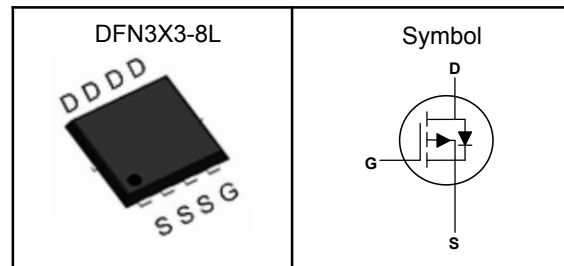


P-Channel Enhancement Mode MOSFET
Features

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

Applications

- Power Management in Desktop Computer
- DC/DC Converters

Pin Description


V _{bss}	-20	V
R _{ds(ON)-Typ}	5.2	mΩ
I _d	-50	A

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

Symbol	Parameter	P-Channel	Unit
V _{bss}	Drain-Source Voltage	-20	V
V _{GSS}	Gate-Source Voltage	±12	V
T _J	Maximum Junction Temperature	-55 to 150	°C
T _{STG}	Storage Temperature Range	-55 to 150	°C
I _{DM} ^①	Pulse Drain Current Tested	-200	A
I _d	Continuous Drain Current	-50	A
P _D	Maximum Power Dissipation	80	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
R _{θJC}	Thermal Resistance Junction-Case	1.6	°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.

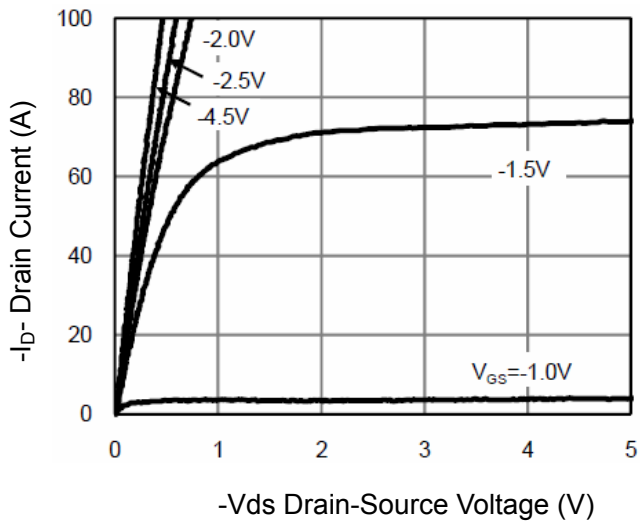
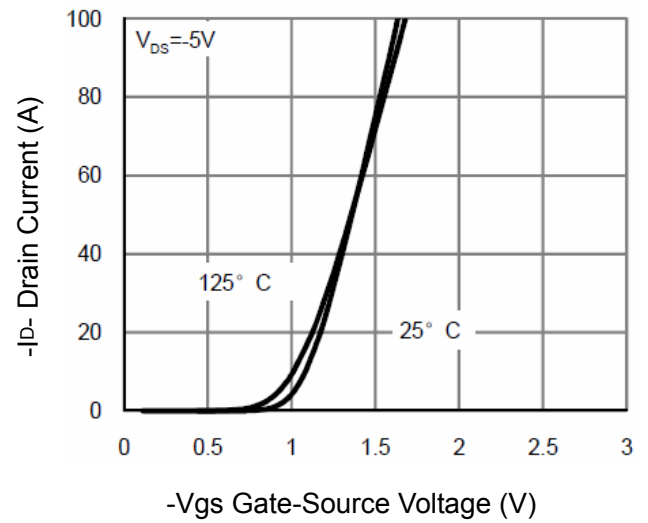
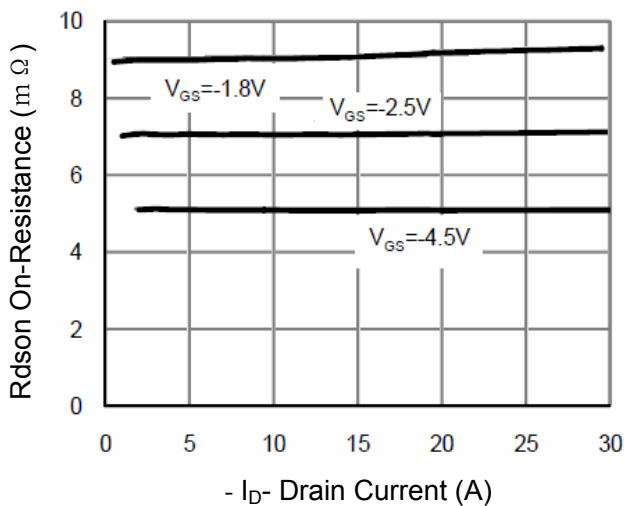
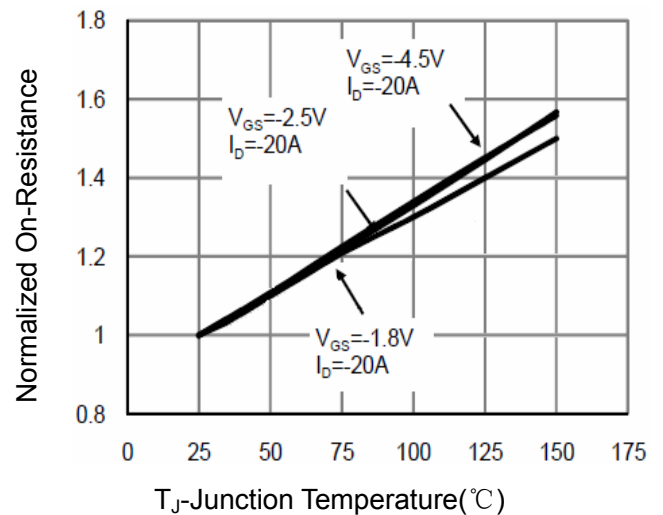
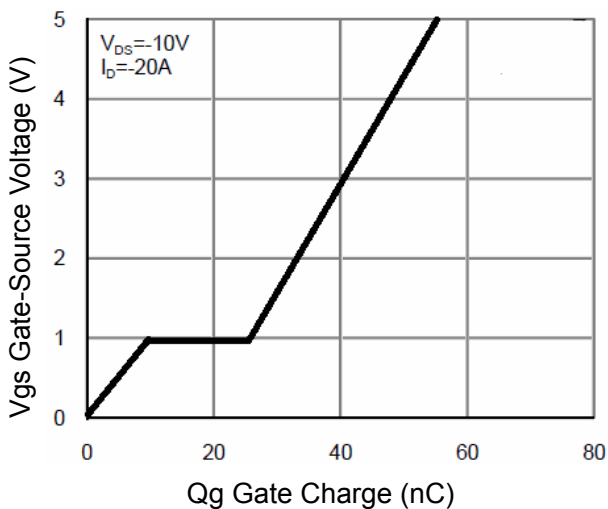
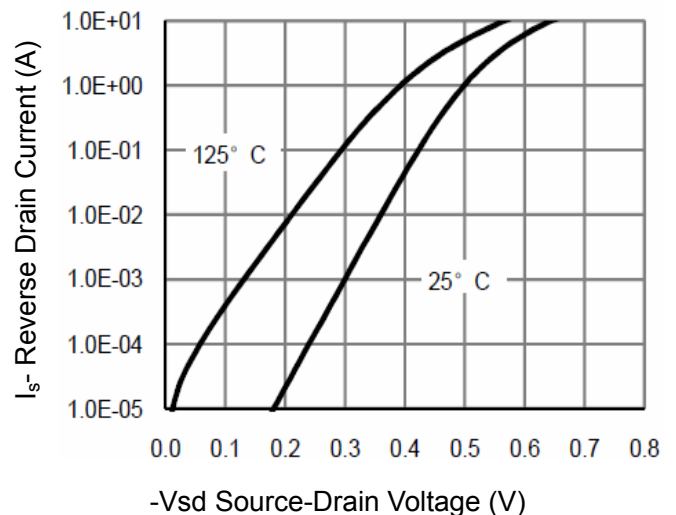
Note ③ : Surface Mounted on 1in² FR-4 board with 1oz.

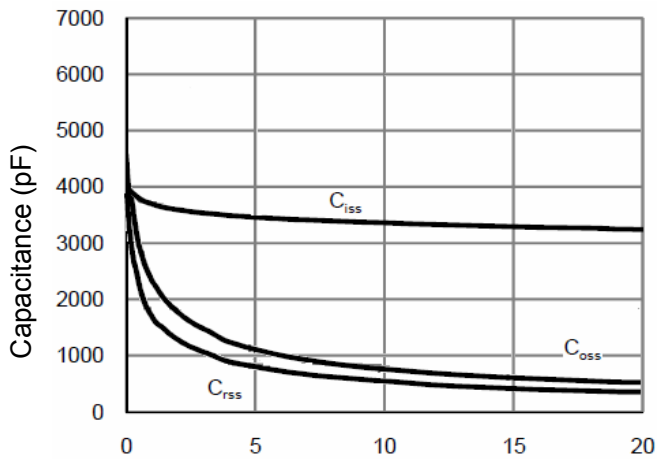
**P-Channel Enhancement Mode MOSFET****Electrical Characteristics** ($T_J=25^\circ\text{C}$, Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-20	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-16V, V_{GS}=0V$	---	---	-1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	---	-1.0	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	---	---	± 100	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=-4.5V, I_D=-20A$	---	5.2	6	$m\Omega$
		$V_{GS}=-2.5V, I_D=-20A$	---	7.2	9	$m\Omega$
gfs	Forward Transconductance	$V_{DS}=-5V, I_D=-20A$	---	80	---	S
Dynamic Characteristics ^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-10V, \text{Freq.}=1\text{MHz}$	---	3500	---	pF
C_{oss}	Output Capacitance		---	577	---	
C_{rss}	Reverse Transfer Capacitance		---	445	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=-10V, V_{GS}=-4.5V, R_G=3\Omega, R_L=0.5\Omega$	---	18	---	nS
T_r	Turn-on Rise Time		---	42	---	
$T_{d(off)}$	Turn-off Delay Time		---	85	---	
T_f	Turn-off Fall Time		---	23	---	
Q_g	Total Gate Charge	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-20A$	---	55	---	nC
Q_{gs}	Gate-Source Charge		---	10	---	
Q_{gd}	Gate-Drain Charge		---	15	---	
Source-Drain Characteristics						
V_{SD} ^④	Diode Forward Voltage	$V_{GS}=0V, I_S=-20A, T_J=25^\circ\text{C}$	---	---	-1.2	V
t_{rr}	Reverse Recovery Time	$I_F=-10A, di/dt=100A/\mu s, T_J=25^\circ\text{C}$	---	47	---	nS
Q_{rr}	Reverse Recovery Charge		---	53	---	nC

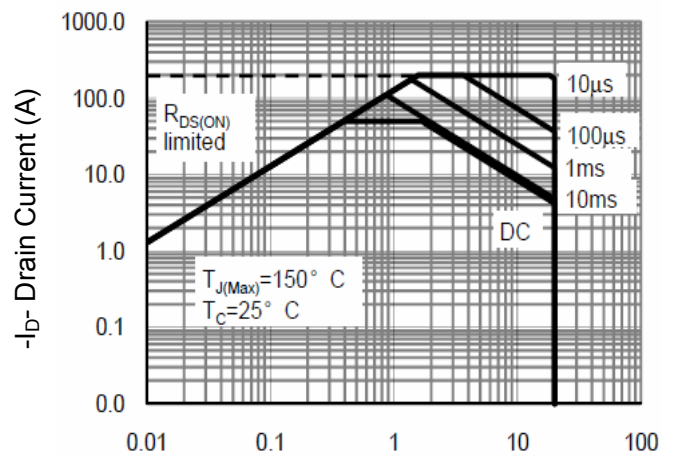
Note ④: Pulse test (pulse width 300us, duty cycle 2%).

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


-Vds Drain-Source Voltage (V)
Figure 7 Capacitance vs Vds



-Vds Drain-Source Voltage (V)
Figure 8 Safe Operation Area

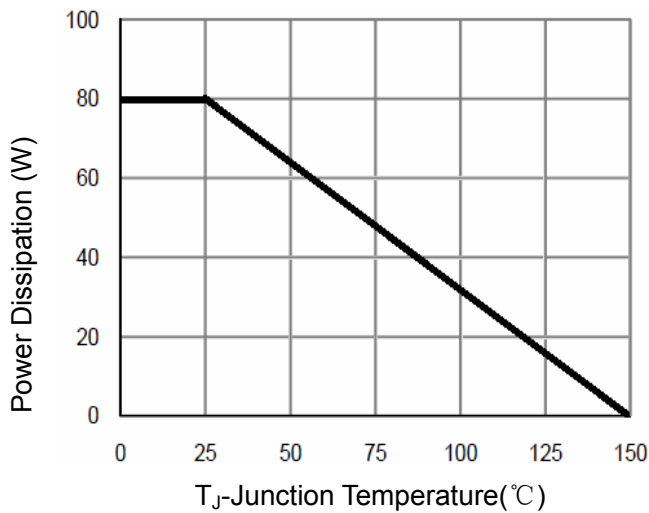


Figure 9 Power De-rating

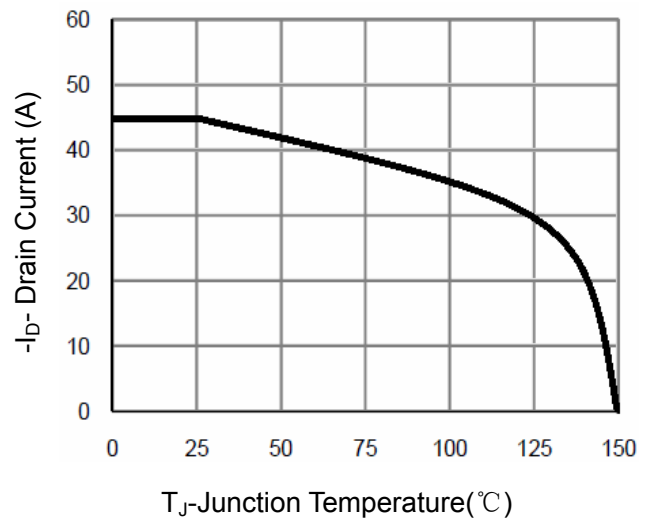


Figure 10 -Current De-rating

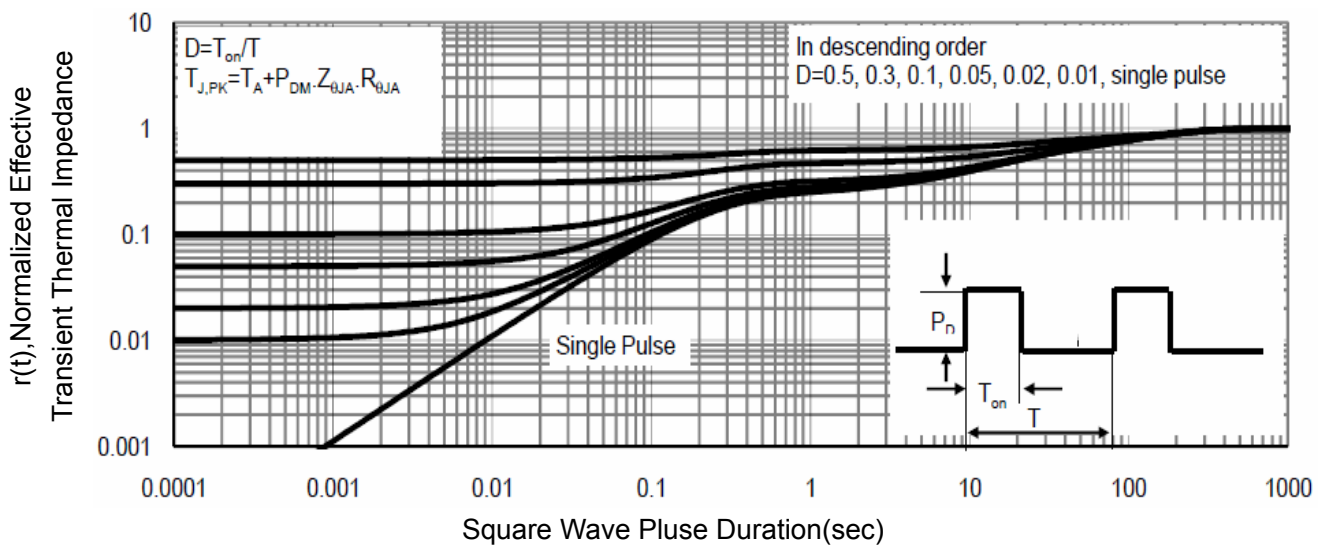
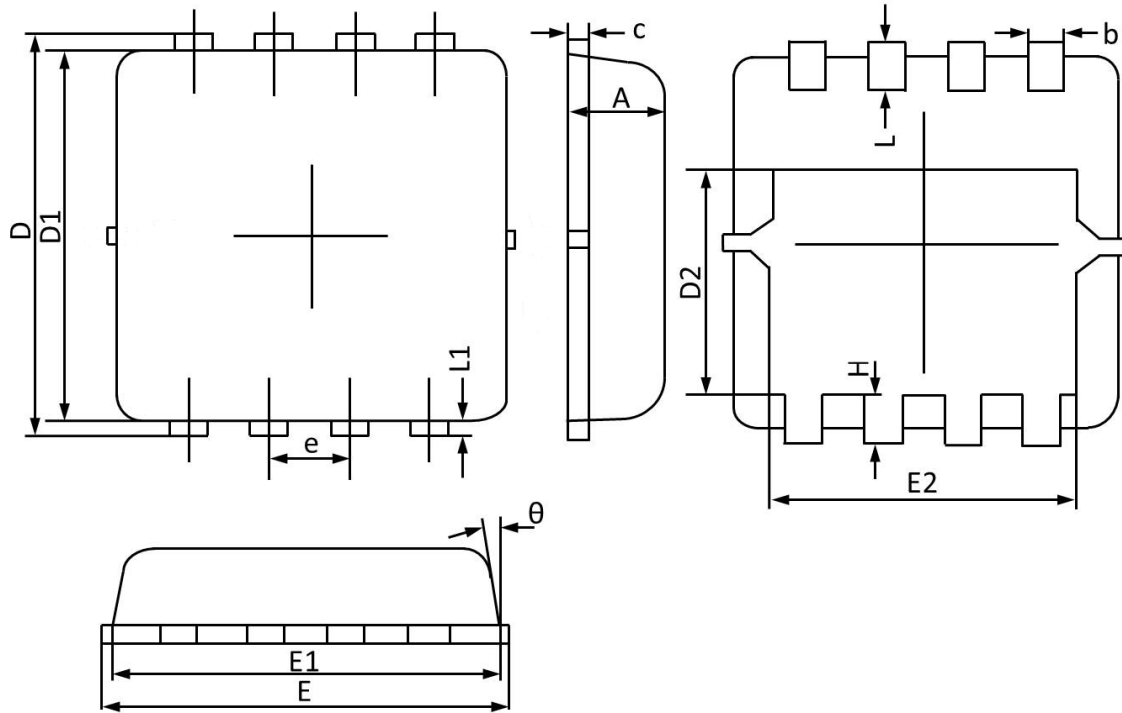


Figure 11 Normalized Maximum Transient Thermal Impedance

P-Channel Enhancement Mode MOSFET
DFN3X3-8L Package Outline Dimensions


Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.70	0.75	0.85	E1	2.90	3.10	3.25
b	0.24	0.30	0.35	E2	2.35	2.50	2.60
c	0.10	0.17	0.25	e	0.65 BSC		
D	3.10	3.30	3.45	H	0.30	0.40	0.50
D1	2.90	3.05	3.20	L	0.30	0.40	0.50
D2	1.45	1.70	1.95	L1	--	0.13	--
E	3.05	3.25	3.40	theta	0°		14°