FH8821G

N-Channel Enhancement Mode Power MOSFET

◆ General Description

The FH8821G uses advanced trenchtechnology anddesign to provide excellent RDS(ON) with low gate charge.It can be used in a wide variety of applications

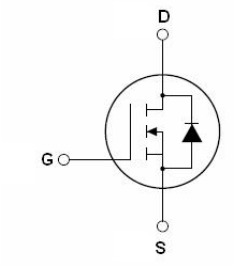
◆ Applications

- Load Switch
- PWM Application
- Modems
- Battery

◆ Features

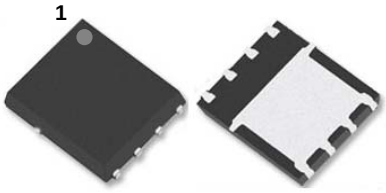
Parameter	Typ.	Unit
V_{DS}	20	V
I_D (@ V_{GS} = 10V)	100	A
$R_{DS(ON)}$ (@ V_{GS} = 10V) (Typ)	1.55	mΩ
$R_{DS(ON)}$ (@ V_{GS} = 4.5V) (Typ)	1.8	mΩ
$R_{DS(ON)}$ (@ V_{GS} = 3.8V) (Typ)	2.05	mΩ
$R_{DS(ON)}$ (@ V_{GS} = 2.5V) (Typ)	2.3	mΩ

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation



Schematic diagram

Marking and pin assignment



PDFN5x6-8L top and bottom view

Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	T_C = 25 ℃	20	-	V
V_{GS}	Gate-Source Voltage	T_C = 25 ℃	-	± 12	V
I_D*	Drain Current (DC)	T_C = 25 ℃, V_{GS} = 10 V	-	100	A
		T_C = 100 ℃, V_{GS} = 10 V	-	68	A
I_{DM}*,**,***	Drain Current (Pulsed)	T_C = 25 ℃, V_{GS} = 10 V	-	300	A
P_{tot}*	Total Power Dissipation	T_C = 25 ℃	-	35	W
T_{stg}	Storage Temperature		- 55	150	℃
T_J	Junction Temperature		-	150	℃
I_S	Diode Forward Current	T_C = 25 ℃	-	100	A
E_{AS}*	Single Pulsed Avalanche Energy	V_{DD}= 15 V , L= 0.5 mH	-	240	mJ
$R_{\theta JA}$*	Thermal Resistance- Junction to Ambient		-	48	℃ / W
$R_{\theta JC}$*	Thermal Resistance- Junction to Case		-	2.3	

Notes：

* Surface Mounted on 1 in^2 pad area, t 10 sec

** Pulse width 300 s, duty cycle 2 %

*** limited by bonding wire

6. Electrical Characteristics (T_A = 25 °C Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 250 μA	20	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_{DS} = 250 μA	0.5	-	1	V
I_{DSS}	Zero Gate Voltage Source Current	V_{DS} = 20 V, V_{GS} = 0 V	-	-	1	μA
I_{GSS}	Gate Leakage Current	V_{GS} = ± 12 V, V_{DS} = 0 V	-	-	± 100	nA
$R_{DS(ON)}$[a]	Drain-Source On-State Resistance	V_{GS} = 10 V, I_D = 20 A	-	1.55	1.95	mΩ
		V_{GS} = 4.5 V, I_D = 20 A	-	1.8	2.3	
		V_{GS} = 3.8 V, I_D = 15 A	-	2.05	2.7	
		V_{GS} = 2.5 V, I_D = 15 A	-	2.3	3.2	
Diode Characteristics						
V_{SD}[a]	Diode Forward Voltage	I_{SD} = 20 A, V_{GS} = 0 V	-	-	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD} = 20 A, dI_{SD}/dt = 100 A/μs	-	64.6	-	nS
Q_{rr}	Reverse Recovery Charge		-	82.4	-	nC
Dynamic Characteristics[b]						
C_{iss}	Input Capacitance	V_{GS} = 0 V, V_{DS} = 10 V Frequency = 1 MHz	-	7774	-	pF
C_{oss}	Output Capacitance		-	749	-	
C_{rss}	Reverse Transfer Capacitance		-	661	-	
t_d(on)	Turn-on Delay Time	V_{DS} = 10 V, V_{GEN} = 4.5 V, R_G = 3.9 Ω, R_L = 1 Ω, I_{DS} = 20 A	-	45	-	nS
t_r	Turn-on Rise Time		-	86	-	
t_d(off)	Turn-off Delay Time		-	159	-	
t_f	Turn-off Fall Time		-	111	-	
Gate Charge Characteristics[b]						
Q_g	Total Gate Charge	V_{DS} = 10 V, V_{GS} = 4.5 V, I_{DS} = 20 A	-	75	-	nC
Q_{gs}	Gate-Source Charge		-	14	-	
Q_{gd}	Gate-Drain Charge		-	24	-	

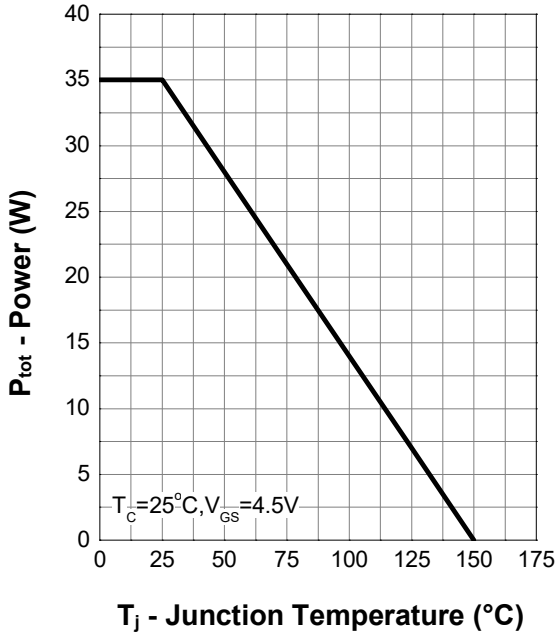
Notes :

a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2 %

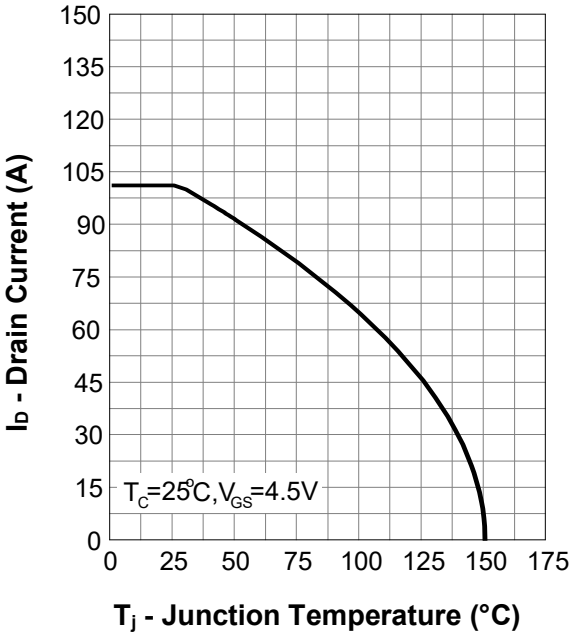
b : Guaranteed by design, not subject to production testing

7. Typical Characteristics (Cont.)

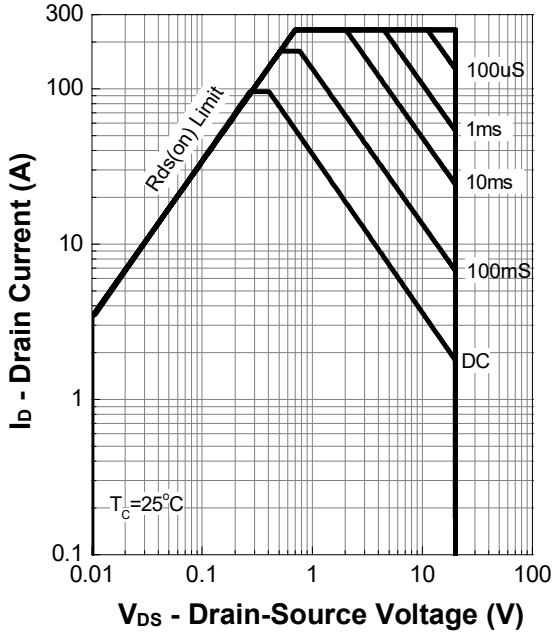
Power Capability



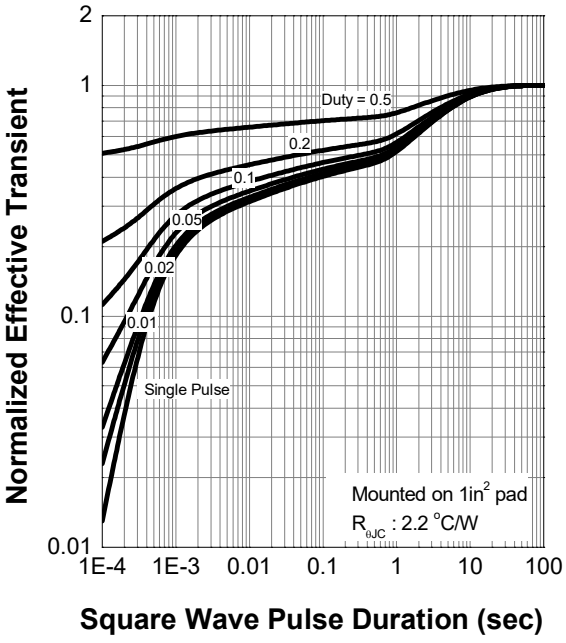
Current Capability



Safe Operation Area

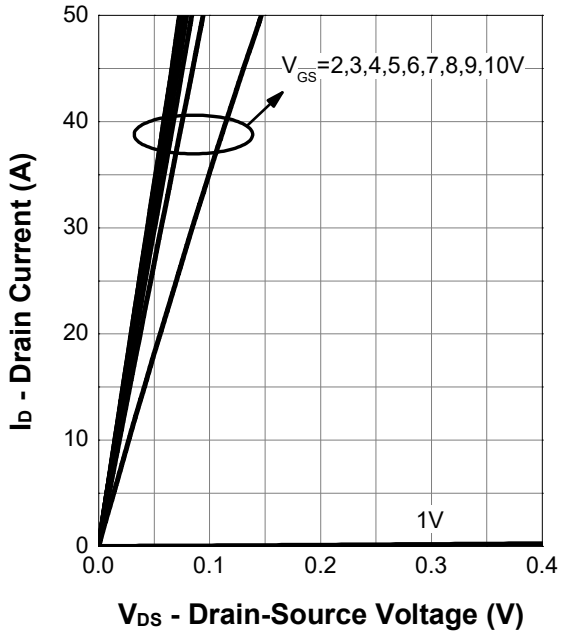


Transient Thermal Impedance

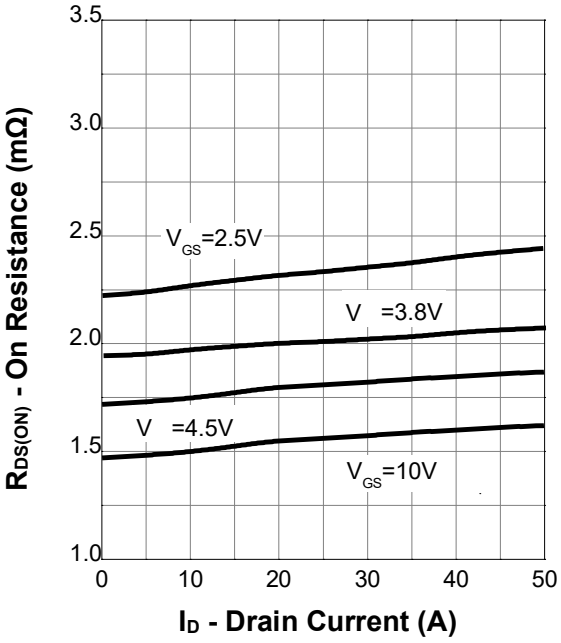


7. Typical Characteristics (Cont.)

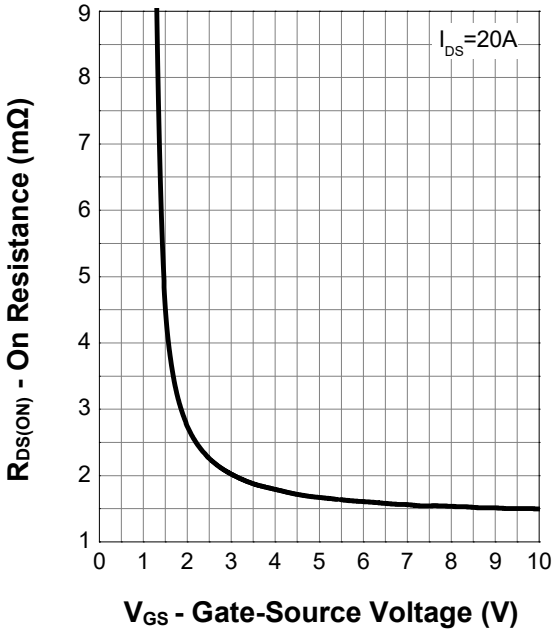
Output Characteristics



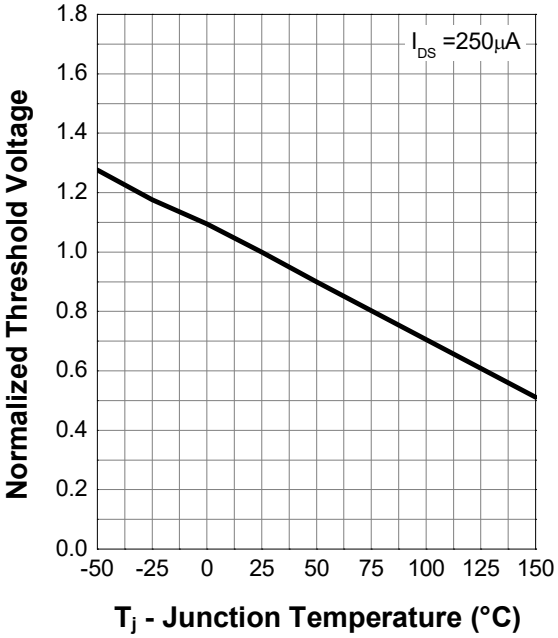
On Resistance



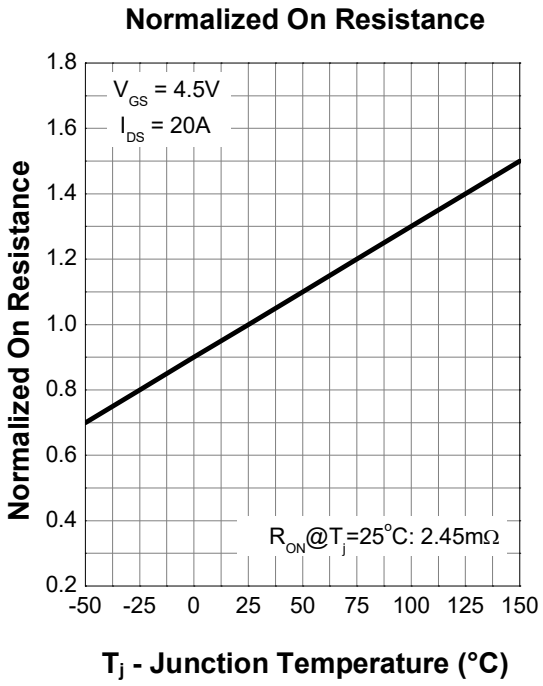
Transfer Characteristics

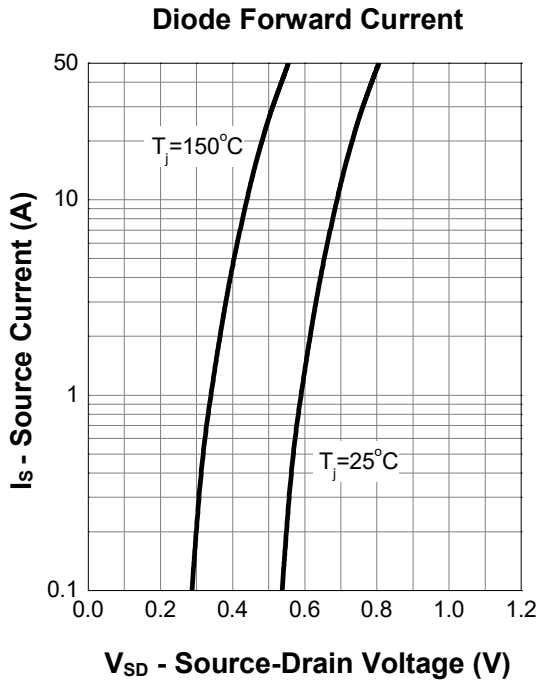


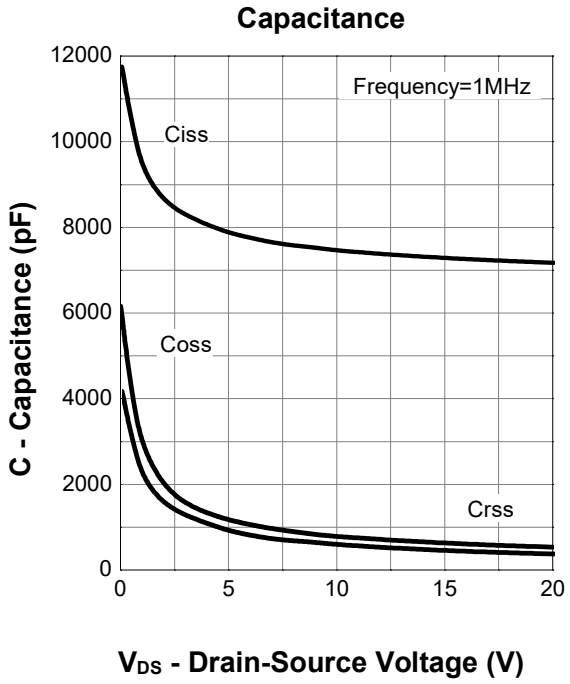
Normalized Threshold Voltage

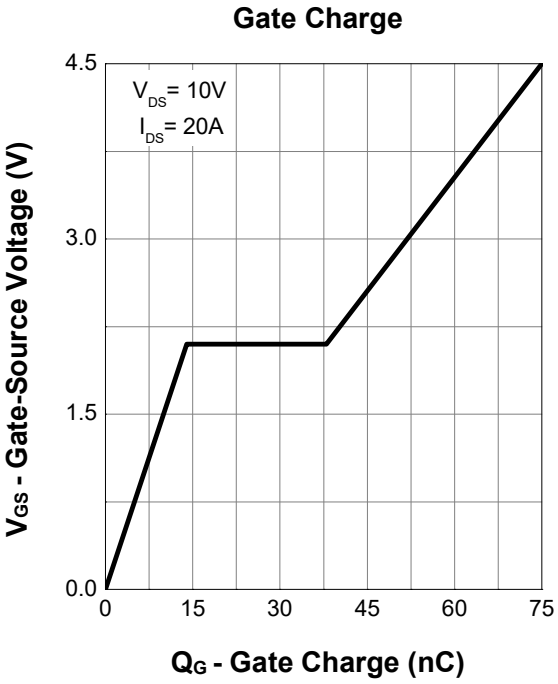


7. Typical Characteristics (Cont.)

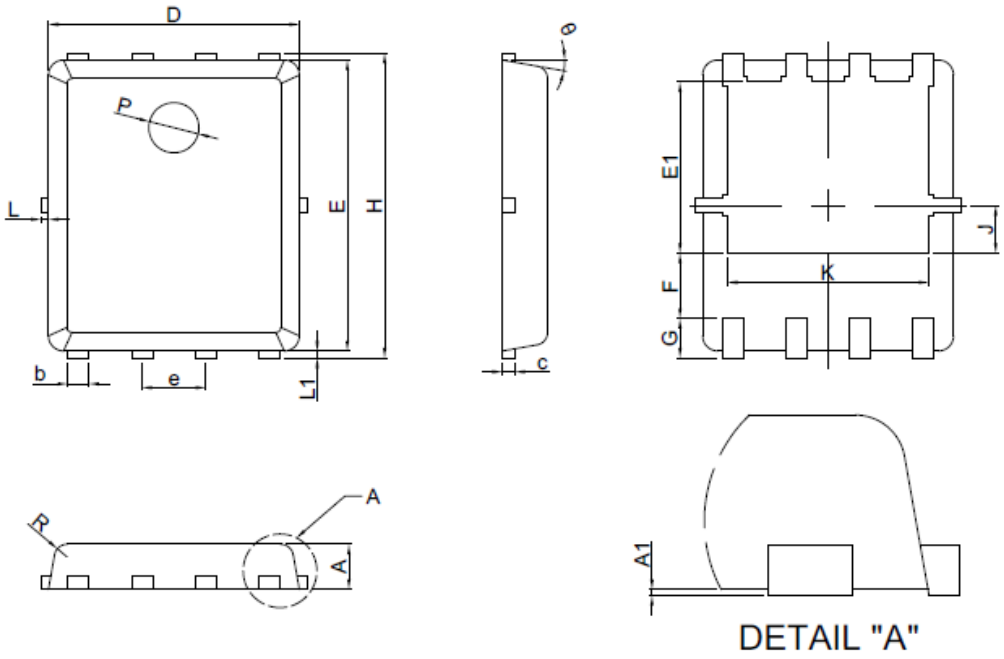








Package Information : PDFN5x6-8L



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	0.80	1.00
A1	0.00	0.05
b	0.35	0.49
c	0.254REF	
D	4.90	5.10
F	1.40REF	
E	5.70	5.90
e	1.27BSC	
H	5.95	6.20
L1	0.10	0.18
G	0.60REF	
K	4.00REF	
L	-	0.15
J	0.95BSC	
P	1.00REF	
E1	3.40REF	
θ	6°	14°
R	0.25REF	