

FH8805

N-Channel Enhancement Mode Power MOSFET

◆ General Description

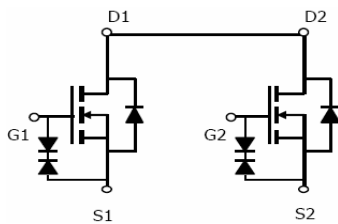
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

◆ Applications

- Portable Equipment
- Battery Powered System
- Load Switch

◆ Features

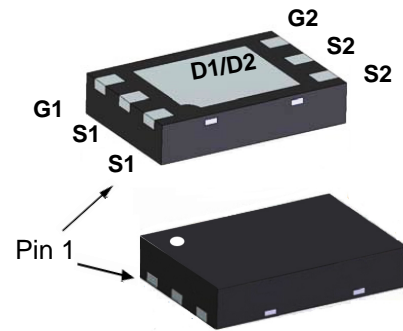
- $V_{DS}=20V, I_D=11A$
- $R_{DS(ON)} < 7.2m\Omega (MAX) @ V_{GS}=4.5V$
 $R_{DS(ON)} < 8.2m\Omega (MAX) @ V_{GS}=3.7V$
 $R_{DS(ON)} < 10.2m\Omega (MAX) @ V_{GS}=2.5V$
- Fast switching
- G-S ESD protection diode embedded
- Green Device Available
- DFN2x3 package design



Schematic diagram



Marking and pin Assignment



DFN2x3-6L Pin assignment and Top / Bottom View

◆ Absolute Maximum Ratings ($T_A=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Maximum	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	$T_A = 25^{\circ}C^1$	11
		$T_A = 70^{\circ}C^1$	8.8
Pulse Drain Current ²	I_{DM}	70	A
Maximum Power Dissipation ¹	P_D	$T_A = 25^{\circ}C$	1.56
		$T_A = 70^{\circ}C$	1
Junction and Storage Temperature Range	T_J, T_{STG}	- 55 to 150	$^{\circ}C$

◆ THERMAL RESISTANCE RATINGS

Parameter	Symbol	Maximum	Unit
Junction-to-Ambient ¹	$R_{\theta JA}$	80	$^{\circ}C/W$

◆ ELECTRICAL CHARACTERISTICS (Tj=25°C Unless Otherwise Noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
◆ Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250 \mu A$	20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS} = V_{DS}, I_D = 250 \mu A$	0.5	0.7	1.2	V
Gate Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 12V$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 18V, V_{GS} = 0V, T_j = 25^\circ C$			1	μA
		$V_{DS} = 18V, V_{GS} = 0V, T_j = 55^\circ C$			5	
Forward Trans conductance	g_{fs}	$V_{DS} = 5V, I_D = 5.5A$		36		S
Drain-Source On Resistance	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 5.5A$	4.5	6	7.2	m Ω
		$V_{GS} = 4.0V, I_D = 5.5A$	4.8	6.2	7.5	
		$V_{GS} = 3.7V, I_D = 5.5A$	5	6.5	8.2	
		$V_{GS} = 3.1V, I_D = 5.5A$	5.3	7	9	
		$V_{GS} = 2.5V, I_D = 5.5A$	6	8.2	10.2	
Diode Forward Voltage ²	V_{SD}	$I_S = 11A, V_{GS} = 0V, T_j = 25^\circ C$			1.2	V
Maximum Body-Diode Continuous Current ¹					11	A
◆ Dynamic Parameters						
Input Cap.	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V, F = 1MHz$		1767		pF
Output Cap.	C_{oss}			164		
Reverse Transfer Cap.	C_{rss}			155		
Total Gate Charge	Q_g	$V_{DS} = 16V, V_{GS} = 4.5V, I_D = 10A$		23		nC
Gate-Source Charge	Q_{gs}			3.5		
Gate-Drain Charge	Q_{gd}			8.4		
Turn-On DelayTime	$T_{D(ON)}$	$V_{DS} = 16V, V_{GS} = 4.5V, R_G = 6\Omega, I_D = 5.5A$		10.2		nS
Turn-On Rise Time	t_r			41		
Turn-Off DelayTime	$T_{D(OFF)}$			67		
Turn-Off Fall Time	t_f			31		
Body Diode Reverse Recovery Time	t_{rr}	$V_{GS} = 0V, I_S = 1A, di/dt = 100A/\mu s, T_j = 25^\circ C$		43		nS
Body Diode Reverse Recovery Charge	Q_{rr}			8.9		nC

Note :

1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper, t ≤ 10s.

2.The data tested by pulsed , pulse width ≤ 10us , duty cycle ≤ 1%

◆ TYPICAL CHARACTERISTICS

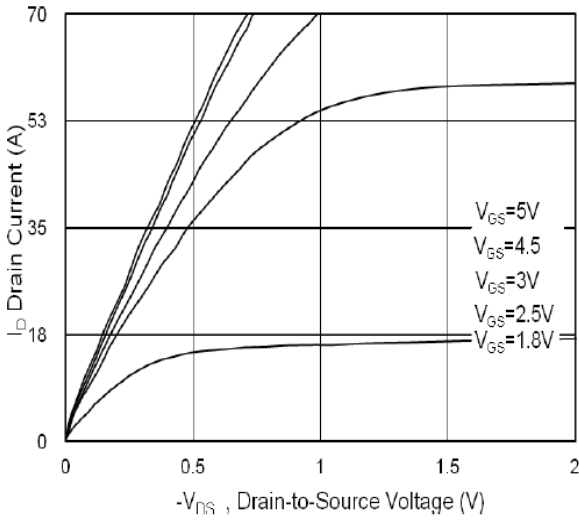


Fig.1 Typical Output Characteristics

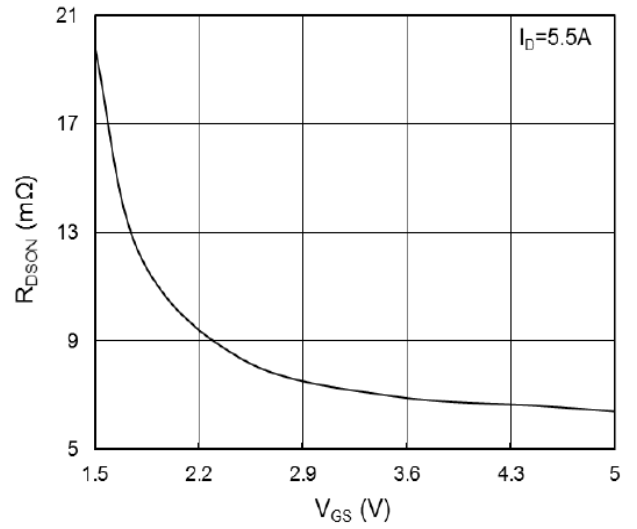


Fig.2 On-Resistance vs. Gate-Source

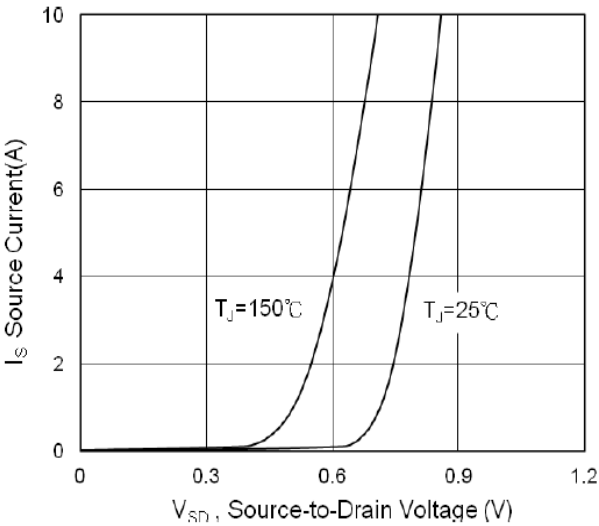


Fig.3 Forward Characteristics of Reverse

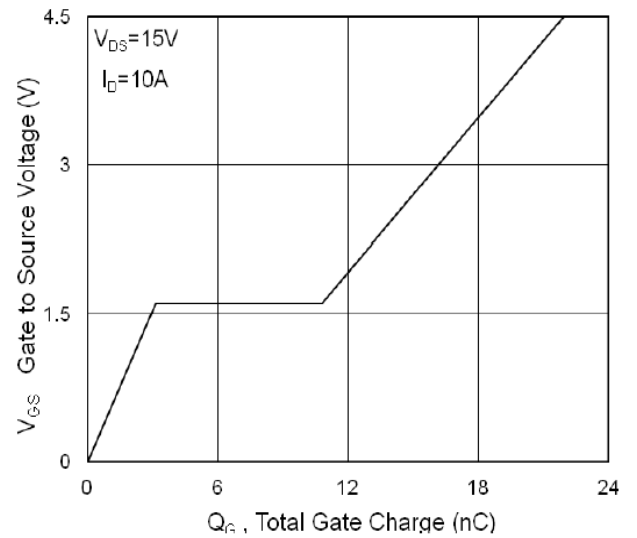


Fig.4 Gate-Charge Characteristics

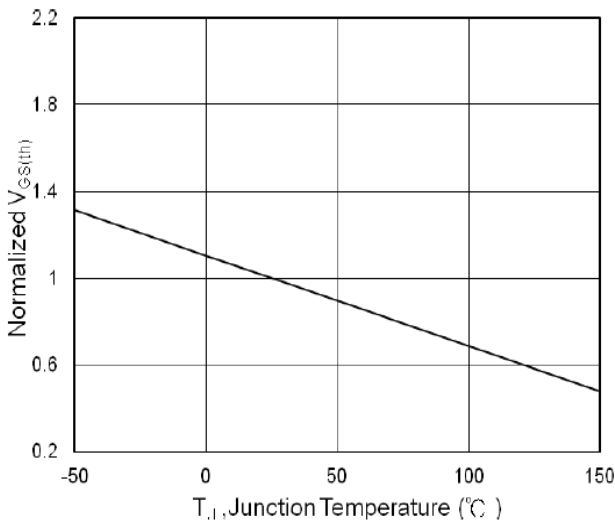


Fig.5 $V_{GS(th)}$ vs. T_J

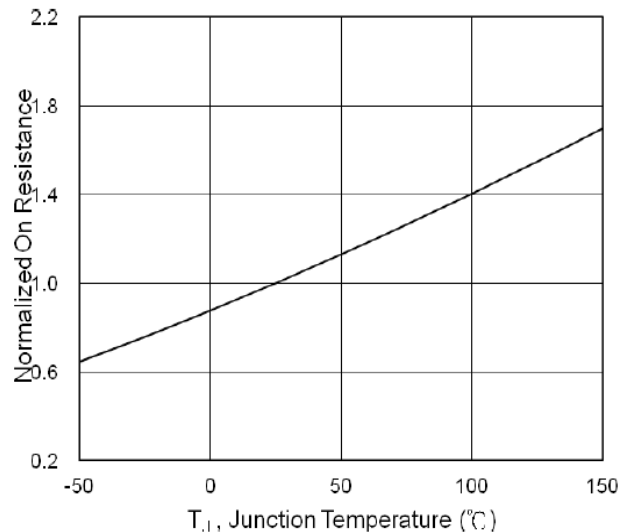


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

◆ TYPICAL CHARACTERISTICS

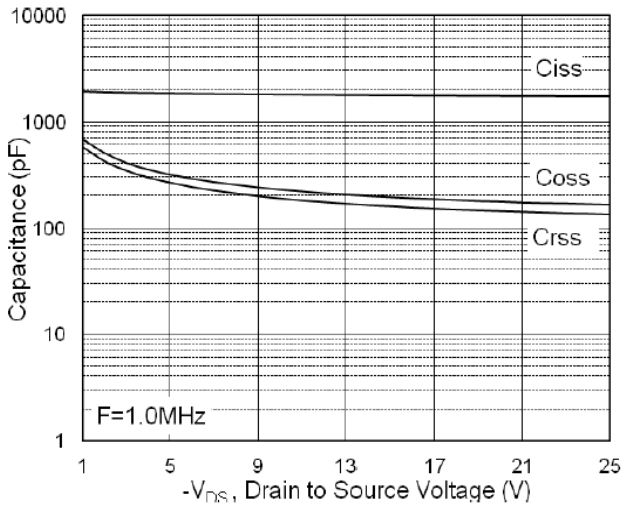


Fig.7 Capacitance

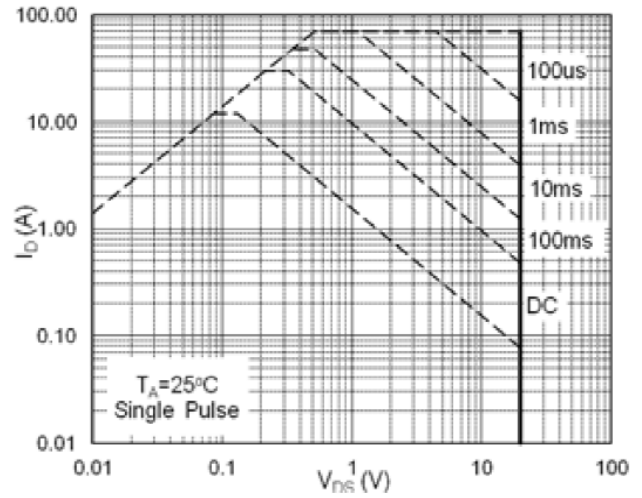


Fig.8 Safe Operating Area

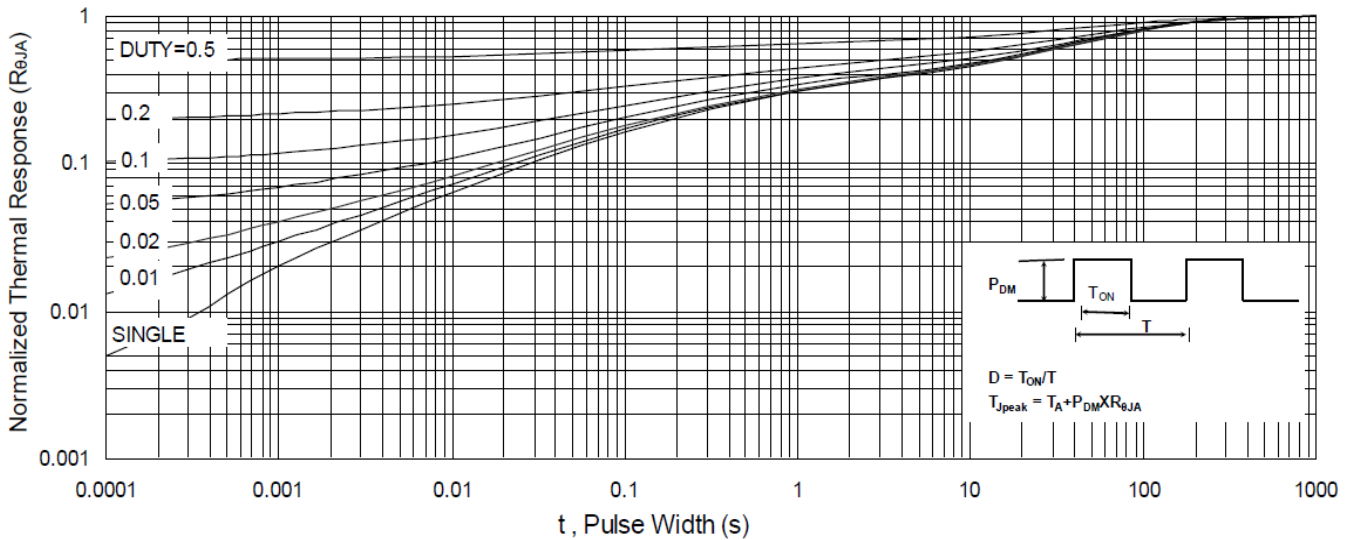


Fig.9 Normalized Maximum Transient Thermal Impedance

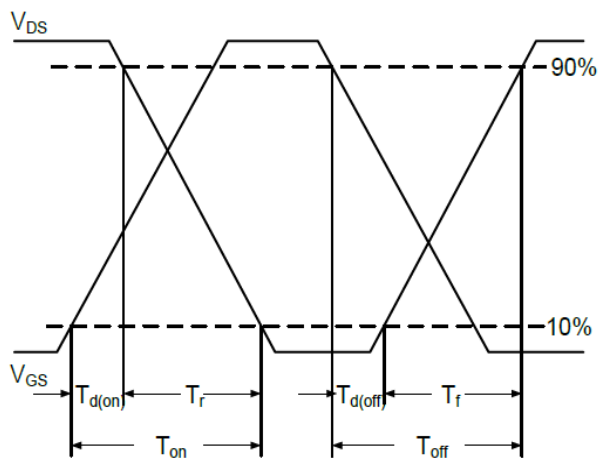


Fig.10 Switching Time Waveform

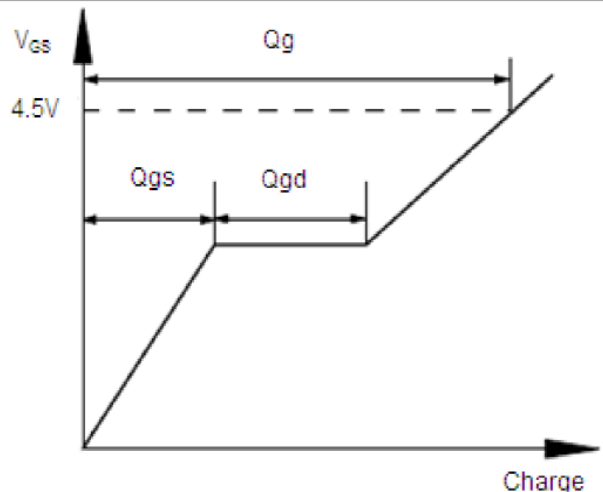
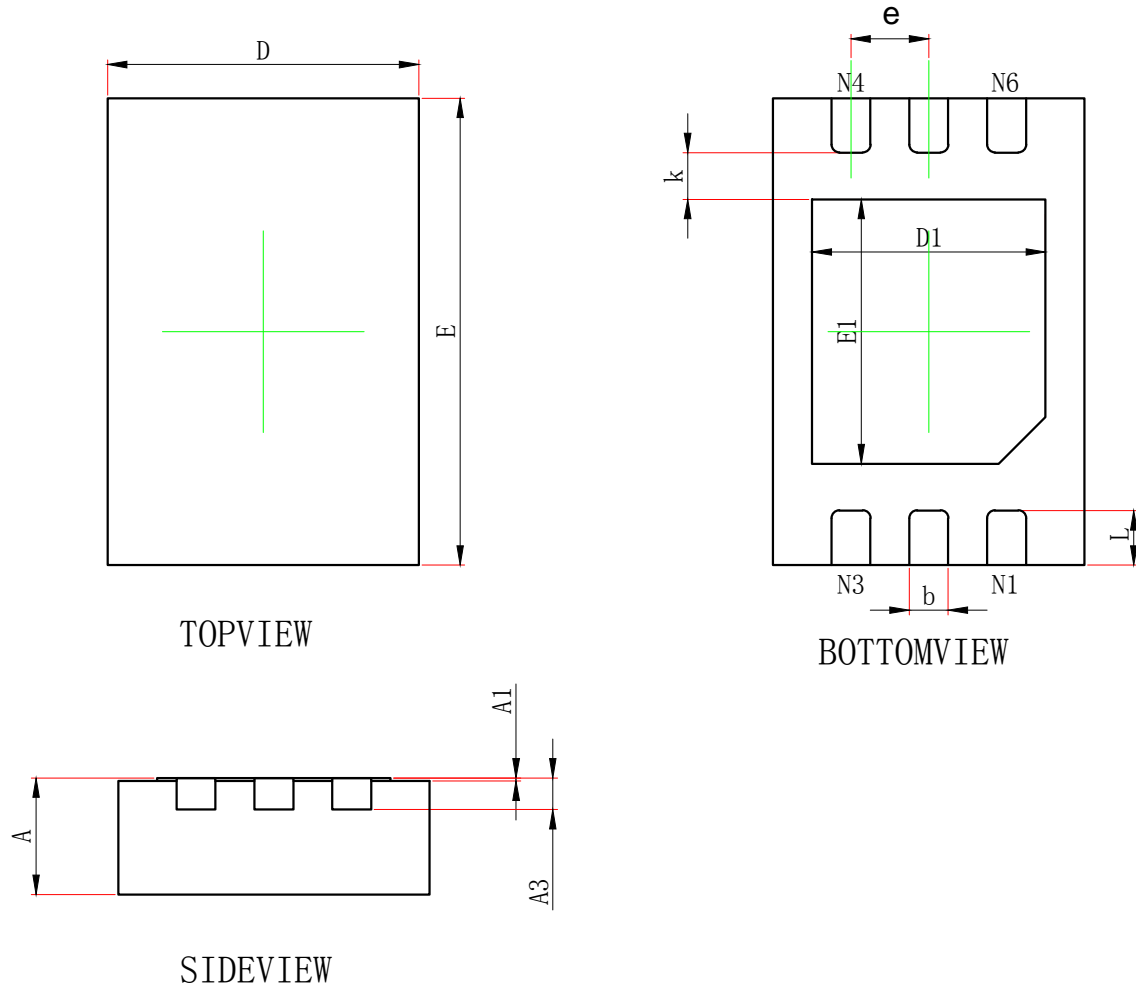


Fig.11 Gate Charge Waveform

Package Outline Dimensions : DFN2x3-6L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	1.950	2.050	0.077	0.081
E	2.950	3.050	0.116	0.120
D1	1.450	1.550	0.057	0.061
E1	1.650	1.750	0.065	0.069
k	0.200MIN.		0.008MIN.	
b	0.200	0.300	0.008	0.012
e	0.500TYP.		0.020TYP.	
L	0.300	0.400	0.012	0.016