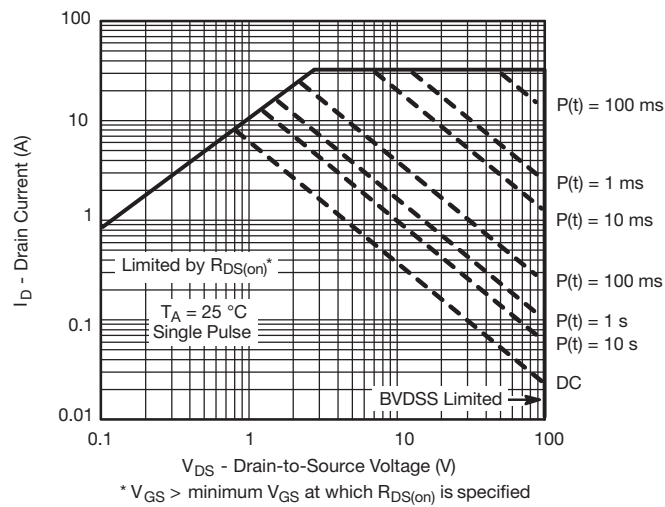
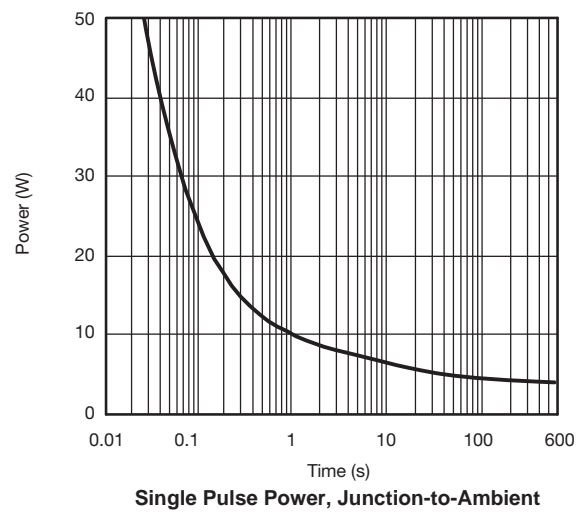
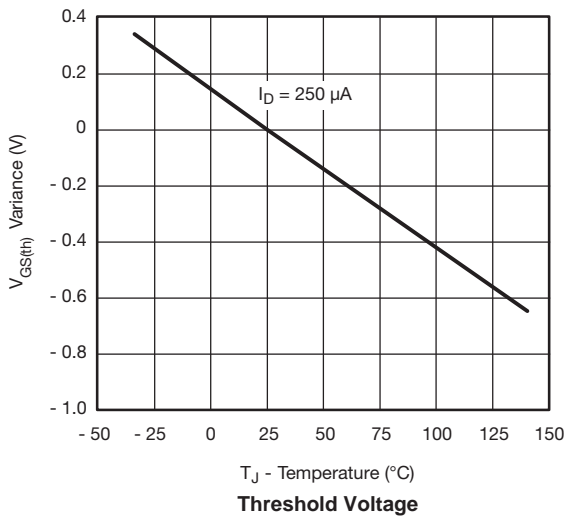
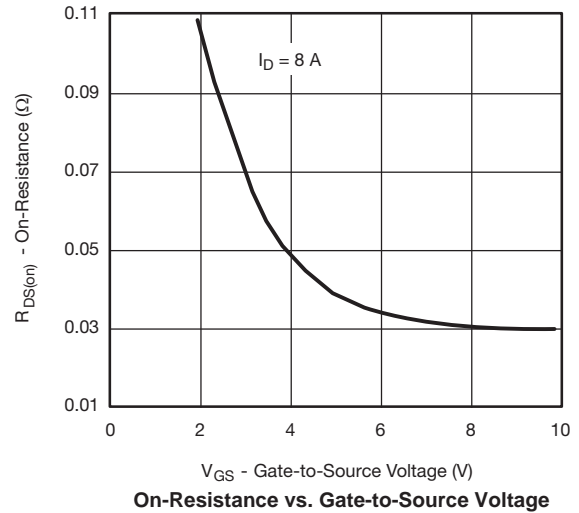
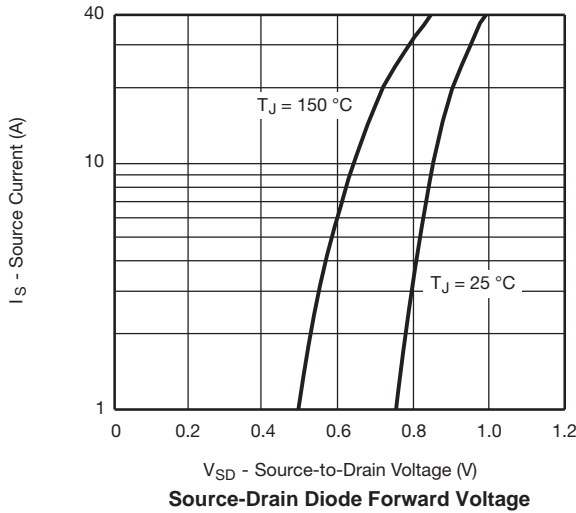


Gate Charge



On-Resistance vs. Junction Temperature

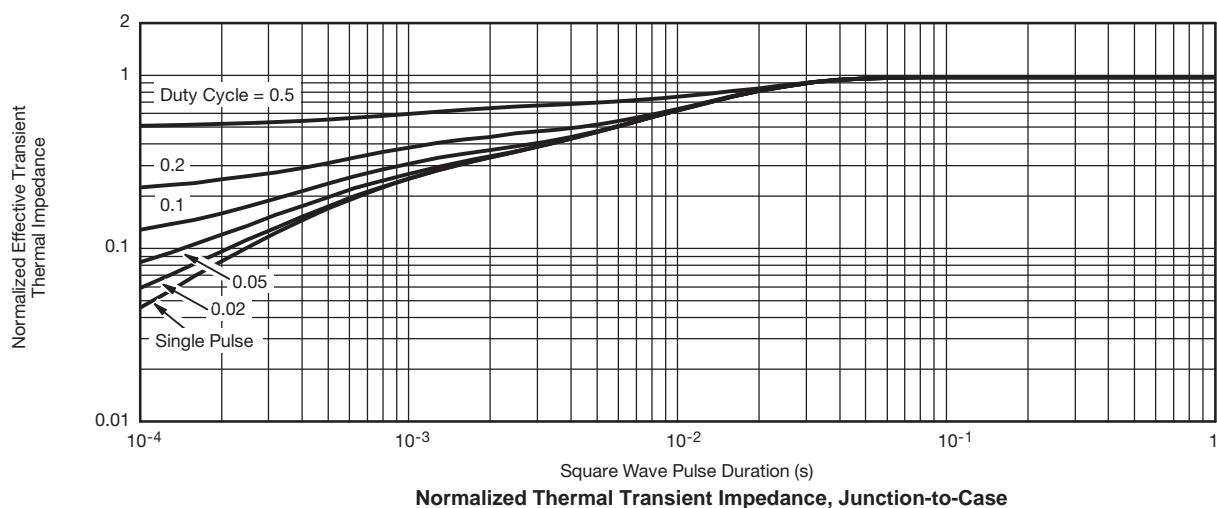
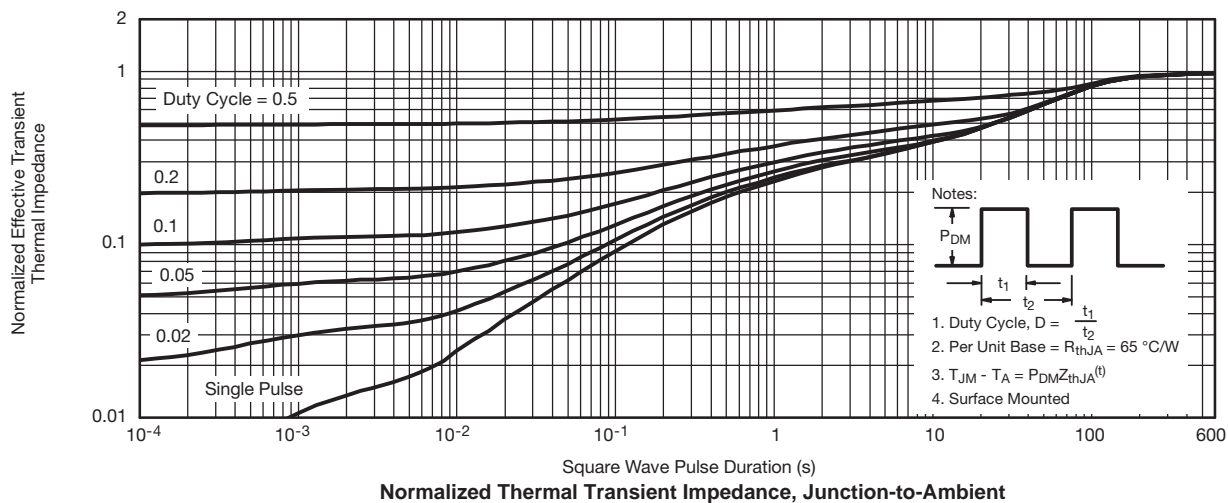
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



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