FH8818K

N- Channel Enhancement Mode Power MOSFET

Description

The FH8818K uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a load switch or in PWM applications .It is ESD protested.

Application

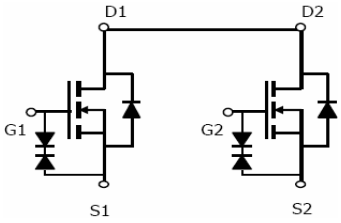
- Uni-directional load switch
- Bi-directional load switch

General Features

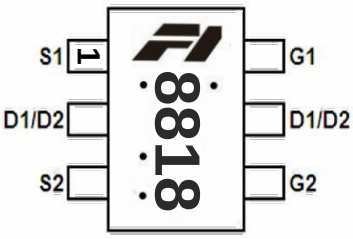
- V_{DS} = 20V, I_D = 6.5A

  $R_{DS(ON)}$ < 18 mΩ (Typ) @ V_{GS}=4.5V
  $R_{DS(ON)}$ <18.5 mΩ (Typ) @ V_{GS}=3.7V
  $R_{DS(ON)}$ <19.5 mΩ (Typ) @ V_{GS}=3.1V
  $R_{DS(ON)}$ < 21 mΩ (Typ) @ V_{GS}=2.5V

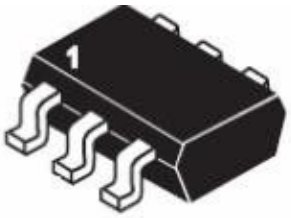
- High power and current handing capability
- Lead free product is acquired
- Surface mount package
- ESD Rating: 2000V HBM



Schematic diagram



Marking and pin Assignment



SOT23-6 top view

Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain Source Voltage	V_{DS}	20	V
Gate Source Voltage	V_{GS}	±12	V
Drain Current Cont nuous	I_D	6.5	A
Drain Current-Pulsed (Note 1)	I_{DM}	26	A
Maximum Power Dissipation	P_D	1.25	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃

Thermal Characteristic

Therma Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	100	℃/W

Electrical Characteristics (T_A=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=18V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V,V_{DS}=0V	-	-	±10	μA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	0.45	0.7	1.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=4.5A		18	19.5	mΩ
		V_{GS}=3.7V, I_D=4A	-	18.5	20.5	mΩ
		V_{GS}=3.1V, I_D=4A	-	19.5	22	mΩ
		V_{GS}=2.5V, I_D=2A	-	21	25	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=6A	-	35	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=10V,V_{GS}=0V, F=1.0MHz		993		PF
Output Capacitance	C_{oss}		-	210	-	PF
Reverse Transfer Capacitance	C_{rss}			139		PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=10V,R_L=1.2Ω V_{GS}=8V,R_{GEN}=3Ω	-	2.5		nS
Turn-on Rise Time	t_r		-	7.2		nS
Turn-Off Delay Time	$t_{d(off)}$		-	49		nS
Turn Off Fall Time	t_f		-	10.8		nS
Total Gate Charge	Q_g	V_{DS}=10V,I_D=6A, V_{GS}=4.5V	-	14.2		nC
Gate-Source Charge	Q_{gs}		-	1.5	-	nC
Gate-Drain Charge	Q_{gd}		-	4.7	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=1A	-	-	1.2	V
Diode Forward Current (Note 2)	I_S		-	-	3	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

Typical Electrical and Thermal Characteristics

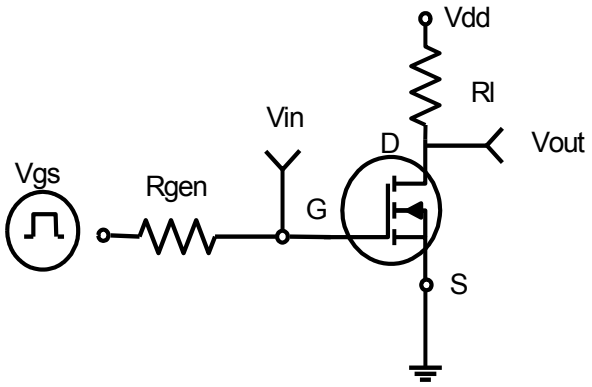


Figure 1:Switching Test Circuit

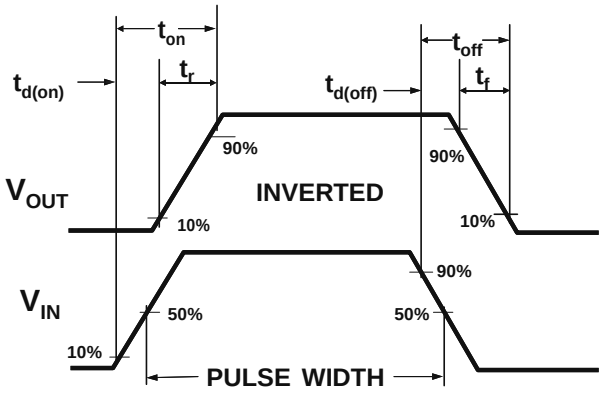


Figure 2:Switching Waveforms

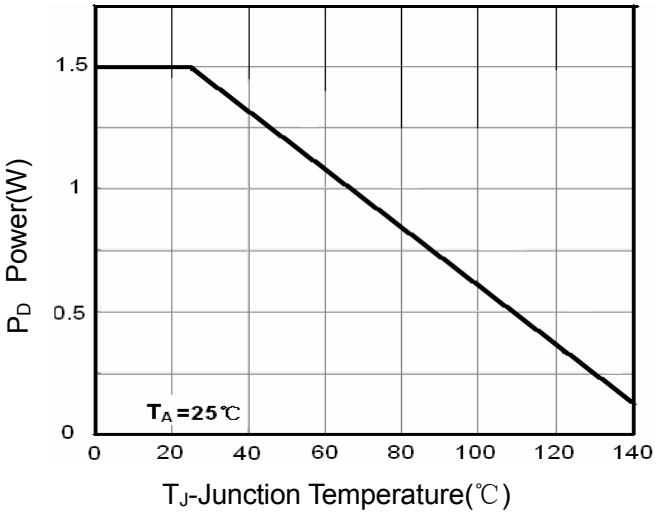


Figure 3 Power Dissipation

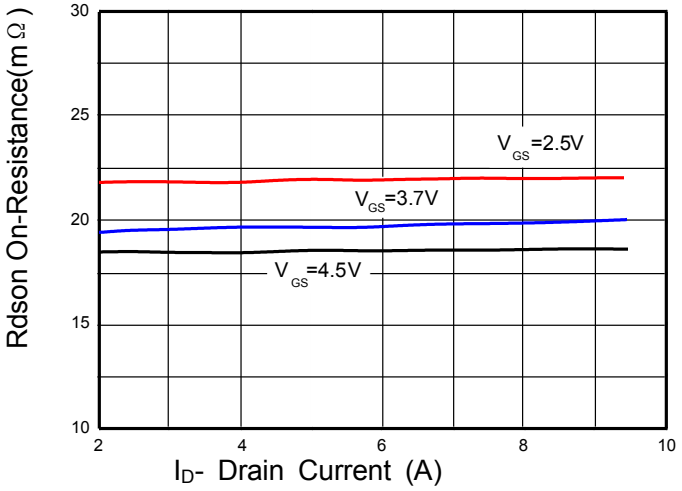


Figure 6 Drain-Source On-Resistance

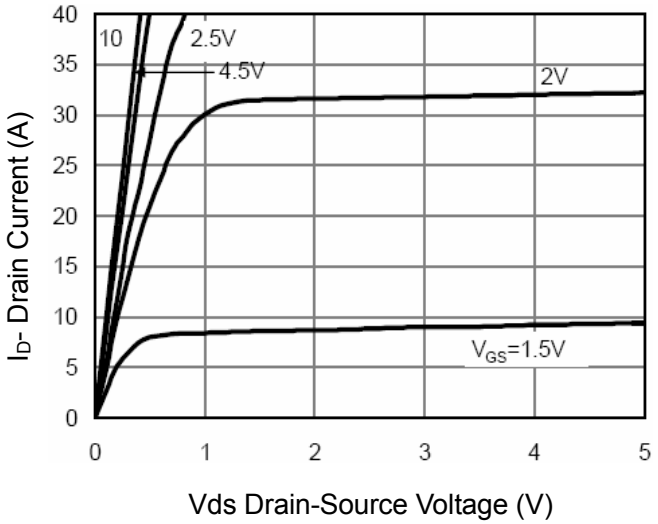


Figure 5 Output Characteristics

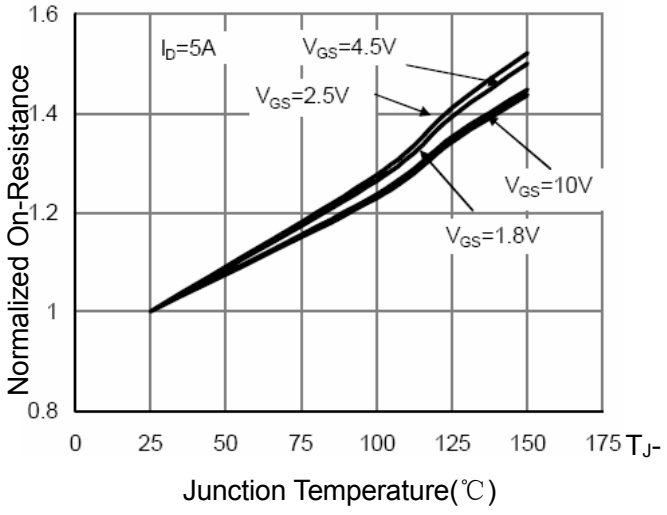


Figure 8 Drain-Source On-Resistance

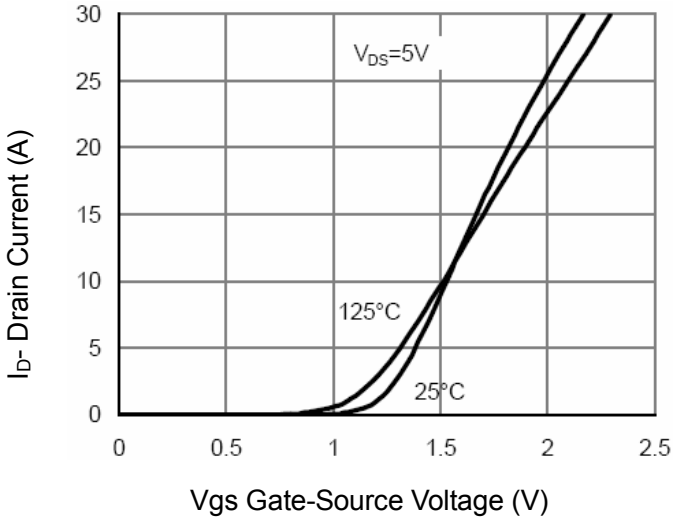


Figure 7 Transfer Characteristics

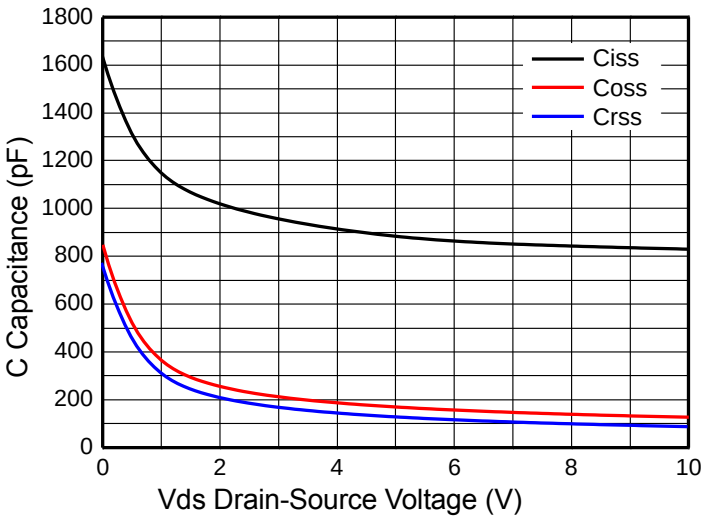


Figure 8 Capacitance vs Vds

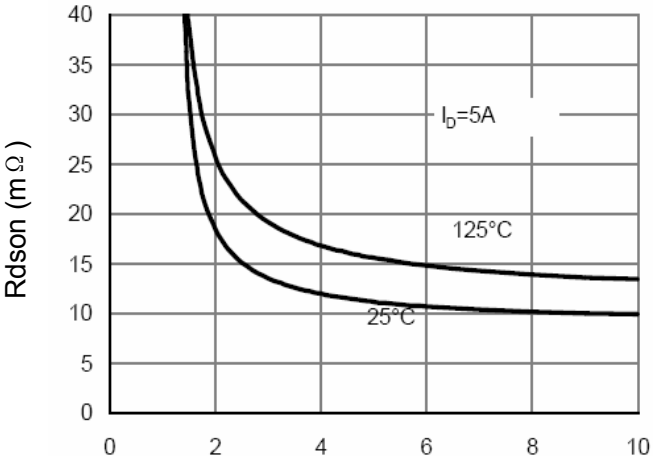


Figure 9 Rdson vs Vgs

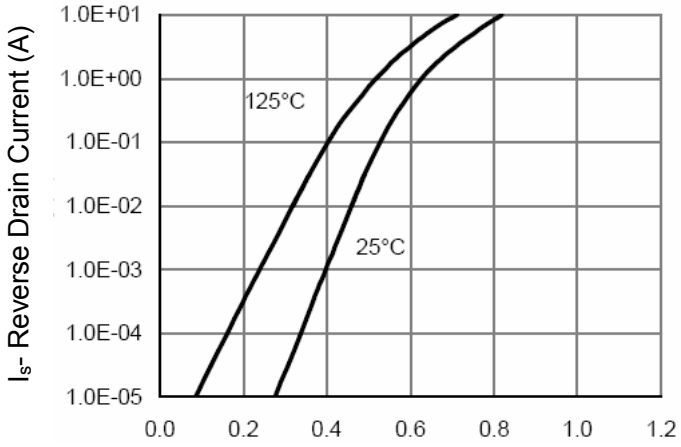


Figure 10 Capacitance vs Vds

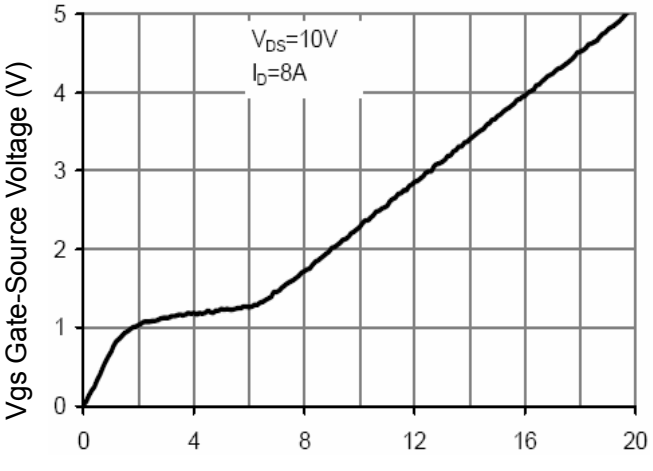


Figure 11 Gate Charge

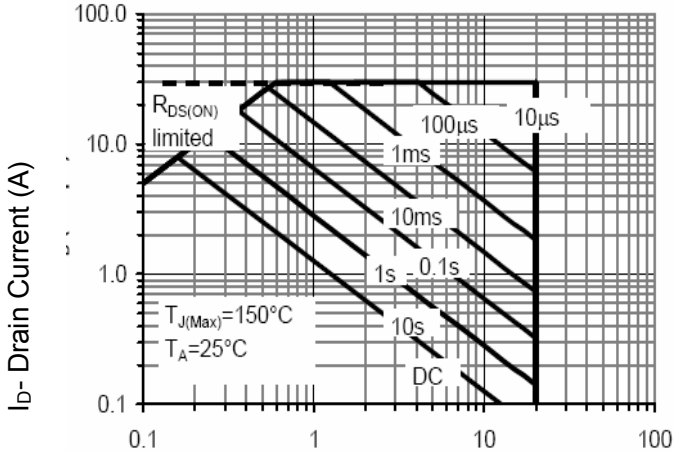


Figure 13 Safe Operation Area

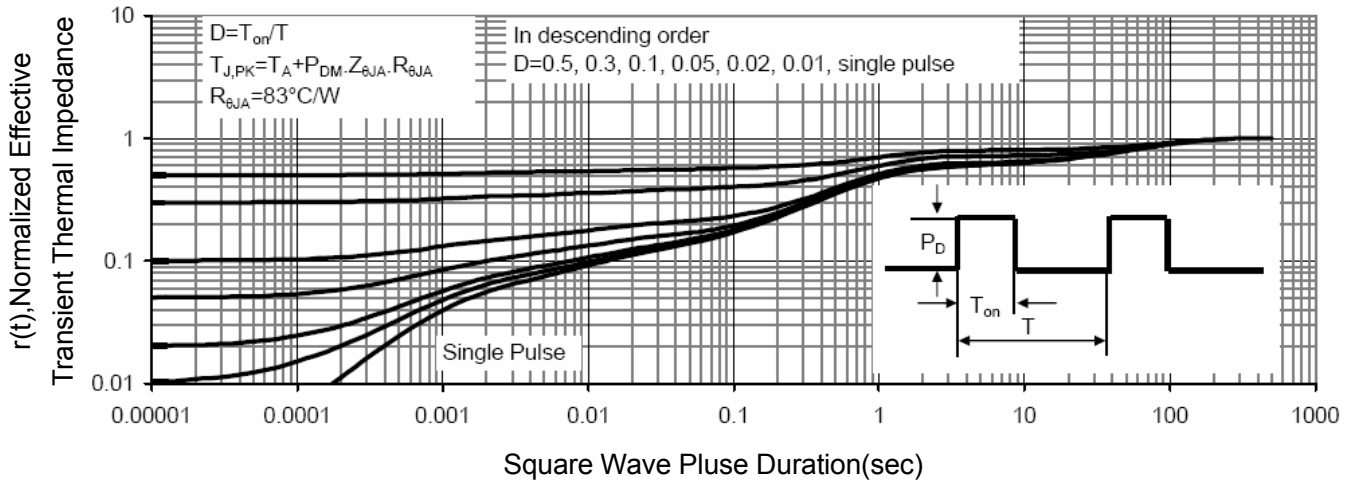
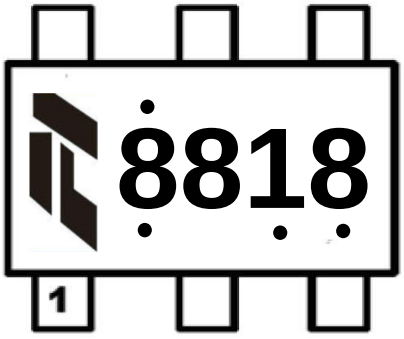


Figure 14 Normalized Maximum Transient Thermal Impedance

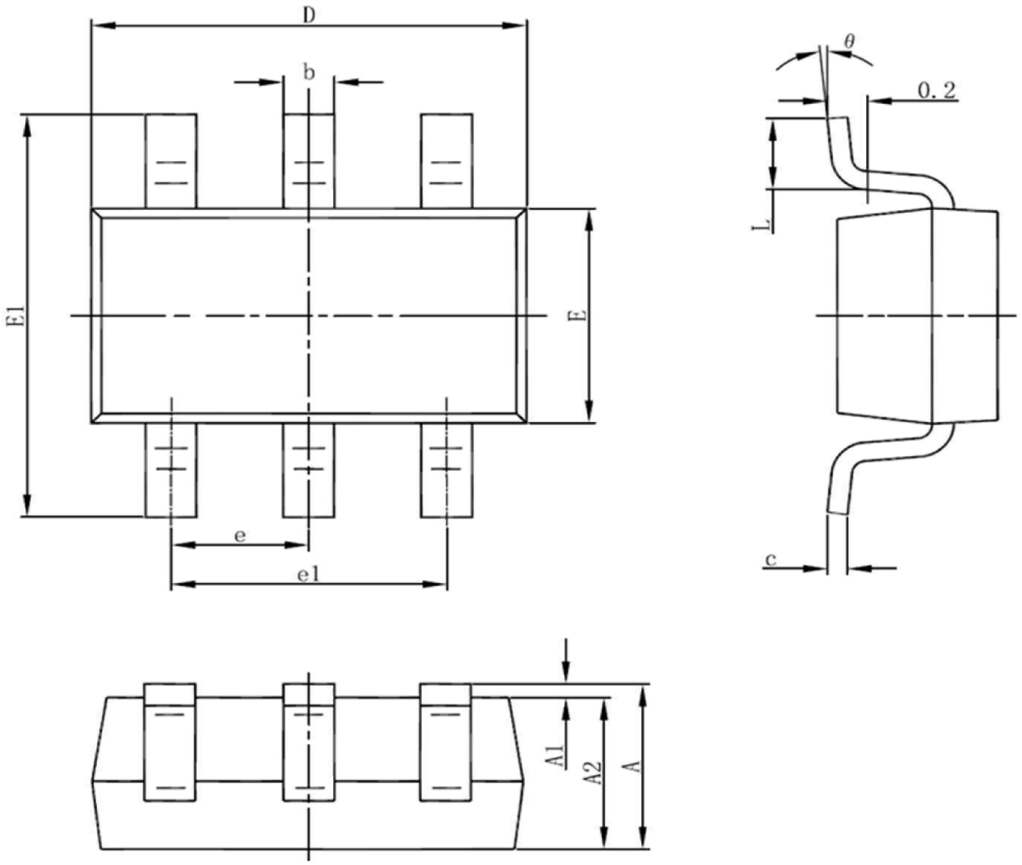
MARKING DESCRIPSION SOT23-6



Note:

The printing points above and below the product model are the internal identification of the company. Each batch of products may be in different locations.

Package Information : SOT23-6



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°