FH3415B+

P-Channel Enhancement Mode MOSFET

Description

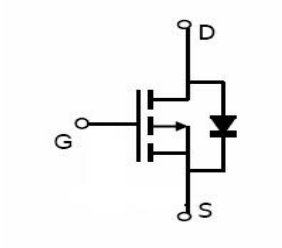
The FH3415B+ is the P-Channel enhancement mode MOSFET in a plastic package (SOT-23) using the Trench technology.

Applications

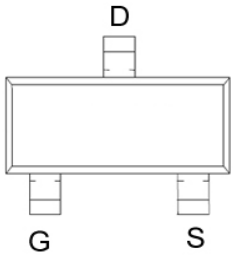
- High Speed Switch
- DC-DC Converters
- Lithium-Ion Battery

Features

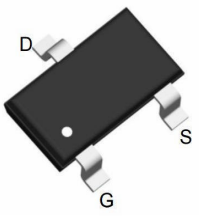
- V_{DS} = -30V ; I_D = -5.5A
  $R_{DS(ON)}$(Typ.)= 27mΩ @V_{GS} = -10V
  $R_{DS(ON)}$(Typ.)= 31mΩ @V_{GS} = -4.5V
  $R_{DS(ON)}$(Typ.)= 48mΩ @V_{GS} = -2.5V
- Logic Level Compatible
- SMD Package (SOT-23)
- Trench Technology
- Fast Switching



Schematic diagram



Marking and Pin Assignment



SOT-23 top view

■ Absolute Maximum Ratings (T_A = 25°C, unless otherwise specified)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_J= 150°C)	I_D	-5.5	A
Pulsed Drain Current	I_{DM}	-22	A
Power Dissipation	P_D	1.25	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C
Thermal Resistance-Junction to Ambient **(Note 1)**	R_{thJA}	100	°C/W

■ Electrical Characteristics (T_A = 25°C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = -250μA	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS},, I_D = -250μA	-0.50	-0.8	-1.10	V
Gate-Body Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -30V, V_{GS} = 0V			-1	μA
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = - 4.2A		27	32	mΩ
		V_{GS} = -4.5V, I_D = - 4.0A		31	41	
		V_{GS} = -2.5V, I_D = - 2.0A		48	62	
Forward Transconductance	g_{FS}	V_{DS} = -5V, I_D = -5.0A	8	13		S
Diode Forward Voltage **(Note 2)**	V_{SD}	V_{GS} = 0V, I_S = -1.0A			-1.0	V
Diode Forward Current **(Note 1)**	I_S				-2.0	A
Dynamic						
Total Gate Charge	Q_g	V_{DS} = -15V, V_{GS} = -10V, I_D = -1A		23		nC
Gate-Source Charge	Q_{gs}			3.2		
Gate-Drain Charge	Q_{gd}			2.72		
Input Capacitance	C_{iss}	V_{DS} = -15V, V_{GS} = 0V, f = 1MHz		1260		pF
Output Capacitance	C_{oss}			182		
Reverse Transfer Capacitance	C_{rss}			158		
Switching						
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -15V, R_L = 15Ω, I_D = -1A, V_{GS} = -4.5V, R_{GEN} = 10Ω		7		nS
Rise Time	t_r			3		
Turn-Off Delay Time	$t_{d(off)}$			32		
Fall-Time	t_f			10		

Note: 1. Mounted on FR4 board, t ≤ 5sec.
2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

■ Typical Electrical and Thermal Characteristics

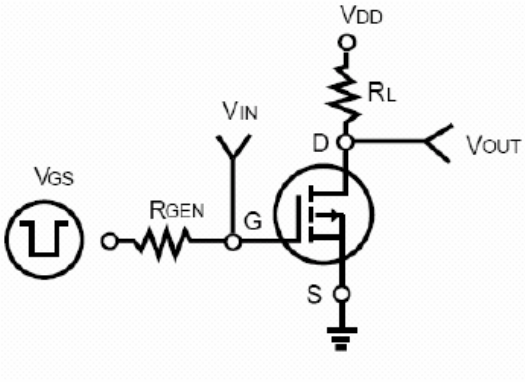


Figure 1: Switching Test Circuit

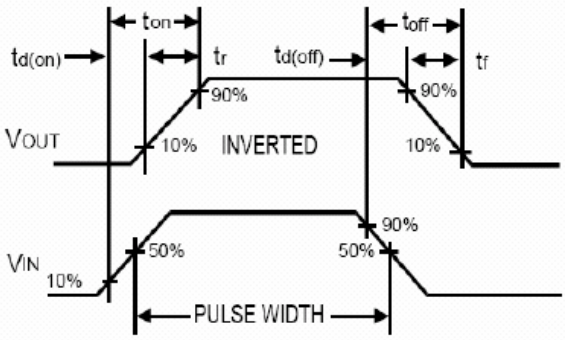


Figure 2: Switching Waveforms

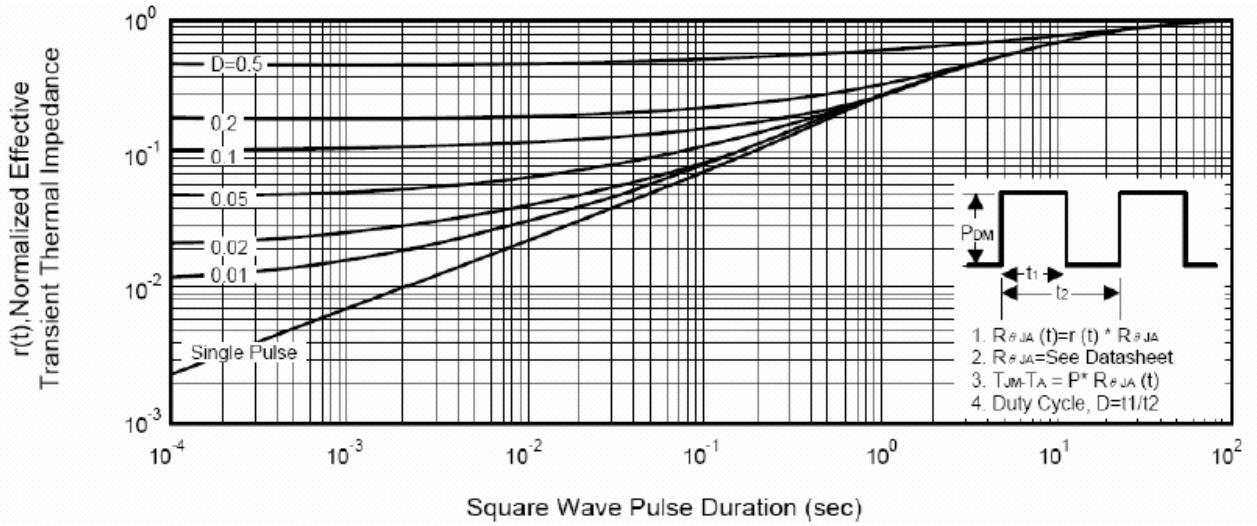
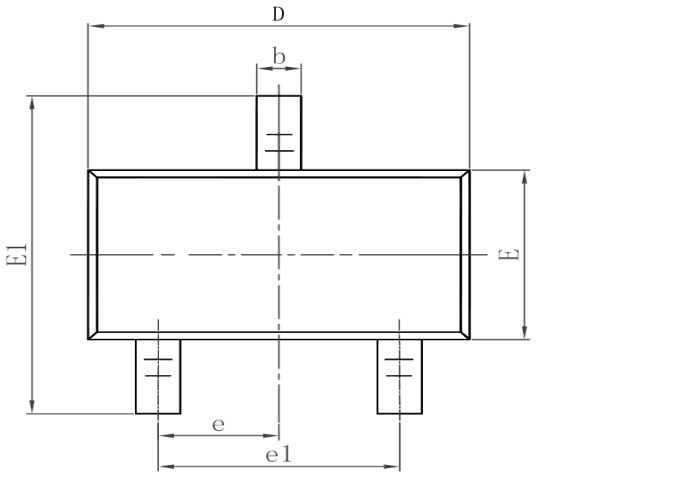
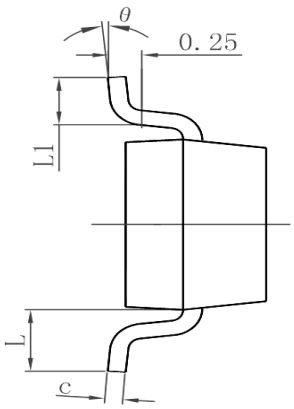
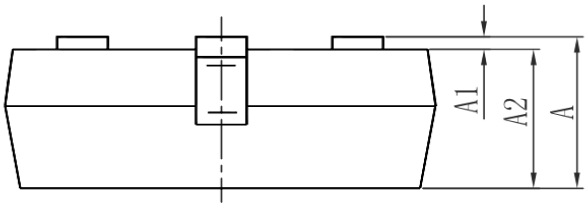


Figure 3: Normalized Maximum Transient Thermal Impedance

■ Package Dimensions : 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°

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