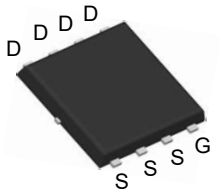
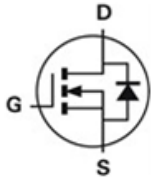
N-Channel Enhancement Mode MOSFET

Features

- High Speed Power Switching
- Reliable and Rugged
- ROHS Compliant
- 100% Avalanche Tested

Pin Description

DFN5X6	Symbol
	

Applications

- Power Management in Desktop Computer
- DC/DC Converters

V_{DSS}	40	V
$R_{DS(ON)-Typ}$	0.52	mΩ
I_D	326	A

Absolute Maximum Ratings (T_C=25℃, Unless Otherwise Noted)

Symbol	Parameter	N-Channel	Unit
V_{DSS}	Drain-Source Voltage	40	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	1300	A
I_D	Continuous Drain Current	326	A
P_D	Maximum Power Dissipation	124	W
E_{AS}	Avalanche Energy, Single pulse	1200	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	42	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1.2	℃/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 1in^2 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	40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=32V, V_{GS}=0V	---	---	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=250uA	1	---	2	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	---	0.52	0.62	mΩ
		V_{GS}=4.5V, I_D=20A	---	0.83	0.95	mΩ
Dynamic Characteristics⑤						
C_{iss}	Input Capacitance	V_{DS}=20V, V_{GS}=0V, Freq.=1MHz	---	8350	---	pF
C_{oss}	Output Capacitance		---	1810	---	
C_{rss}	Reverse Transfer Capacitance		---	115	---	
$T_{d(on)}$	Turn-on Delay Time	V_{DD}=20V,V_{GS}=10V, I_D=30A,R_G=4.5Ω	---	15	---	nS
T_r	Turn-on Rise Time		---	74	---	
$T_{d(off)}$	Turn-off Delay Time		---	140	---	
T_f	Turn-off Fall Time		---	92	---	
Q_g	Total Gate Charge	V_{DS}=20V,V_{GS}=10V, I_D=30A	---	145	---	nC
Q_{gs}	Gate-Source Charge		---	29	---	
Q_{gd}	Gate-Drain Charge		---	26	---	
Source-Drain Characteristics						
V_{SD}	Diode Forward Voltage	I_S=30A, V_{GS}=0V	---	---	1.3	V
t_{rr}	Reverse Recovery Time	I_F=30A, dI_F/dt=100A/us	---	85	---	nS
Q_{rr}	Reverse Recovery Charge		---	123	---	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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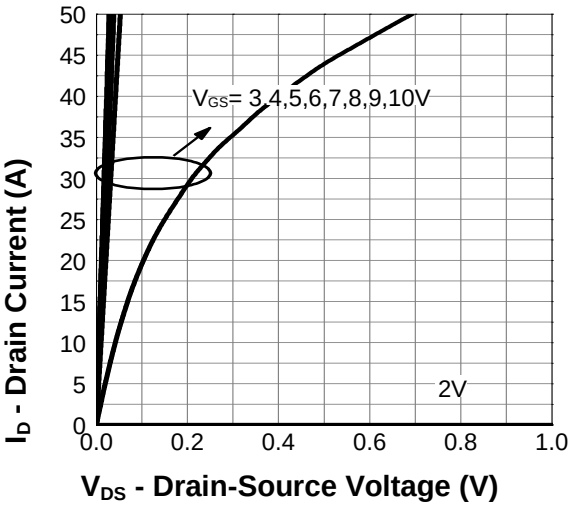
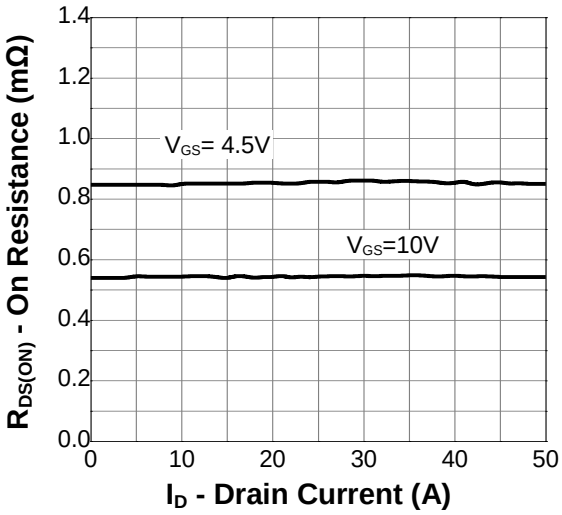
Typical Characteristics

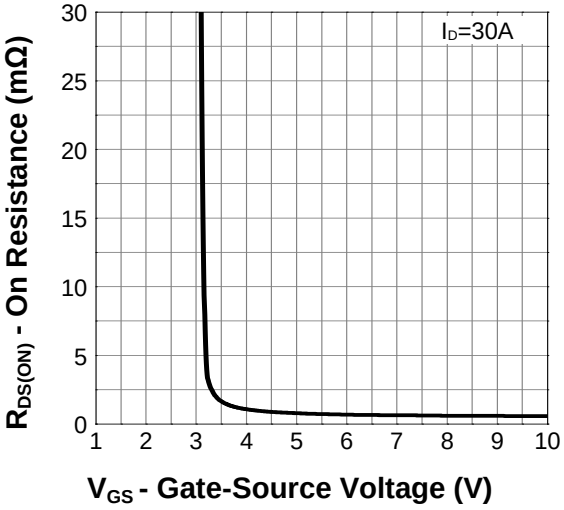
Output Characteristics



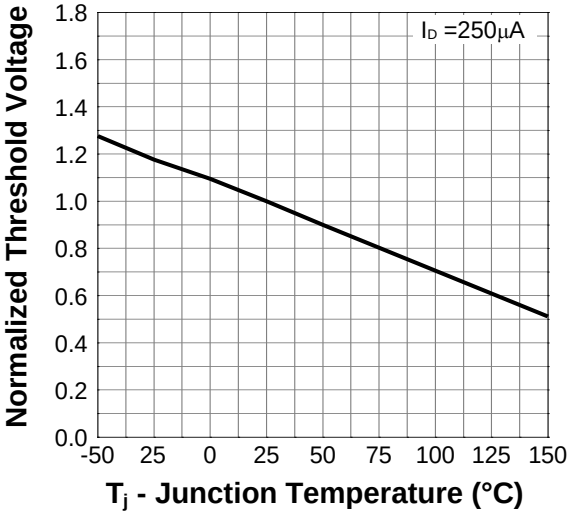
On Resistance



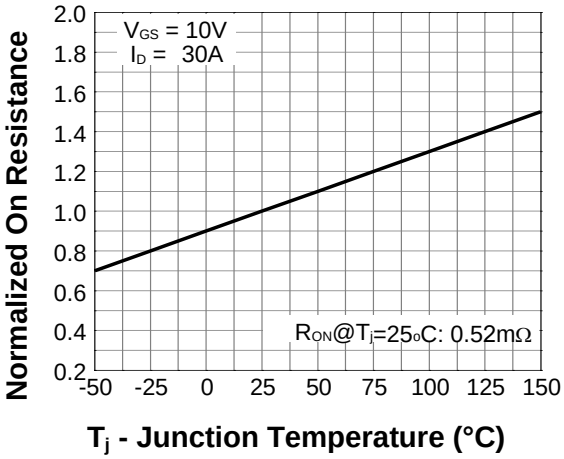
Transfer Characteristics



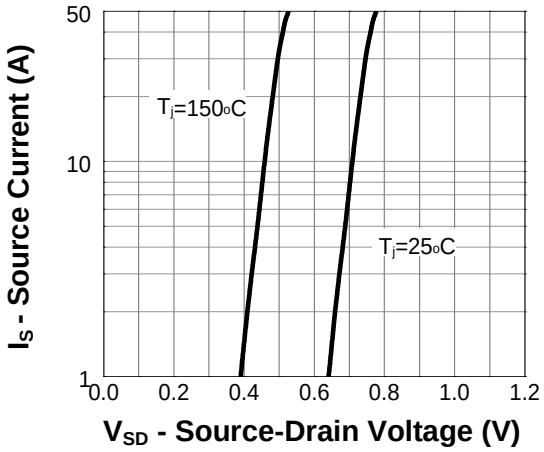
Normalized Threshold Voltage



Normalized On Resistance



Diode Forward Current



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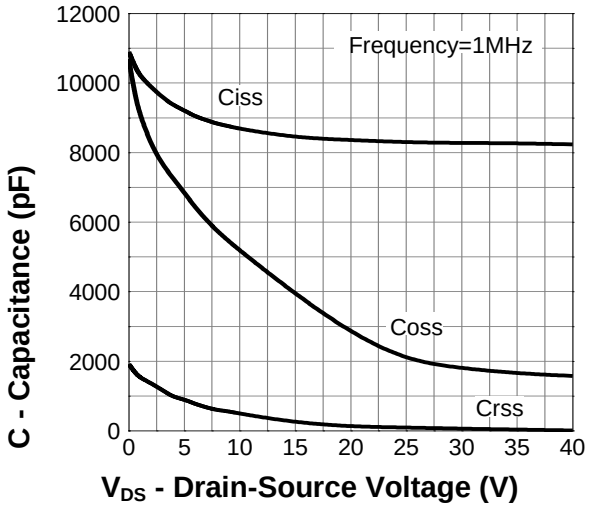
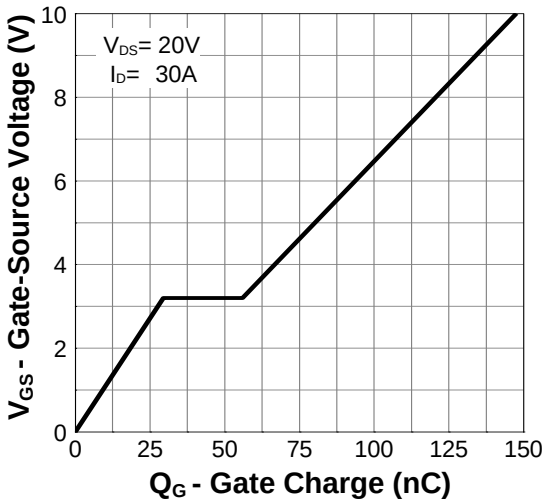
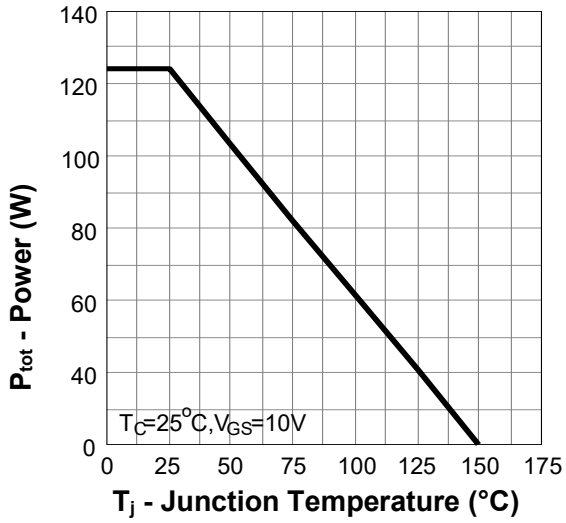
Capacitance



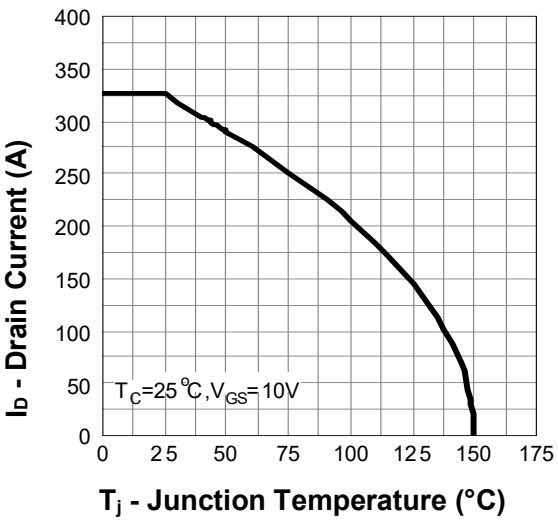
Gate Charge



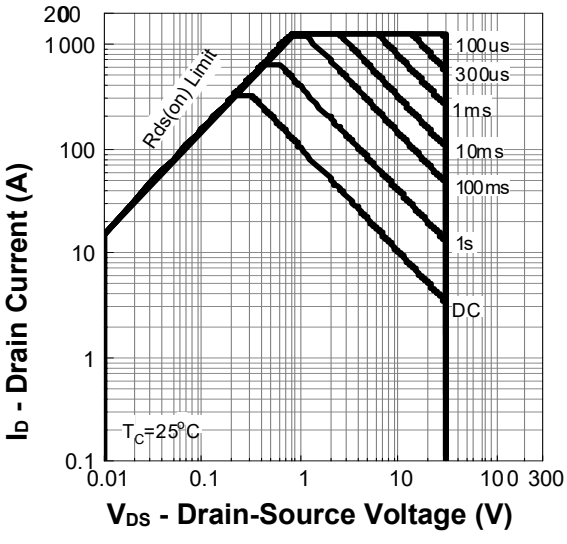
Power Capability



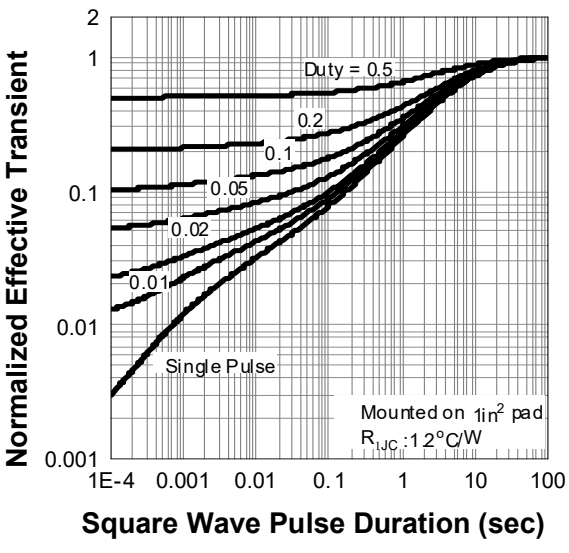
Current Capability



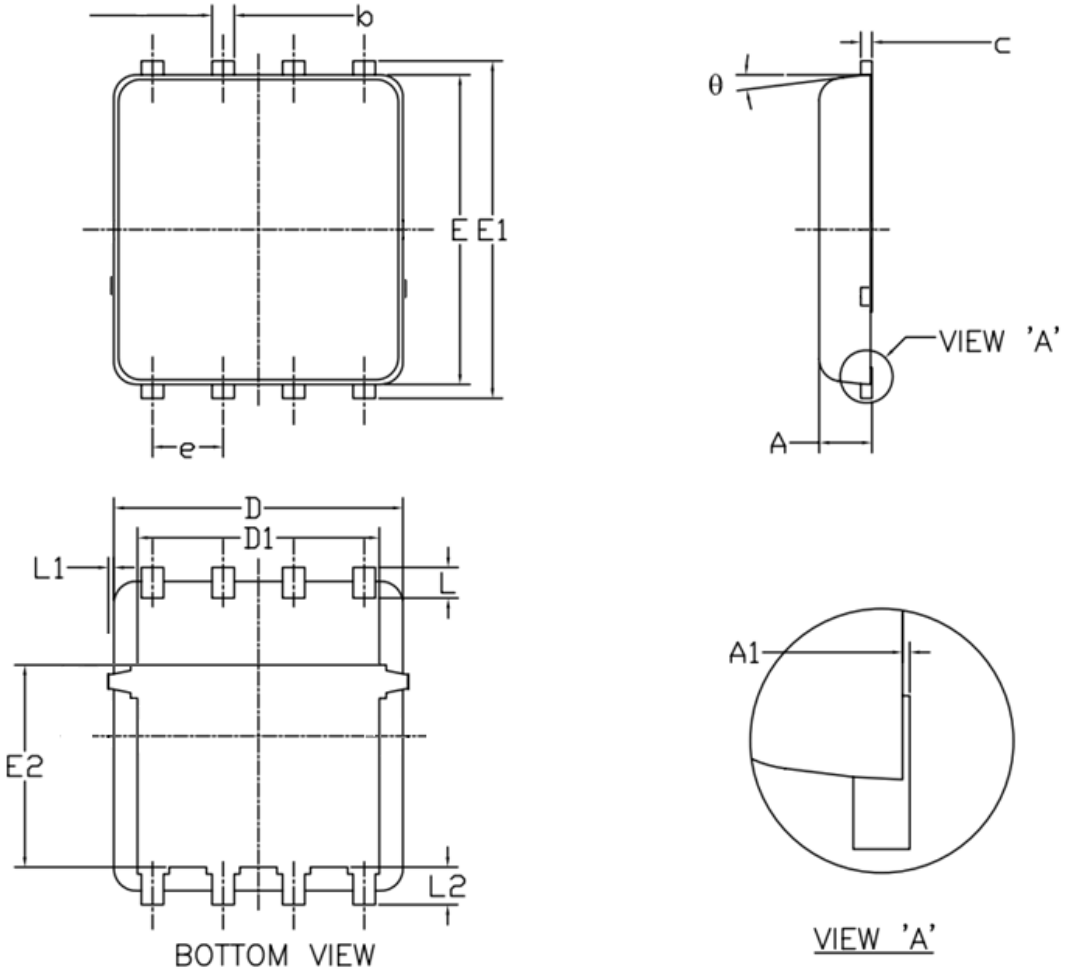
Safe Operation Area



Transient Thermal Impedance



DFN5X6-8L Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.90	1.00	1.20	**E1**	5.90	6.10	6.35
A1	0.00	--	0.05	**E2**	3.38	3.58	3.92
b	0.30	0.40	0.51	**e**	1.27 BSC		
c	0.20	0.25	0.33	**L**	0.51	0.61	0.71
D	4.80	4.90	5.40	**L1**	--	--	0.15
D1	3.61	4.00	4.25	**L2**	0.41	0.51	0.61
E	5.65	5.80	6.06	**θ**	0°	--	12°