

## ■ 概述

L7810CV 系列为3端正稳压电路,TO-220 封装,有不同的固定的输出电压,应用范围广。内含过流、过热和过载保护电路。带散热片时,输出电流可达1.4A。虽然是固定稳压电路,但使用外接元件,可获得不同的电压和电流。

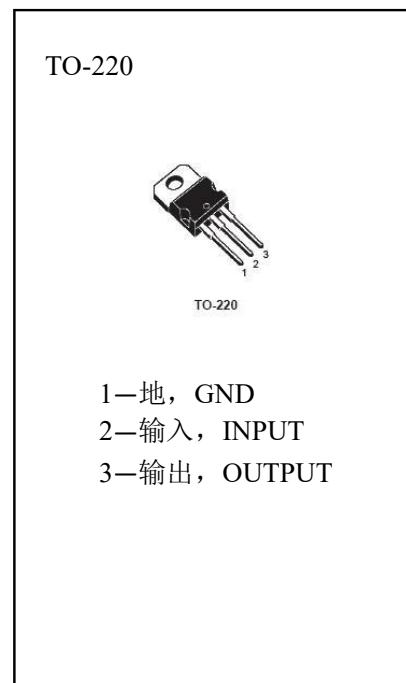
## ■ 主要特点

- 输出电流可达 1.4A, 输出电压有: 10V
- 过热保护
- 短路保护
- 输出晶体管SOA保护。

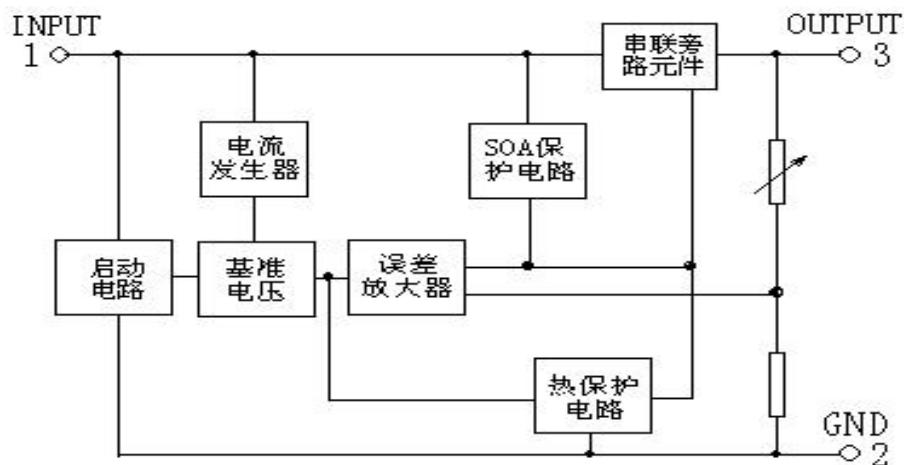
## ■ 极限值 (T<sub>a</sub>=25°C)

V <sub>I</sub> -- 输入电压	.....	35 V
R <sub>0JC</sub> --热阻 (结到壳)	.....	5°C/W
R <sub>0JA</sub> --热阻 (结到空气)	.....	65°C/W
T <sub>OPR</sub> --工作结温范围	.....	0~125°C
T <sub>STG</sub> --贮存温度范围	.....	-65~150°C

## ■ 外形图及引脚排列



## ■ 功能框图





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L7810CV

(参见测试电路, 除非另有说明,  $0^{\circ}\text{C} \leq T_J \leq 125^{\circ}\text{C}$ ,  $I_O = 500\text{mA}$ ,  $V_I = 10\text{V}$ ,  $C_I = 0.33\mu\text{F}$ ,  $C_O = 0.1\mu\text{F}$ )

参数符号	符 号 说 明	最 小 值	典 型 值	最 大 值	单 位	测 试 条 件
$V_0$	输出电压	9. 6	10	10. 4	V	$T_J = 25^{\circ}\text{C}$
		9. 5	10	10. 5		$5. 0\text{mA} \leq I_0 \leq 1. 4\text{A}$ , $P_0 \leq 15\text{W}$ , $12. 5\text{V} \leq V_I \leq 25\text{V}$
$\Delta V_0$	电压调整率*		10	200	mV	$T_J = 25^{\circ}\text{C}$ , $12. 5\text{V} \leq V_I \leq 25\text{V}$
			3	100		$T_J = 25^{\circ}\text{C}$ , $13\text{V} \leq V_I \leq 20\text{V}$
$\Delta V_0$	负载调整率*		12	200	mV	$T_J = 25^{\circ}\text{C}$ , $5. 0\text{mA} \leq I_0 \leq 1. 4\text{A}$
			4	100		$T_J = 25^{\circ}\text{C}$ , $250\text{mA} \leq I_0 \leq 750\text{mA}$
$I_Q$	静态电流		5. 1	8	mA	$T_J = 25^{\circ}\text{C}$
$\Delta I_Q$	静态电流变化率			0. 5	mA	$5\text{mA} \leq I_0 \leq 1. 4\text{A}$
				1. 0		$12. 5\text{V} \leq V_I \leq 29\text{V}$
$\Delta V_0/\Delta T$	输出电压温度系数		-1		mV/°C	$I_0 = 5\text{mA}$
$V_N$	输出噪声电压		58		μV	$T_A = 25^{\circ}\text{C}$ , $10\text{Hz} \leq f \leq 100\text{kHz}$
RR	纹波抑制比	56	71		dB	$f = 120\text{Hz}$ , $14\text{V} \leq V_I \leq 24\text{V}$
$V_D$	下降电压		2		V	$I_0 = 1\text{A}$ , $T_J = 25^{\circ}\text{C}$
$R_O$	输出阻抗		17		mA	$f = 1\text{kHz}$
$I_{SC}$	短路电流		250		mA	$V_I = 35\text{V}$ , $T_A = 25^{\circ}\text{C}$
$I_{PK}$	峰值电流		2. 2		A	$T_J = 25^{\circ}\text{C}$

## ■ 测试电路

图1、DC 参数测试

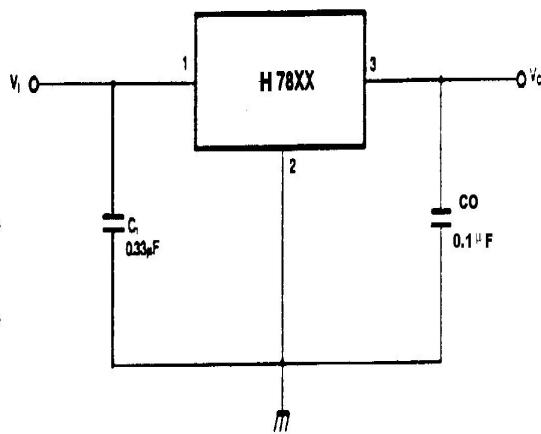


图2、负载调整率测试

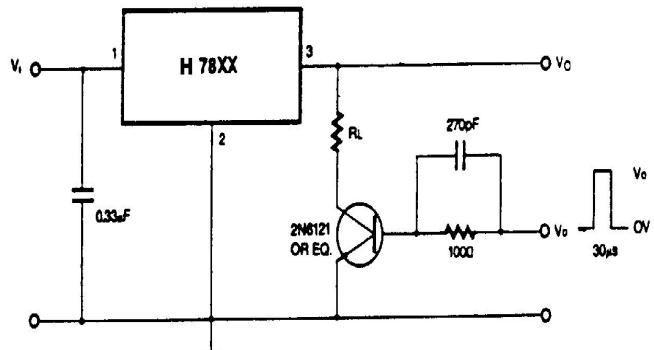
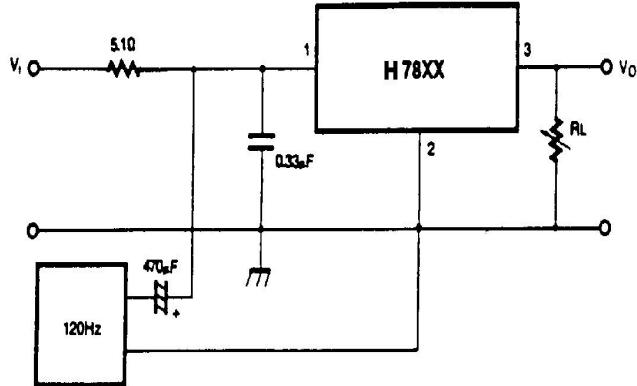


图3、纹波抑制比测试



## ■ 应用电路

图4、固定输出稳压器

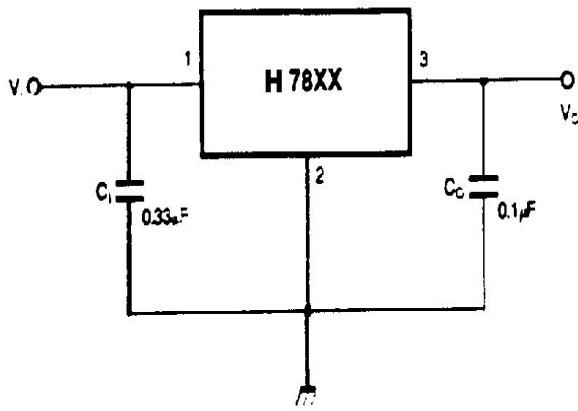


图5、恒流源

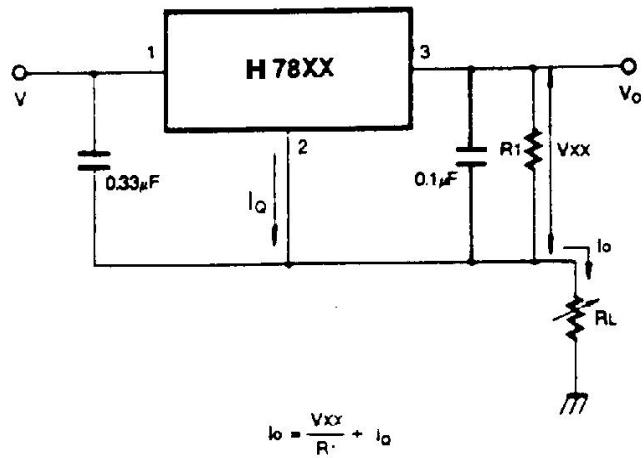
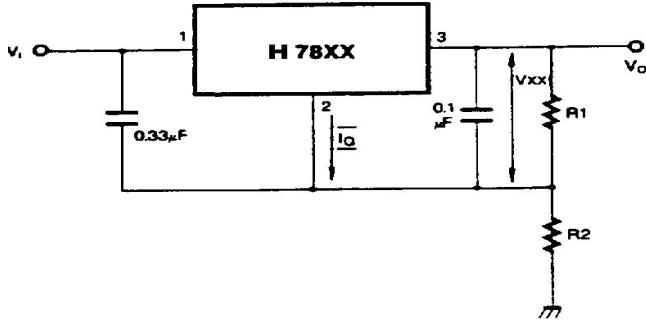


图6、提高输出电压电路



$$I_{R1} \geq 5 I_0$$

$$V_0 = V_{xx} \left( 1 + \frac{R_2}{R_1} \right) + I_0 R_2$$

注:

- 1) 输出电压对应于“XX”值。输入电压, 即使是纹波电压中的低值点, 都必须高于所需输出电压 2V 以上。
- 2) 当稳压器远离电源滤波器时, 要求用 C1。
- 3) C0 可改善稳定性和瞬态响应。

## 应用电路(续)

图 7、可调整输出稳压器(7~30V)

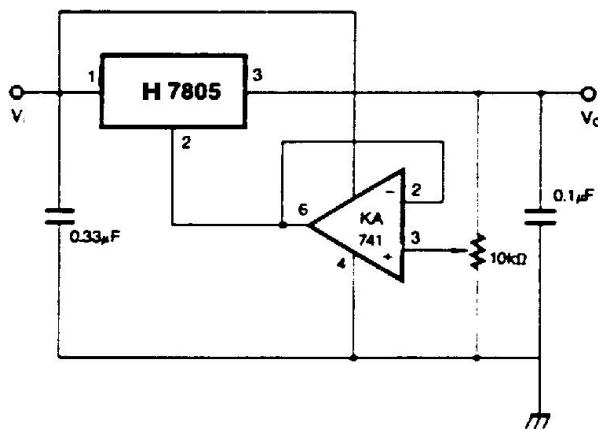


图 9、带短路保护的大电流输出

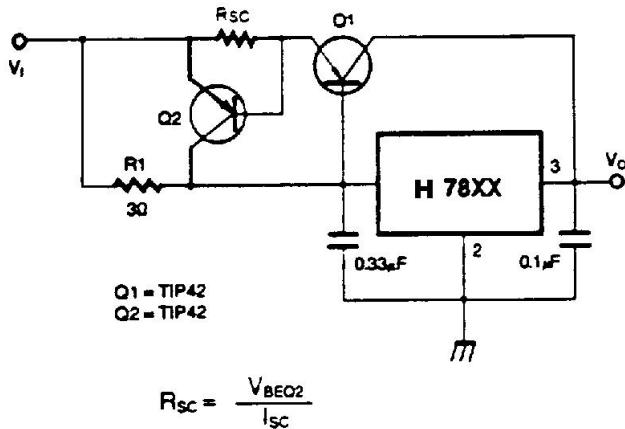


图 11、分离电源(±15V-1A)

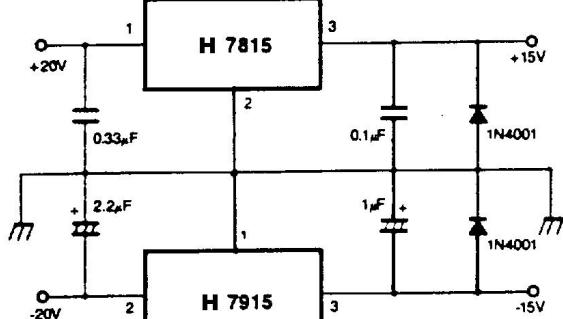


图 8、大电流稳压器

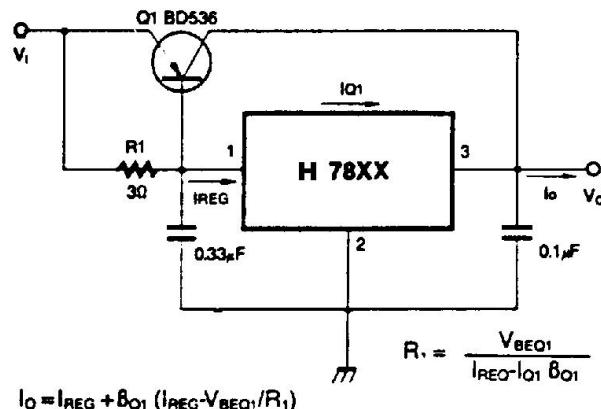


图 10、跟踪稳压器

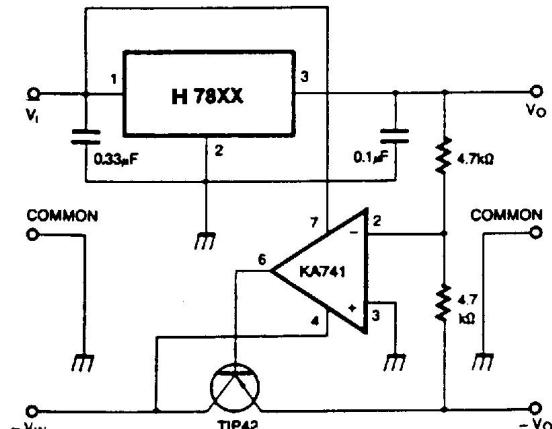


图 12、负输出电压电路

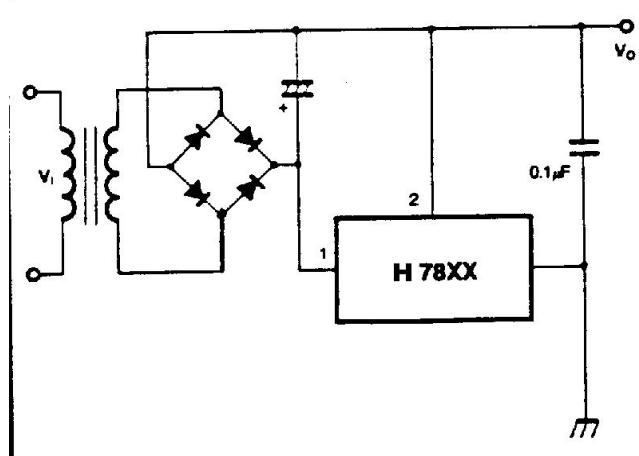
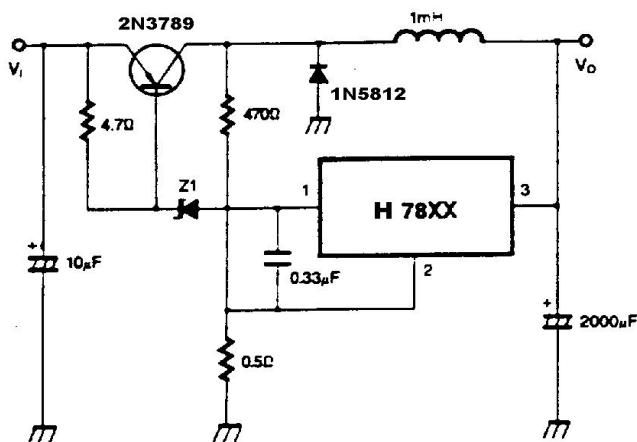
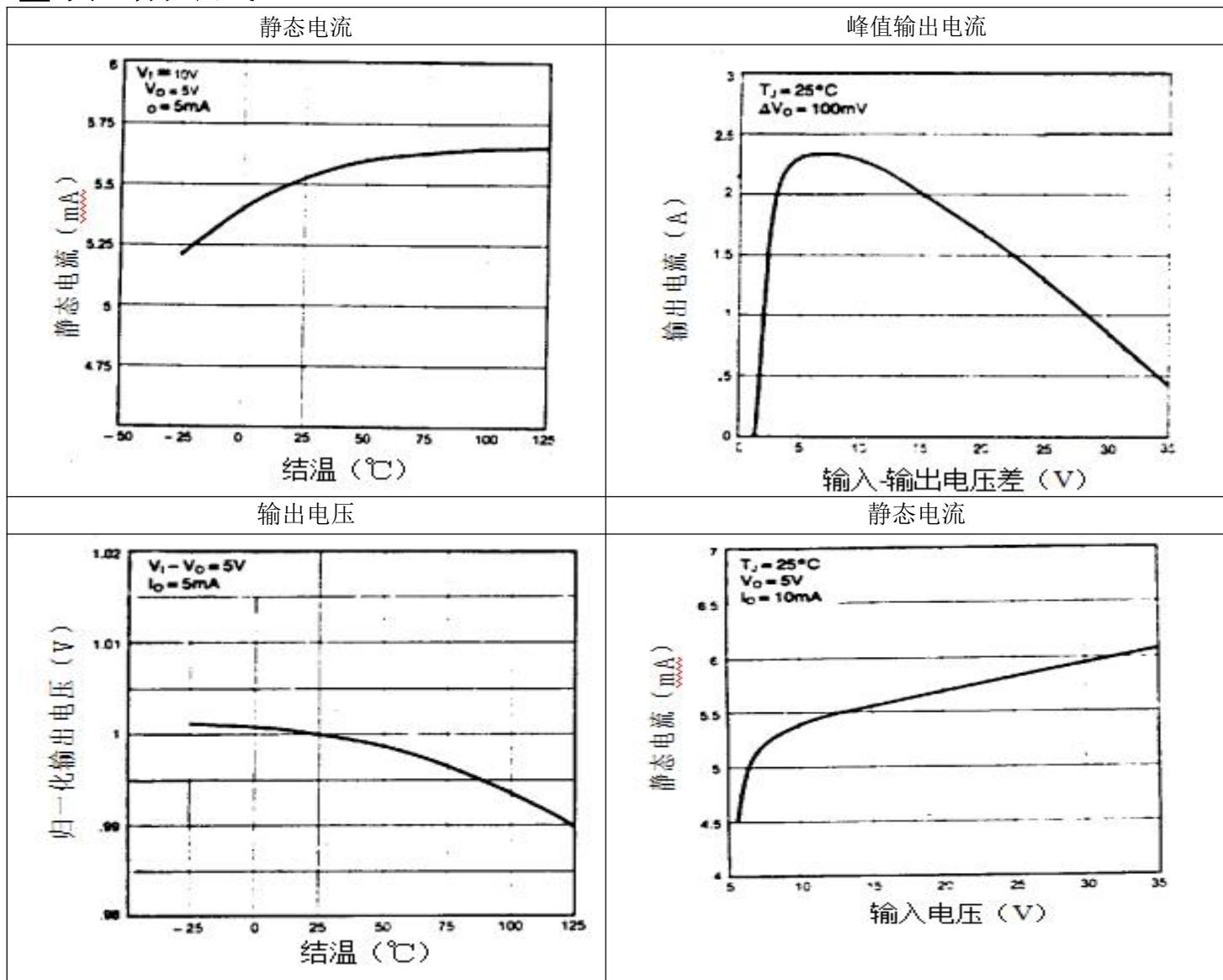


图13、开关稳压器



## 典型特性曲线





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**L7810CV**

**NOTE:**

1. Exceeding the maximum ratings of the device in performance may cause damage to the device, even the permanent failure, which may affect the dependability of the machine. Please do not exceed the absolute maximum ratings of the device when circuit designing.
2. When installing the heat sink, please pay attention to the torsional moment and the smoothness of the heat sink.
3. MOSFETs is the device which is sensitive to the static electricity, it is necessary to protect the device from being damaged by the static electricity when using it.
4. Shenzhen Minos reserves the right to make changes in this specification sheet and is subject to change without prior notice.

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