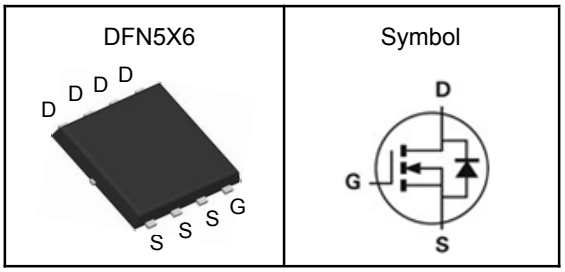
N-Channel Enhancement Mode MOSFET

Features

- Low Rdson for low conduction loss
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

Pin Description



Applications

- Power Management in Desktop Computer
- DC/DC Converters

V_{DSS}	30	V
$R_{DS(ON)-Typ}$	3	mΩ
I_D	96	A

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

Symbol	Parameter		N-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	384	A
I_D	Continuous Drain Current	T_C=25°C	96	A
		T_A=25°C	18	
P_D	Maximum Power Dissipation	T_C=25°C	56.8	W
		T_A=25°C	1.95	
E_{AS} ②	Avalanche Energy, Single pulse L=0.1mH		192	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$ ③	Thermal Resistance-Junction to Ambient	64	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case	2.2	℃/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 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	1.3	---	2.5	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=20A	---	3	3.8	mΩ
		V_{GS}=4.5V, I_D=15A	---	4.2	5.5	
gfs	Forward Transconductance	V_{DS}=5V , I_D=10A	---	24.6	---	S
Dynamic Characteristics⑤						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, Freq.=1MHz	---	1285	---	pF
C_{oss}	Output Capacitance		---	850	---	
C_{rss}	Reverse Transfer Capacitance		---	85	---	
$T_{d(on)}$	Turn-on Delay Time	V_{DD}=15V, R_L=15Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	---	12.4	---	nS
T_r	Turn-on Rise Time		---	9.5	---	
$T_{d(off)}$	Turn-off Delay Time		---	27.2	---	
T_f	Turn-off Fall Time		---	35.2	---	
Q_g	Total Gate Charge	V_{DS}=15V,V_{GS}=4.5V, I_D=20A	---	9.8	---	nC
Q_{gs}	Gate-Source Charge		---	3.8	---	
Q_{gd}	Gate-Drain Charge		---	3.7	---	
Source-Drain Characteristics						
V_{SD}④	Diode Forward Voltage	V_{GS}=0V , I_{SD}=20A , T_J=25℃	---	0.8	1.1	V
t_{rr}	Reverse Recovery Time	I_{DS}=20A , di/dt=100A/μs，T_J=25℃	---	35.6	---	nS
Q_{rr}	Reverse Recovery Charge		---	26	---	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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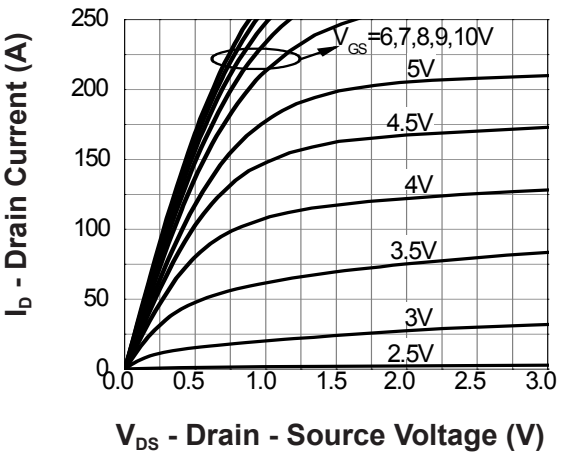
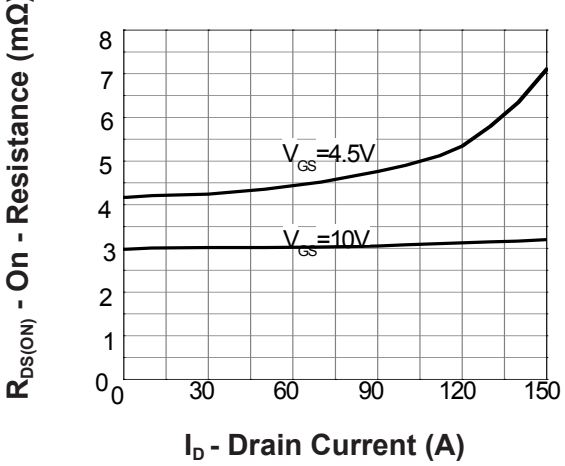
Typical Characteristics

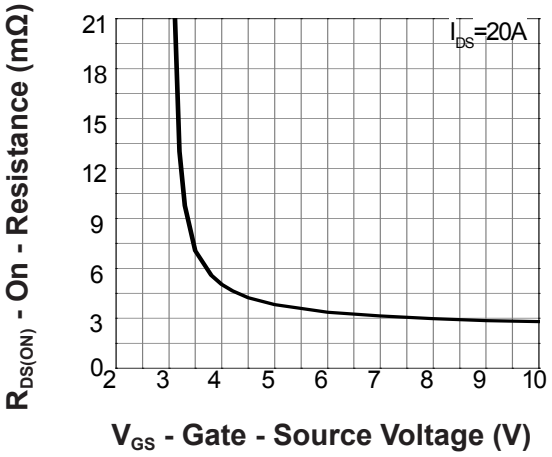
Output Characteristics



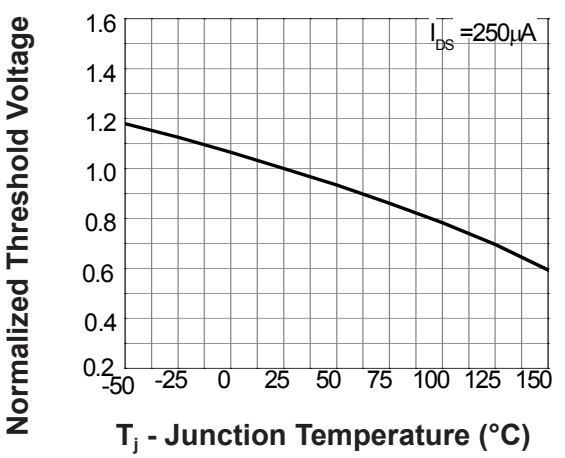
Drain-Source On Resistance



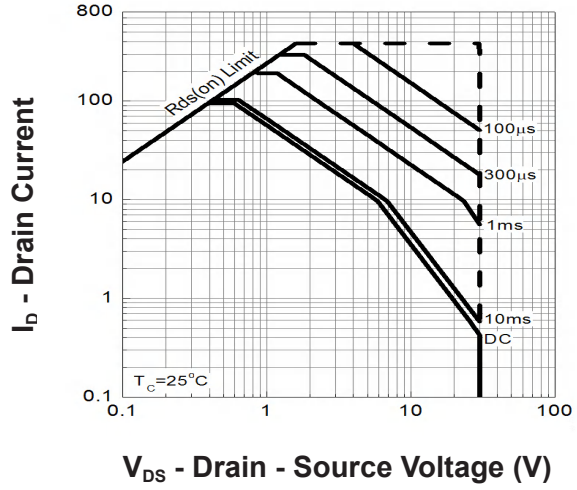
Gate-Source On Resistance



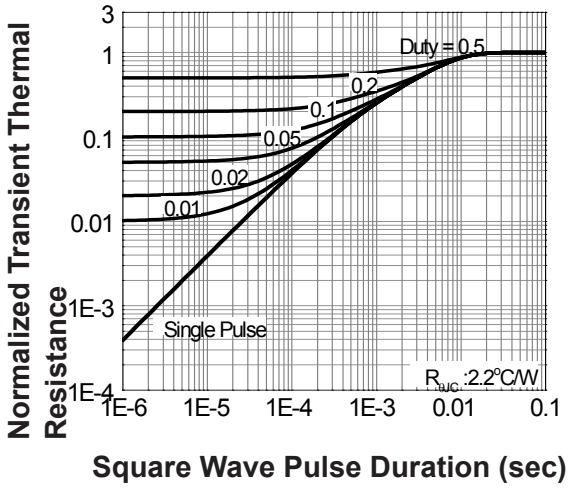
Gate Threshold Voltage



Safe Operation Area



Thermal Transient Impedance



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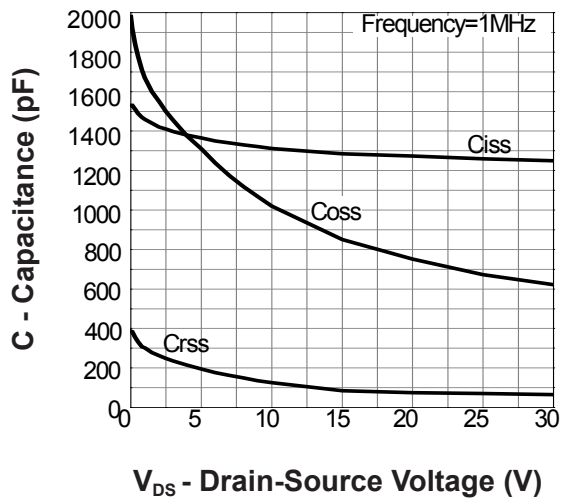
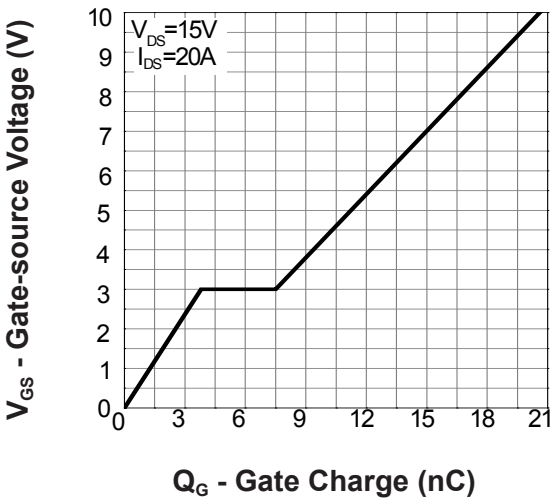
Capacitance



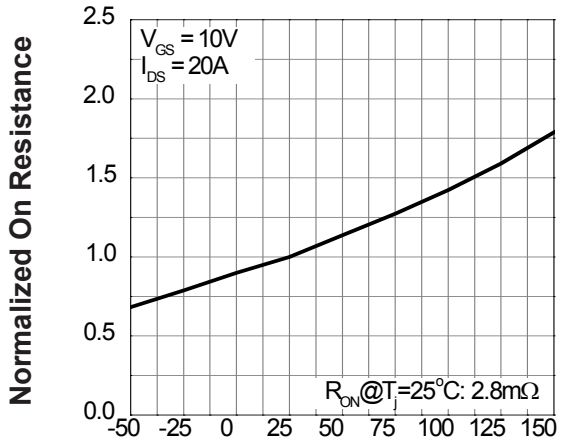
V_{DS} - Drain-Source Voltage (V)

Gate Charge



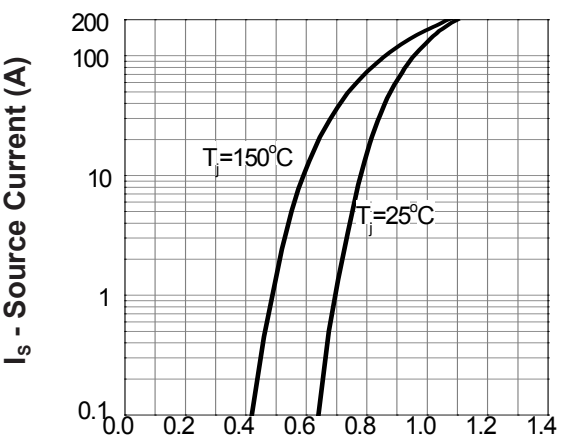
Q_G - Gate Charge (nC)

Drain-Source On Resistance



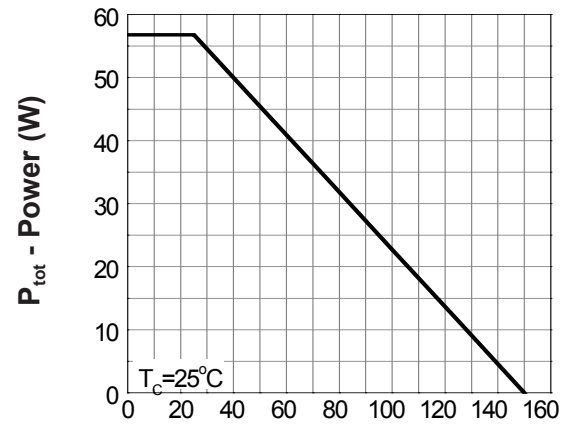
T_j - Junction Temperature (°C)

Source-Drain Diode Forward



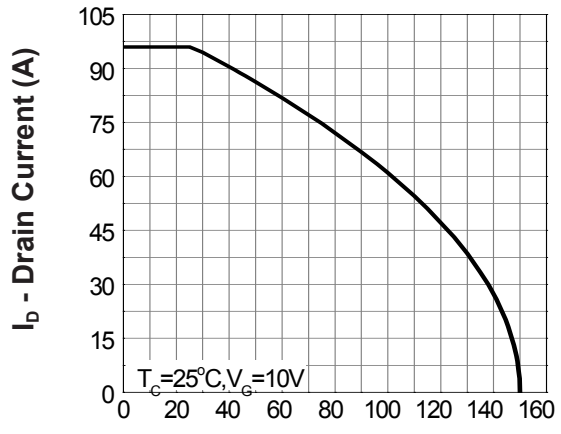
V_{SD} - Source - Drain Voltage (V)

Power Dissipation



T_j - Junction Temperature (°C)

Drain Current



T_j - Junction Temperature (°C)

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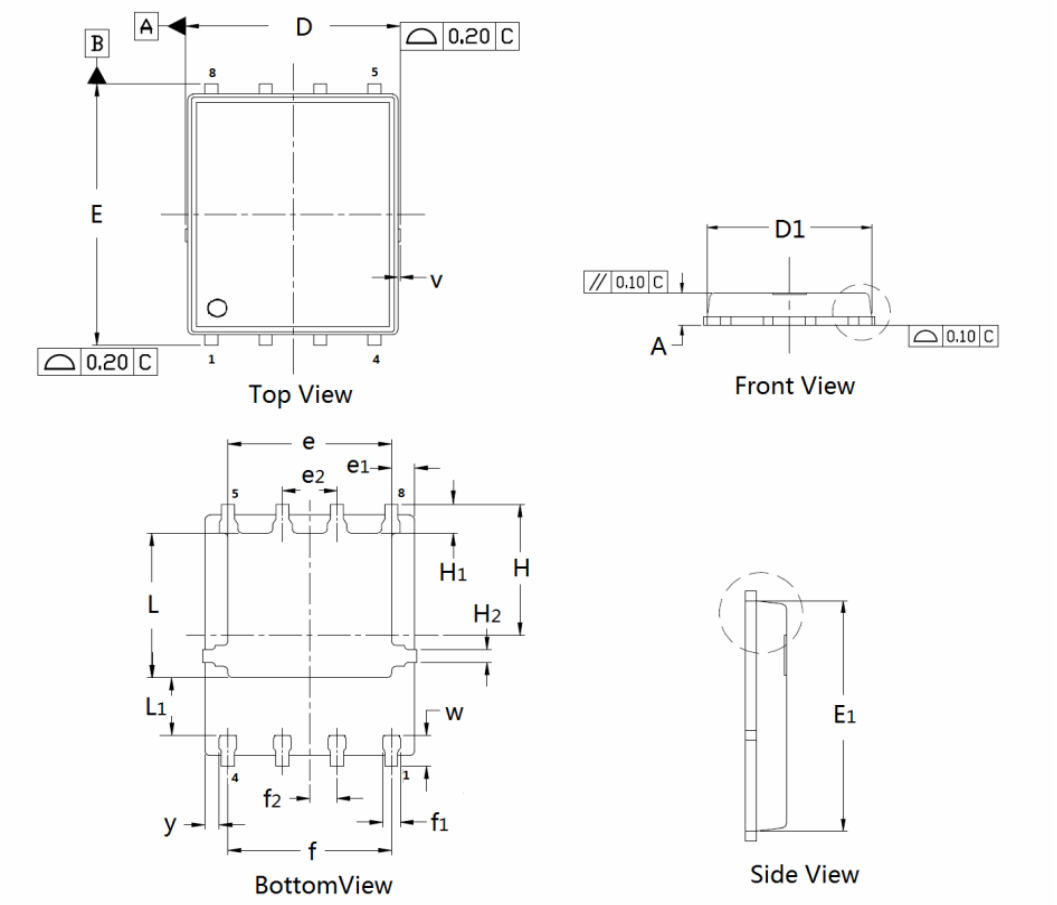
DFN5×6 Package Outline Data



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	--		--		--