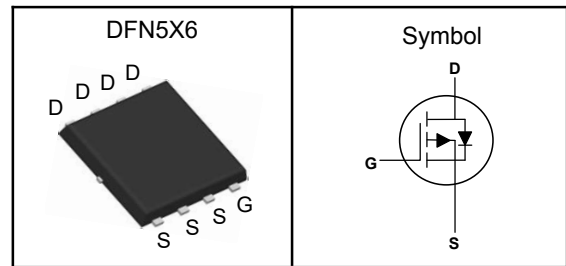# P-Channel Enhancement Mode MOSFET

Features

- Fast switching speed
- ROHS Compliant & Halogen-Free
- 100% UIS and Rg Tested

Applications

- Motor drivers
- DC - DC Converter

Pin Description

DFN5X6	Symbol
D D D D S S S S G	

V_{DSS}	-30	V
$R_{DS(ON)-Typ}$	2.5	mΩ
I_D	-115	A

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

Symbol	Parameter		Rating	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		-460	A
I_D	Continuous Drain Current	T_C=25°C	-115	A
P_D	Maximum Power Dissipation	T_C=25°C	80	W
E_{AS}	Avalanche Energy, Single pulse		175	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{θJA}$	Thermal Resistance-Junction to Ambient	62.5	℃/W
$R_{θJC}$	Thermal Resistance-Junction to Case	1.56	℃/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.

P-Channel Enhancement Mode MOSFET

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

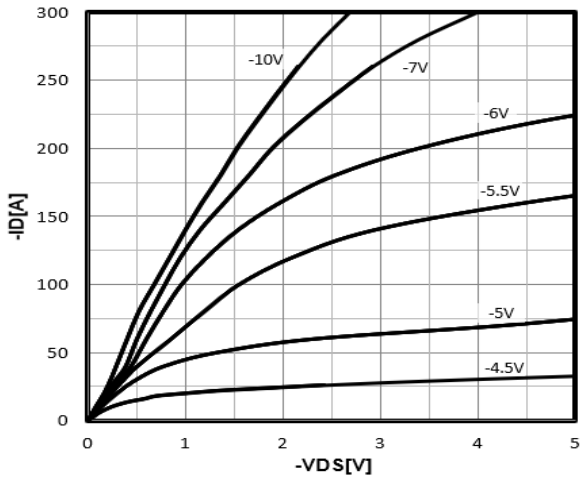| Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV$_{DSS}$	Drain-Source Breakdown Voltage	V$_{GS}$=0V, I$_D$=-250uA	-30	---	---	V
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{DS}$=-30V, V$_{GS}$=0V	---	---	-1	uA
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$=V$_{GS}$, I$_D$=-250uA	-1.3	---	-2.1	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	---	2.5	3	mΩ
		V$_{GS}$=-4.5V, I$_D$=-10A	---	3.5	4.2	mΩ
Dynamic Characteristics[5]						
C$_{iss}$	Input Capacitance	V$_{GS}$=0V, V$_{DS}$=-15V, Freq.=1MHz	---	9148	---	pF
C$_{oss}$	Output Capacitance		---	1173	---	
C$_{rss}$	Reverse Transfer Capacitance		---	1184	---	
T$_{d(on)}$	Turn-on Delay Time	V$_{GS}$=-10V,V$_{DS}$=-15V , I$_D$=-10A,R$_G$=3Ω	---	15	---	nS
T$_r$	Turn-on Rise Time		---	18	---	
T$_{d(off)}$	Turn-off Delay Time		---	110	---	
T$_f$	Turn-off Fall Time		---	85	---	
Q$_g$	Total Gate Charge	V$_{GS}$=-10V,V$_{DS}$=-15V , I$_D$=-5A	---	177	---	nC
Q$_{gs}$	Gate-Source Charge		---	23	---	
Q$_{gd}$	Gate-Drain Charge		---	39	---	
Source-Drain Characteristics						
V$_{SD}$[4]	Diode Forward Voltage	I$_S$=-15A, V$_{GS}$=0V	---	---	-1.2	V

Note ④： Pulse test (pulse width≤300us, duty cycle≤2%).

Note ⑤ : Guaranteed by design, not subject to production testing.
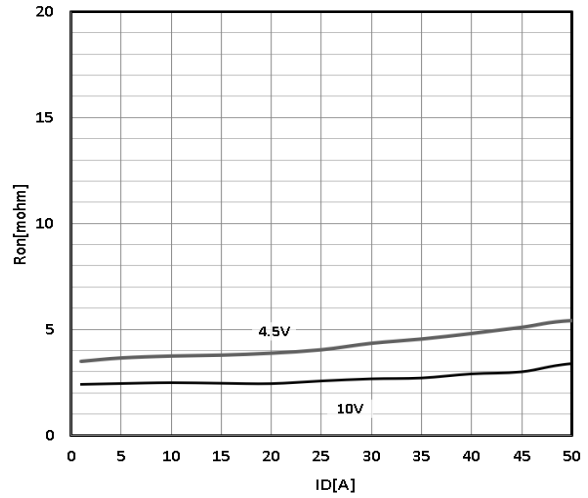
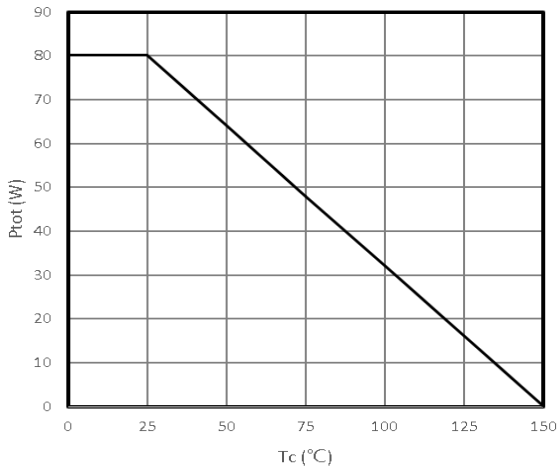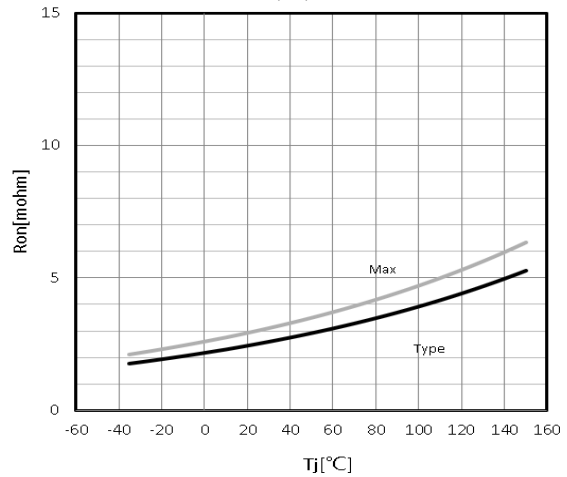# P-Channel Enhancement Mode MOSFET

Typical Characteristics

Typ. output characteristics
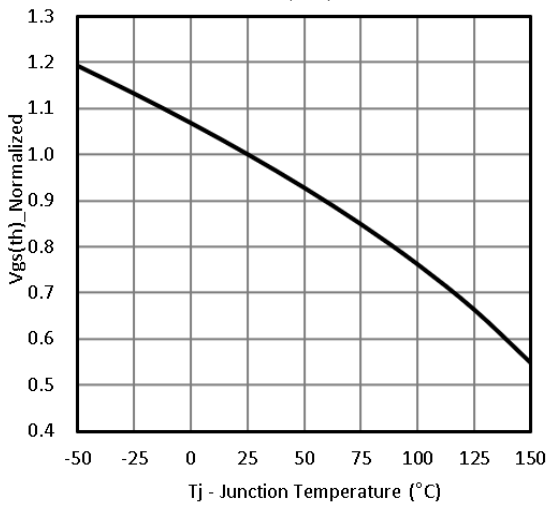$-I_D=f(-V_{DS})$

Typ. drain-source on resistance
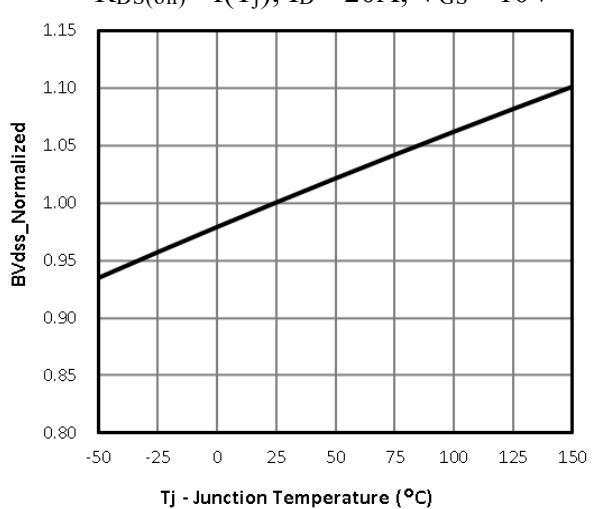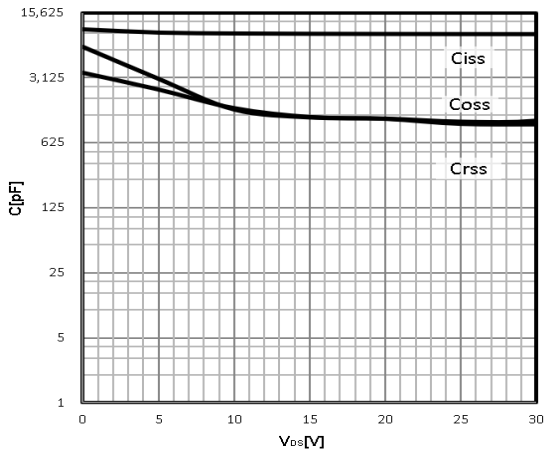$R_{DS(on)}=f(-I_D)$

Power Dissipation
$P_{tot}=f(T_C)$

Drain-source on-state resistance
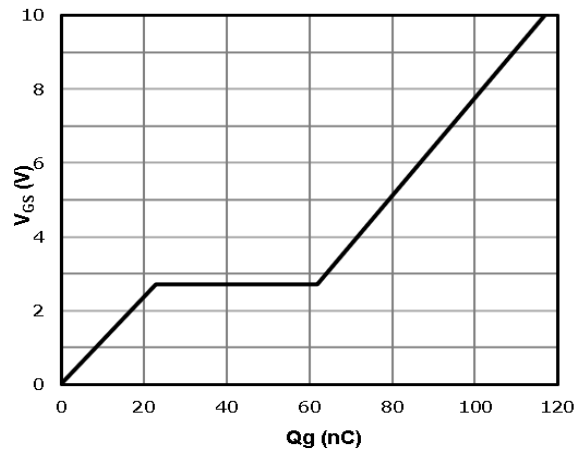$R_{DS(on)}= f(T_j)$; $I_D=-20A$; $V_{GS}=-10V$

Gate Threshold Voltage
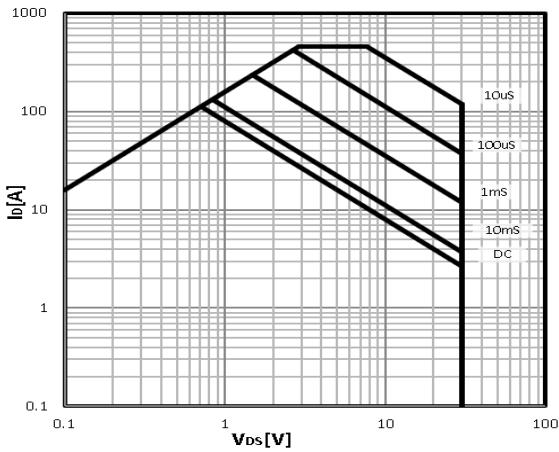$-V_{TH}=f(T_j)$; $I_D=-250uA$

Drain-source breakdown voltage
$-V_{BR(DSS)}=f(T_j)$; $I_D=-250uA$
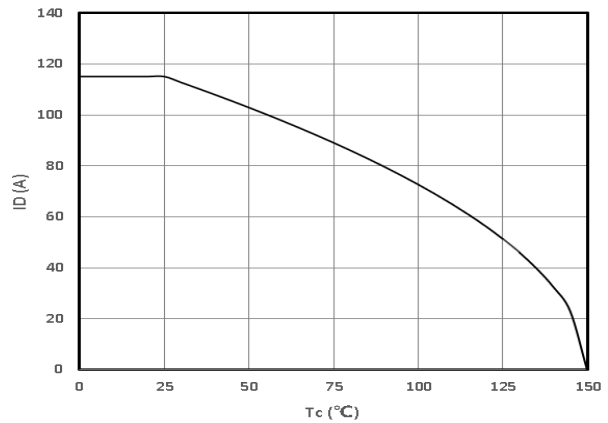
P-Channel Enhancement Mode MOSFET
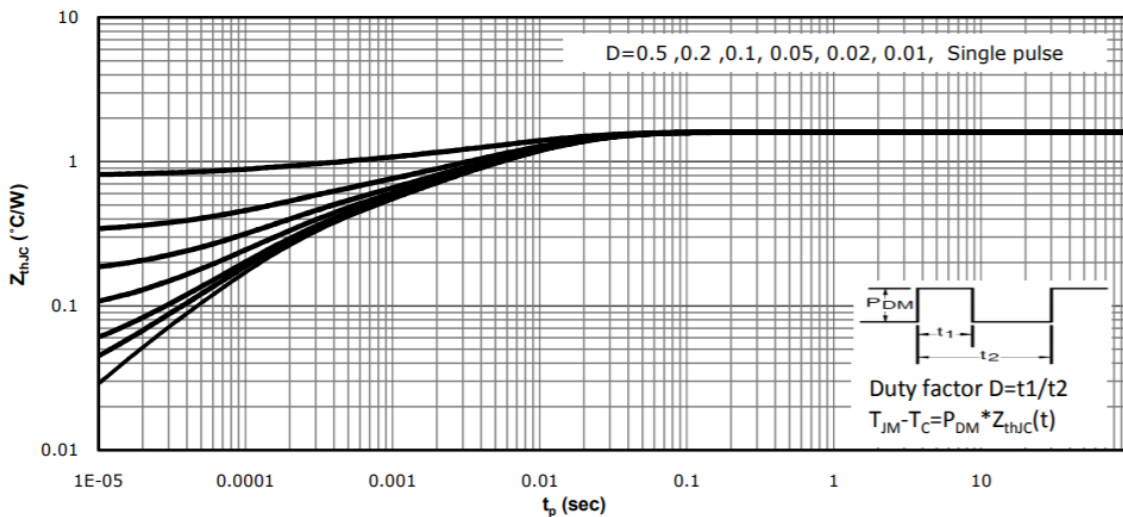
Typ. capacitances
$C = f(-V_{DS})$; $V_{GS} = 0V$; $f = 1MHz$

Typ. gate charge
$-V_{GS} = f(Q_g)$; $I_D = -5A$

Safe operating area
$-I_D = f(-V_{DS})$

Maximum Drain Current
$-I_D = f(T_C)$

Max. transient thermal impedance
$Z_{thJC} = f(t_p)$

D=0.5 ,0.2 ,0.1, 0.05, 0.02, 0.01, Single pulse

Duty factor D=t1/t2
$T_{JM} - T_C = P_{DM} * Z_{thJC}(t)$

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4 / 5
Specifications are subject to change without notice

P-Channel Enhancement Mode MOSFET

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	--		--		--