

The PJ5800/A series are highly precise, low ground current and fixed output voltage regulators manufactured using CMOS process. The series provides large currents with a significantly small dropout voltage. The PJ5800/A consists of a current limiting circuit; a thermal limiting, a precision reference voltage and an error amplifier provide maximal protection against any fault conditions. Output voltage ranges are adjustable, 1.5V, 1.8V, 2.5V, 3.3V; TO-252 (1W), SOT-89 (500mW) and SOT-223 (800mW) packages are available.

FEATURES

- Maximum Output Current: 500mA
- Dropout Voltage: 300mV
- Maximum Operating Voltage: 12V
- Output Voltage Range:
Adjustable, 1.5V, 1.8V, 2.5V, 3.3V
- Highly Accurate: $\pm 2\%$
- Low Ground Current: TYP 100 μ A
- Fast Transient Response
- Current Limited and Thermal Limited

Applications

- Voltage Regulator for LAN Card, CD-ROM and DVD
- Cordless phones
- Camera, video recorders
- Portable games
- Portable AV equipment
- Reference voltage
- Battery powered equipment

TO-252

| | |
|-----------|------------|
| PJ5800 | PJ5800A |
| Pin 1. In | Pin 1. Gnd |
| 2. Out | 2. In |
| 3. Gnd | 3. Out |

SOT-89

| | |
|------------|------------|
| PJ5800 | PJ5800A |
| Pin 1. Out | Pin 1. Gnd |
| 2. Gnd | 2. In |
| 3. Int | 3. Out |

(Heatsink surface connected to Pin 2)

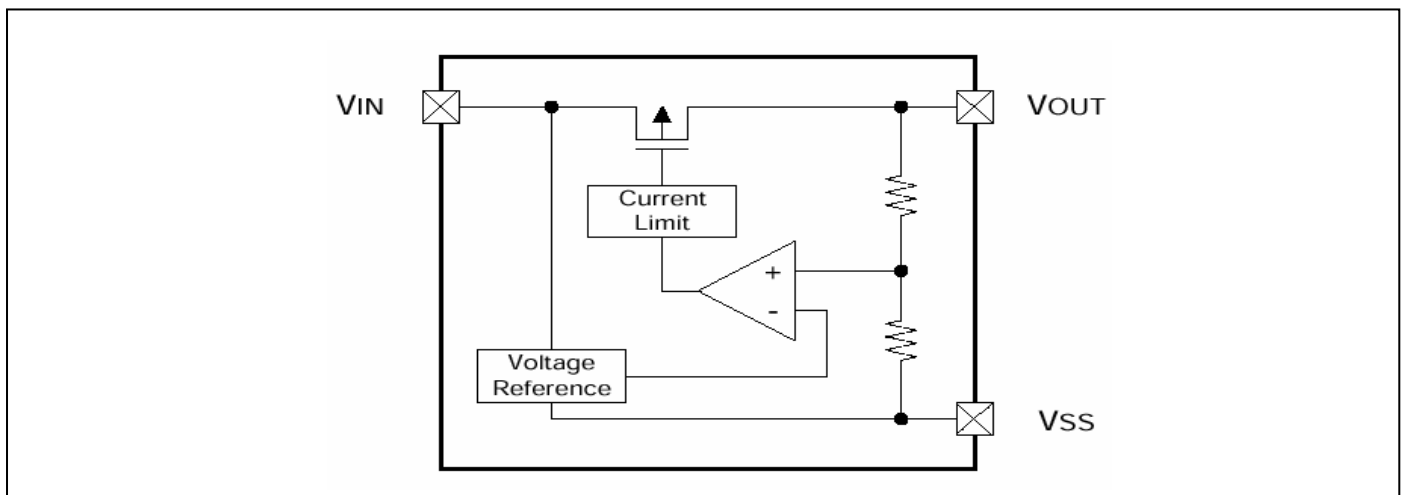
SOT-223

| | |
|-----------|------------|
| PJ5800 | PJ5800A |
| Pin 1. In | Pin 1. Gnd |
| 2. Out | 2. Out |
| 3. Gnd | 3. In |

ORDER INFORMATION

| Device | Operation Temperature (Ambient) | Package |
|-----------|---------------------------------|---------|
| PJ58xxCP | -20°C ~ +85°C | SOT-252 |
| PJ58xxCY | | SOT-89 |
| PJ58xxCW | | SOT-223 |
| PJ58xxACP | | TO-252 |
| PJ58xxACY | | SOT-89 |
| PJ58xxACW | | SOT-223 |

BLOCK DIAGRAM



500mA CMOS Low Dropout Voltage Regulators

ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|---|-----------------------------|-------------------------------|------------|
| Input Voltage | V_{IN} | 12 | V |
| Output Current | I_{OUT} | 500 | mA |
| Output Voltage | V_{OUT} | $V_{SS}-0.3 \sim V_{IN} +0.3$ | V |
| Power Dissipation $P_D@T_A=25^\circ C$ | TO-252 SOT-89 SOT-223 | 1000 500 800 | mW |
| Operating Temp. (Ambient) | T_{opr} | -20 ~ +85 | $^\circ C$ |
| Storage Temp. | T_{stg} | -40 ~ +125 | $^\circ C$ |

ORDERING INFORMATION

| Part Number | Output Voltage | Package |
|----------------|----------------|----------------------------|
| PJ5800CP/CY/CW | Adjustable | SOT-252 / SOT-89 / SOT-223 |
| PJ5815CP/CY/CW | 1.5V | SOT-252 / SOT-89 / SOT-223 |
| PJ5818CP/CY/CW | 1.8V | SOT-252 / SOT-89 / SOT-223 |
| PJ5825CP/CY/CW | 2.5V | SOT-252 / SOT-89 / SOT-223 |
| PJ5833CP/CY/CW | 3.3V | SOT-252 / SOT-89 / SOT-223 |

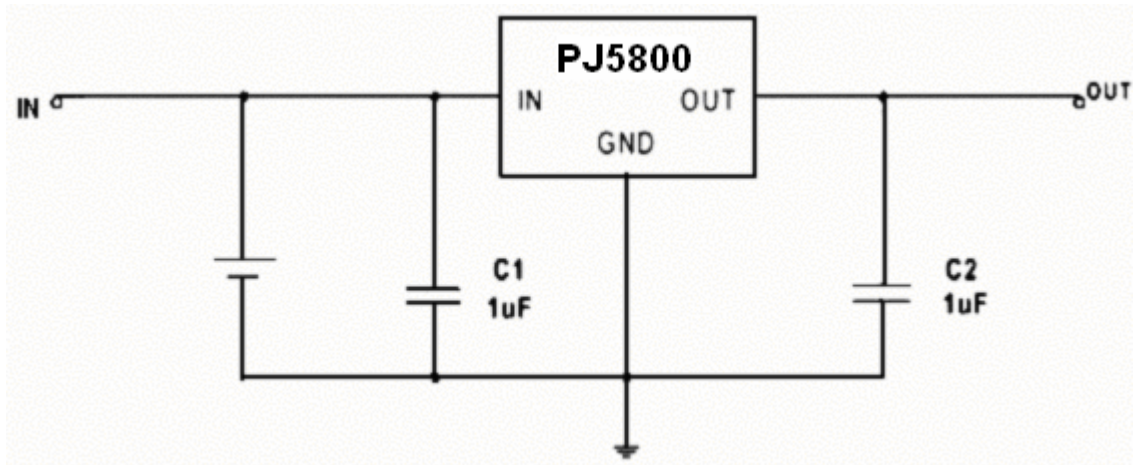
ELECTRICAL CHARACTERISTICS ($T_a = +25^\circ C$, $V_{in}=5V$ unless otherwise noted)

PJ58xx $V_{out} = x.x V$

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit | Circuit |
|--|--|--|-----|-------|-----|-----------------|---------|
| Output Voltage | V_{OUT} | $I_{OUT}=1mA, V_{IN}=5V$ | -2 | V_o | +2 | % | 2 |
| Load Regulation | ΔV_{OUT} | $V_{IN}=5V$ $1mA \leq I_{OUT} \leq 500mA$ | -- | 20 | 50 | mV | 2 |
| Dropout Voltage(Note 1) | V_{dif1} | $I_{OUT}=300mA$ | -- | 450 | -- | mV | 2 |
| | V_{dif2} | $I_{OUT}=500mA$ | -- | 750 | -- | mV | |
| Standby Current | I_{BIAS} | $I_{OUT}=0mA$ $V_{in}=12V$ | -- | 100 | 110 | μA | 1 |
| Current Limit | I_{LIMIT} | $V_{IN}=5V, V_{OUT}=0V$ | -- | 550 | 700 | mA | 2 |
| Line Regulation | $\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$ | $I_{OUT} = 1mA$ $4.3V \leq V_{IN} \leq 10V$ | -- | 0.2 | 0.3 | %/V | 2 |
| Output Voltage Temperature Coefficient | | (Note 2) | -- | 100 | -- | ppm/ $^\circ C$ | 2 |

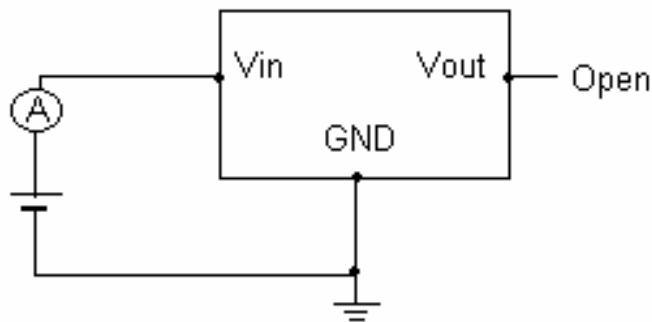
Note: 1. $V_{dif}=V_{IN} - V_{OUT}$
2. Design Characteristics

TYPICAL APPLICATIONS

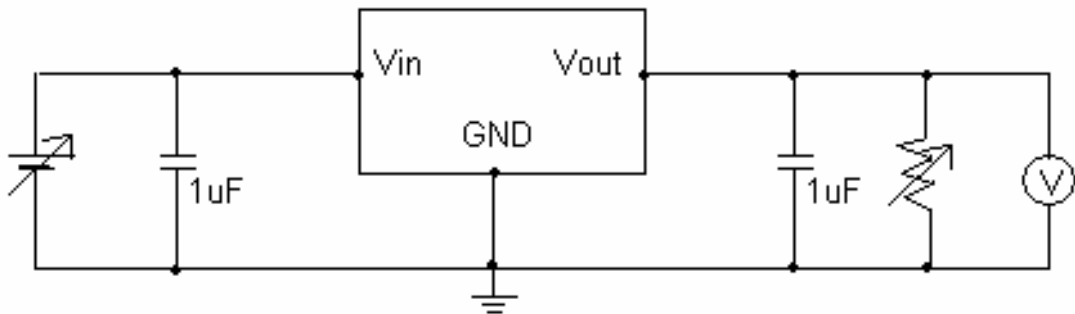


MEASURING CIRCUITS

Measuring Circuit 1: Standby Current

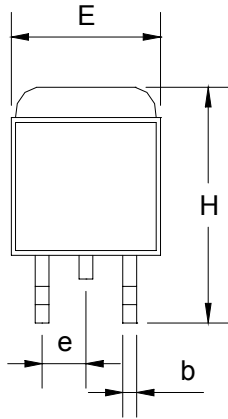


Measuring Circuit 2: Output Voltage, Oscillation Check, Line Regulation, Dropout Voltage, Load Regulation

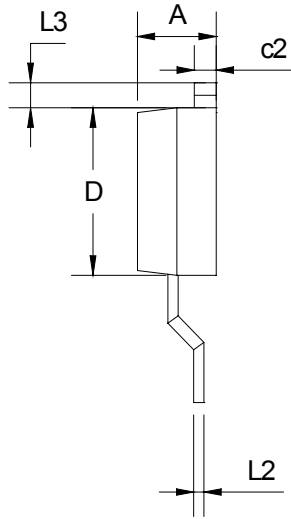


TO-252 Mechanical drawing

1.Top View



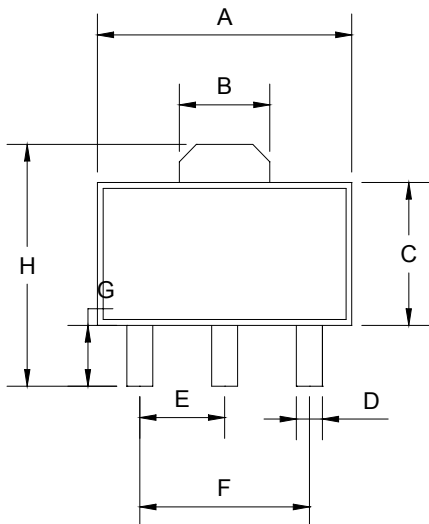
2.Side View



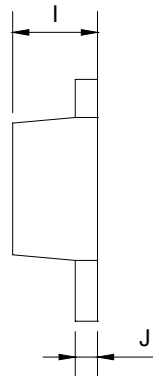
| TO-252 DIMENSION | | | | |
|------------------|-------------|--------|----------|-------|
| DIM | MILLIMETERS | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 2.184 | 2.388 | 0.086 | 0.094 |
| b | 0.635 | 0.889 | 0.025 | 0.035 |
| c2 | 0.457 | 0.889 | 0.018 | 0.035 |
| D | 5.334 | 5.588 | 0.210 | 0.220 |
| E | 6.35 | 6.731 | 0.250 | 0.265 |
| e | 2.286BSC | | 0.090BSC | |
| H | 9.398 | 10.414 | 0.370 | 0.410 |
| L2 | 0.508BSC | | 0.020BSC | |
| L3 | 1.524 | 2.032 | 0.060 | 0.080 |

SOT-89 Mechanical drawing

1.Top View

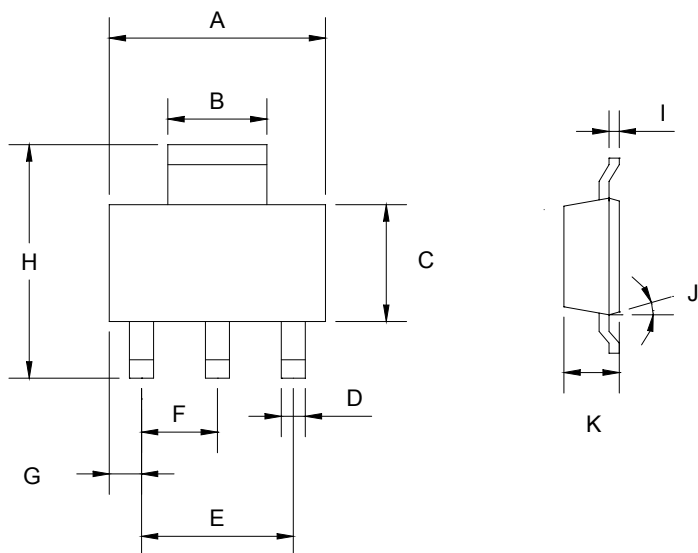


2.Side View



| SOT-89 DIMENSION | | | | |
|------------------|-------------|------|--------|-------|
| DIM | MILLIMETERS | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 4.4 | 4.6 | 0.173 | 0.181 |
| B | 1.5 | 1.7 | 0.059 | 0.070 |
| C | 2.30 | 2.60 | 0.090 | 0.102 |
| D | 0.40 | 0.52 | 0.016 | 0.020 |
| E | 1.50 | 1.50 | 0.059 | 0.059 |
| F | 3.00 | 3.00 | 0.118 | 0.118 |
| G | 0.89 | 1.20 | 0.035 | 0.047 |
| H | 4.05 | 4.25 | 0.159 | 0.167 |
| I | 1.4 | 1.6 | 0.055 | 0.063 |
| J | 0.35 | 0.44 | 0.014 | 0.017 |

SOT-223 Mechanical drawing



| SOT-223 DIMENSION | | | | |
|-------------------|-------------|-------|--------|-------|
| DIM | MILLIMETERS | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 6.30 | 6.80 | 0.248 | 0.268 |
| B | 2.90 | 3.10 | 0.114 | 0.122 |
| C | 3.30 | 3.70 | 0.129 | 0.146 |
| D | 0.63 | 0.83 | 0.024 | 0.033 |
| E | 4.55 | 4.65 | 0.179 | 0.183 |
| F | 2.25 | 2.35 | 0.088 | 0.093 |
| G | 0.835 | 1.035 | 0.032 | 0.041 |
| H | 6.70 | 7.30 | 0.263 | 0.287 |
| I | 0.255 | 0.355 | 0.010 | 0.014 |
| J | 10° | 16° | 10° | 16° |
| K | 1.55 | 1.80 | 0.061 | 0.071 |