

# 广东肇庆风华新谷电子有限公司

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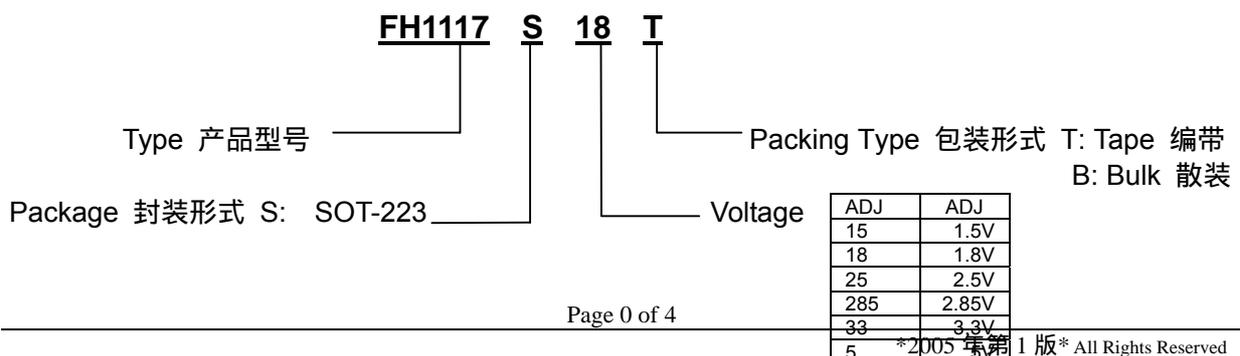
TEL: 0758-2865088 2865091 FAX: 0758-2849749

## 1A LOW DROPOUT POSITIVE REGULATOR

DESCRIPTION & FEATURES 概述及特点	
<p>The FH1117 series of positive adjustable and fixed regulators is designed to provide 1A for applications requiring high efficiency. All internal circuitry is designed to operated down to 800mV input to output differential and the dropout voltage is fully specified as a function of load current.</p> <p>The FH1117 offers current limiting and thermal protection. The on chip trimming adjusts the reference voltage accuracy to 1%.</p>	<p>FH1117 系列三端可调、固定电压调整器，可以提供 1A 的电流，内部电路设计运用于 800mA 输入 输出微分电路，压差由负载电流确定。</p> <p>FH1117 产品可提供限流及热保护功能，调整参考电压精度达 1%</p>
<ul style="list-style-type: none"> <li>Output current of 1A typical</li> <li>Three-terminal adjustable or fixed</li> <li>1.5V, 1.8V, 2.5V, 2.85V, 3.3V, 5.0V outputs</li> <li>Low dropout of typical 800mV</li> <li>Thermal protection built in</li> <li>Typical 0.015% line regulation</li> <li>Typical 0.01% load regulation</li> <li>Fast transient response</li> </ul>	<ul style="list-style-type: none"> <li>输出电流 (典型值 1A)</li> <li>三端可调或固定输出</li> <li>1.5V, 1.8V, 2.5V, 2.85V, 3.3V, 5.0V 输出</li> <li>低压差 (典型值 800mV)</li> <li>内置热保护</li> <li>线性调整 (典型值 0.015%)</li> <li>负载调整 (典型值 0.01%)</li> <li>快速瞬态响应</li> </ul>
Applications 应用	
<ul style="list-style-type: none"> <li>PC Motherboard</li> <li>LCD Monitor</li> <li>DVD-Video Player</li> <li>NIC / Switch</li> <li>Telecom Equipment</li> <li>High Efficiency Linear Regulator</li> <li>Printer and other Peripheral Equipment</li> <li>Battery Charger</li> </ul>	<ul style="list-style-type: none"> <li>电脑主板</li> <li>LCD 显示器</li> <li>DVD 视频播放器</li> <li>网络接口卡/开关</li> <li>通讯设备</li> <li>高效率线性调整器</li> <li>打印机及其它外设</li> <li>充电器</li> </ul>

## 1A 低压差三端稳压器 FH1117

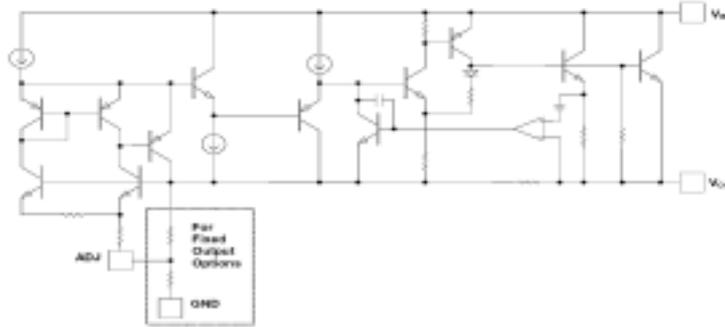
Package 封装类型	Temperature Range 温度范围	Part Number 产品型号	Packing Type 包装类型
SOT-223	0°C ~ 125°C	FH1117SADJ	Tape
		FH1117S15	Tape
		FH1117S18	Tape
		FH1117S25	Tape
		FH1117S285	Tape
		FH1117S33	Tape
		FH1117S5	Tape



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**BLOCK DIAGRAM (功能框图)**

<b>MAXIMUM RATINGS (T<sub>a</sub>=25 ) 最大额定值</b> (Note 1)				
Characteristic 特性参数	Symbol 符号	Rating 额定值		Unit 单位
		Min 最小	Max 最大	
Input Voltage 输入电压	V <sub>IN</sub>		13	V
Operating Junction Temperature 结温	T <sub>J</sub>	0	150	°C
Storage Temperature Range 储存温度	T <sub>STG</sub>	-65	150	°C
Lead Temperature 焊接温度(soldering, 10 seconds)		-	260	°C

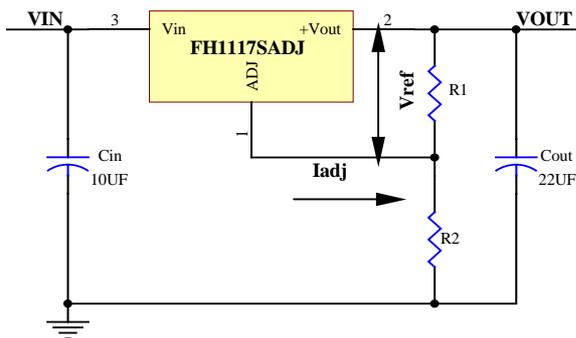
Note 1: Exceeding these ratings could cause damage to the device. All voltages are with respect to Ground. Currents are positive into, negative out of the specified terminal.

<b>POWER DISSIPATION TABLE 耗散功率</b>					
Package	J <sub>A</sub> (°C/W)	Derating factor (mW/°C) T <sub>A</sub> ≥25 °C	T <sub>A</sub> ≤25 °C Power rating (mW)	T <sub>A</sub> =70 °C Power rating (mW)	T <sub>A</sub> = 85 °C Power rating (mW)
SOT-223	136	7.35	919	588	478

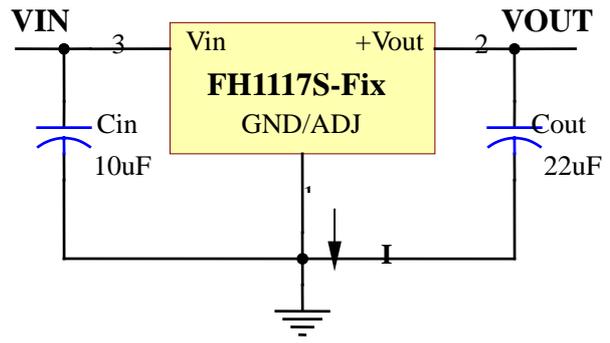
Note : J<sub>A</sub> : Thermal Resistance-Junction to Ambient, D<sub>F</sub> : Derating factor, P<sub>o</sub>: Power consumption.  
 Junction Temperature Calculation: T<sub>J</sub> = T<sub>A</sub> + (P<sub>D</sub> × J<sub>A</sub>), P<sub>o</sub> = D<sub>F</sub> × (T<sub>J</sub> - T<sub>A</sub>)  
 The J<sub>A</sub> numbers are guidelines for the thermal performance of the device/PC-board system.  
 All of the above assume no ambient airflow.

<b>RECOMMENDED OPERATING CONDITIONS 推荐使用条件</b>				
	Symbol 符号	Min 最小	Max 最大	Unit 单位
Input Voltage 输入电压	V <sub>IN</sub>	2.7	12	V
Load Current (with adequate heat sinking) 负载电流	I <sub>O</sub>	5	-	mA
Input Capacitor V <sub>IN</sub> to GND 输入电容		1.0	-	μF
Output Capacitor with ESR of 10Ω max 输出电容		4.7	-	μF
Junction temperature 结温	T <sub>J</sub>	-	125	°C

**Typical Applications 典型应用图例**



Adjustable Voltage Regulator



Fixed Voltage Regulator

ELECTRICAL CHARACTERISTICS 电特性						
Unless otherwise specified, 如无特殊说明, $V_{IN} = V_{OUT} + 2V$ , $I_O = 10\text{ mA}$ , and $T_J = 25\text{ }^\circ\text{C}$ .						
Parameter 参数	Symbol 符号	Test Conditions 测试条件	Min. 最小值	Typ. 典型值	Max. 最大值	Unit 单位
Reference Voltage 参考电压	$V_{REF}$	$I_O = 10\text{ mA}$ , $V_{IN} - V_{OUT} = 2\text{ V}$	1.238	1.250	1.262	V
		$10\text{ mA} \leq I_O \leq 1\text{ A}$ , $V_{OUT} + 1.5\text{ V} \leq V_{IN} \leq 12\text{ V}$	1.230	1.250	1.270	
Output Voltage 输出电压	$V_{OUT}$	$I_O = 10\text{ mA}$ , $V_{IN} = 2.5\text{ V}$	1.485	1.500	1.515	V
		$10\text{ mA} \leq I_O \leq 1\text{ A}$ , $3.0\text{ V} \leq V_{IN} \leq 12\text{ V}$	1.476	1.500	1.524	
		$I_O = 10\text{ mA}$ , $V_{IN} = 3.8\text{ V}$	1.782	1.800	1.818	
		$10\text{ mA} \leq I_O \leq 1\text{ A}$ , $3.2\text{ V} \leq V_{IN} \leq 12\text{ V}$	1.764	1.800	1.836	
		$I_O = 10\text{ mA}$ , $V_{IN} = 4.5\text{ V}$	2.475	2.500	2.525	
		$10\text{ mA} \leq I_O \leq 1\text{ A}$ , $4.25\text{ V} \leq V_{IN} \leq 12\text{ V}$	2.450	2.500	2.550	
		$I_O = 10\text{ mA}$ , $V_{IN} = 4.85\text{ V}$	2.821	2.850	2.879	
		$10\text{ mA} \leq I_O \leq 1\text{ A}$ , $4.35\text{ V} \leq V_{IN} \leq 12\text{ V}$	2.805	2.850	2.895	
		$I_O = 10\text{ mA}$ , $V_{IN} = 5.0\text{ V}$	3.267	3.300	3.333	
		$10\text{ mA} \leq I_O \leq 1\text{ A}$ , $4.75\text{ V} \leq V_{IN} \leq 12\text{ V}$	3.235	3.300	3.365	
Line Regulation 线性调整率	$\Delta V_{OI}$	$I_O = 10\text{ mA}$ , $V_{OUT} + 1.5\text{ V} \leq V_{IN} \leq 12\text{ V}$	-	0.04	0.20	%
		$I_O = 10\text{ mA}$ , $V_{OUT} + 1.5\text{ V} \leq V_{IN} \leq 12\text{ V}$	-	1.0	6.0	mV
Load Regulation 负载调整率	$\Delta V_{OL}$	$10\text{ mA} \leq I_O \leq 1\text{ A}$ , $V_{IN} - V_{OUT} = 3\text{ V}$	-	0.10	0.40	%
		$10\text{ mA} \leq I_O \leq 1\text{ A}$ , $V_{IN} = V_{OUT} + 1.5\text{ V}$	-	1.0	10.0	mV
Dropout Voltage 压降	$\Delta V$	$I_O = 10\text{ mA}$	-	0.8	1.15	V
		$I_O = 1\text{ A}$	-	0.8	1.30	
Minimum Load Current 最小负载电流(Note 1)	$I_{min}$	$V_{IN} \leq 12\text{ V}$	-	1.7	5	mA
Quiescent Current 静态电流	$I_Q$	$V_{IN} \leq 12\text{ V}$	-	6	10	mA
Current Limit 电流范围	$I_{CL}$	$V_{IN} - V_{OUT} = 3\text{ V}$	1	1.2	-	A
Adjust Pin Current 调整端电流		$I_O = 10\text{ mA}$ , $V_{IN} - V_{OUT} = 2\text{ V}$	-	50	120	$\mu\text{ A}$
Thermal Regulation 温度特性 (Note 2)		$T_A = 25\text{ }^\circ\text{C}$ , 30 ms pulse	-	0.01	0.1	%/W
Ripple rejection 纹波抑制比 (Note 2)	$R_R$	$f_O = 120\text{ Hz}$ , $1\text{ V}_{RMS}$ , $I_O = 400\text{ mA}$ , $V_{IN} - V_{OUT} = 3\text{ V}$	60	75	-	dB

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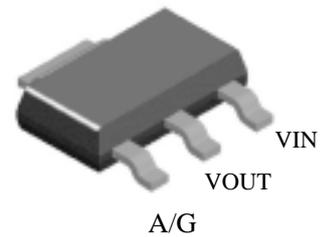
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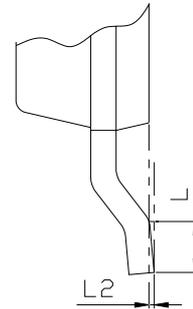
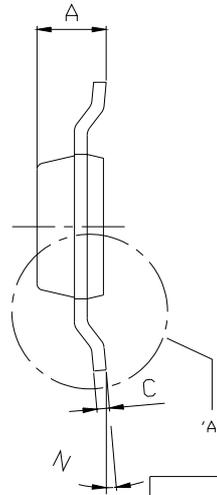
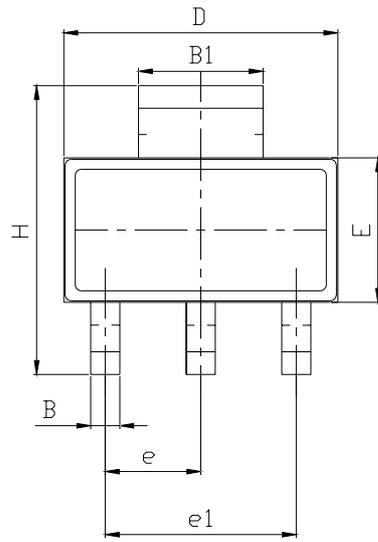
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**Note 1:** For the adjustable device, the minimum load current is the minimum current required to maintain regulation. Normally the current in the resistor divider used to set the output voltage is selected to meet the minimum load current requirement.

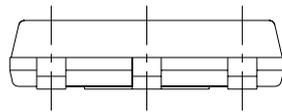
**Note 2:** These parameters, although guaranteed, are not tested in production.

## SOT-223 封装外形尺寸 ( SOT-223 DIMENSION )





DETAIL 'A'



1.ADJ/GND  
2.VOUT  
3.VIN

DIM	MILLIMETERS	
	MIN.	MAX.
A	1.80REF	
B	0.60	0.80
B1	2.90	3.10
C	0.24	0.32
D	6.30	6.70
E	3.30	3.70
e	2.30REF	
e1	4.60REF	
H	6.70	7.30
L	0.91	---
L2	0.02	0.10
N	0°	10°

SOT-223(TO-261)