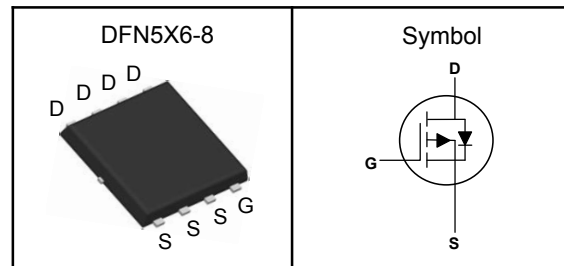


P-Channel Enhancement Mode MOSFET
Features

- 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}	-40	V
$R_{ds(ON)-Typ}$	10	m Ω
I_D	-50	A

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

Symbol	Parameter	Rating	Unit
V_{bss}	Drain-Source Voltage	-40	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	-200	A
I_D	Continuous Drain Current	-50	A
P_D	Maximum Power Dissipation	55	W
EAS	Single Pulse Avalanche Energy	80	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient Steady State	40	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case Steady State	2.27	$^\circ\text{C/W}$

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	$V_{GS}=0V, I_D=-250\mu A$	-40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-40V, V_{GS}=0V$	---	---	-1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	---	-2.5	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	μA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=-10V, I_D=-20A$	---	10	13	$m\Omega$
		$V_{GS}=-4.5V, I_D=-10A$	---	12	17	$m\Omega$
Dynamic Characteristics^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=-15V,$ Freq.=1MHz	---	3270	---	pF
C_{oss}	Output Capacitance		---	290	---	
C_{rss}	Reverse Transfer Capacitance		---	255	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=-15V, V_{GS}=-10V,$ $R_G=3\Omega, I_D=-20A$	---	38	---	nS
T_r	Turn-on Rise Time		---	31	---	
$T_{d(off)}$	Turn-off Delay Time		---	90	---	
T_f	Turn-off Fall Time		---	9.2	---	
Q_g	Total Gate Charge	$V_{DS}=-20V,$ $V_{GS}=-10V, I_D=-20A$	---	26	---	nC
Q_{gs}	Gate-Source Charge		---	8	---	
Q_{gd}	Gate-Drain Charge		---	8.5	---	
Source-Drain Characteristics ($T_J=25^\circ\text{C}$)						
$V_{SD}^{④}$	Diode Forward Voltage	$V_{GS}=0V, I_S=-20A, T_J=25^\circ\text{C}$	---	---	-1.2	V

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

Note ⑤: Guaranteed by design, not subject to production testing.

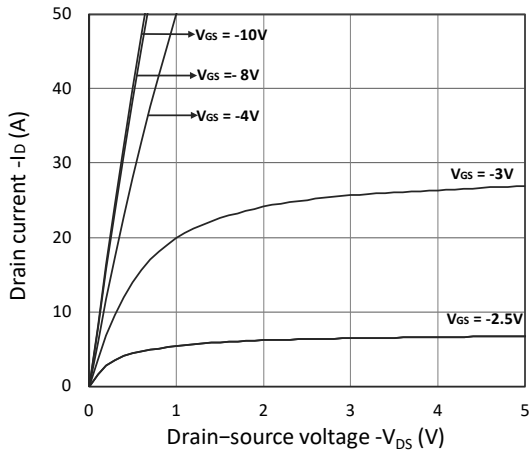
P-Channel Enhancement Mode MOSFET
Typical Characteristics


Figure 1. Output Characteristics

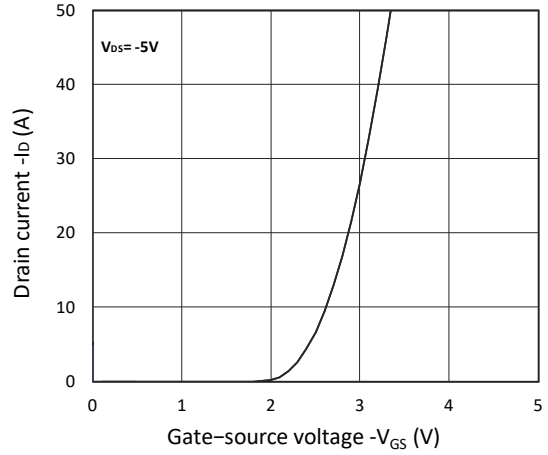


Figure 2. Transfer Characteristics

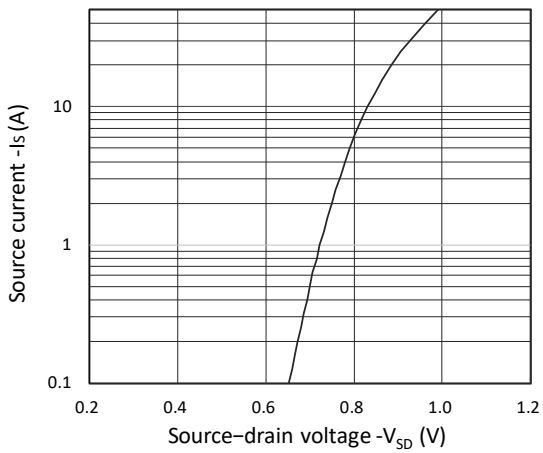
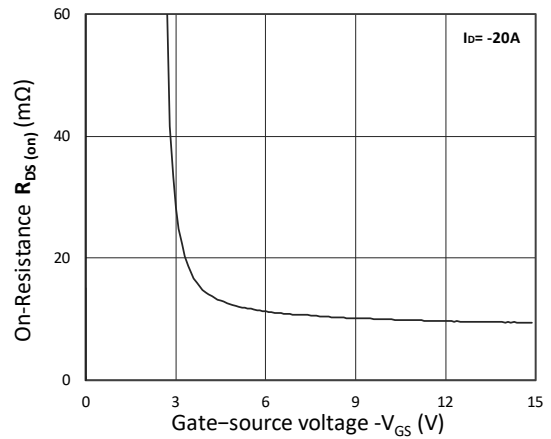
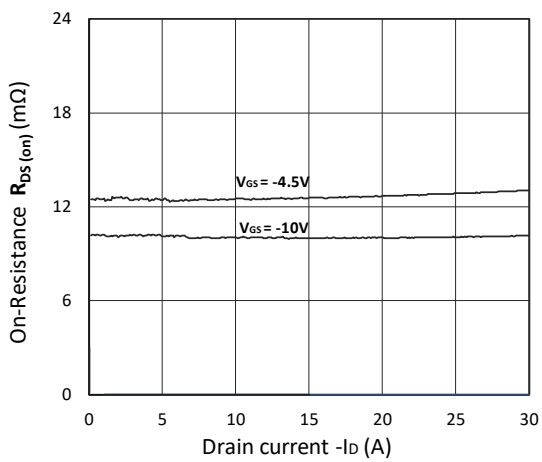
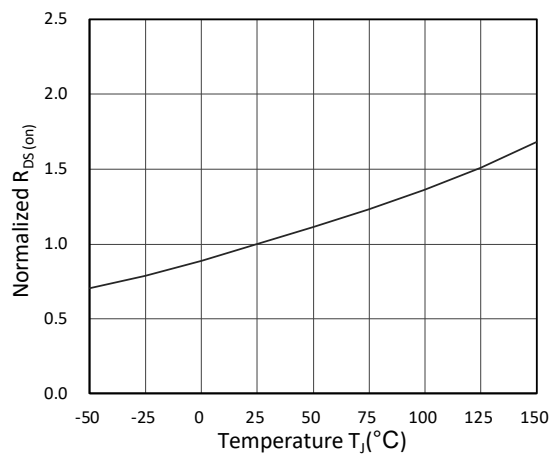


Figure 3. Forward Characteristics of Reverse


 Figure 4. $R_{DS(on)}$ vs. V_{GS}

 Figure 5. $R_{DS(on)}$ vs. I_D

 Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

P-Channel Enhancement Mode MOSFET

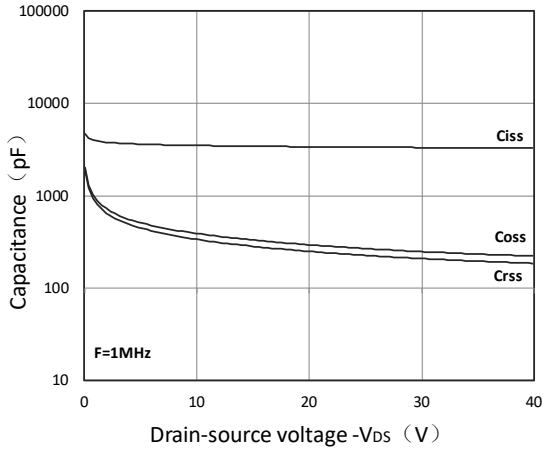


Figure 7. Capacitance Characteristics

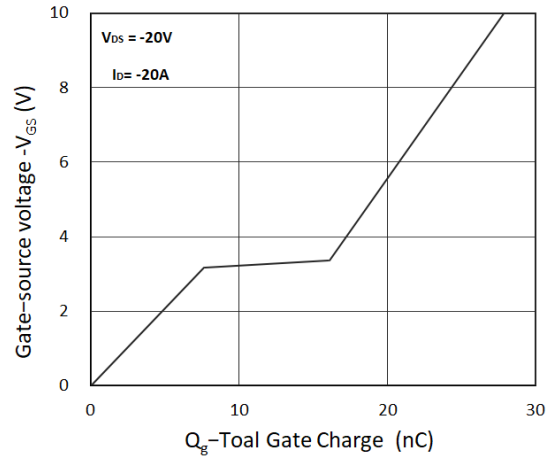


Figure 8. Gate Charge Characteristics

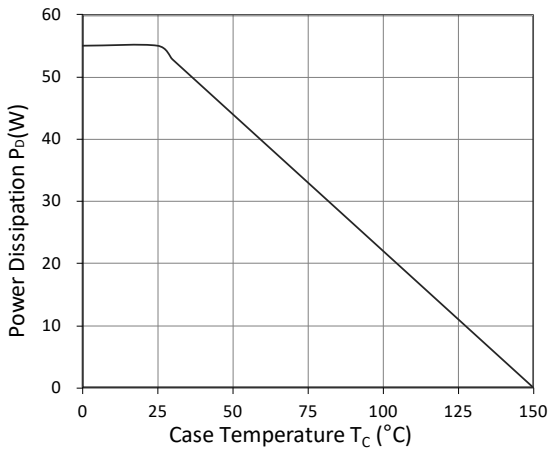


Figure 9. Power Dissipation

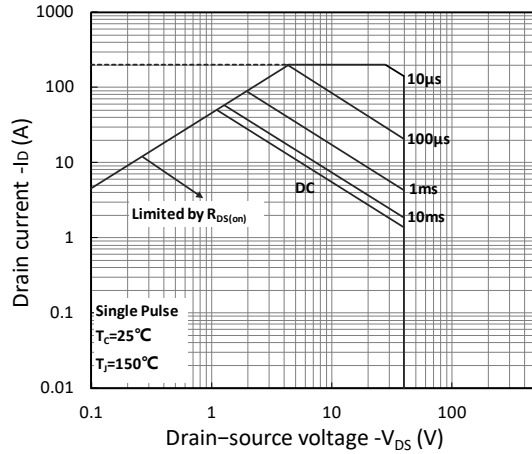


Figure 10. Safe Operating Area

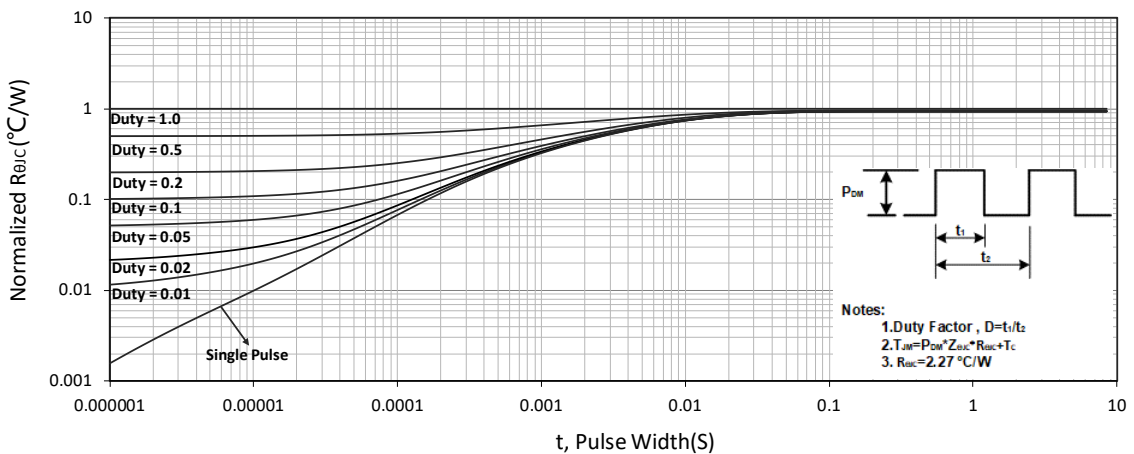
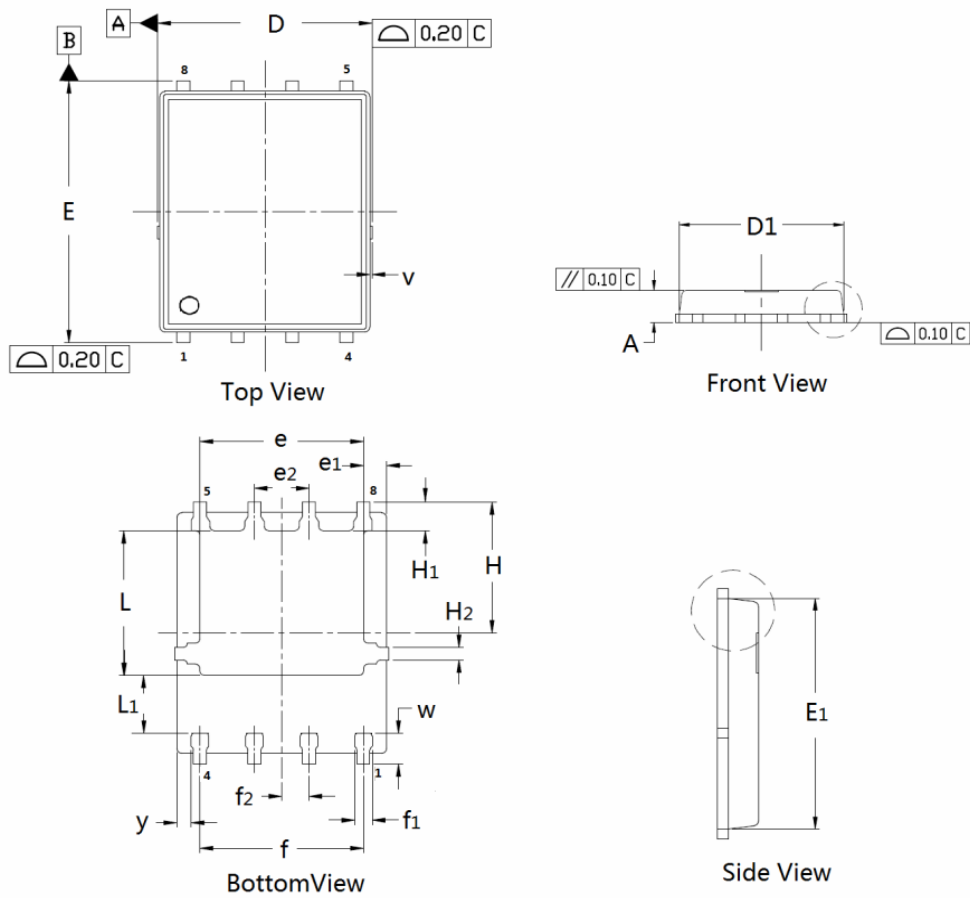


Figure 11. Normalized Maximum Transient Thermal Impedance

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		--		--