P-Channel Enhancement Mode Power MOSFET

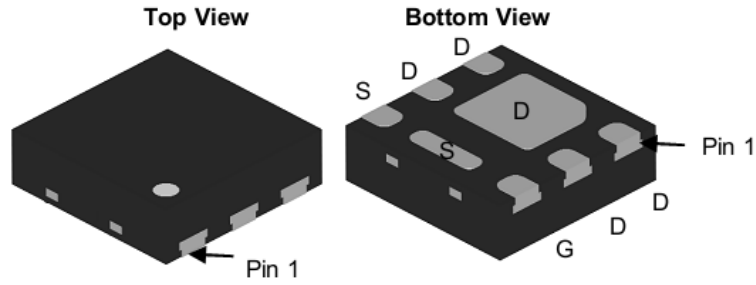
Features

V_{DS} = -30V,
I_D = -12A
$R_{DS(ON)}$ @V_{GS}= -10V, TYP 26mΩ
$R_{DS(ON)}$ @V_{GS}= -4.5V, TYP 35mΩ

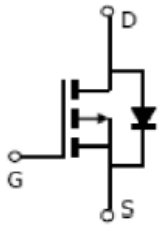
General Description

- DC-DC Converters
- Power Management Functions
- Battery Management Application

Pin Configurations



DFN2*2-6L
MARKING:4435



Absolute Maximum Ratings @T_A=25℃ unless otherwise noted

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	-30	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current (Continuous) *AC	T_C=25°C	I_D	-12	A
	T_C=70°C		-12	
Drain Current (Pulse) *B		I_{DM}	-35	A
Power Dissipation	T_C=25°C	P_D	19	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	℃

Thermal Resistance Ratings

Parameter		Symbol	Maximum	Unit
Maximum Junction-to-Ambient	t ≤ 5s	R_{thJA}	36	℃/W
Thermal Resistance, Junction to Case	Steady State	R_{thJC}	6.5	

Electrical Characteristics @T_A=25℃ unless otherwise noted

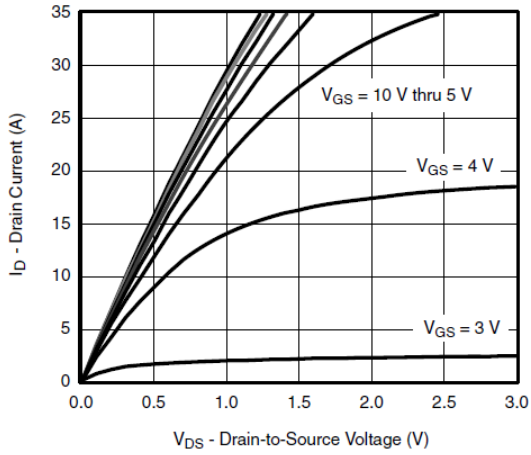
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D= -250μA	-30	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -30V, V_{GS} = 0V	--	--	-1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_{DS}= -250μA	-1	-1.45	-3	V
Gate Leakage Current	I_{GSS}	V_{GS}= ± 20V, V_{DS}=0V	--	--	±100	μA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -10A	--	26	34	mΩ
	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -7A	--	35	45.5	mΩ
Diode Forward Voltage	V_{SD}	I_{SD}= -1A , V_{GS}=0V	--	-0.77	-1.2	V
Diode Forward Current *AC	I_S	T_C =25°C	--	--	-12	A
Switching						
Total Gate Charge	Q_g	V_{DS} = - 15 V, V_{GS} = - 4.5 V, I_D = - 7.9 A	--	10	--	nC
Gate-Source Charge	Q_{gs}		--	3	--	nC
Gate-Drain Charge	Q_{gd}		--	4.5	--	nC
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = - 15 V, R_L = 2.4Ω I_D =- 6.3 A, V_{GEN} =- 4.5V, R_g = 1Ω	--	40	--	ns
Turn-on Rise Time	t_r		--	110	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	25	--	ns
Turn-Off Fall Time	t_f		--	12	--	ns
Dynamic						
Input Capacitance	C_{iss}	V_{DS}= -15V,V_{GS}=0V, f=1.0MHz	--	950	--	pF
Output Capacitance	C_{oss}		--	150	--	pF
Reverse Transfer Capacitance	C_{rss}		--	120	--	pF

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

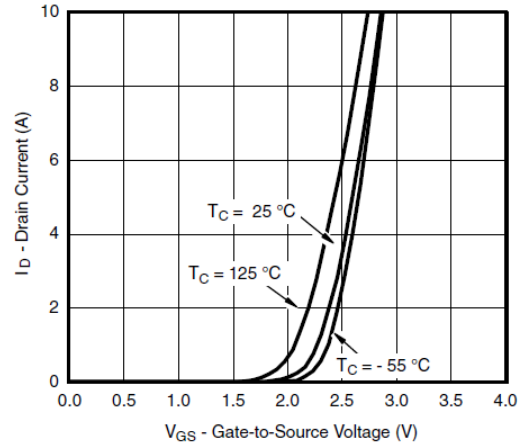
B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the t≤ 10s junction to ambient thermal resistance rating, Package limited 12A.

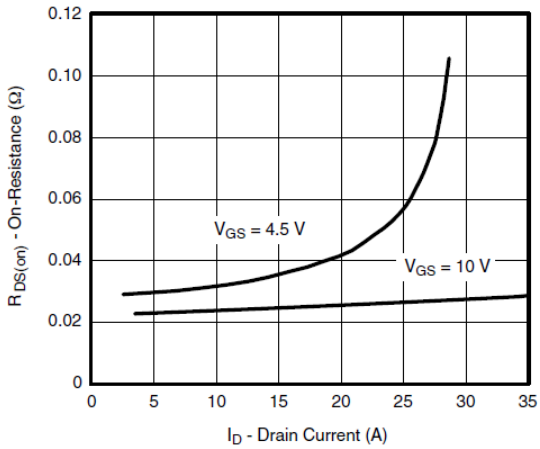
Typical Performance Characteristics（(TJ = 25 °C, unless otherwise noted)）



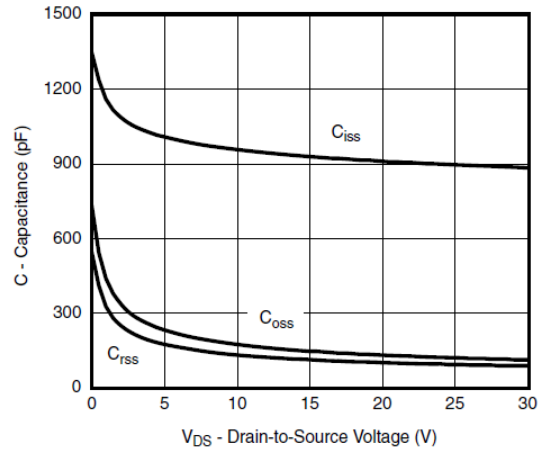
Output Characteristics



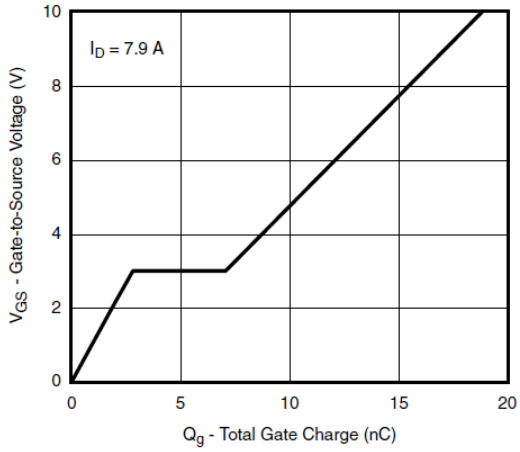
Transfer Characteristics



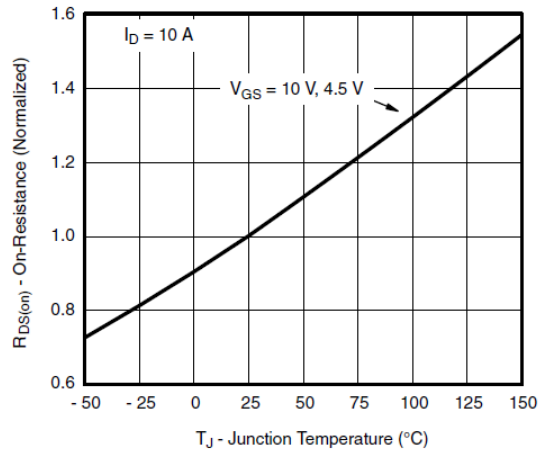
On-Resistance vs. Drain Current and Gate Voltage



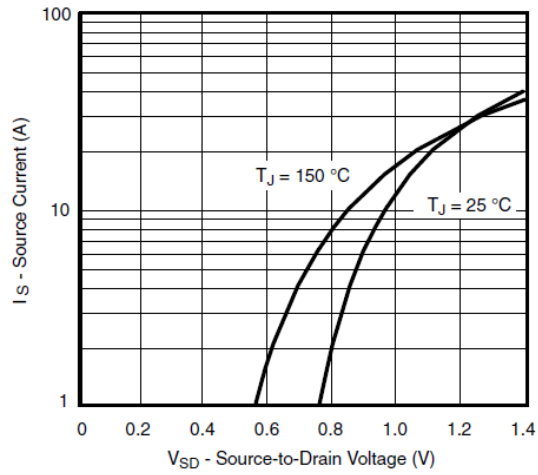
Capacitance



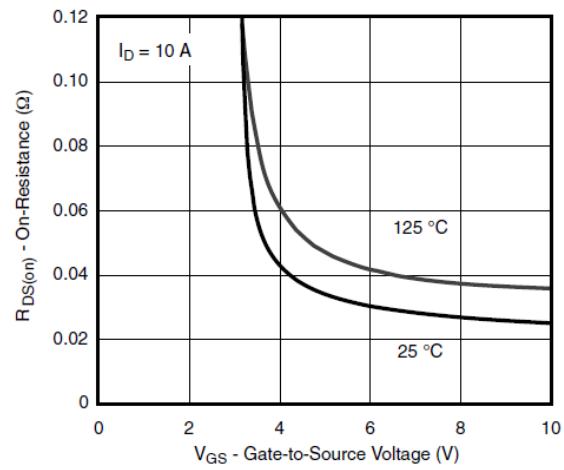
Gate Charge



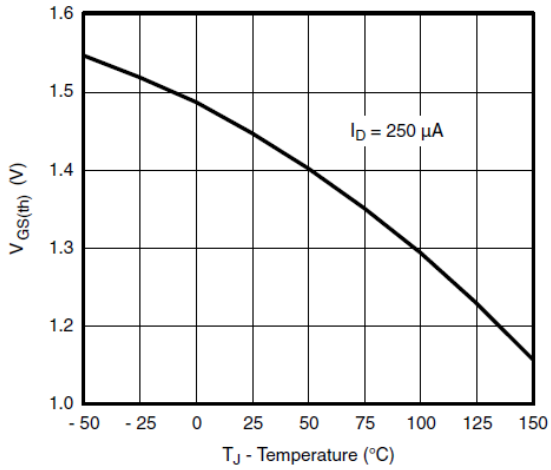
On-Resistance vs. Junction Temperature



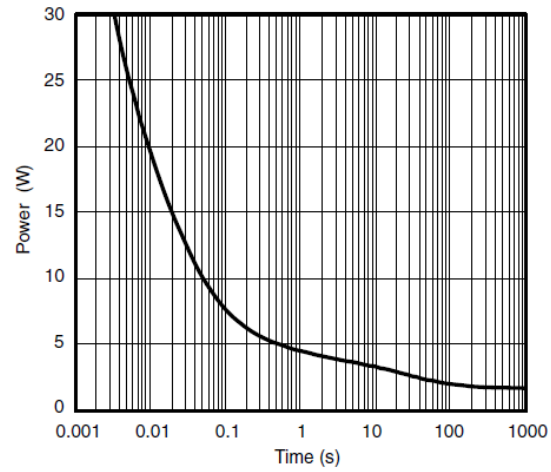
Soure-Drain Diode Forward Voltage



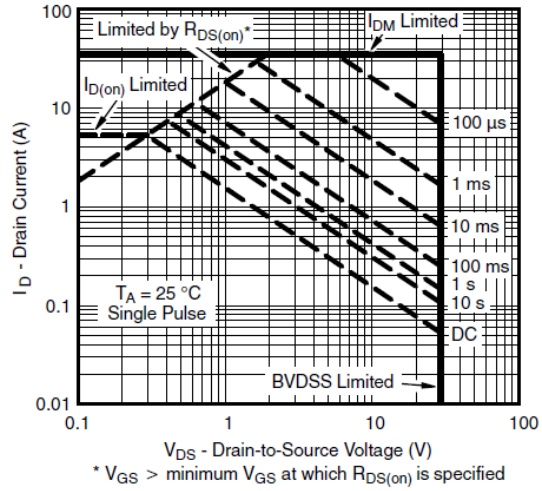
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

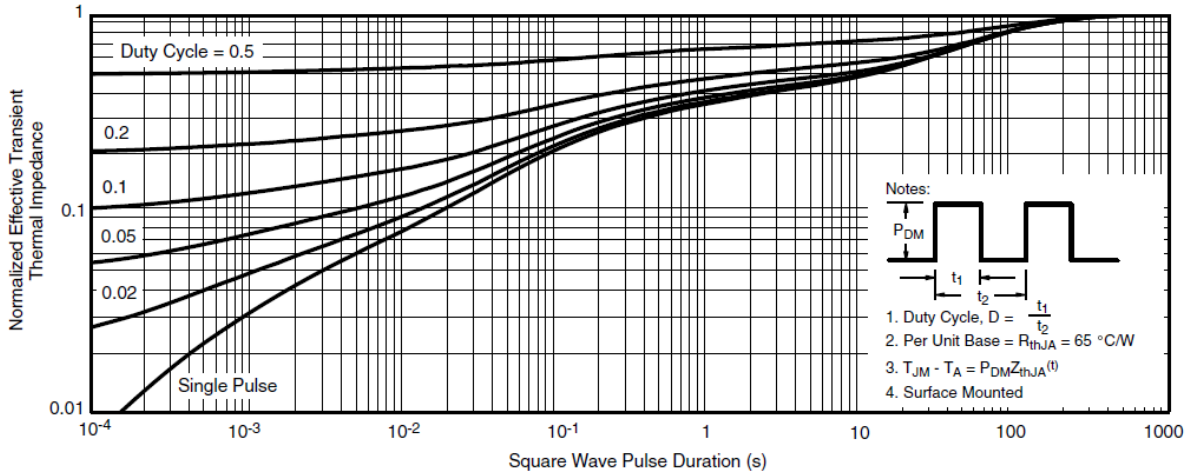


Single Pulse Power, Junction-to-Ambient

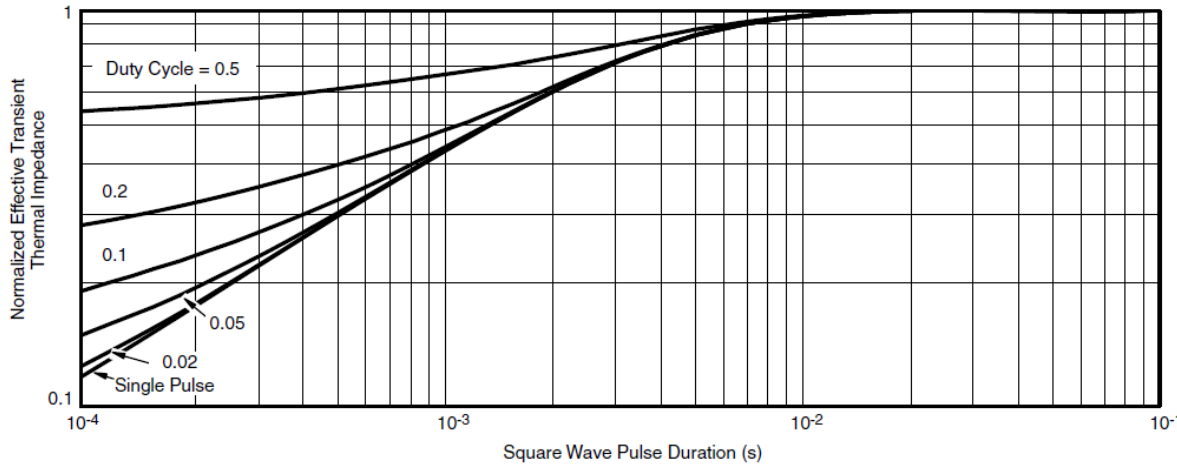


* V_{GS} > minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area, Junction-to-Ambient



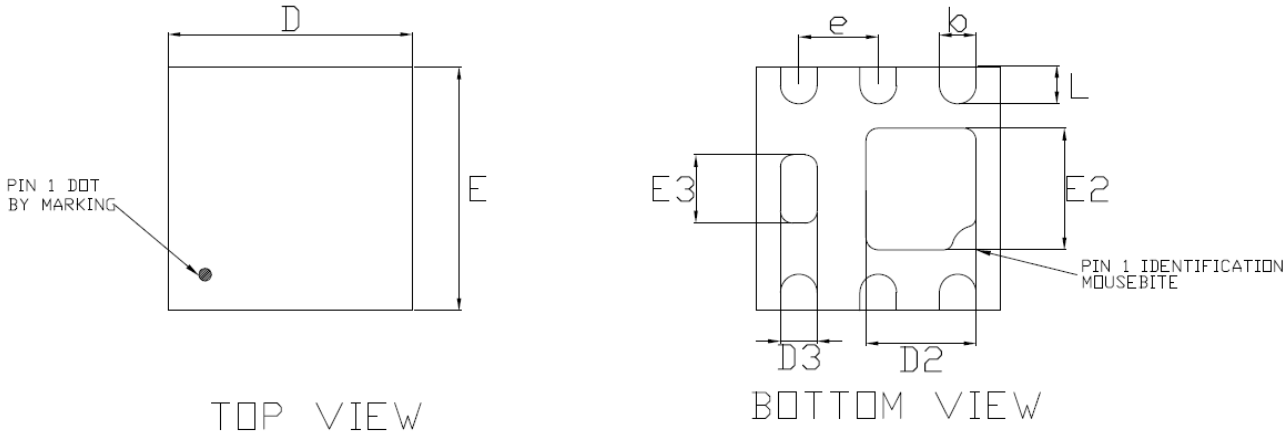
Normalized Thermal Transient Impedance, Junction-to-Ambient

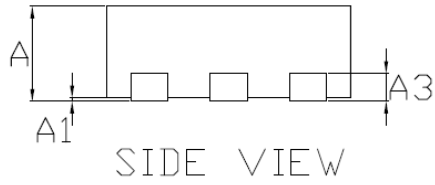


Normalized Thermal Transient Impedance, Junction-to-Case

Package Information

DFN2X2-6 Package Out Line A

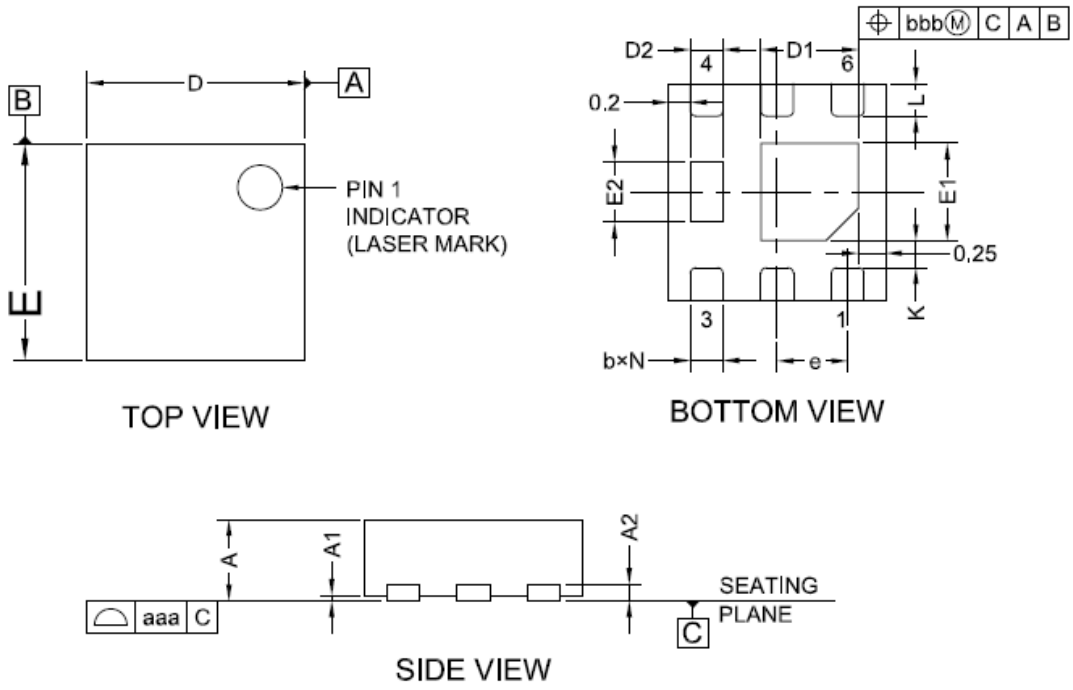




COMMON DIMENSIONS(MM)			
PKG. REF.	WIVERY VERY THIN		
	MIN.	NOM.	MAX
A	0.70	0.75	0.80
A1	0.00	–	0.05
A3	0.20 REF.		
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D2	0.85	0.90	0.95
E2	0.95	1.00	1.05
D3	0.25	0.30	0.35
E3	0.51	0.56	0.61
b	0.25	0.30	0.35
L	0.25	0.30	0.35
e	0.65 BSC		

.

DFN2X2-6 Package Out Line B



COMMON DIMENSIONS

(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	TYP	MAX
A	0.50	0.55	0.60
A1	0.00	0.02	0.05
A2		0.152REF.	
b	0.25	0.30	0.35
D	1.95	2.00	2.05
D1	0.80	0.90	1.00
D2	0.25	0.30	0.35
E	1.95	2.00	2.05
E1	0.80	0.90	1.00
E2	0.46	0.56	0.66
e		0.65BSC	
L	0.25	0.30	0.35
J		0.40BSC	
K		0.20MIN	
N		6	
aaa		0.08	
bbb		0.10	