

## 双极型线性集成电路

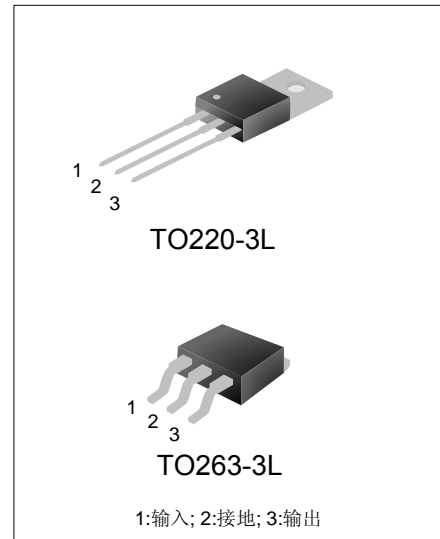
### 三端1.2A正电源稳压电路

#### 概述

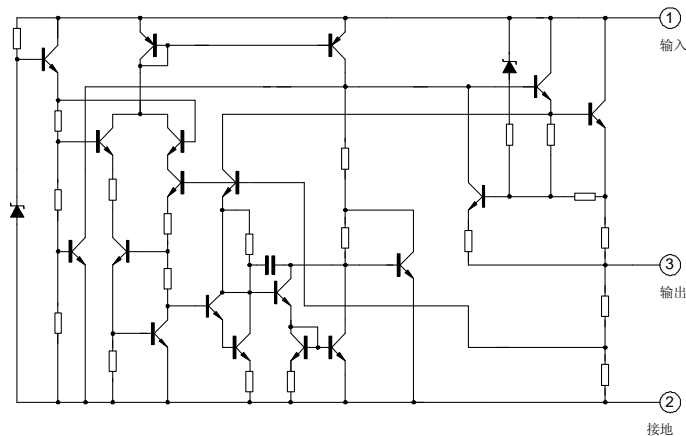
L78xx 系列是三端正电源稳压电路，它的封装形式为 TO-263 TO-220。它有一系列固定的电压输出，应用非常的广泛。每种类型由于内部电流的限制，以及过热保护和安全工作区的保护，使它基本上不会损坏。如果能够提供足够的散热片，它们就能够提供大于1.5A的输出电流。虽然是按照固定电压值来设计的，但是当接入适当的外部器件后，就能能获得各种不同的电压和电流。

#### 特点

- \*最大输出电流为 1.2A
- \*输出电压为 5V;6V;8V;9V;10V;12V;15V;18V;24V
- \*热过载保护
- \*短路保护
- \*输出晶体管安全工作区保护



#### 内部框图



#### 极限参数 (Ta=25°C)

| 参数                                 | 符号   | 数值         | 单位     |
|------------------------------------|------|------------|--------|
| 输入电压<br>(Vo=5V to 18V)<br>(Vo=24V) | Vi   | 35<br>40   | V<br>V |
| 结到空气热阻                             | RθJA | 65         | °C/W   |
| 结到壳热阻                              | RθJC | 5          | °C/W   |
| 工作温度                               | Topr | 0~ +125    | °C     |
| 贮存温度                               | Tstg | -65 ~ +150 | °C     |

## L7805 电参数

(除特别说明,  $0 < T_j < 125^\circ\text{C}$ ,  $I_o = 500\text{mA}$ ,  $V_i = 10\text{V}$ ,  $C_i = 0.33\mu\text{F}$ ,  $C_o = 0.1\mu\text{F}$ )

| 参数      | 符号                      | 测试条件  | 最小值  | 典型值  | 最大值  | 单位                   |
|---------|-------------------------|---|------|------|------|----------------------|
| 输出电压    | $V_o$                   | $T_j = 25^\circ\text{C}$  | 4.8  | 5.0  | 5.2  | V                    |
|         |                         | $5.0\text{mA} < I_o < 1.2\text{A}$ , $P_o < 15\text{W}$<br>$V_i = 7.5\text{V to } 20\text{V}$ | 4.75 | 5.00 | 5.25 | V                    |
| 线性调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $V_i = 7.5\text{V to } 25\text{V}$                                 |      | 4.0  | 100  | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $V_i = 8\text{V to } 12\text{V}$                                   |      | 1.6  | 50   | mV                   |
| 负载调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $I_o = 5.0\text{mA to } 1.5\text{A}$                               |      | 9    | 100  | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $I_o = 250\text{mA to } 750\text{mA}$                              |      | 4    | 50   | mV                   |
| 静态电流    | $I_Q$                   | $T_j = 25^\circ\text{C}$  |      | 5.0  | 8    | mA                   |
| 静态电流变化率 | $\Delta I_Q$            | $I_o = 5\text{mA to } 1.0\text{A}$  |      | 0.03 | 0.5  | mA                   |
|         |                         | $V_i = 8\text{V to } 25\text{V}$  |      | 0.3  | 0.8  | mA                   |
| 输出电压温漂  | $\Delta V_o / \Delta T$ | $I_o = 5\text{mA}$  |      | 0.8  |      | mV/ $^\circ\text{C}$ |
| 输出噪音电压  | $V_N$                   | $f = 10\text{Hz to } 100\text{kHz}$ , $T_a = 25^\circ\text{C}$                                |      | 42   |      | $\mu\text{V}$        |
| 纹波抑制比   | RR                      | $f = 120\text{Hz}$ , $V_i = 8\text{V to } 18\text{V}$   | 62   | 73   |      | dB                   |
| 输入输出电压差 | $V_o$                   | $I_o = 1.0\text{A}$ , $T_j = 25^\circ\text{C}$  |      | 2    |      | V                    |
| 输出阻抗    | $R_o$                   | $f = 1\text{kHz}$   |      | 15   |      | $\text{m}\Omega$     |
| 短路电流    | $I_{sc}$                | $V_i = 35\text{V}$ , $T_a = 25^\circ\text{C}$   |      | 230  |      | mA                   |
| 峰值电流    | $I_{pk}$                | $T_j = 25^\circ\text{C}$  |      | 2.2  |      | A                    |

## L7806 电参数

(除特别说明,  $0 < T_j < 125^\circ\text{C}$ ,  $I_o = 500\text{mA}$ ,  $V_i = 11\text{V}$ ,  $C_i = 0.33\mu\text{F}$ ,  $C_o = 0.1\mu\text{F}$ )

| 参数      | 符号                      | 测试参数  | 最小值  | 典型值  | 最大值  | 单位                   |
|---------|-------------------------|---|------|------|------|----------------------|
| 输出电压    | $V_o$                   | $T_j = 25^\circ\text{C}$  | 5.75 | 6.00 | 6.25 | V                    |
|         |                         | $5.0\text{mA} < I_o < 1.2\text{A}$ , $P_o < 15\text{W}$<br>$V_i = 8.5\text{V to } 21\text{V}$ | 5.7  | 6.0  | 6.3  | V                    |
| 线性调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $V_i = 8.5\text{V to } 25\text{V}$                                 |      | 5    | 120  | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $V_i = 9\text{V to } 13\text{V}$                                   |      | 1.5  | 60   | mV                   |
| 负载调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $I_o = 5.0\text{mA to } 1.5\text{A}$                               |      | 9    | 130  | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $I_o = 250\text{mA to } 750\text{mA}$                              |      | 3    | 60   | mV                   |
| 静态电流    | $I_Q$                   | $T_j = 25^\circ\text{C}$  |      | 5.0  | 8    | mA                   |
| 静态电流变化率 | $\Delta I_Q$            | $I_o = 5\text{mA to } 1.0\text{A}$  |      |      | 0.5  | mA                   |
|         |                         | $V_i = 9\text{V to } 25\text{V}$  |      |      | 0.8  | mA                   |
| 输出电压温漂  | $\Delta V_o / \Delta T$ | $I_o = 5\text{mA}$  |      | 0.8  |      | mV/ $^\circ\text{C}$ |
| 输出噪音电压  | $V_N$                   | $f = 10\text{Hz to } 100\text{kHz}$ , $T_a = 25^\circ\text{C}$                                |      | 45   |      | $\mu\text{V}$        |
| 纹波抑制比   | RR                      | $f = 120\text{Hz}$ , $V_i = 9\text{V to } 19\text{V}$   | 59   | 75   |      | dB                   |
| 输入输出电压差 | $V_o$                   | $I_o = 1.0\text{A}$ , $T_j = 25^\circ\text{C}$  |      | 2    |      | V                    |
| 输出阻抗    | $R_o$                   | $f = 1\text{kHz}$   |      | 19   |      | $\text{m}\Omega$     |
| 短路电流    | $I_{sc}$                | $V_i = 35\text{V}$ , $T_a = 25^\circ\text{C}$   |      | 250  |      | mA                   |
| 峰值电流    | $I_{pk}$                | $T_j = 25^\circ\text{C}$  |      | 2.2  |      | A                    |

## L7808 电参数

(除特别说明,  $0 < T_j < 125^\circ\text{C}$ ,  $I_o = 500\text{mA}$ ,  $V_i = 14\text{V}$ ,  $C_i = 0.33\mu\text{F}$ ,  $C_o = 0.1\mu\text{F}$ )

| 参数      | 符号                      | 测试条件   | 最小值 | 典型值  | 最大值 | 单位                   |
|---------|-------------------------|--|-----|------|-----|----------------------|
| 输出电压    | $V_o$                   | $T_j = 25^\circ\text{C}$   | 7.7 | 8.0  | 8.3 | V                    |
|         |                         | $5.0\text{mA} < I_o < 1.2\text{A}$ , $P_o < 15\text{W}$<br>$V_i = 11\text{V to } 23\text{V}$ | 7.6 | 8.0  | 8.4 | V                    |
| 线性调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $V_i = 10.5\text{V to } 25\text{V}$                               |     | 5.0  | 160 | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $V_i = 11\text{V to } 17\text{V}$                                 |     | 2.0  | 80  | mV                   |
| 负载调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $I_o = 5.0\text{mA to } 1.5\text{A}$                              |     | 10   | 160 | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $I_o = 250\text{mA to } 750\text{mA}$                             |     | 5.0  | 80  | mV                   |
| 静态电流    | $I_Q$                   | $T_j = 25^\circ\text{C}$   |     | 5.0  | 8   | mA                   |
| 静态电流变化率 | $\Delta I_Q$            | $I_o = 5\text{mA to } 1.0\text{A}$   |     | 0.05 | 0.5 | mA                   |
|         |                         | $V_i = 11\text{V to } 25\text{V}$  |     | 0.5  | 1.0 | mA                   |
| 输出电压温漂  | $\Delta V_o / \Delta T$ | $I_o = 5\text{mA}$   |     | 0.8  |     | mV/ $^\circ\text{C}$ |
| 输出噪音电压  | $V_N$                   | $f = 10\text{Hz to } 100\text{kHz}$ , $T_a = 25^\circ\text{C}$                               |     | 52   |     | $\mu\text{V}$        |
| 纹波抑制比   | RR                      | $f = 120\text{Hz}$ , $V_i = 11.5\text{V to } 21.5\text{V}$                                   | 56  | 73   |     | dB                   |
| 输入输出电压差 | $V_o$                   | $I_o = 1.0\text{A}$ , $T_j = 25^\circ\text{C}$   |     | 2    |     | V                    |
| 输出阻抗    | $R_o$                   | $f = 1\text{kHz}$  |     | 17   |     | $\text{m}\Omega$     |
| 短路电流    | $I_{sc}$                | $V_i = 35\text{V}$ , $T_a = 25^\circ\text{C}$  |     | 230  |     | mA                   |
| 峰值电流    | $I_{pk}$                | $T_j = 25^\circ\text{C}$   |     | 2.2  |     | A                    |

## L7809 电参数

(除特别说明,  $0 < T_j < 125^\circ\text{C}$ ,  $I_o = 500\text{mA}$ ,  $V_i = 15\text{V}$ ,  $C_i = 0.33\mu\text{F}$ ,  $C_o = 0.1\mu\text{F}$ )

| 参数      | 符号                      | 测试条件   | 最小值  | 典型值  | 最大值  | 单位                   |
|---------|-------------------------|--|------|------|------|----------------------|
| 输出电压    | $V_o$                   | $T_j = 25^\circ\text{C}$   | 8.65 | 9.00 | 9.35 | V                    |
|         |                         | $5.0\text{mA} < I_o < 1.2\text{A}$ , $P_o < 15\text{W}$<br>$V_i = 11.5\text{V to } 24\text{V}$ | 8.6  | 9.0  | 9.4  | V                    |
| 线性调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $V_i = 11.5\text{V to } 25\text{V}$                                 |      | 6    | 180  | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $V_i = 12\text{V to } 25\text{V}$                                   |      | 2    | 90   | mV                   |
| 负载调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $I_o = 5.0\text{mA to } 1.5\text{A}$                                |      | 12   | 180  | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $I_o = 250\text{mA to } 750\text{mA}$                               |      | 4    | 90   | mV                   |
| 静态电流    | $I_Q$                   | $T_j = 25^\circ\text{C}$   |      | 5.0  | 8    | mA                   |
| 静态电流变化率 | $\Delta I_Q$            | $I_o = 5\text{mA to } 1.0\text{A}$   |      |      | 0.5  | mA                   |
|         |                         | $V_i = 12\text{V to } 26\text{V}$  |      |      | 0.8  | mA                   |
| 输出电压温漂  | $\Delta V_o / \Delta T$ | $I_o = 5\text{mA}$   |      | 1    |      | mV/ $^\circ\text{C}$ |
| 输出噪音电压  | $V_N$                   | $f = 10\text{Hz to } 100\text{kHz}$ , $T_a = 25^\circ\text{C}$                                 |      | 58   |      | $\mu\text{V}$        |
| 纹波抑制比   | RR                      | $f = 120\text{Hz}$ , $V_i = 13\text{V to } 23\text{V}$   | 56   | 71   |      | dB                   |
| 输入输出电压差 | $V_o$                   | $I_o = 1.0\text{A}$ , $T_j = 25^\circ\text{C}$   |      | 2    |      | V                    |
| 输出阻抗    | $R_o$                   | $f = 1\text{kHz}$  |      | 15   |      | $\text{m}\Omega$     |
| 短路电流    | $I_{sc}$                | $V_i = 35\text{V}$ , $T_a = 25^\circ\text{C}$  |      | 250  |      | mA                   |
| 峰值电流    | $I_{pk}$                | $T_j = 25^\circ\text{C}$   |      | 2.2  |      | A                    |

### L7810 电参数

(除特别说明,  $0 < T_j < 125^\circ\text{C}$ ,  $I_o = 500\text{mA}$ ,  $V_i = 16\text{V}$ ,  $C_i = 0.33\mu\text{F}$ ,  $C_o = 0.1\mu\text{F}$ )

| 参数      | 符号                      | 测试条件   | 最小值 | 典型值 | 最大值  | 单位                   |
|---------|-------------------------|--|-----|-----|------|----------------------|
| 输出电压    | $V_o$                   | $T_j = 25^\circ\text{C}$   | 9.6 | 10  | 10.4 | V                    |
|         |                         | $5.0\text{mA} < I_o < 1.2\text{A}$ , $P_o < 15\text{W}$<br>$V_i = 12.5\text{V to } 25\text{V}$ | 9.5 | 10  | 10.5 | V                    |
| 线性调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $V_i = 12.5\text{V to } 25\text{V}$                                 |     | 10  | 200  | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $V_i = 13\text{V to } 20\text{V}$                                   |     | 3   | 100  | mV                   |
| 负载调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $I_o = 5.0\text{mA to } 1.5\text{A}$                                |     | 12  | 200  | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $I_o = 250\text{mA to } 750\text{mA}$                               |     | 4   | 100  | mV                   |
| 静态电流    | $I_Q$                   | $T_j = 25^\circ\text{C}$   |     | 5.0 | 8    | mA                   |
| 静态电流变化率 | $\Delta I_Q$            | $I_o = 5\text{mA to } 1.0\text{A}$   |     |     | 0.5  | mA                   |
|         |                         | $V_i = 13\text{V to } 29\text{V}$  |     |     | 0.8  | mA                   |
| 输出电压温漂  | $\Delta V_o / \Delta T$ | $I_o = 5\text{mA}$   |     | 1   |      | mV/ $^\circ\text{C}$ |
| 输出噪音电压  | $V_N$                   | $f = 10\text{Hz to } 100\text{kHz}$ , $T_a = 25^\circ\text{C}$                                 |     | 58  |      | $\mu\text{V}$        |
| 纹波抑制比   | RR                      | $f = 120\text{Hz}$ , $V_i = 14\text{V to } 24\text{V}$   | 56  | 71  |      | dB                   |
| 输入输出电压差 | $V_o$                   | $I_o = 1.0\text{A}$ , $T_j = 25^\circ\text{C}$   |     | 2   |      | V                    |
| 输出阻抗    | $R_o$                   | $f = 1\text{kHz}$  |     | 17  |      | $\text{m}\Omega$     |
| 短路电流    | $I_{sc}$                | $V_i = 35\text{V}$ , $T_a = 25^\circ\text{C}$  |     | 250 |      | mA                   |
| 峰值电流    | $I_{pk}$                | $T_j = 25^\circ\text{C}$   |     | 2.2 |      | A                    |

### L7812 电参数

(除特别说明,  $0 < T_j < 125^\circ\text{C}$ ,  $I_o = 500\text{mA}$ ,  $V_i = 16\text{V}$ ,  $C_i = 0.33\mu\text{F}$ ,  $C_o = 0.1\mu\text{F}$ )

| 参数      | 符号                      | 测试条件   | 最小值  | 典型值  | 最大值  | 单位                   |
|---------|-------------------------|--|------|------|------|----------------------|
| 输出电压    | $V_o$                   | $T_j = 25^\circ\text{C}$   | 11.5 | 12.0 | 12.5 | V                    |
|         |                         | $5.0\text{mA} < I_o < 1.2\text{A}$ , $P_o < 15\text{W}$<br>$V_i = 14.5\text{V to } 27\text{V}$ | 11.4 | 12   | 12.6 | V                    |
| 线性调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $V_i = 14.5\text{V to } 30\text{V}$                                 |      | 10   | 240  | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $V_i = 16\text{V to } 22\text{V}$                                   |      | 3    | 120  | mV                   |
| 负载调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $I_o = 5.0\text{mA to } 1.5\text{A}$                                |      | 11   | 240  | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $I_o = 250\text{mA to } 750\text{mA}$                               |      | 5.0  | 120  | mV                   |
| 静态电流    | $I_Q$                   | $T_j = 25^\circ\text{C}$   |      | 5.1  | 8    | mA                   |
| 静态电流变化率 | $\Delta I_Q$            | $I_o = 5\text{mA to } 1.0\text{A}$   |      |      | 0.5  | mA                   |
|         |                         | $V_i = 15\text{V to } 30\text{V}$  |      |      | 0.8  | mA                   |
| 输出电压温漂  | $\Delta V_o / \Delta T$ | $I_o = 5\text{mA}$   |      | 1    |      | mV/ $^\circ\text{C}$ |
| 输出噪音电压  | $V_N$                   | $f = 10\text{Hz to } 100\text{kHz}$ , $T_a = 25^\circ\text{C}$                                 |      | 76   |      | $\mu\text{V}$        |
| 纹波抑制比   | RR                      | $f = 120\text{Hz}$ , $V_i = 15\text{V to } 25\text{V}$   | 55   | 71   |      | dB                   |
| 输入输出电压差 | $V_o$                   | $I_o = 1.0\text{A}$ , $T_j = 25^\circ\text{C}$   |      | 2    |      | V                    |
| 输出阻抗    | $R_o$                   | $f = 1\text{kHz}$  |      | 18   |      | $\text{m}\Omega$     |
| 短路电流    | $I_{sc}$                | $V_i = 35\text{V}$ , $T_a = 25^\circ\text{C}$  |      | 230  |      | mA                   |
| 峰值电流    | $I_{pk}$                | $T_j = 25^\circ\text{C}$   |      | 2.2  |      | A                    |

## L7815 电参数

(除特别说明,  $0 < T_j < 125^\circ\text{C}$ ,  $I_o = 500\text{mA}$ ,  $V_i = 23\text{V}$ ,  $C_i = 0.33\mu\text{F}$ ,  $C_o = 0.1\mu\text{F}$ )

| 参数      | 符号                      | 测试条件   | 最小值   | 典型值  | 最大值   | 单位                   |
|---------|-------------------------|--|-------|------|-------|----------------------|
| 输出电压    | $V_o$                   | $T_j = 25^\circ\text{C}$   | 14.4  | 15.0 | 15.6  | V                    |
|         |                         | $5.0\text{mA} < I_o < 1.2\text{A}$ , $P_o < 15\text{W}$<br>$V_i = 17.5\text{V to } 30\text{V}$ | 14.25 | 15   | 15.75 | V                    |
| 线性调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $V_i = 17.5\text{V to } 30\text{V}$                                 |       | 11   | 300   | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $V_i = 20\text{V to } 26\text{V}$                                   |       | 3    | 150   | mV                   |
| 负载调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $I_o = 5.0\text{mA to } 1.5\text{A}$                                |       | 12   | 300   | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $I_o = 250\text{mA to } 750\text{mA}$                               |       | 4    | 150   | mV                   |
| 静态电流    | $I_Q$                   | $T_j = 25^\circ\text{C}$   |       | 5.2  | 8     | mA                   |
| 静态电流变化率 | $\Delta I_Q$            | $I_o = 5\text{mA to } 1.0\text{A}$   |       |      | 0.5   | mA                   |
|         |                         | $V_i = 18\text{V to } 30\text{V}$  |       |      | 0.8   | mA                   |
| 输出电压温漂  | $\Delta V_o / \Delta T$ | $I_o = 5\text{mA}$   |       | 1    |       | mV/ $^\circ\text{C}$ |
| 输出噪声电压  | $V_N$                   | $f = 10\text{Hz to } 100\text{kHz}$ , $T_a = 25^\circ\text{C}$                                 |       | 90   |       | $\mu\text{V}$        |
| 纹波抑制比   | RR                      | $f = 120\text{Hz}$ , $V_i = 18.5\text{V to } 28.5\text{V}$                                     | 54    | 70   |       | dB                   |
| 输入输出电压差 | $V_o$                   | $I_o = 1.0\text{A}$ , $T_j = 25^\circ\text{C}$   |       | 2    |       | V                    |
| 输出阻抗    | $R_o$                   | $f = 1\text{kHz}$  |       | 19   |       | $\text{m}\Omega$     |
| 短路电流    | $I_{sc}$                | $V_i = 35\text{V}$ , $T_a = 25^\circ\text{C}$  |       | 250  |       | mA                   |
| 峰值电流    | $I_{pk}$                | $T_j = 25^\circ\text{C}$   |       | 2.2  |       | A                    |

## L7818 电参数

(除特别说明,  $0 < T_j < 125^\circ\text{C}$ ,  $I_o = 500\text{mA}$ ,  $V_i = 23\text{V}$ ,  $C_i = 0.33\mu\text{F}$ ,  $C_o = 0.1\mu\text{F}$ )

| 参数      | 符号                      | 测试条件   | 最小值  | 典型值  | 最大值  | 单位                   |
|---------|-------------------------|--|------|------|------|----------------------|
| 输出电压    | $V_o$                   | $T_j = 25^\circ\text{C}$   | 17.3 | 18.0 | 18.7 | V                    |
|         |                         | $5.0\text{mA} < I_o < 1.2\text{A}$ , $P_o < 15\text{W}$<br>$V_i = 21\text{V to } 33\text{V}$ | 17.1 | 18   | 18.9 | V                    |
| 线性调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $V_i = 21\text{V to } 33\text{V}$                                 |      | 15   | 360  | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $V_i = 24\text{V to } 30\text{V}$                                 |      | 5    | 180  | mV                   |
| 负载调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $I_o = 5.0\text{mA to } 1.5\text{A}$                              |      | 15   | 360  | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $I_o = 250\text{mA to } 750\text{mA}$                             |      | 5.0  | 180  | mV                   |
| 静态电流    | $I_Q$                   | $T_j = 25^\circ\text{C}$   |      | 5.2  | 8    | mA                   |
| 静态电流变化率 | $\Delta I_Q$            | $I_o = 5\text{mA to } 1.0\text{A}$   |      |      | 0.5  | mA                   |
|         |                         | $V_i = 21\text{V to } 32\text{V}$  |      |      | 0.8  | mA                   |
| 输出电压温漂  | $\Delta V_o / \Delta T$ | $I_o = 5\text{mA}$   |      | 1    |      | mV/ $^\circ\text{C}$ |
| 输出噪声电压  | $V_N$                   | $f = 10\text{Hz to } 100\text{kHz}$ , $T_a = 25^\circ\text{C}$                               |      | 110  |      | $\mu\text{V}$        |
| 纹波抑制比   | RR                      | $f = 120\text{Hz}$ , $V_i = 22\text{V to } 32\text{V}$                                       | 53   | 69   |      | dB                   |
| 输入输出电压差 | $V_o$                   | $I_o = 1.0\text{A}$ , $T_j = 25^\circ\text{C}$   |      | 2    |      | V                    |
| 输出阻抗    | $R_o$                   | $f = 1\text{kHz}$  |      | 22   |      | $\text{m}\Omega$     |
| 短路电流    | $I_{sc}$                | $V_i = 35\text{V}$ , $T_a = 25^\circ\text{C}$  |      | 250  |      | mA                   |
| 峰值电流    | $I_{pk}$                | $T_j = 25^\circ\text{C}$   |      | 2.2  |      | A                    |

### L7824 电参数

(除特别说明,  $0 < T_j < 125^\circ\text{C}$ ,  $I_o = 500\text{mA}$ ,  $V_i = 33\text{V}$ ,  $C_i = 0.33\mu\text{F}$ ,  $C_o = 0.1\mu\text{F}$ )

| 参数      | 符号                      | 测试条件   | 最小值  | 典型值 | 最大值  | 单位                   |
|---------|-------------------------|--|------|-----|------|----------------------|
| 输出电压    | $V_o$                   | $T_j = 25^\circ\text{C}$   | 23   | 24  | 25   | V                    |
|         |                         | $5.0\text{mA} < I_o < 1.2\text{A}$ , $P_o < 15\text{W}$<br>$V_i = 27\text{V to } 38\text{V}$ | 22.8 | 24  | 25.2 | V                    |
| 线性调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $V_i = 27\text{V to } 38\text{V}$                                 |      | 17  | 480  | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $V_i = 30\text{V to } 36\text{V}$                                 |      | 6   | 240  | mV                   |
| 负载调整率   | $\Delta V_o$            | $T_j = 25^\circ\text{C}$ , $I_o = 5.0\text{mA to } 1.5\text{A}$                              |      | 15  | 480  | mV                   |
|         |                         | $T_j = 25^\circ\text{C}$ , $I_o = 250\text{mA to } 750\text{mA}$                             |      | 5.0 | 240  | mV                   |
| 静态电流    | $I_Q$                   | $T_j = 25^\circ\text{C}$   |      | 5.2 | 8    | mA                   |
| 静态电流变化率 | $\Delta I_Q$            | $I_o = 5\text{mA to } 1.0\text{A}$   |      |     | 0.5  | mA                   |
|         |                         | $V_i = 27\text{V to } 38\text{V}$  |      |     | 0.8  | mA                   |
| 输出电压温漂  | $\Delta V_o / \Delta T$ | $I_o = 5\text{mA}$   |      | 1.5 |      | mV/ $^\circ\text{C}$ |
| 输出噪音电压  | $V_N$                   | $f = 10\text{Hz to } 100\text{kHz}$ , $T_a = 25^\circ\text{C}$                               |      | 160 |      | $\mu\text{V}$        |
| 纹波抑制比   | RR                      | $f = 120\text{Hz}$ , $V_i = 28\text{V to } 38\text{V}$                                       | 50   | 67  |      | dB                   |
| 输入输出电压差 | $V_o$                   | $I_o = 1.0\text{A}$ , $T_j = 25^\circ\text{C}$   |      | 2   |      | V                    |
| 输出阻抗    | $R_o$                   | $f = 1\text{kHz}$  |      | 28  |      | $\text{m}\Omega$     |
| 短路电流    | $I_{sc}$                | $V_i = 35\text{V}$ , $T_a = 25^\circ\text{C}$  |      | 230 |      | mA                   |
| 峰值电流    | $I_{pk}$                | $T_j = 25^\circ\text{C}$   |      | 2.2 |      | A                    |

### 测试电路图

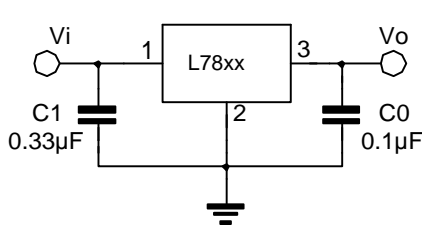


图1 测直流电参数电路图

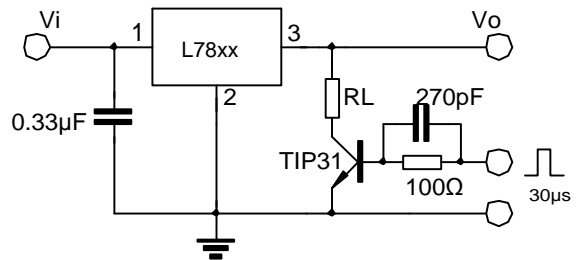


图2 测负载调整率电路图

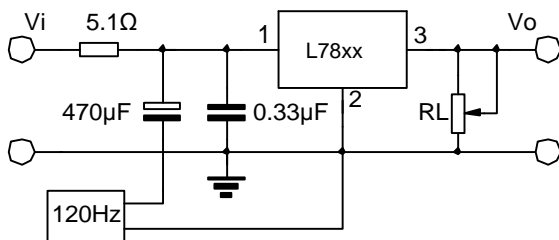


图3 测纹波抑制比电路图

## 应用电路图

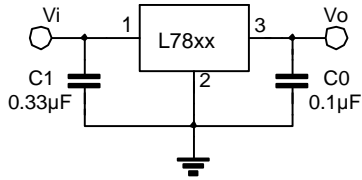


图4 固定输出稳压电路

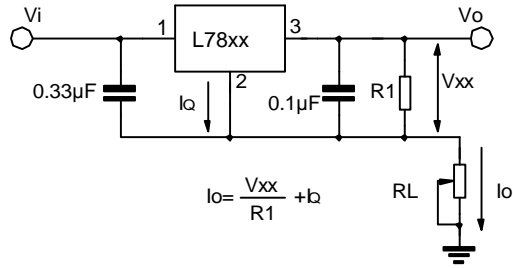


图5 恒流稳压电路

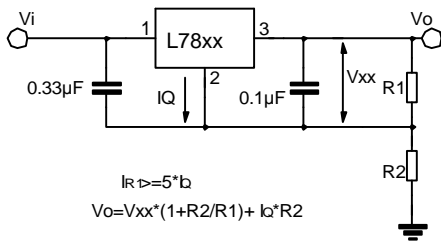


图6 增强型稳压输出电路

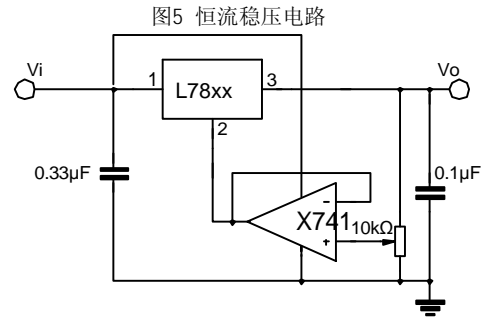


图7 可调型输出电路

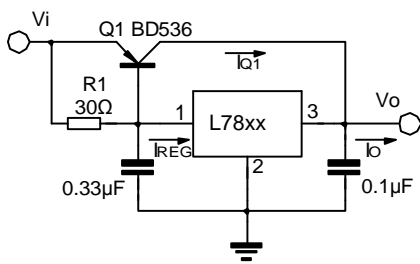
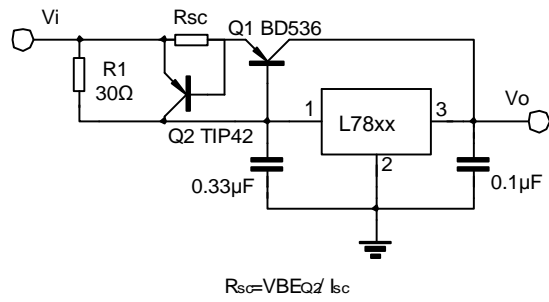


图8 高电流电压稳压电路



$$R_{sc} = V_{BEQ2} / I_{sc}$$

图9 高输出电流短路保护电路

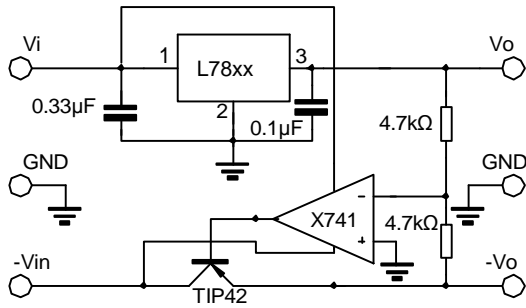


图10 跟踪电压稳压电路

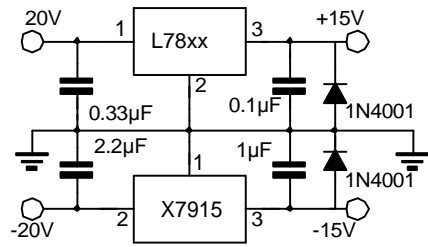


图11 分电源电路(±15V, 1A)

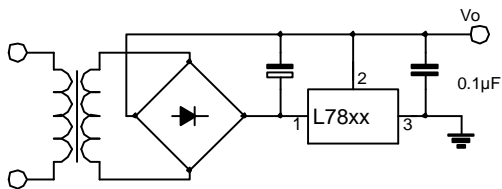


图12 负电源电压输出电路

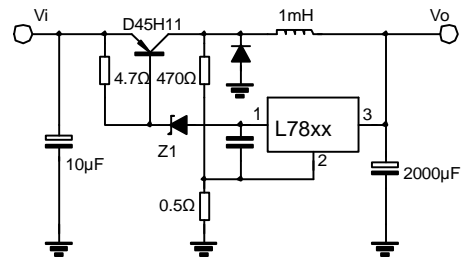


图13 开关稳压电路



## 典型特性曲线图

图14 静态电流与结点温度的关系曲线图

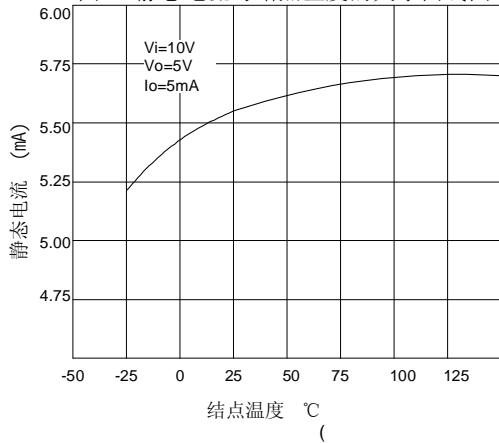


图15 输出电压与结点温度的关系曲线图

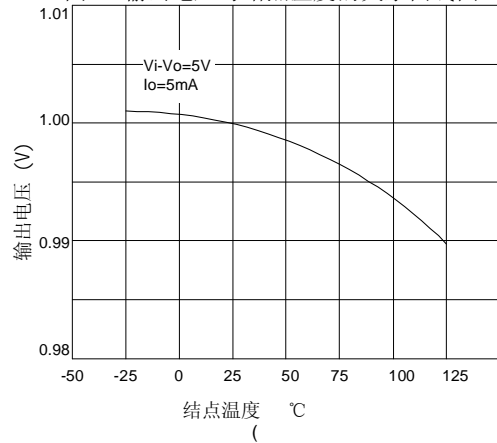


图16 峰值输出电流

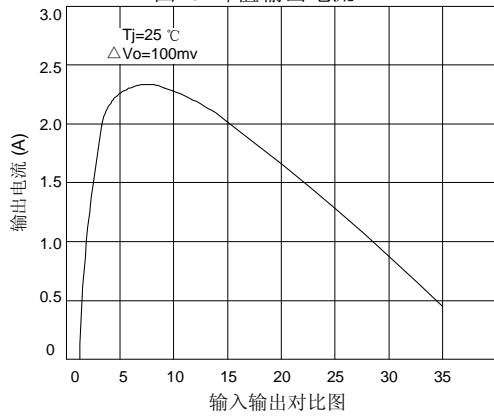
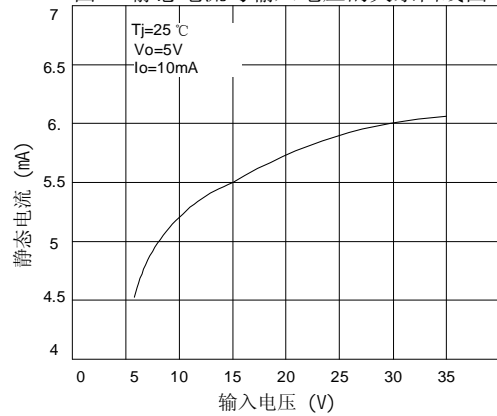


图17 静态电流与输入电压的关系曲线图



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