



1A Precision Constant Current Source IC

SR97

SOT-23, SOT-89, SOT-223, TO-252

概述

SR97是顆低壓差的恆流驅動IC，可取代傳統以電阻限流之應用設計電路。

本IC支援工作電壓範圍2.5V~12V。

SR97由外接一個電阻來設定恆定電流，穩定度可達 $\pm 2\text{mA}$ 以內，本零件應用容易且具有低成本、低外加零件之優點。

特色

- ✓ 輸入電壓 5V 以上，最大輸入電壓較負載電壓高 12V。
- ✓ TO-252 最大輸出電流 1A
- ✓ SOT-223 最大輸出電流 1A
- ✓ SOT-89 最大輸出電流 1A
- ✓ SOT-23 最大輸出電流 600 mA
- ✓ 具有過熱保護裝置

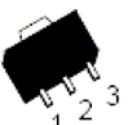
應用

- LED 定流源電路應用
- LED 尾燈、剎車燈及方向燈應用
- LED 交通警示燈應用
- LED 廣告燈應用
- LED 食人魚燈應用
- 其它 LED 燈品應用

腳位圖

3-lead TO-252	Pin Functions		
	Pin 1	Output	Output Pin.
	Pin 2	FB	Feedback Pin.
	Pin 3	+VIN	Supply Voltage Input

3-lead SOT-223	Pin Functions		
	Pin 1	Output	Output Pin.
	Pin 2	FB	Feedback Pin.
	Pin 3	+VIN	Supply Voltage Input

3-lead SOT-89	Pin Functions		
	Pin 1	Output	Output Pin.
	Pin 2	FB	Feedback Pin.
	Pin 3	+VIN	Supply Voltage Input.



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3-lead SOT-23	Pin Functions		
	Pin 1	+VIN	Supply Voltage Input
	Pin 2	Output	Output Pin.
	Pin 3	FB	Feedback Pin..

零件選項

SR97 N

代碼	封裝
J	TO-252
A	SOT-223
M	SOT-89
N	SOT-23

最大額定值

SYMBOL	PARAMETER	MAXIMUM	UNITS
V _{IN}	Input supply voltage	15+V _O	V
θ_{JA}	Thermal resistance junction to ambient(PCB mounted) SOT-23 SOT-89 SOT-223 TO-252	200 160 90 45	°C/W
T _J	Operating junction temperature range	0 to 125	°C
T _{STQ}	Storage temperature range	-40 to 150	°C
T _{LEAD}	Lead temperature (soldering) 10sec	200	°C

Note 1: Exceeding these ratings could cause damage to the device. All voltages are with respect to Ground.

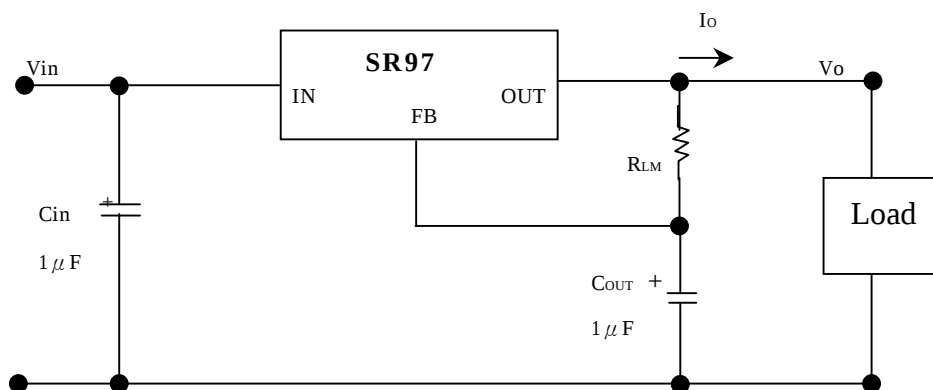
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標準應用電路

Basic Circuit:



$$\text{恆定電流設定公式： } I_o = 1.2 / R_{LM}$$

1. SR97 元件配線位置遠離輸入電流端濾波電容時，必須追加 C_{in} 靠近 SR97 元件輸入端。
2. 當輸出端使用閃爍或能量變化的負載時，必須加 C_{out} 。

電氣特性

$T_J = 0 \sim 125^\circ\text{C}$ unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITION	MIN	TYP	MAX	UNITS
I_o	OUTPUT CURRENT	$V_{in} - V_o = 2.5\text{V (TO-252)}$		800	1000	mA
		$V_{in} - V_o = 2.5\text{V (SOT-223)}$		800	1000	
		$V_{in} - V_o = 2.5\text{V (SOT-89)}$		800	1000	
		$V_{in} - V_o = 2.5\text{V (SOT-23)}$		400	600	
I_{FB}	Feedback Current	$V_{in} - V_o = 2.5 \text{ to } 10\text{V}$		50	120	uA



參考：

最大功率計算

$$P_{D(max)} = [(V_{IN(max)} - 2.5)] \times I_O$$

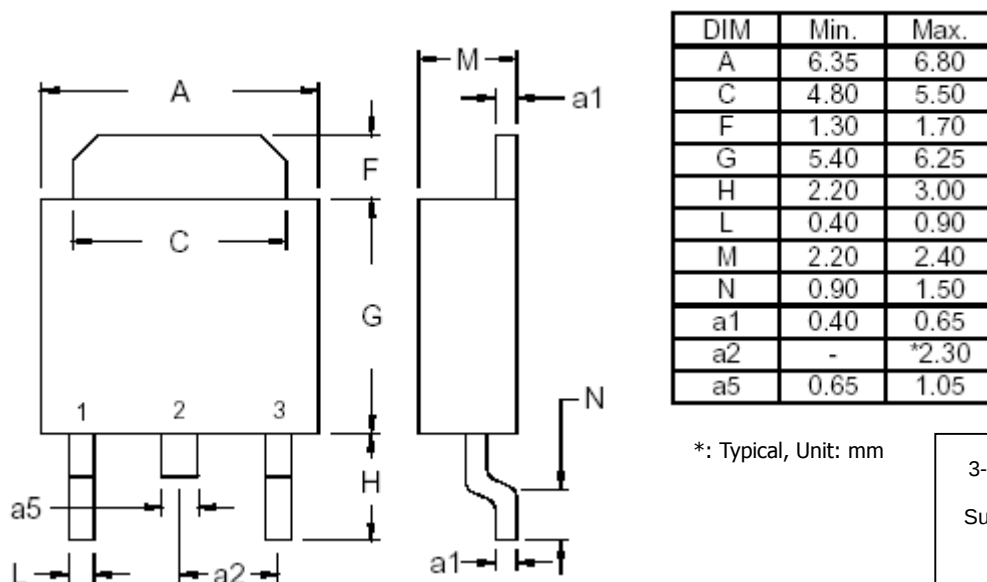
Where: $V_{IN(max)}$: 最大輸入電壓

I_O : 定流輸出

Then $\theta_{JA} = (150^{\circ}\text{C} - T_A) / P_D$

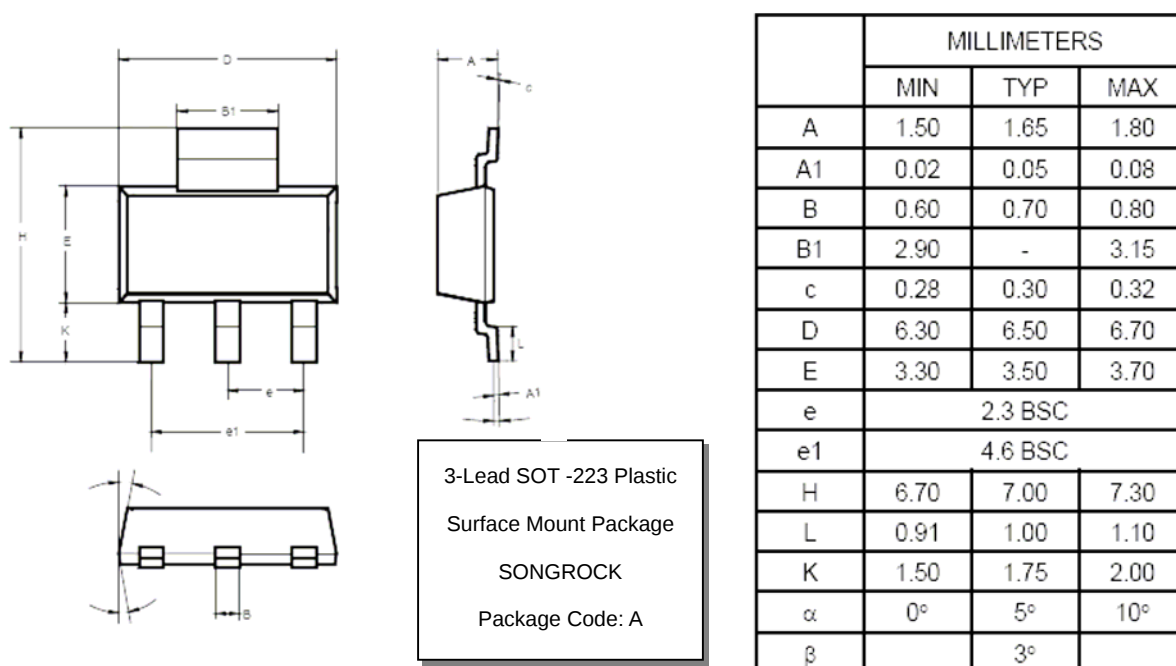


TO-252 Dimension & Mechanical Drawing



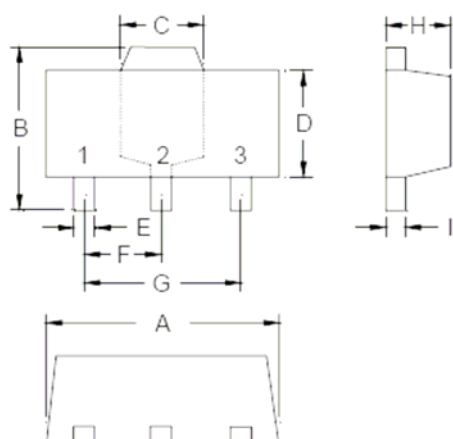
3-Lead TO -252 Plastic
Surface Mount Package
SONGROCK
Package Code: J

SOT-223 Dimension & Mechanical Drawing





SOT-89 Dimension & Mechanical Drawing



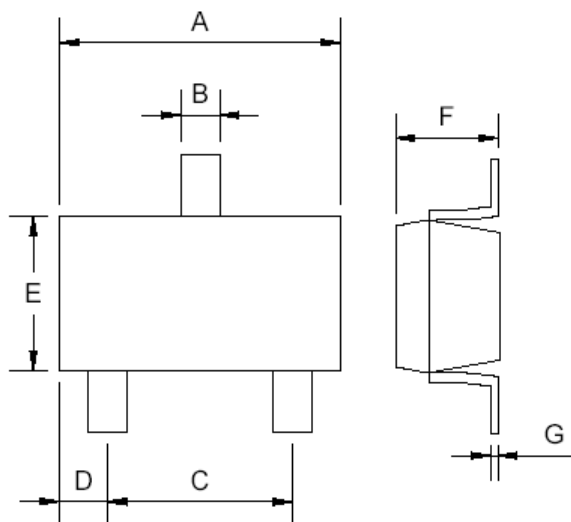
DIM	Min.	Max.
A	4.40	4.60
B	4.05	4.25
C	1.50	1.70
D	2.40	2.60
E	0.36	0.51
F	*1.50	-
G	*3.00	-
H	1.40	1.60
I	0.35	0.41

3-Lead SOT-89 Plastic
Surface Mounted Package

SONGROCK
Package Code: M

Typical, Unit: mm

SOT-23 Dimension & Mechanical Drawing



SOT-23 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.88	2.91	0.113	0.115
B	0.39	0.42	0.015	0.017
C	1.78	2.03	0.070	0.080
D	0.51	0.61	0.020	0.024
E	1.59	1.66	0.063	0.065
F	1.04	1.08	0.041	0.043
G	0.07	0.09	0.003	0.004

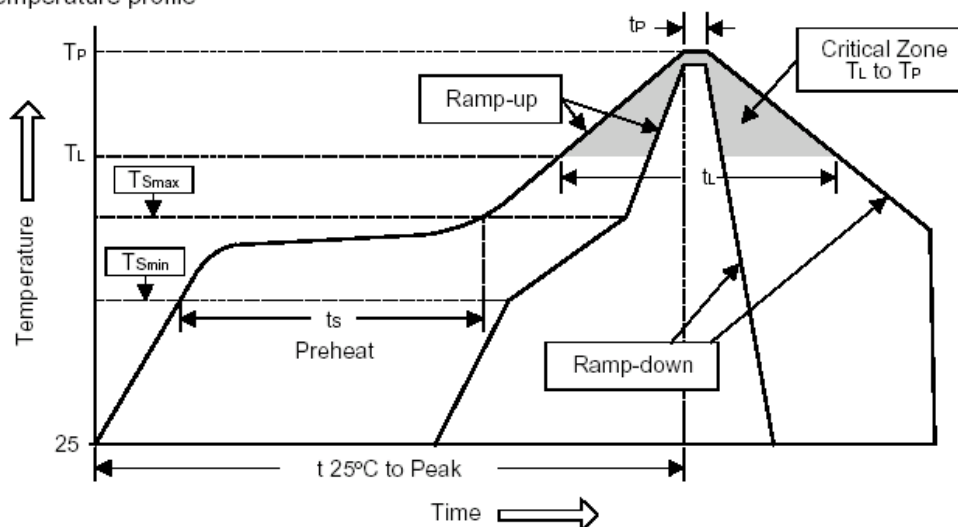
3-Lead SOT-23
Plastic Package

SONGROCK
Package Code: N

Soldering Methods for Products of SONGROCK

1. Storage environment: Temperature=10°C~35°C Humidity=65%±15%
2. Reflow soldering of surface-mount devices

Figure 1: Temperature profile



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	<3°C/sec	<3°C/sec
Preheat		
- Temperature Min (T_{Smin})	100°C	150°C
- Temperature Max (T_{Smax})	150°C	200°C
- Time (min to max) (t_s)	60~120 sec	60~180 sec
T_{Smax} to T_L		
- Ramp-up Rate	<3°C/sec	<3°C/sec
Time maintained above:		
- Temperature (T_L)	183°C	217°C
- Time (t_L)	60~150 sec	60~150 sec
Peak Temperature (T_P)	240°C +0/-5°C	260°C +0/-5°C
Time within 5°C of actual Peak Temperature (t_p)	10~30 sec	20~40 sec
Ramp-down Rate	<6°C/sec	<6°C/sec
Time 25°C to Peak Temperature	<6 minutes	<8 minutes



3. Flow (wave) soldering (solder dipping)

Products	Peak temperature	Dipping time
Pb devices.	245°C $\pm$ 5°C	5sec $\pm$ 1sec
Pb-Free devices.	260°C +0/-5°C	5sec $\pm$ 1sec