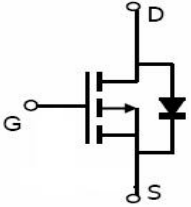
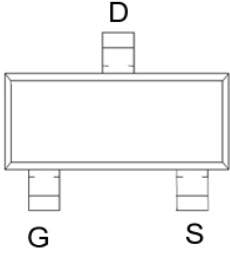
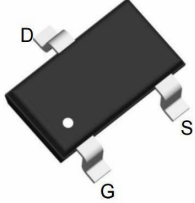


FH3415B+

P-Channel Enhancement Mode MOSFET

<p>Description</p> <p>The FH3415B+ is the P-Channel enhancement mode MOSFET in a plastic package (SOT-23) using the Trench technology.</p> <p>Applications</p> <ul style="list-style-type: none"> ◆ High Speed Switch ◆ DC-DC Converters ◆ Lithium-Ion Battery 	<p>Features</p> <ul style="list-style-type: none"> ◆ $V_{DS} = -30V$; $I_D = -5.5A$ $R_{DS(ON)}(Typ.) = 27m\Omega$ @ $V_{GS} = -10V$ $R_{DS(ON)}(Typ.) = 31m\Omega$ @ $V_{GS} = -4.5V$ $R_{DS(ON)}(Typ.) = 48m\Omega$ @ $V_{GS} = -2.5V$ ◆ LogicLevelCompatible ◆ SMDPackage(SOT-23) ◆ TrenchTechnology ◆ FastSwitching 	
 <p>Schematic diagram</p>	 <p>Marking and Pin Assignment</p>	 <p>SOT-23 top view</p>

■ **Absolute Maximum Ratings** ($T_A = 25^{\circ}C$, unless otherwise specified)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_J = 150^{\circ}C$)	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	$^{\circ}C$
Thermal Resistance-Junction to Ambient (Note 1)	R_{thJA}	100	$^{\circ}C/W$

■ Electrical Characteristics ($T_A = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.50	-0.8	-1.10	V
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 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	m Ω
		$V_{GS} = -4.5V, I_D = -4.0A$		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	$t_{d(on)}$	$V_{DD} = -15V, R_L = 15\Omega, I_D = -1A, V_{GS} = -4.5V, R_{GEN} = 10\Omega$		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, $t \leq 5\text{sec}$.
 2. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

■ Typical Electrical and Thermal Characteristics

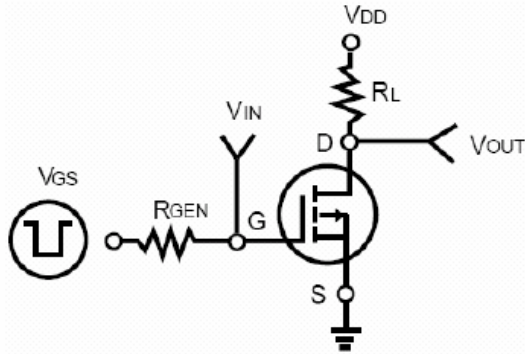


Figure 1: Switching Test Circuit

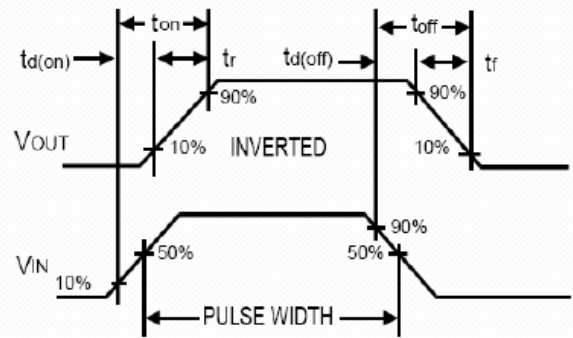


Figure 2: Switching Waveforms

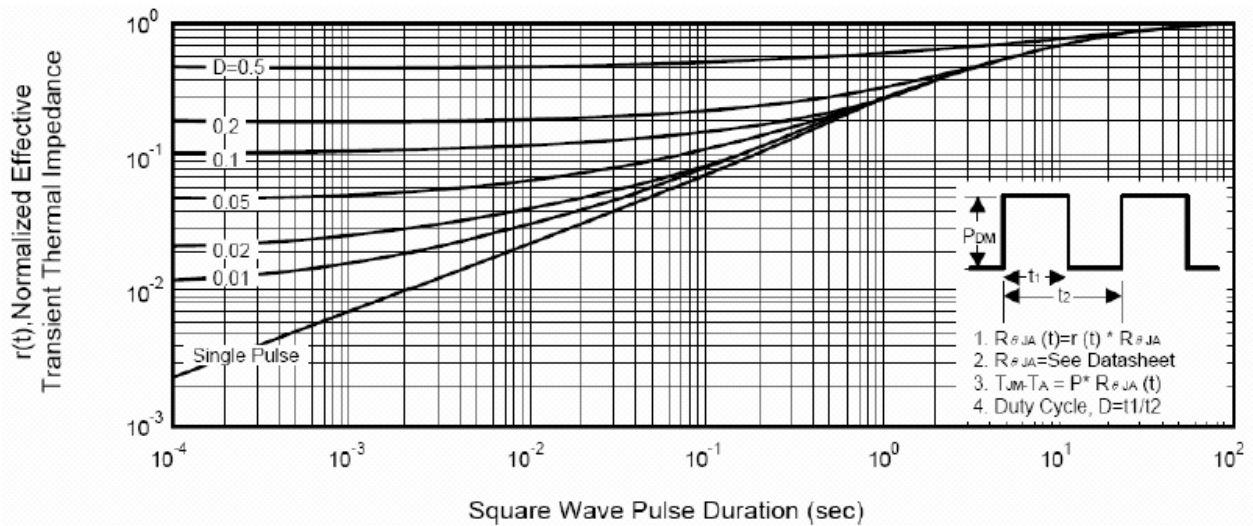
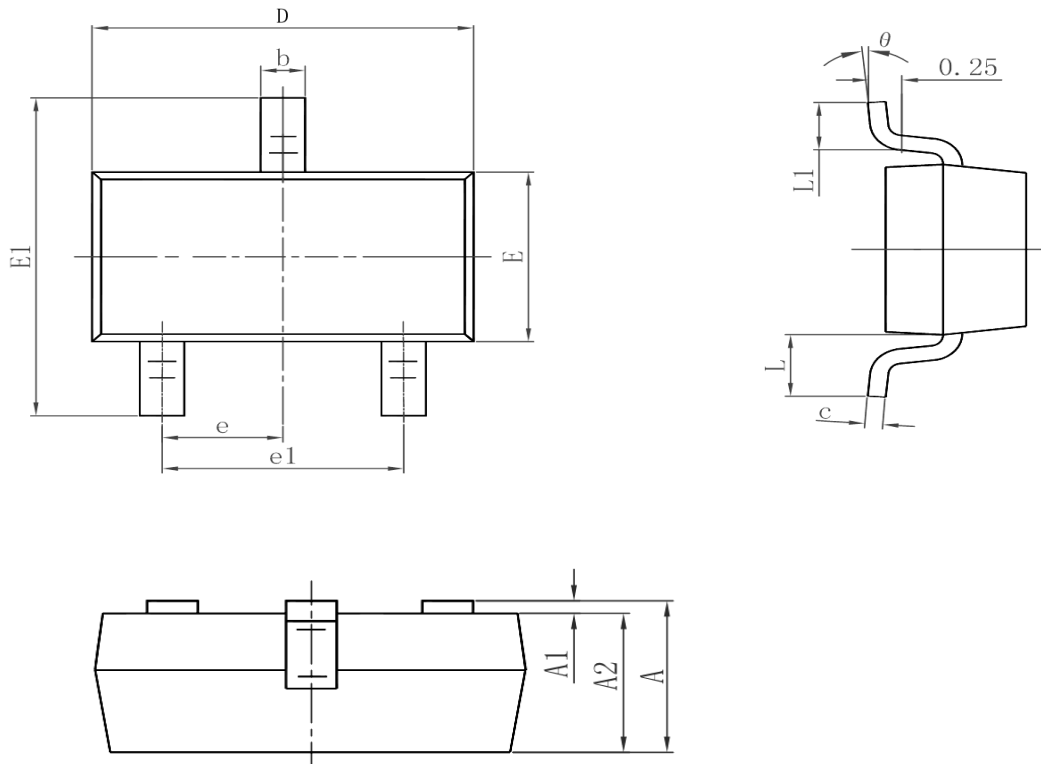


Figure 3: Normalized Maximum Transient Thermal Impedance

■ 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°