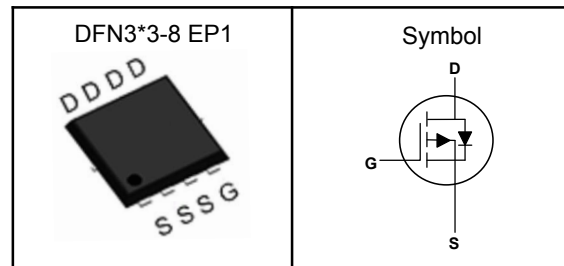


P-Channel Enhancement Mode MOSFET
Features

- 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_{DSS}	-30	V
$R_{DS(ON)-Typ}$	8.6	m Ω
I_D	-51.8	A

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

Symbol	Parameter	P-Channel	Unit
V_{DSS}	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	-70	A
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$	A
I_D	Continuous Drain Current	$T_C=100^\circ\text{C}$	A
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$	W
P_D	Maximum Power Dissipation	$T_C=100^\circ\text{C}$	W
E_{AS}	Avalanche Energy, Single pulse	39.2	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	80	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case	3	$^\circ\text{C/W}$

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.



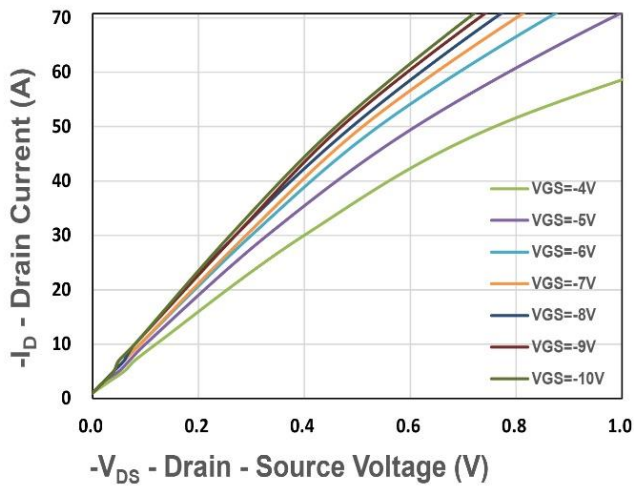
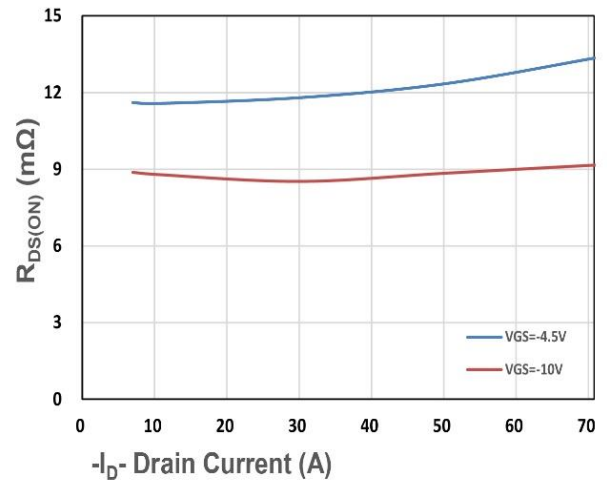
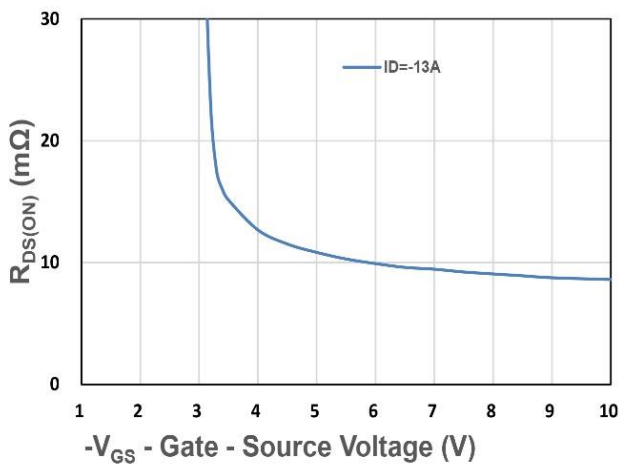
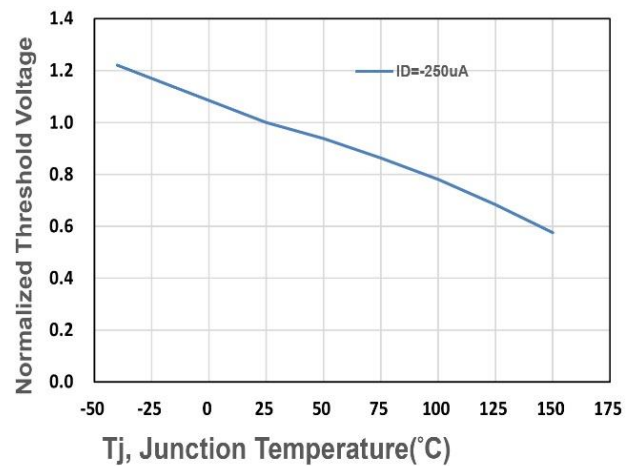
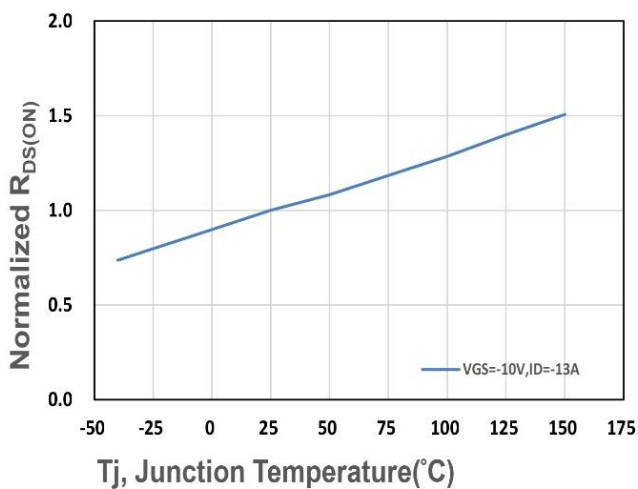
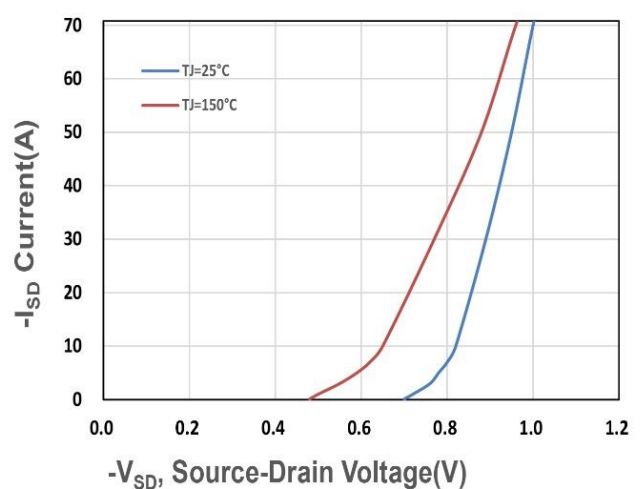
P-Channel Enhancement Mode MOSFET

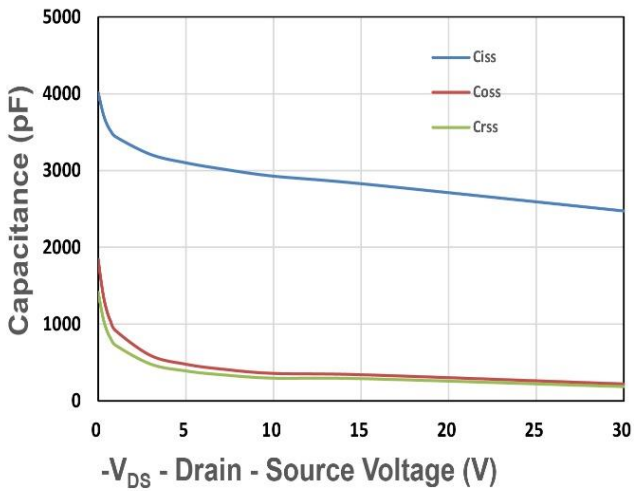
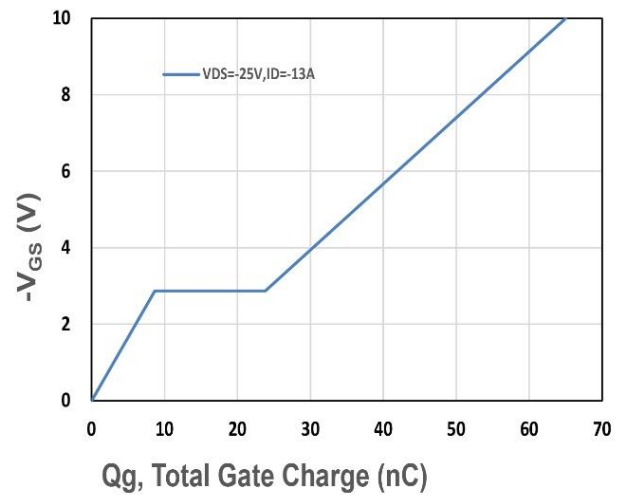
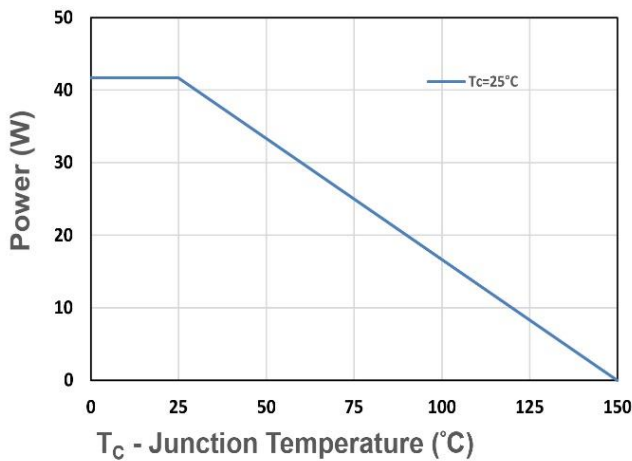
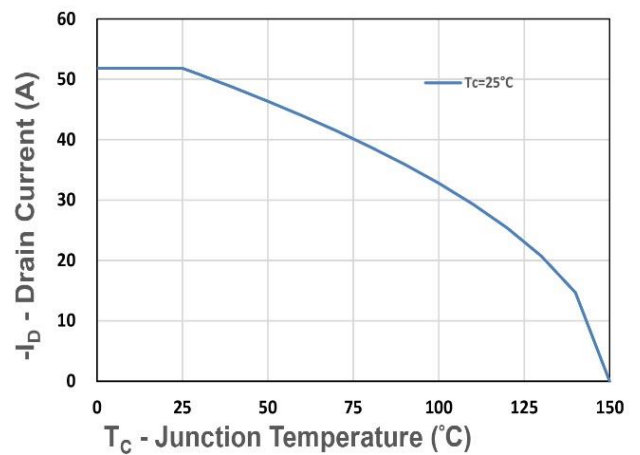
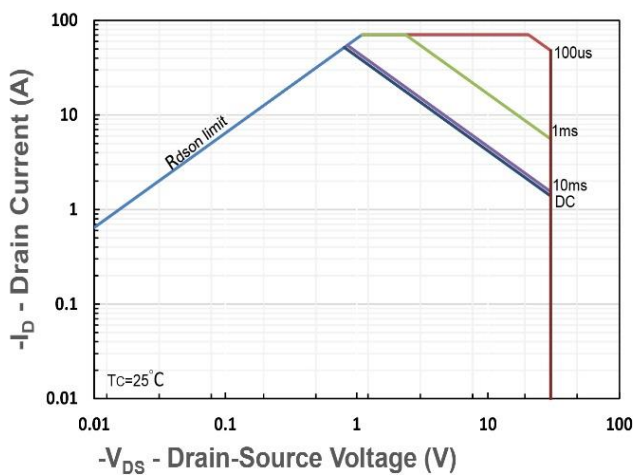
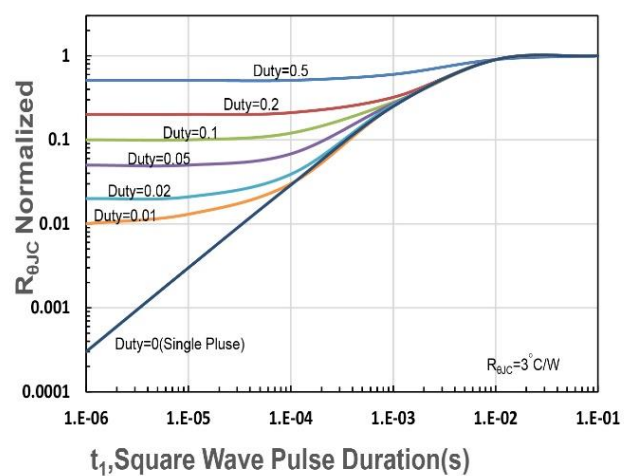
Electrical Characteristics ($T_J=25^{\circ}\text{C}$, Unless Otherwise Noted)

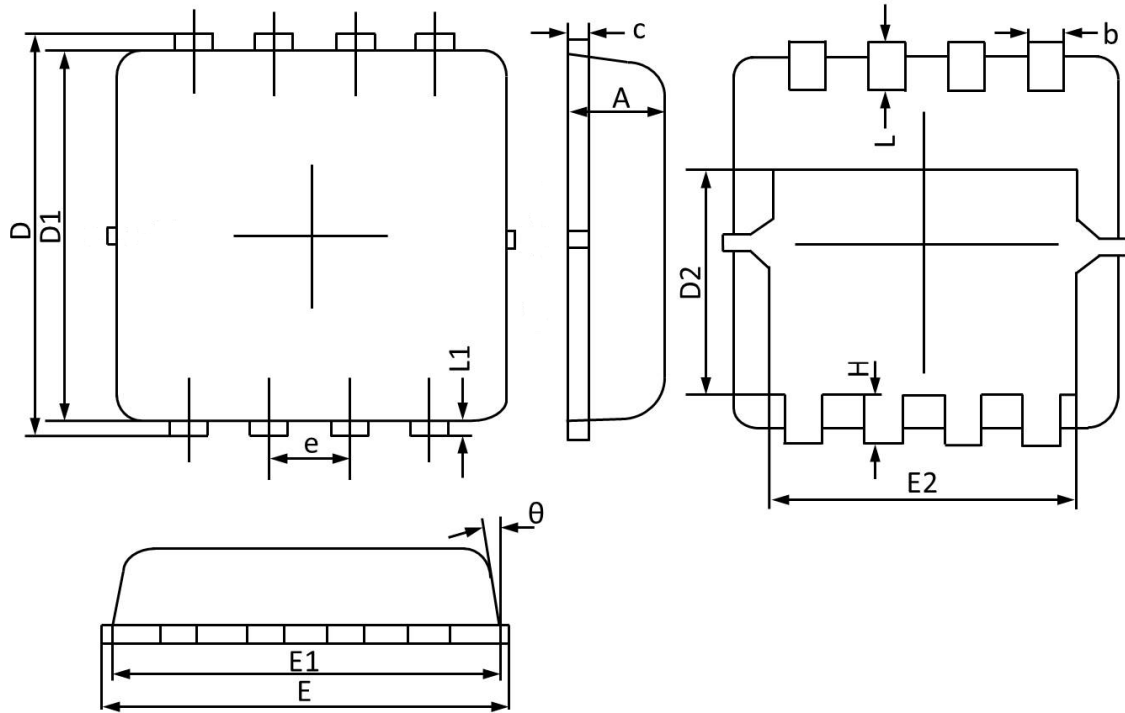
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-24V, V_{GS}=0V$	---	---	-1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	---	-2.0	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=-10V, I_D=-13A$	---	8.6	10.5	$m\Omega$
		$V_{GS}=-4.5V, I_D=-9A$	---	11.5	15	$m\Omega$
gfs	Forward Transconductance	$V_{DS}=-5V, I_D=-13A$	---	25	---	S
Dynamic Characteristics^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-15V, \text{Freq.}=1\text{MHz}$	---	2828	---	pF
C_{oss}	Output Capacitance		---	343	---	
C_{rss}	Reverse Transfer Capacitance		---	291	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=-15V, V_{GS}=-10V, R_G=6\Omega, I_D=-1A$	---	11.4	---	nS
T_r	Turn-on Rise Time		---	24	---	
$T_{d(off)}$	Turn-off Delay Time		---	104	---	
T_f	Turn-off Fall Time		---	56.8	---	
Q_g	Total Gate Charge	$V_{DS}=-25V, V_{GS}=-10V, I_D=-13A$	---	65	---	nC
Q_{gs}	Gate-Source Charge		---	8.7	---	
Q_{gd}	Gate-Drain Charge		---	15	---	
Source-Drain Characteristics						
$V_{SD}^{④}$	Diode Forward Voltage	$V_{GS}=0V, I_S=-3A, T_J=25^{\circ}\text{C}$	---	-0.75	-1.1	V
t_{rr}	Reverse Recovery Time	$I_F=-20A, V_R=0V, di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	15.6	---	nS
Q_{rr}	Reverse Recovery Charge		---	7.9	---	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. On-Resistance vs. ID

Figure 3. On-Resistance vs. VGS

Figure 4. Gate Threshold Voltage

Figure 5. Drain-Source On Resistance

Figure 6. Source-Drain Diode Forward

P-Channel Enhancement Mode MOSFET

Figure 7. Capacitance

Figure 8. Gate Charge Characteristics

Figure 9. Power Dissipation

Figure 10. Drain Current

Figure 11. Safe Operating Area

Figure 12. R_{θJC} Transient Thermal Impedance

P-Channel Enhancement Mode MOSFET
DFN3*3-8 EP1 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°