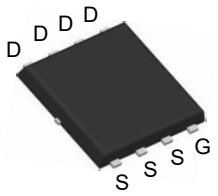
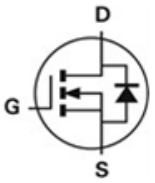
N-Channel Enhancement Mode MOSFET

Features

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

Pin Description

DFN5X6	Symbol
	

Applications

- Power Management in Desktop Computer
- DC/DC Converters

V_{DSS}	80	V
$R_{DS(ON)-Typ}$	10	mΩ
I_D	60	A

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

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source Voltage		80	V
V_{GSS}	Gate-Source Voltage		±20	V
T_J	Maximum Junction Temperature		-55 to 150	℃
T_{STG}	Storage Temperature Range		-55 to 150	℃
E_{AS}	Single Pulse Avalanche Energy③		180	mJ
I_{DM}①	Pulse Drain Current Tested		204	A
I_D	Continuous Drain Current	T_C=25°C	60	A
P_D	Maximum Power Dissipation	T_C=25°C	70	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case①	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	80	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=80V, V_{GS}=0V	---	---	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=250uA	1.0	---	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=15A	---	10	15	mΩ
Dynamic Characteristics⑤						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=40V, Freq.=1MHz	---	1400	---	pF
C_{oss}	Output Capacitance		---	190	---	
C_{rss}	Reverse Transfer Capacitance		---	4	---	
$T_{d(on)}$	Turn-on Delay Time	V_{DD}=40V , V_{GS}=10V , R_G=3Ω, I_D=14.5A	---	19	---	nS
T_r	Turn-on Rise Time		---	10	---	
$T_{d(off)}$	Turn-off Delay Time		---	24	---	
T_f	Turn-off Fall Time		---	5	---	
Q_g	Total Gate Charge	V_{DS}=40V , V_{GS}=10V , I_D=14.5A	---	23	---	nC
Q_{gs}	Gate-Source Charge		---	6.2	---	
Q_{gd}	Gate-Drain Charge		---	3.3	---	
Source-Drain Characteristics （T_J=25℃）						
V_{SD}④	Diode Forward Voltage	I_S=1A, V_{GS}=0V	---	0.7	1.2	V
trr	Reverse Recovery Time	I_F=10A,V_R=30V di/dt=100A/μs，T_J=25℃	---	19	---	nS
Qrr	Reverse Recovery Charge		---	61	---	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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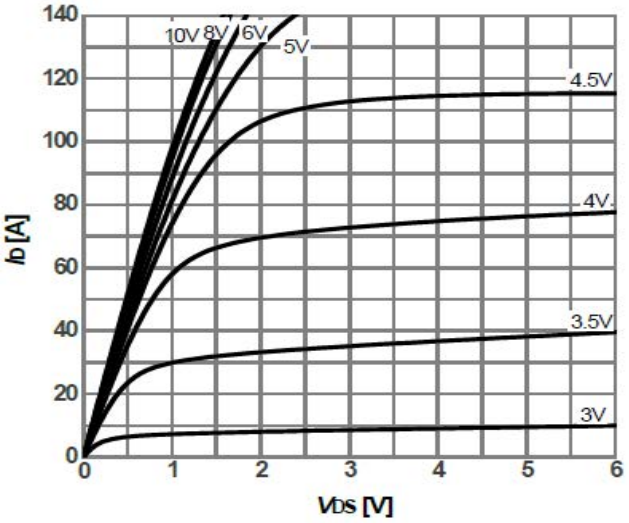
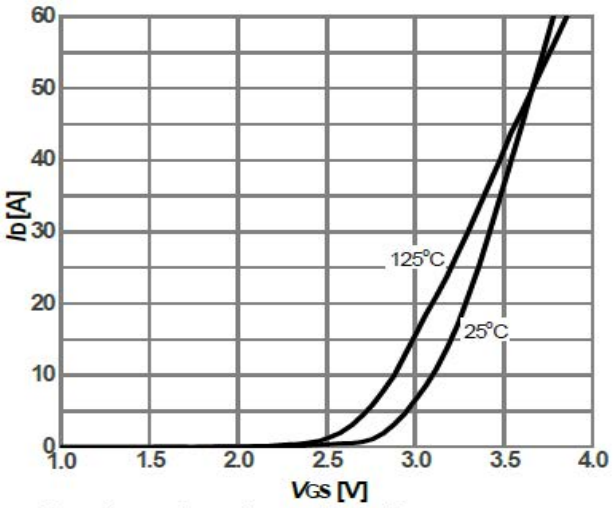
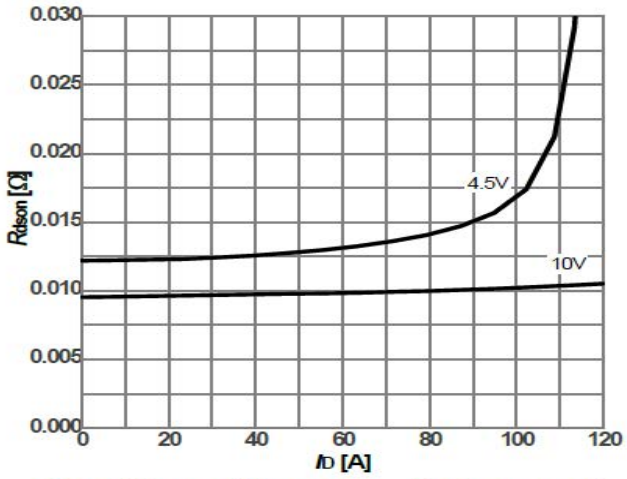
Typical Characteristics



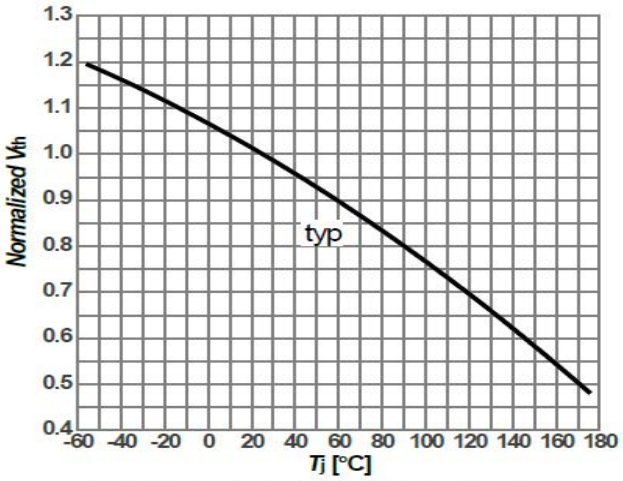
Typ. output characteristics



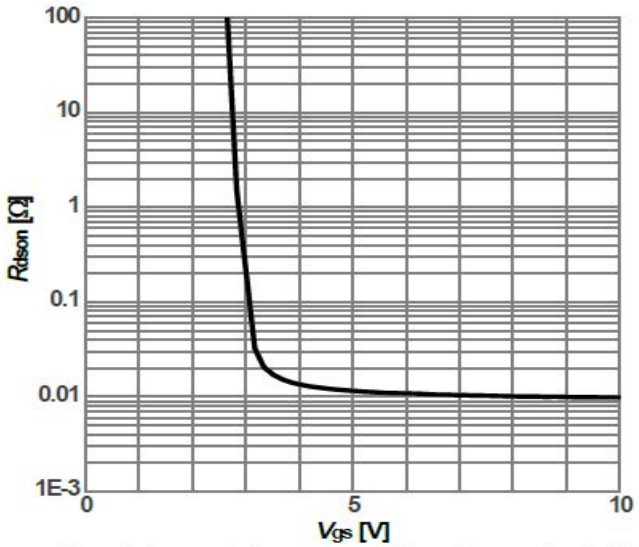
Typ. transfer characteristics



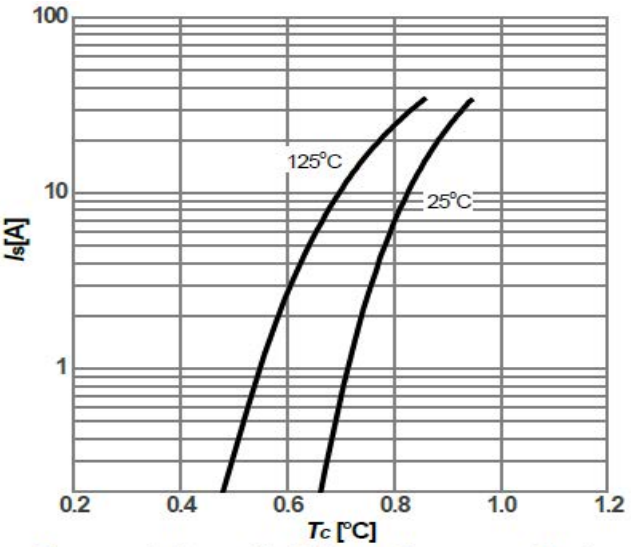
On-state resistance vs. Drain current



Gate threshold voltage vs. Junction temperature



On-state resistance vs. Vgs characteristics



Forward characteristics of reverse diode

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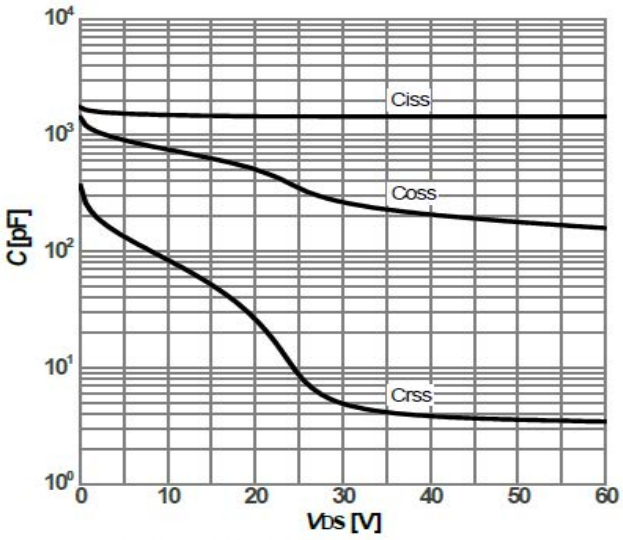
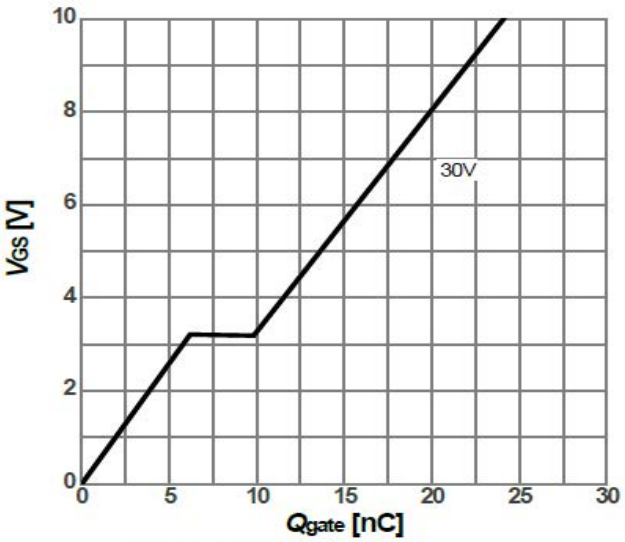
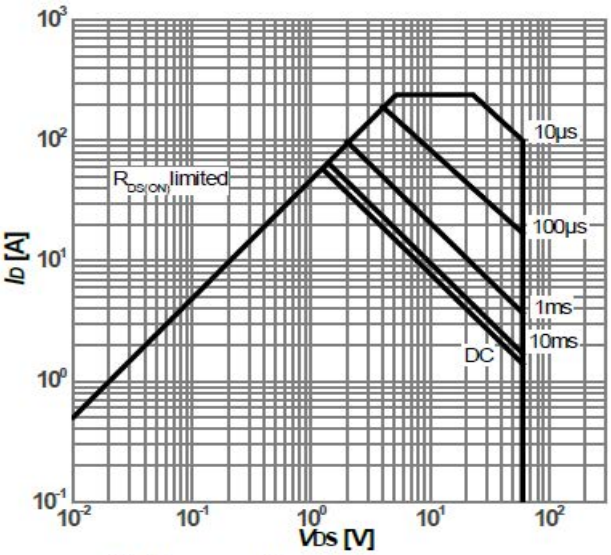


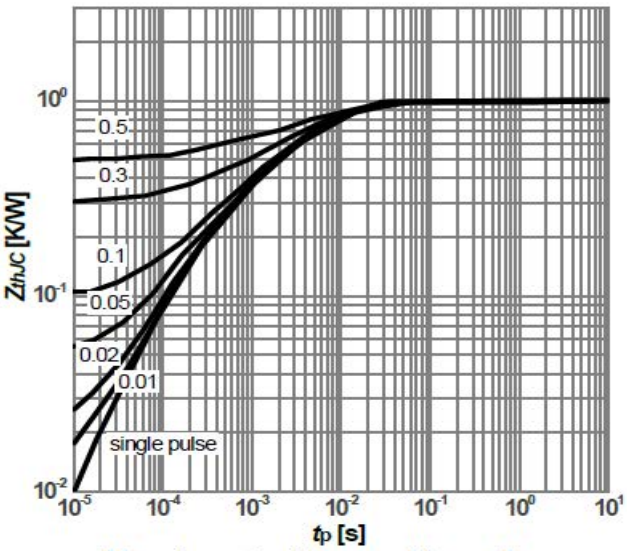
Typ. capacitances



Typ. gate charge



Safe operating area



Max. transient thermal impedance

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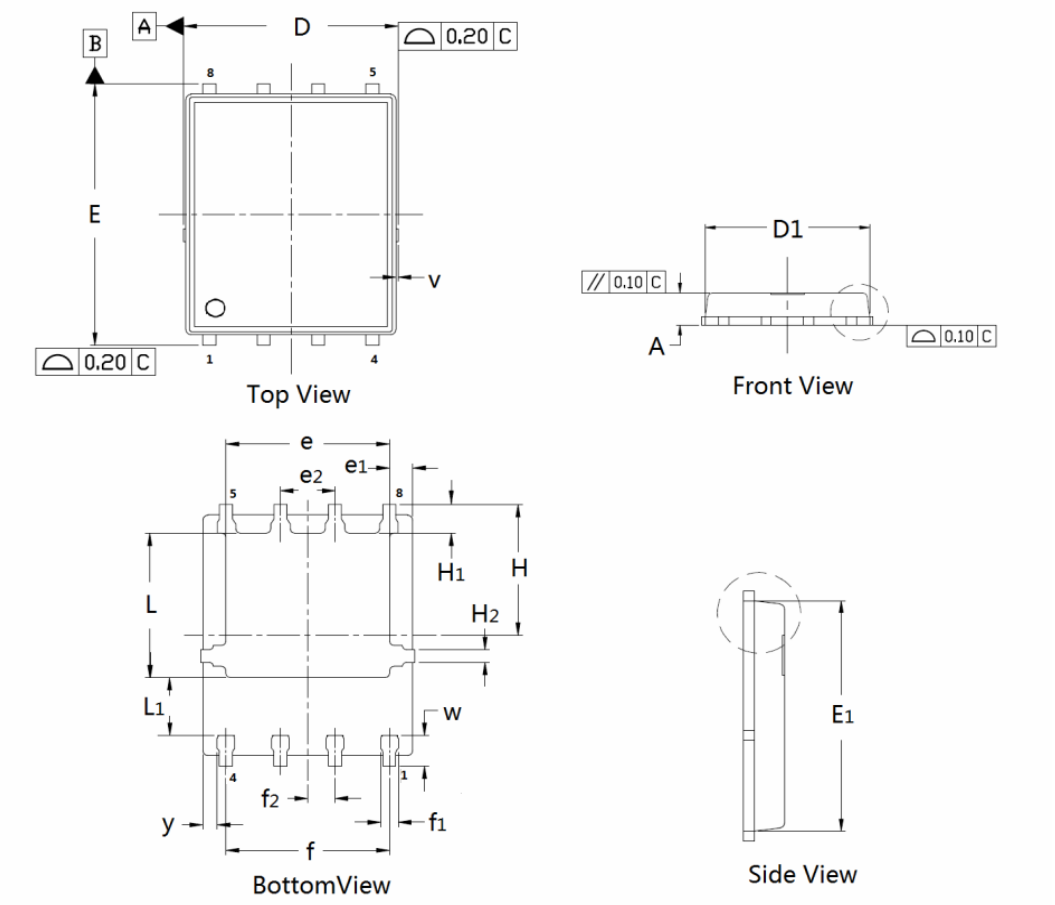
DFN5×6 Package Outline Data



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	--		--		--