

FH3415M

P-Channel Enhancement Mode MOSFET

Description

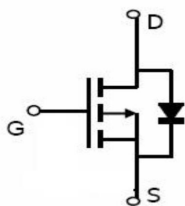
- ◆ Trench Power LV MOSFET technology
- ◆ High Power and Current handing capability
- ◆ Low Gate Charge

Application

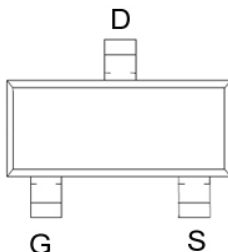
- ◆ PWM applications
- ◆ Power management
- ◆ Load switch

General Features

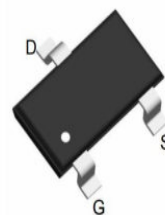
- ◆ $V_{DS} = -20V$; $I_D = -2.7A$
- ◆ $R_{DS(ON)}(Typ.) = 73 m\Omega$ @ $V_{GS} = -5.0V$
- ◆ $R_{DS(ON)}(Typ.) = 74 m\Omega$ @ $V_{GS} = -4.5V$
- ◆ $R_{DS(ON)}(Typ.) = 98 m\Omega$ @ $V_{GS} = -2.5V$
- ◆ LogicLevelCompatible
- ◆ SMDPackage(SOT-23)
- ◆ TrenchTechnology
- ◆ FastSwitching



Schematic diagram



Marking and Pin Assignment



SOT-23 top view

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameter		Symbol	Maximum	Unit
Drain-source Voltage		V_{DS}	-20	V
Gate-source Voltage		V_{GS}	± 12	V
Drain Current	$T_A = 25^\circ C$	I_D	-2.7	A
	$T_A = 70^\circ C$		-2.3	
Pulsed Drain Current ^A		I_{DM}	-10.8	A
Total Power Dissipation @ $T_A = 25^\circ C$		P_D	1	W
Thermal Resistance Junction-to-Ambient ^B		$R_{\theta JA}$	146	$^\circ C / W$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ C$

Electrical Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-20	-22		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V, T_C=25^{\circ}C$			-1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}= \pm 12V, V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	-0.65	-1.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}= -5.0V, I_D= -1A$		73	92	m Ω
		$V_{GS}= -4.5V, I_D= -2.7A$		74	94	
		$V_{GS}= -2.5V, I_D= -2A$		98	128	
Diode Forward Voltage	V_{SD}	$I_S=-3A, V_{GS}=0V$		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I_S				-2.7	A
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{DS}=-10V, V_{GS}=0V, f=1MHZ$		497		pF
Output Capacitance	C_{oss}			81		
Reverse Transfer Capacitance	C_{rss}			55		
Switching Parameters						
Total Gate Charge	Q_g	$V_{GS}=-4.5V, V_{DS}=-10V, I_D=-3.1A$		3.9		nC
Gate Source Charge	Q_{gs}			0.8		
Gate Drain Charge	Q_{gd}			1.1		
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=-4.5V, V_{DD}=-10V, I_D=-1A, R_{GEN}=2.5\Omega$		12		ns
Turn-on Rise Time	t_r			54		
Turn-off Delay Time	$t_{D(off)}$			15		
Turn-off Fall Time	t_f			9		

A. Pulse Test: Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Performance Characteristics

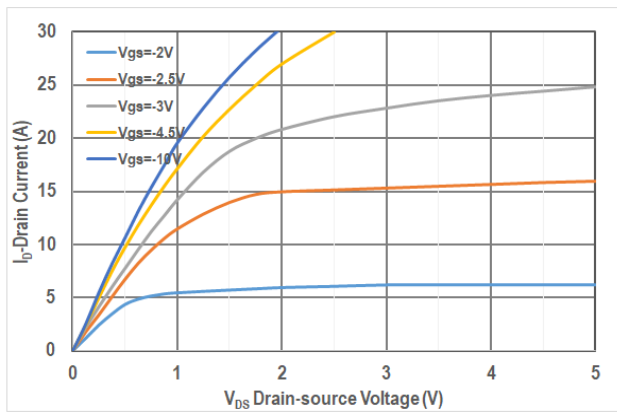


Figure1. Output Characteristics

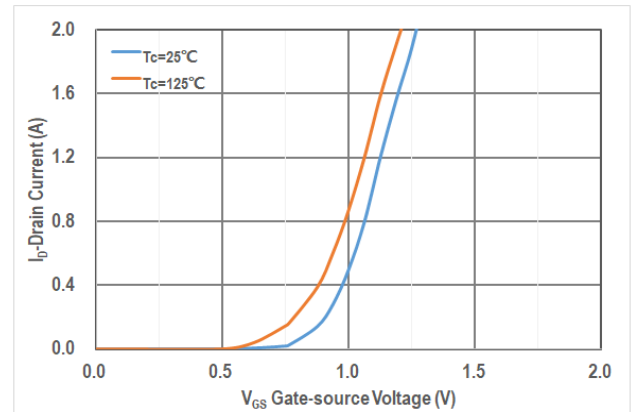


Figure2. Transfer Characteristics

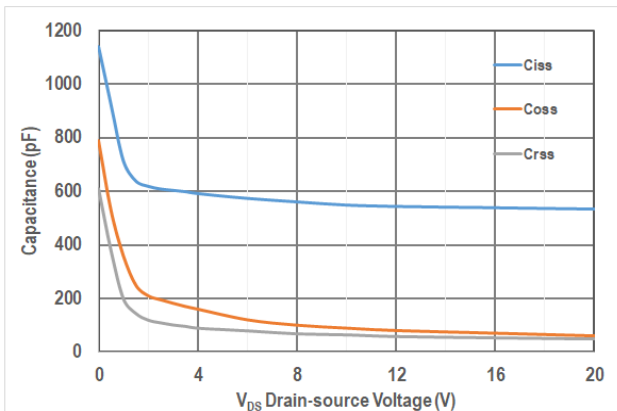


Figure3. Capacitance Characteristics

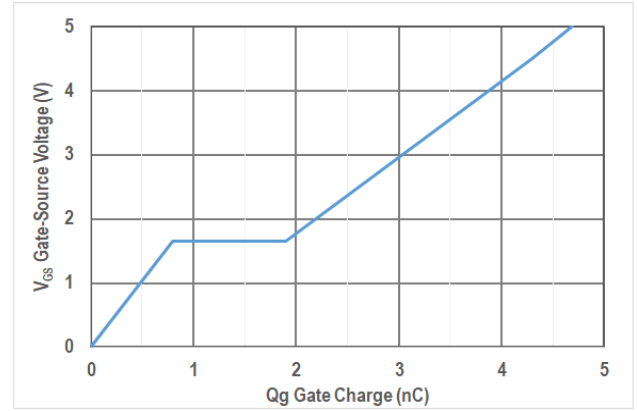


Figure4. Gate Charge

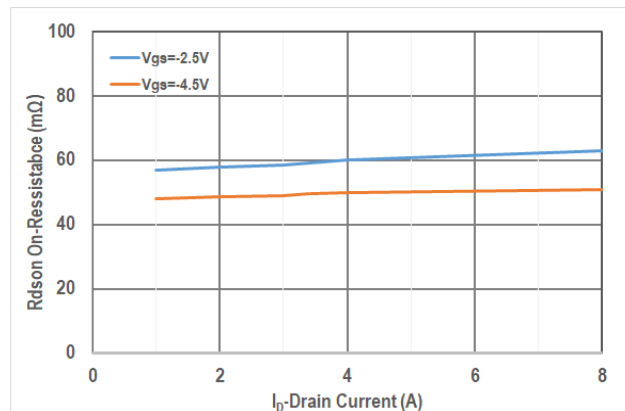


Figure5. Drain-Source on Resistance

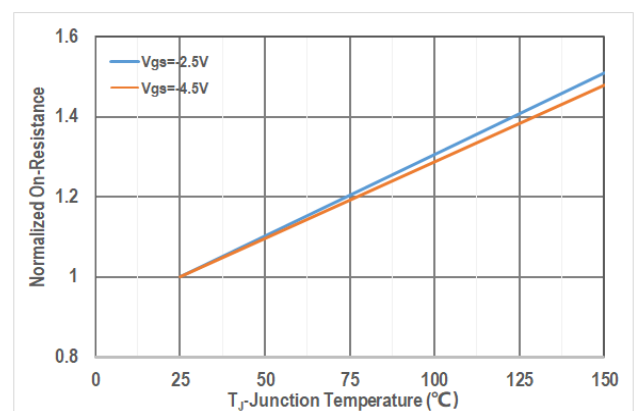


Figure6. Drain-Source on Resistance

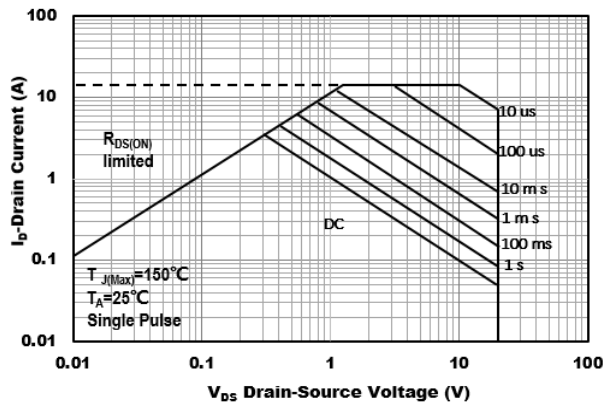


Figure7. Safe Operation Area

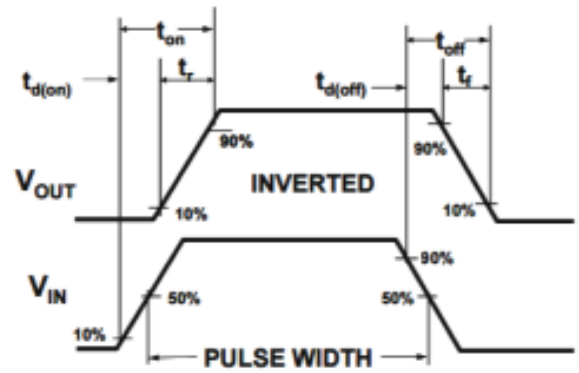
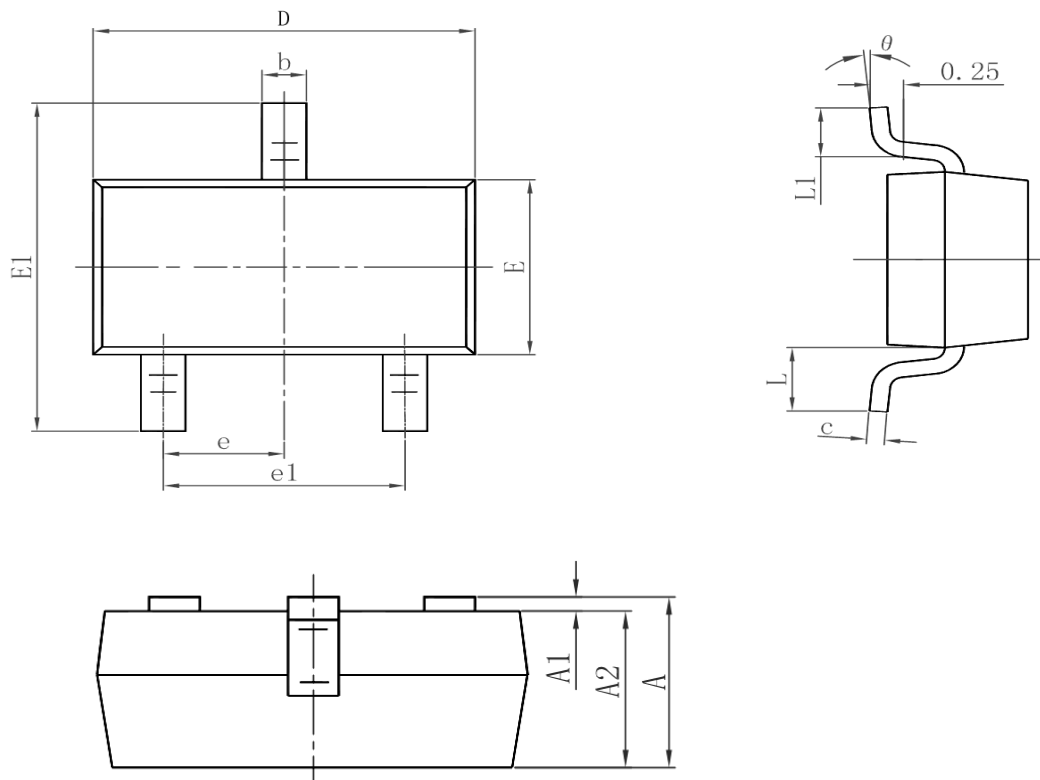


Figure8. Switching wave

Package Information : SOT-23



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°