P-Channel Enhancement Mode MOSFET

Features

● Low Rdson for low conduction loss

● Reliable and Rugged

● ROHS Compliant & Halogen-Free

Applications

● Power Management in Desktop Computer

● DC/DC Converters

Pin Description

DFN5X6-8	Symbol
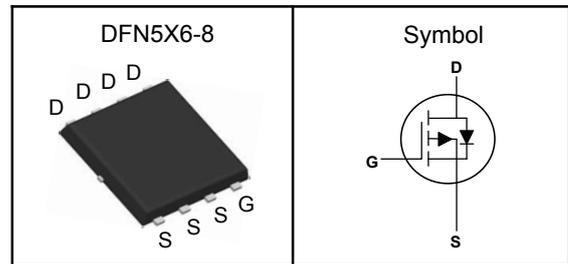
V_{DSS}	-30	V
$R_{DS(ON)-Typ}$	4.8	mΩ
I_D	-88	A

Absolute Maximum Ratings (T$_C$=25℃, Unless Otherwise Noted)

Symbol	Parameter		P-Channel	Unit
V_{DSS}	Drain-Source Voltage		-30	V
V_{GSS}	Gate-Source Voltage		±20	V
T_J	Maximum Junction Temperature		-55 to 150	℃
T_{STG}	Storage Temperature Range		-55 to 150	℃
I_{DM}[①]	Pulse Drain Current Tested	T_C=25°C	-300	A
I_D	Continuous Drain Current	T_C=25°C	-88	A
P_D	Maximum Power Dissipation	T_C=25°C	59.5	W
EAS	Single Pulse Avalanche Energy	L=0.1mH	125	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$[③]	Thermal Resistance-Junction to Ambient Steady State	60	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case Steady State	2.1	℃/W

Note ① : Max. current is limited by bonding wire.

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150℃.

Note ③ : Surface Mounted on 1in² FR-4 board with 1oz.

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Electrical Characteristics (T$_J$=25℃, Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV$_{DSS}$	Drain-Source Breakdown Voltage	V$_{GS}$=0V, I$_D$=-250uA	-30	---	---	V
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{DS}$=-24V, V$_{GS}$=0V	---	---	-1	uA
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$=V$_{GS}$, I$_D$=-250uA	-1.0	---	-2.0	V
I$_{GSS}$	Gate Leakage Current	V$_{GS}$=±20V, V$_{DS}$=0V	---	---	±100	nA
R$_{DS(ON)}$	Drain-Source On-state Resistance	V$_{GS}$=-10V, I$_D$=-30A	---	3.8	4.8	mΩ
		V$_{GS}$=-4.5V, I$_D$=-20A	---	6	8.1	mΩ
Dynamic Characteristics[5]						
C$_{iss}$	Input Capacitance	V$_{GS}$=0V, V$_{DS}$=-15V, Freq.=1MHz	---	4125	---	pF
C$_{oss}$	Output Capacitance		---	812	---	
C$_{rss}$	Reverse Transfer Capacitance		---	575	---	
T$_{d(on)}$	Turn-on Delay Time	V$_{DD}$=-15V, V$_{GS}$=-10V, R$_G$=6Ω, I$_D$=-1A, R$_L$=15Ω	---	19	---	nS
T$_r$	Turn-on Rise Time		---	16	---	
T$_{d(off)}$	Turn-off Delay Time		---	115	---	
T$_f$	Turn-off Fall Time		---	71	---	
Q$_g$	Total Gate Charge	V$_{DS}$=-15V, V$_{GS}$=-10V, I$_D$=-30A	---	80	---	nC
Q$_{gs}$	Gate-Source Charge		---	14	---	
Q$_{gd}$	Gate-Drain Charge		---	19	---	
Source-Drain Characteristics（T$_J$=25℃）						
V$_{SD}$[4]	Diode Forward Voltage	V$_{GS}$=0V, I$_S$=-1A, T$_J$=25℃	---	-0.7	-1.0	V
t$_{rr}$	Reverse Recovery Time	I$_{SD}$=-30A, di/dt=100A/μs, T$_J$=25℃	---	36	---	nS
Q$_{rr}$	Reverse Recovery Charge		---	23	---	nC

Note ④： Pulse test (pulse width 300us, duty cycle 2%).
Note ⑤：Guaranteed by design, not subject to production testing.

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Typical Characteristics

Safe Operation Area

-V_{DS} - Drain - Source Voltage (V)
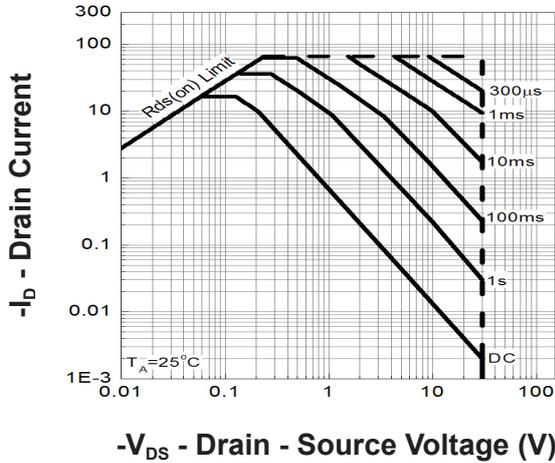
Thermal Transient Impedance

Square Wave Pulse Duration (sec)
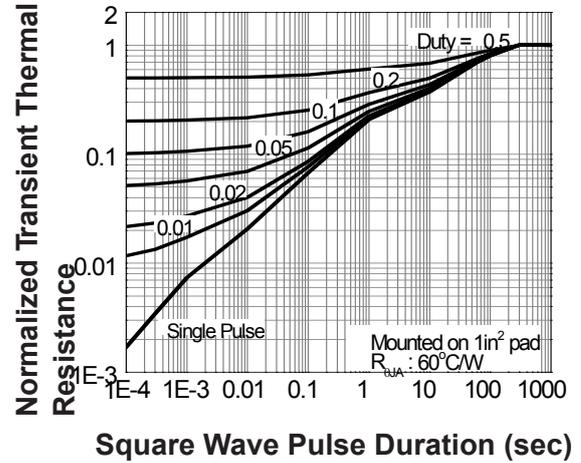
Output Characteristics

-V_{DS} - Drain - Source Voltage (V)

Drain-Source On Resistance

-I_D - Drain Current (A)

Gate-Source On Resistance

-V_{GS} - Gate - Source Voltage (V)
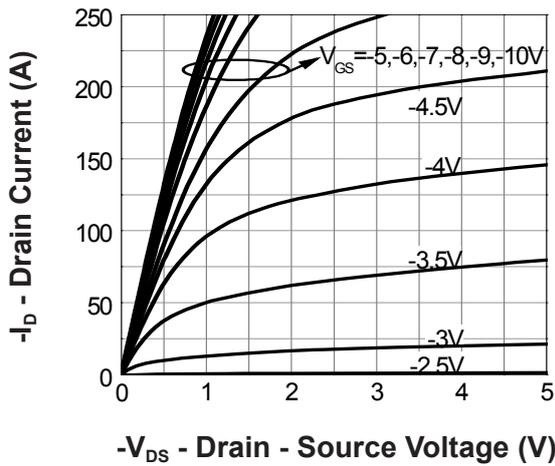
Source-Drain Diode Forward

-V_{SD} - Source - Drain Voltage (V)
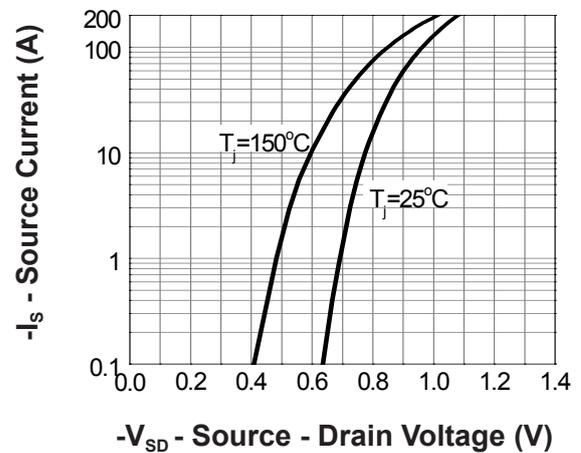
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Capacitance
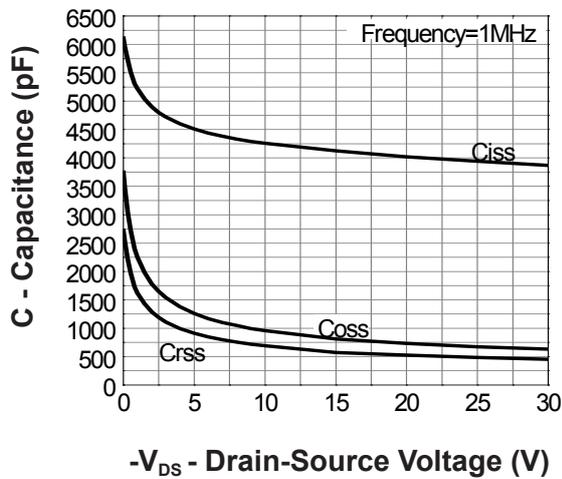
Gate Charge
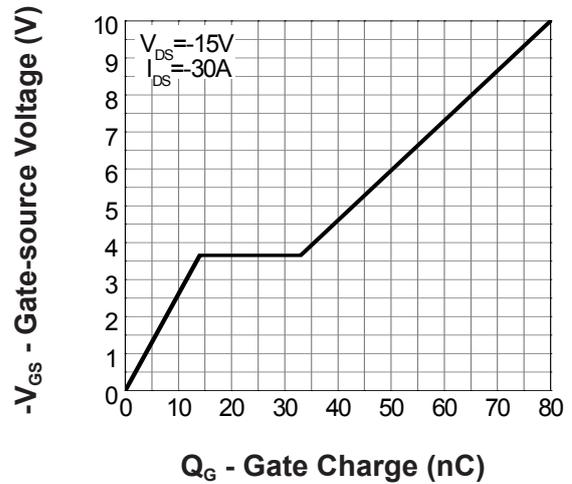
Safe Operation Area
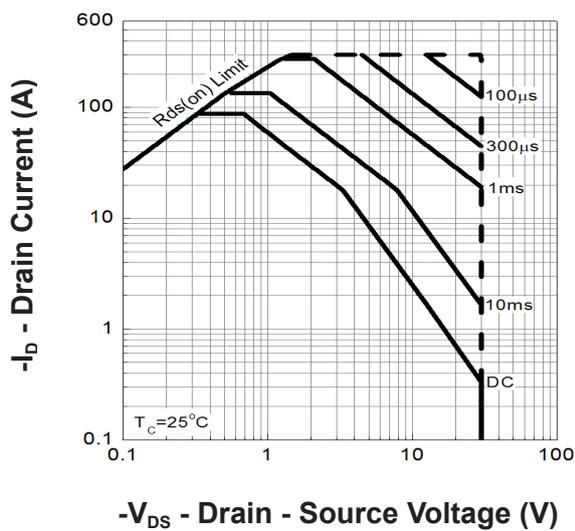
Transfer Characteristics
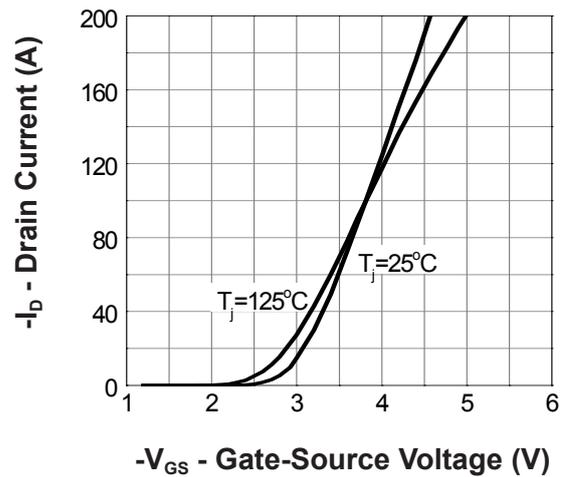
Drain-Source On Resistance
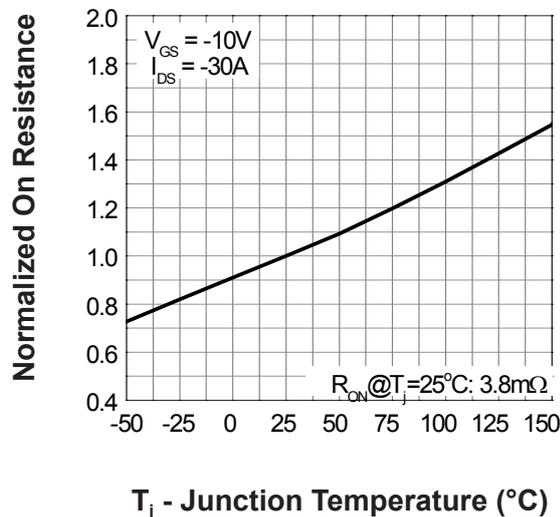
Gate Threshold Voltage
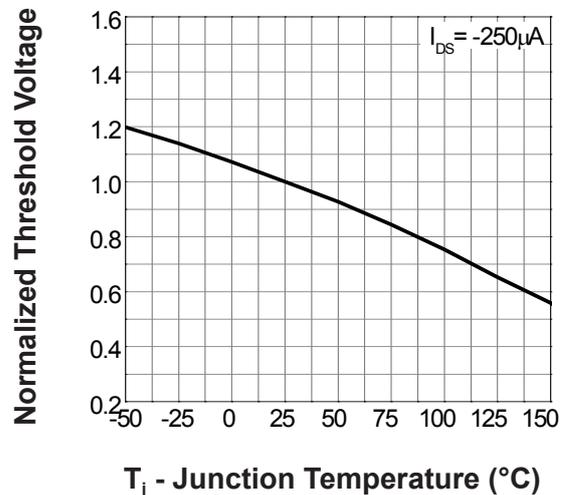
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DFN5×6 Package Outline Data

Top View

Front View

BottomView

Side View
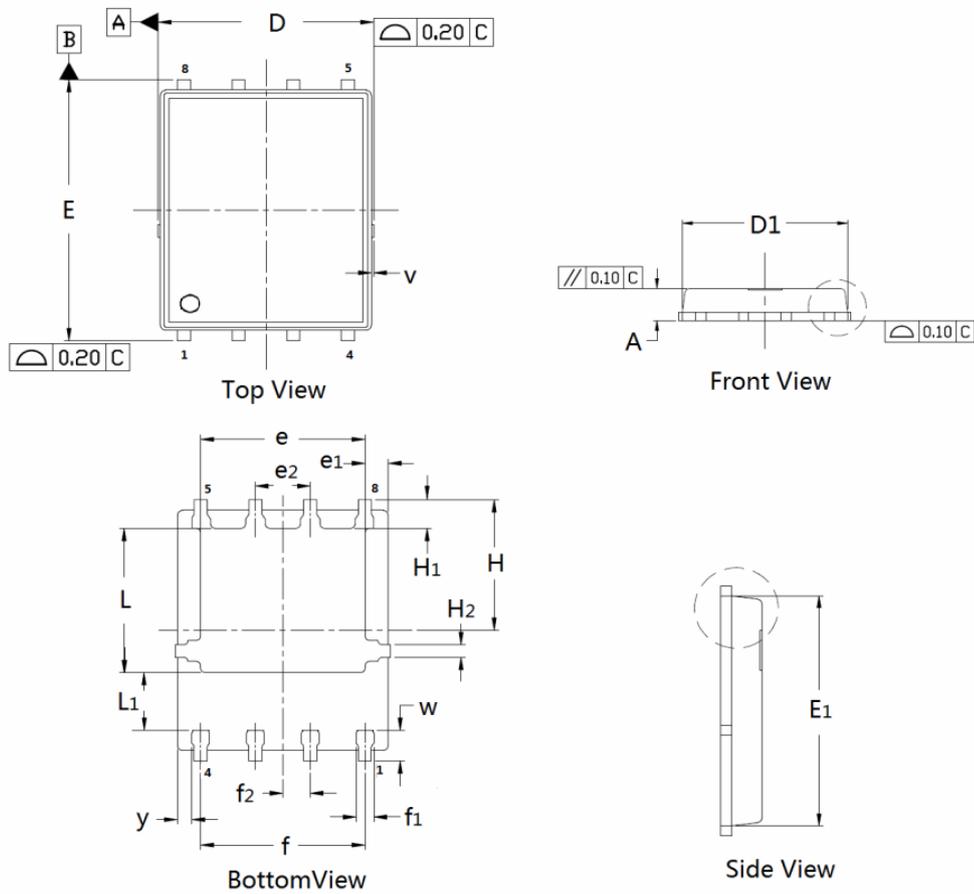
DIMENSIONS (unit : mm)

Symbol		Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.02	1.10	D	4.90	4.98	5.10
D_1	4.80	4.89	5.10	E	5.90	6.11	6.25
E_1	5.65	5.74	5.95	e	3.72	3.80	3.92
e_1	--	0.5	--	e_2	--	1.	--
f	--	3.8	--	f_1	0.31	0.37	0.51
f_2	--	0.6	--	H	--	3.	--
H_1	0.59	0.63	0.79	H_2	0.26	0.28	0.32
L	3.35	3.45	3.65	L_1	--	1.	--
v	--	0.1	--	w	0.64	0.68	0.84
y	--	0.3	--		--		--