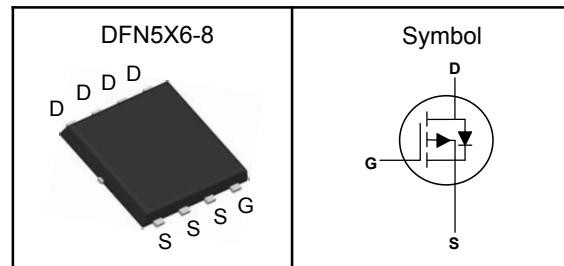


P-Channel Enhancement Mode MOSFET
Features

- Low $R_{ds(on)}$ for low conduction loss
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

Applications

- Power Management in Desktop Computer
- DC/DC Converters

Pin Description


V_{bss}	-30	V
$R_{ds(ON)-Typ}$	5.1	m Ω
I_D	-90	A

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$, Unless Otherwise Noted)

Symbol	Parameter	P-Channel	Unit
V_{bss}	Drain-Source Voltage	-30	V
V_{GSS}	Gate-Source Voltage	± 20	V
T_J	Maximum Junction Temperature	-55 to 150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
$I_{DM}^{①}$	Pulse Drain Current Tested	-300	A
I_D	Continuous Drain Current	-90	A
P_D	Maximum Power Dissipation	75	W
EAS	Single Pulse Avalanche Energy	500	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance Junction-Case	1.0	$^\circ\text{C}/\text{W}$

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

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

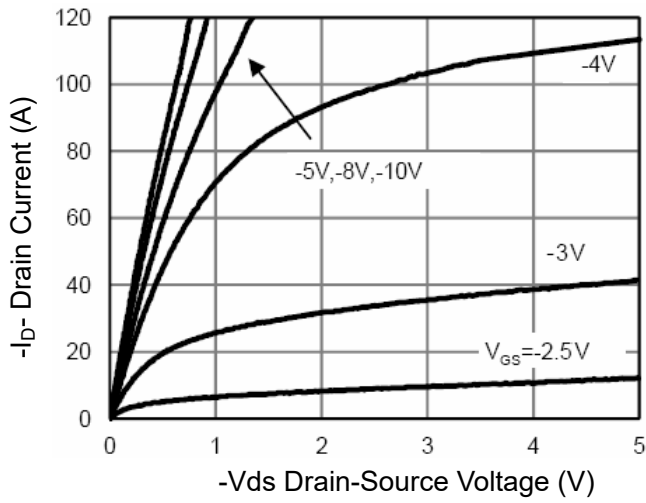
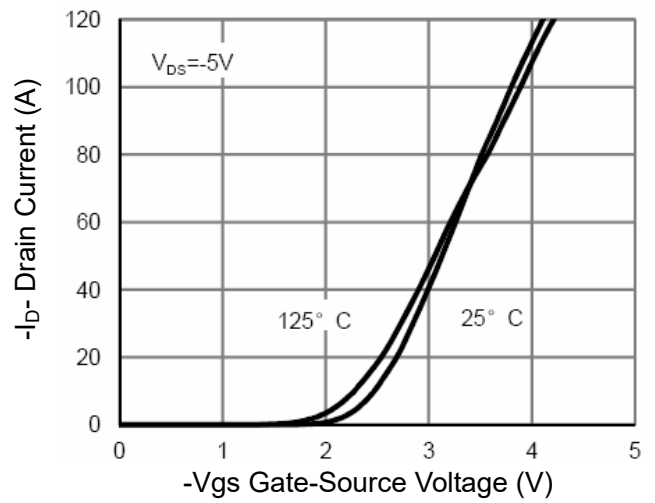
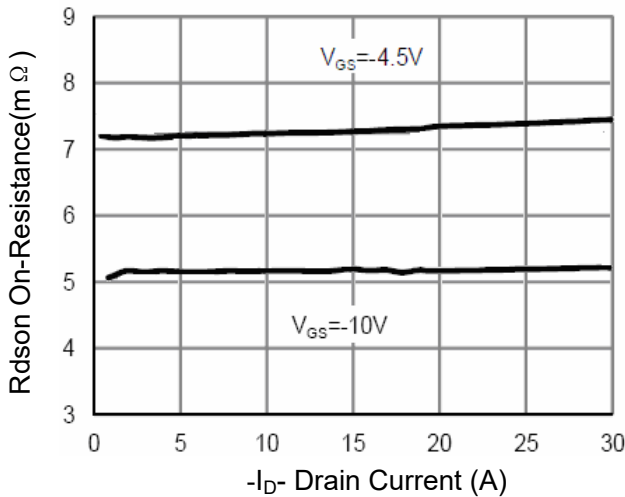
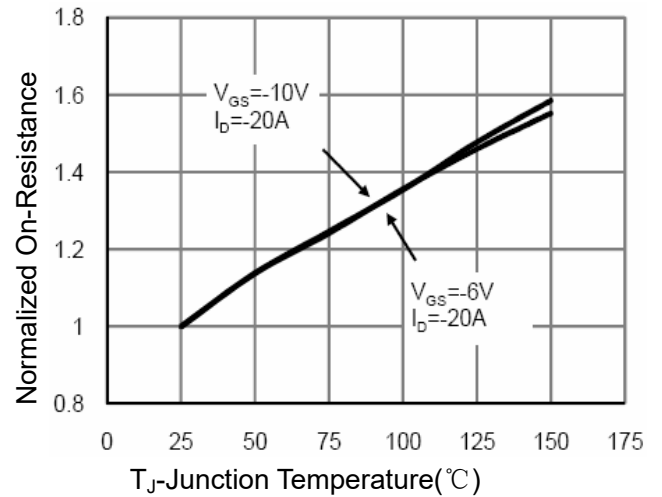
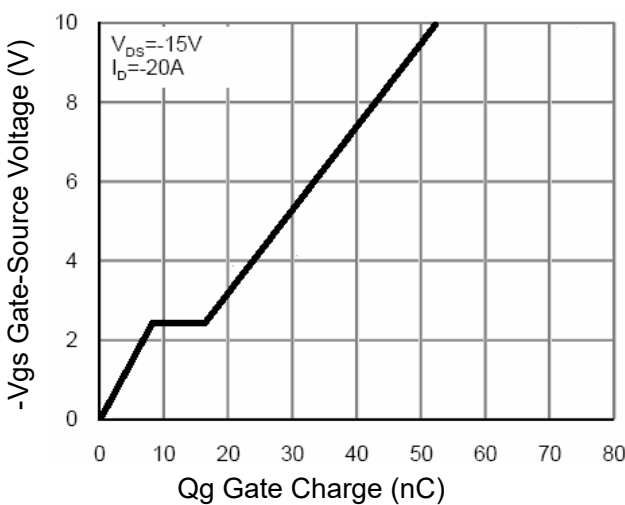
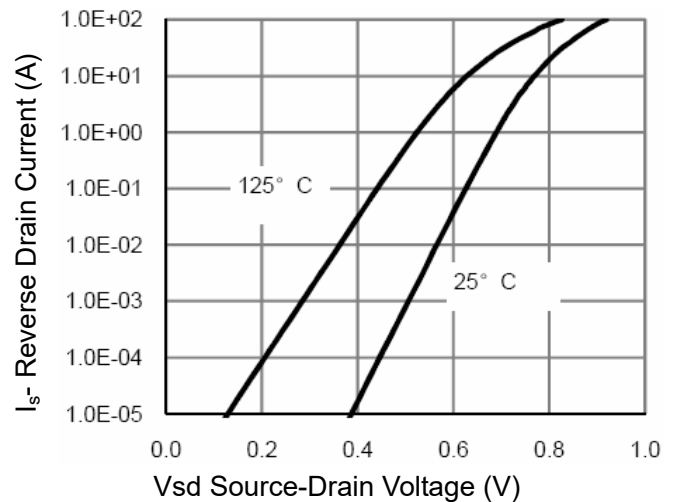
Note ③ : Surface Mounted on 1in^2 FR-4 board with 1oz.

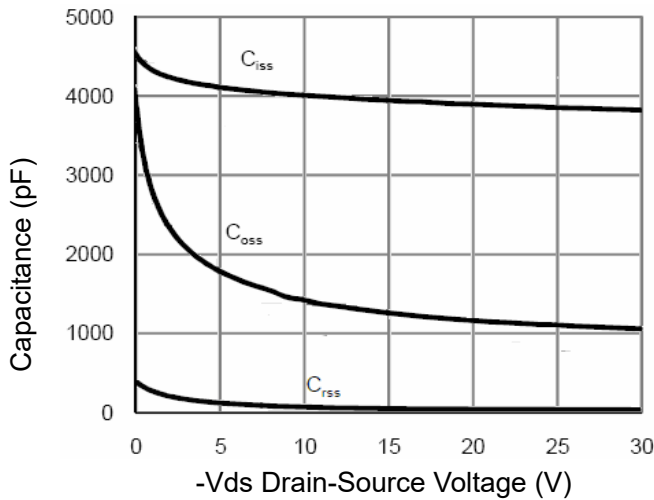
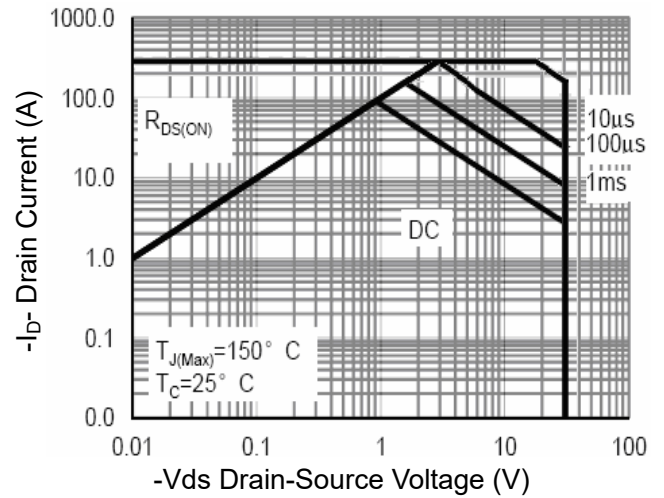
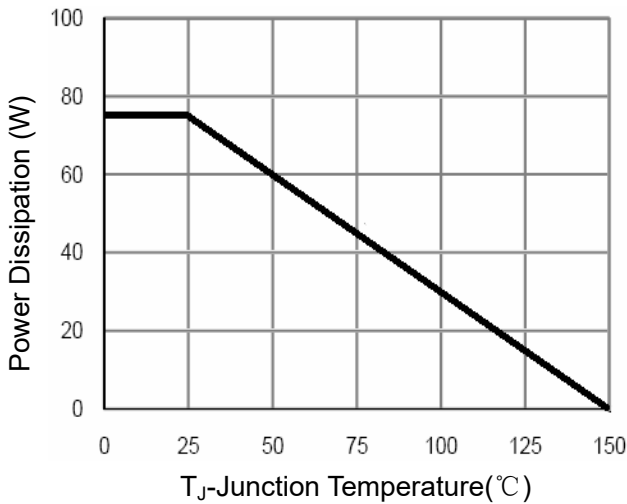
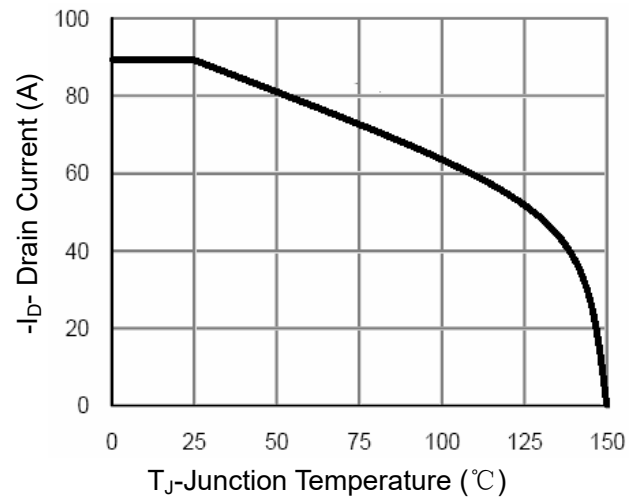
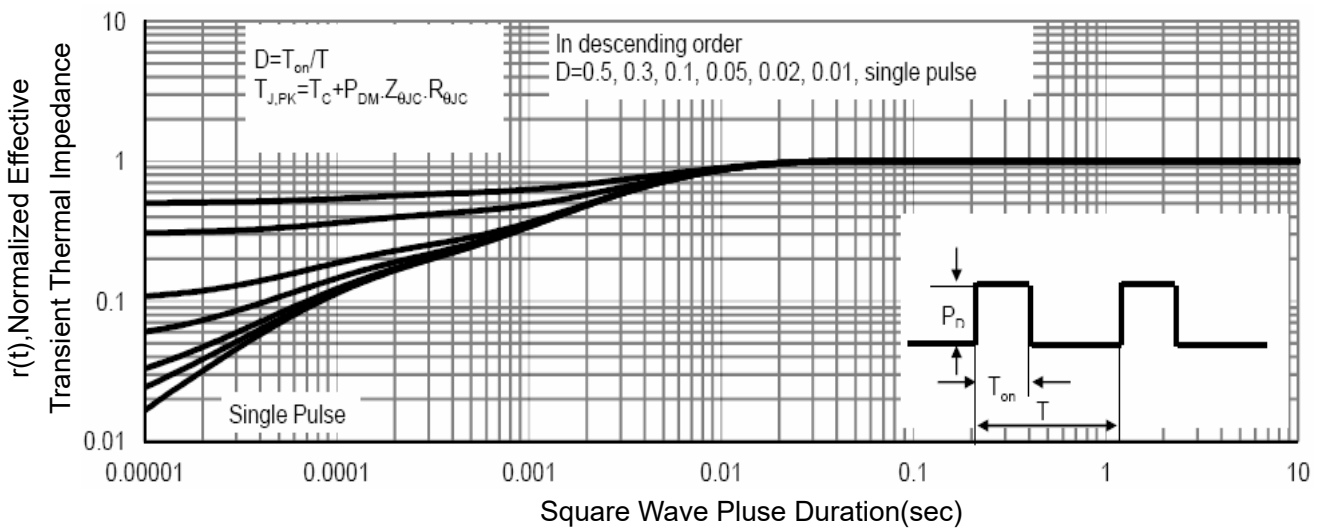
**P-Channel Enhancement Mode MOSFET****Electrical Characteristics** ($T_J=25^\circ\text{C}$, Unless Otherwise Noted)

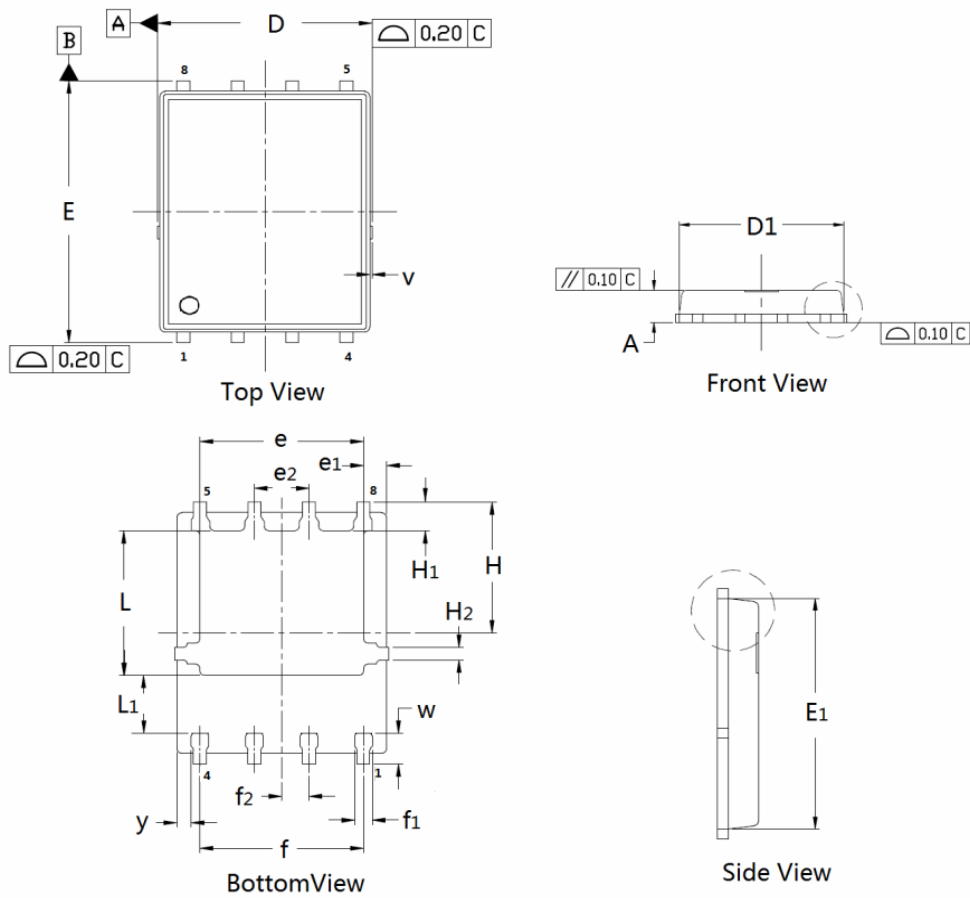
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V$	---	---	-1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	---	-2.2	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=-10V, I_D=-20A$	---	5.1	5.6	$m\Omega$
		$V_{GS}=-4.5V, I_D=-20A$	---	7.4	8.0	$m\Omega$
gfs	Forward Transconductance	$V_{DS}=-5V, I_D=-20A$	---	30	---	S
Dynamic Characteristics ^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=-15V,$ Freq.=1MHz	---	3914	---	pF
C_{oss}	Output Capacitance		---	1263	---	
C_{rss}	Reverse Transfer Capacitance		---	50	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=-15V, V_{GS}=-10V,$ $R_G=1.6\Omega, I_D=-20A$	---	10.5	---	nS
T_r	Turn-on Rise Time		---	9	---	
$T_{d(off)}$	Turn-off Delay Time		---	40	---	
T_f	Turn-off Fall Time		---	10	---	
Q_g	Total Gate Charge	$V_{DS}=-15V,$ $V_{GS}=-10V, I_D=-20A$	---	52	---	nC
Q_{gs}	Gate-Source Charge		---	9.6	---	
Q_{gd}	Gate-Drain Charge		---	7	---	
Source-Drain Characteristics ($T_J=25^\circ\text{C}$)						
V_{SD} ^④	Diode Forward Voltage	$I_S=-20A, T_J=25^\circ\text{C}$	---	---	-1.2	V
t_{rr}	Reverse Recovery Time	$I_F=-20A,$ $di/dt=100A/\mu s, T_J=25^\circ\text{C}$	---	---	24	nS
Q_{rr}	Reverse Recovery Charge		---	---	68	nC

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

Figure 1 Output Characteristics

Figure 2 Transfer Characteristics

Figure 3 Rdson- Drain Current

Figure 4 Rdson-Junction Temperature

Figure 5 Gate Charge

Figure 6 Source- Drain Diode Forward

P-Channel Enhancement Mode MOSFET

Figure 7 Capacitance vs Vds

Figure 8 Safe Operation Area

Figure 9 Power De-rating

Figure 10 Current De-rating

Figure 11 Normalized Maximum Transient Thermal Impedance

P-Channel Enhancement Mode MOSFET
DFN5×6 Package Outline Data

DIMENSIONS (unit : mm)

Symbol	Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.02	D	4.90	4.98	5.10
D ₁	4.80	4.89	E	5.90	6.11	6.25
E ₁	5.65	5.74	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	H ₂	0.26	0.28	0.32
L	3.35	3.45	L ₁	--	1.	--
v	--	0.1	w	0.64	0.68	0.84
y	--	0.3		--		--