



SSF2418B

20V Dual N-Channel MOSFET

DESCRIPTION

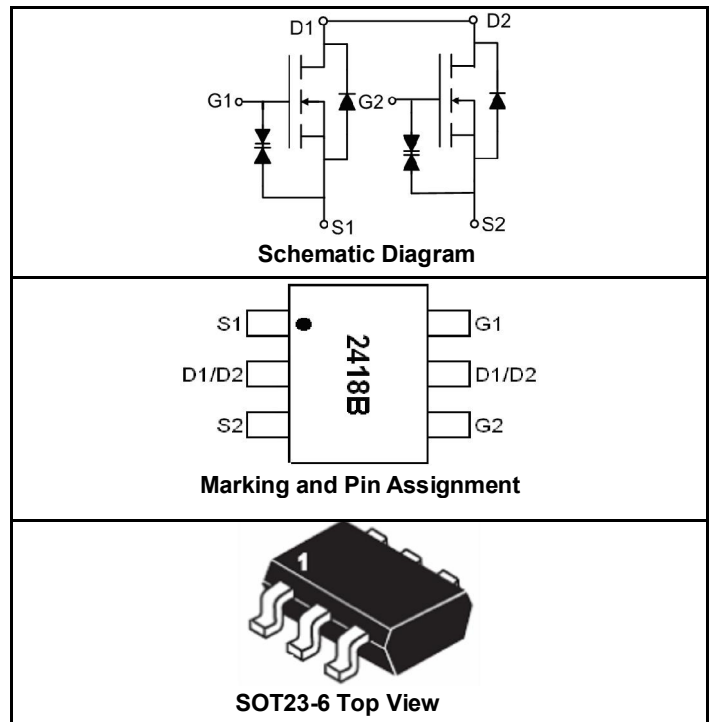
The SSF2418B uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a load switch. It is ESD protected.

GENERAL FEATURES

- $V_{DS} = 20V, I_D = 6A$
- $R_{DS(ON)} < 30m\Omega @ V_{GS}=2.5V$
- $R_{DS(ON)} < 26m\Omega @ V_{GS}=3.1V$
- $R_{DS(ON)} < 22m\Omega @ V_{GS}=4.0V$
- $R_{DS(ON)} < 21m\Omega @ V_{GS}=4.5V$
- ESD Rating: 2000V HBM
- High Power and current handing capability
- Lead free product
- Surface Mount Package

APPLICATIONS

- Battery protection
- Load switch
- Power management



PACKAGE MARKING AND ORDERING INFORMATION

Device Marking	Device	Device Package	Reel Size	Tape Width	Quantity
2418B	SSF2418B	SOT23-6	Ø330mm	12mm	3000 units

ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous@ Current-Pulsed (Note 1)	I_D	6	A
	I_{DM}	30	A
Maximum Power Dissipation	P_D	1.3	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^{\circ}C$

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	95	$^{\circ}C/W$
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ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	20			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$			1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$			± 10	μA
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5		1	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=6A$		18	21	$m\Omega$
		$V_{GS}=4.0V, I_D=5.5A$		19	22	$m\Omega$
		$V_{GS}=3.1V, I_D=5A$		21	26	$m\Omega$
		$V_{GS}=2.5V, I_D=4A$		25	30	$m\Omega$
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=6A$		7		S
DYNAMIC CHARACTERISTICS (Note4)						
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V,$ $F=1.0MHz$		650		PF
Output Capacitance	C_{oss}			170		PF
Reverse Transfer Capacitance	C_{rss}			150		PF
SWITCHING CHARACTERISTICS (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=10V, I_D=1A$ $V_{GS}=4.5V, R_{GEN}=10\Omega$		20		nS
Turn-on Rise Time	t_r			50		nS
Turn-Off Delay Time	$t_{d(off)}$			64		nS
Turn-Off Fall Time	t_f			40		nS
Total Gate Charge	Q_g	$V_{DS}=10V, I_D=6A,$ $V_{GS}=4.5V$		8		nC
Gate-Source Charge	Q_{gs}			1.5		nC
Gate-Drain Charge	Q_{gd}			2		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S=1A$		0.76	1	V

NOTES:

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

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

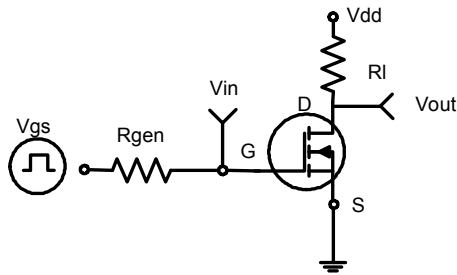


Figure 1: Switching Test Circuit

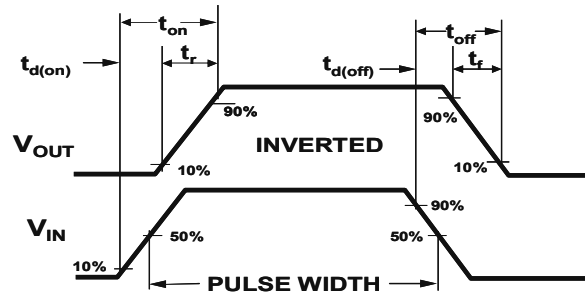


Figure 2: Switching Waveforms

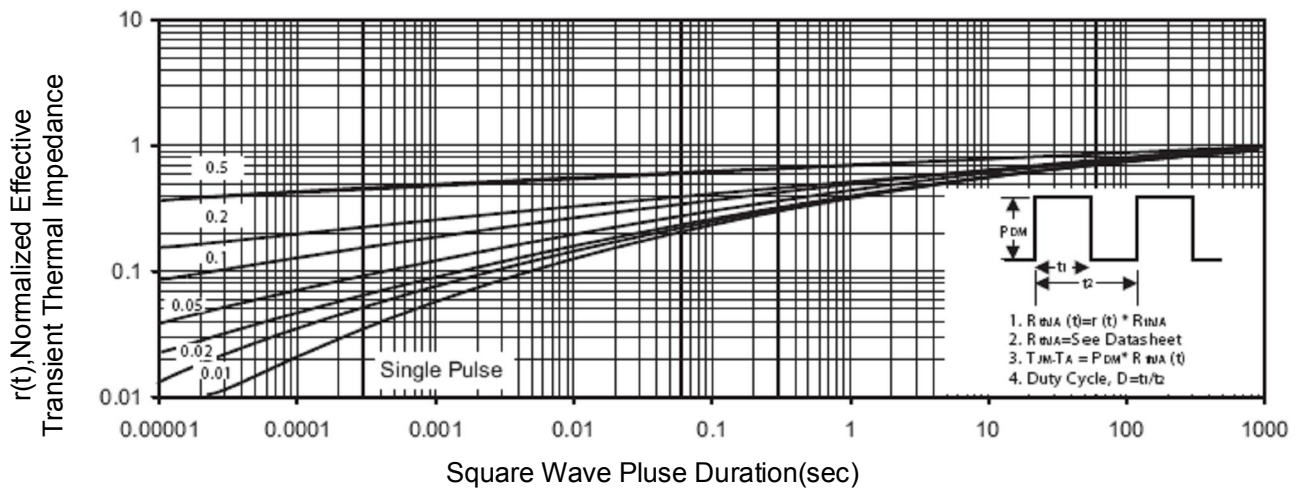
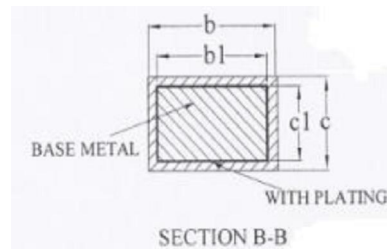
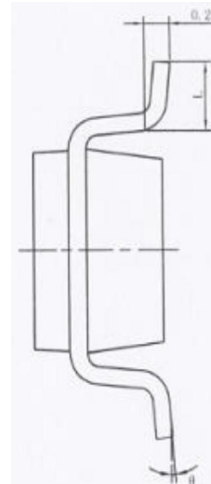
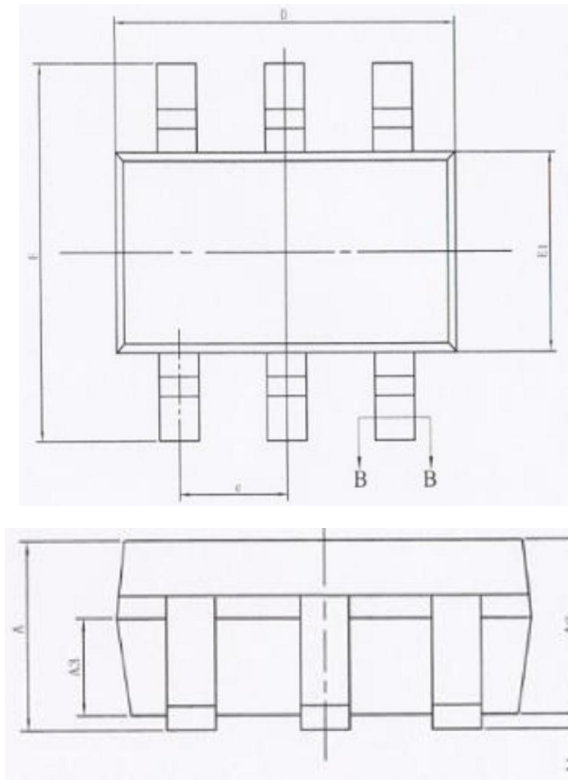


Figure 3 Normalized Maximum Transient Thermal Impedance

SOT23-6 PACKAGE INFORMATION

Dimensions in Millimeters (UNIT: mm)



Symbol	Dimension In Millimeters		Dimension In Inches	
	Min	Max	Min	Max
A	-	1.350	-	0.053
A1	0.000	0.150	0.000	0.006
A2	1.000	1.200	0.039	0.047
b	0.340	0.430	0.013	0.017
c	0.150	0.210	0.006	0.008
D	2.720	3.120	0.107	0.123
E	1.400	1.800	0.055	0.071
E1	2.600	3.000	0.102	0.118
e	0.95(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°

NOTES:

1. All dimensions are in millimeters.
2. Dimensions are inclusive of plating
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 6 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.