

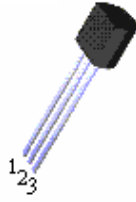


The PJ2800/A series are highly precise, low power consumption, positive voltage regulators manufactured using CMOS and laser trimming technologies. The series provides large currents with a significantly small dropout voltage. The PJ2800/A consists of a current limiter circuit, a driver transistor, a precision reference voltage and an error amplifier. Output voltage is selectable in 0.1V steps between 1.5V to 5.0V, TO-92, SOT-89 and SOT-23 packages are available.

**FEATURES**

- Input Voltage range is up to 12V
- Dropout Voltage :450mV at 300mA output current
- Guaranteed 300mA output current
- Internal Ron=1.5Ω PMOS draw no base current
- Highly Accurate : ±2%, 1.5V to 5V with 0.1V step
- Low quiescent current : 100µA
- Fast transient response
- Good load regulation
- Current limit and thermal shutdown protection
- Ultra Small Packages : TO-92, SOT-89, SOT-23

**Applications**

- Wireless Communication
- Cameras, video recorders
- Portable games
- Portable AV equipment
- Battery powered equipment
- CD-ROM, DVD, and LAN Card

|  |  |  |
|--|--|--|
| <p>TO-92</p>     | <p>PJ2800<br/>Pin 1. In<br/>2. Gnd<br/>3. Out</p>  | <p>PJ2800A<br/>Pin 1. Gnd<br/>2. In<br/>3. Out</p> |
| <p>SOT-89</p>    | <p>PJ2800<br/>Pin 1. Out<br/>2. Gnd<br/>3. Int</p> | <p>PJ2800A<br/>Pin 1. Gnd<br/>2. In<br/>3. Out</p> |
| <p>(Heatsink surface connected to Pin 2)</p>   |  |  |
| <p>SOT-23</p>  | <p>PJ2800<br/>Pin 1. In<br/>2. Out<br/>3. Gnd</p>  | <p>PJ2800A<br/>Pin 1. Gnd<br/>2. Out<br/>3. In</p> |

**ORDER INFORMATION**

| Device    | Operation Temperature | Package |
|-----------|-----------------------|---------|
| PJ28xxCT  | -20°C ~ +85°C         | TO-92   |
| PJ28xxCY  |                       | SOT-89  |
| PJ28xxCX  |                       | SOT-23  |
| PJ28xxACT |                       | TO-92   |
| PJ28xxACY |                       | SOT-89  |
| PJ28xxACX |                       | SOT-23  |

Note:

1. xx is the index of output voltage, ex. 33=3.3V
2. Available output voltage – 1.5/1.8/2.5/2.8/3.0/3.2/3.3/5.0
3. Contact factory fro additional voltage options.

**ABSOLUTE MAXIMUM RATINGS**

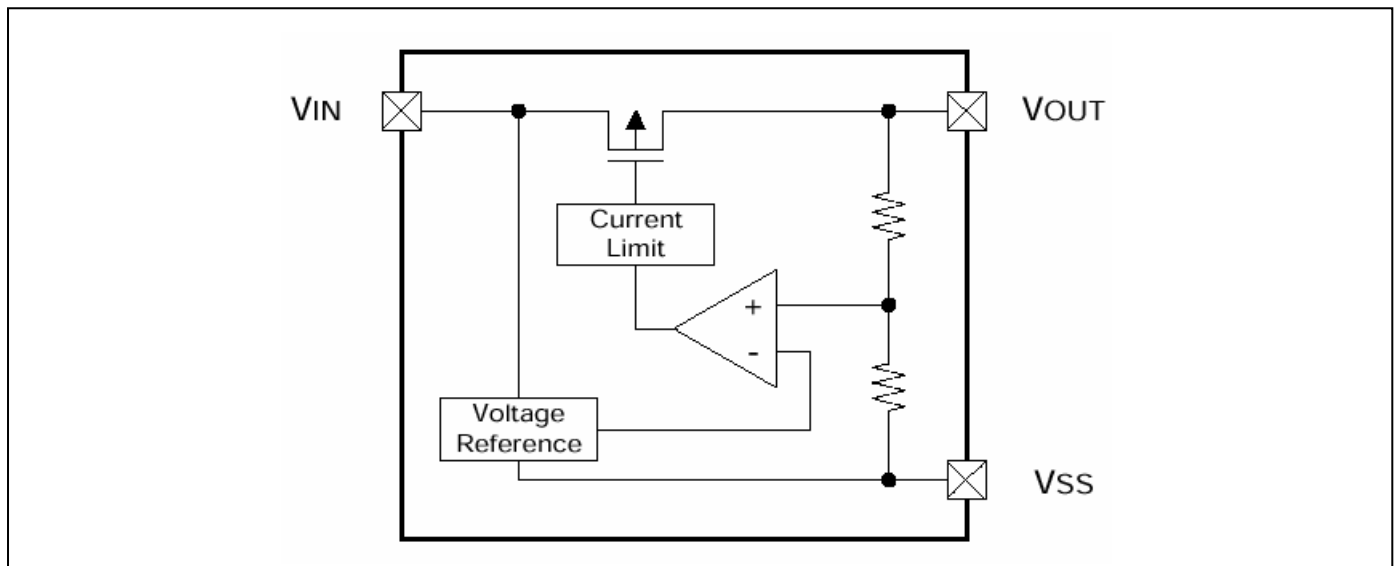
| Parameter                            | Symbol        | Value      | Unit |
|--------------------------------------|---------------|------------|------|
| Input Voltage                        | $V_{cc}$      | 12         | V    |
| Package thermal resistance           | $\theta_{JA}$ | TO-92      | °C/W |
|                                      |               | SOT-89     |      |
|                                      |               | SOT-23     |      |
| Power Dissipation                    | $P_D$         | TO-92      | mW   |
| $P_D @ T_A = 25^\circ C$             |               | SOT-89     |      |
|                                      |               | SOT-23     |      |
| Operating Junction Temperature range | $T_{op}$      | -40 ~ +125 | °C   |
| Storage Temperature range            | $T_{st}$      | -65 ~ +150 | °C   |

**ELECTRICAL CHARACTERISTICS ( $T_a = +25^\circ C$  unless otherwise noted)**

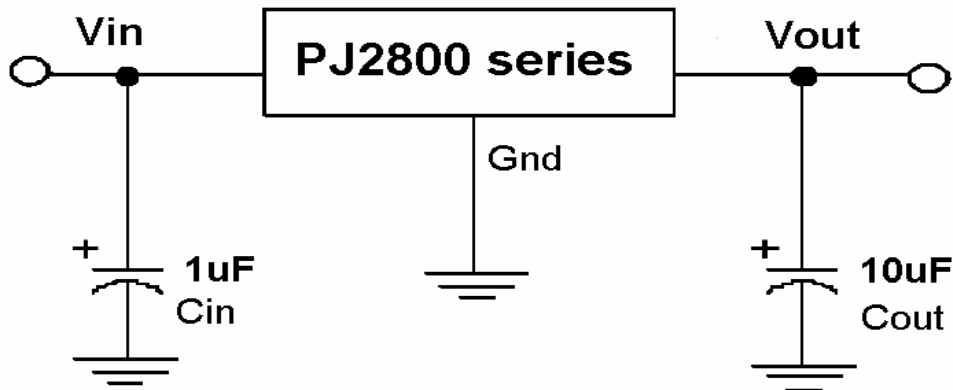
| Parameter  | Symbol            | Conditions                        | Min | Typ | Max | Unit    |
|--|-------------------|-----------------------------------|-----|-----|-----|---------|
| Input Voltage                                      | $V_{IN}$          |                                   | --  | --  | 10  | V       |
| Output Voltage accuracy                            | $V_{OUT}$         | $V_{IN}=5V, I_{OUT}=1mA$          | -2  | --  | +2  | %       |
| Current Limit (Note 2)                             | $I_{LIMIT}$       | $V_{IN}=5V, V_{OUT}=0V$           | 350 | 450 | --  | mA      |
| Load Regulation (Note 3)                           | $\Delta V_{LOAD}$ | $I_{OUT}=1\sim 300mA, V_{IN}=5V$  | --  | 1   | 30  | mV      |
| Dropout Voltage (Note 1)                           | $V_{DROP}$        | $I_{OUT}=300mA$                   | --  | 450 | 600 | mV      |
| Standby Current                                    | $V_{STANDBY}$     | $I_{OUT}=0mA, V_{IN}=12V$         | --  | 100 | 110 | $\mu A$ |
| Line Regulation                                    | $\Delta V_{LINE}$ | $I_{OUT}=1mA, V_{IN}=4.5\sim 12V$ | --  | 2   | 3   | %/V     |
| Output Voltage (Note 4)<br>Temperature Coefficient | $\Delta V_{OUT}$  |                                   | --  | 50  | 150 | PPM/°C  |

- Note 1.** Dropout voltage is defined as the input to output differential voltage. Dropout is measured at constant junction temperature by using pulsed ON time, and the criterion is  $V_{OUT}$  inside target value  $\pm 2\%$ . This test is skipped at the condition of  $V_{IN} < 3V$ .
- 2.** Current limit is measured at constant junction temperature by using pulsed testing with a low ON time.
- 3.** Regulation is measured at constant junction temperature by using pulsed testing with a low ON time
- 4.** Guaranteed by design.

**BLOCK DIAGRAM**

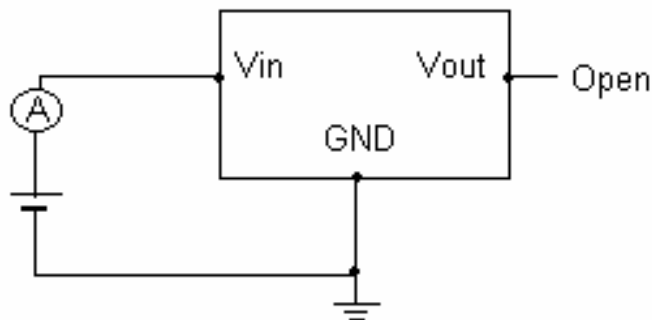


**TYPICAL APPLICATION CIRCUIT**

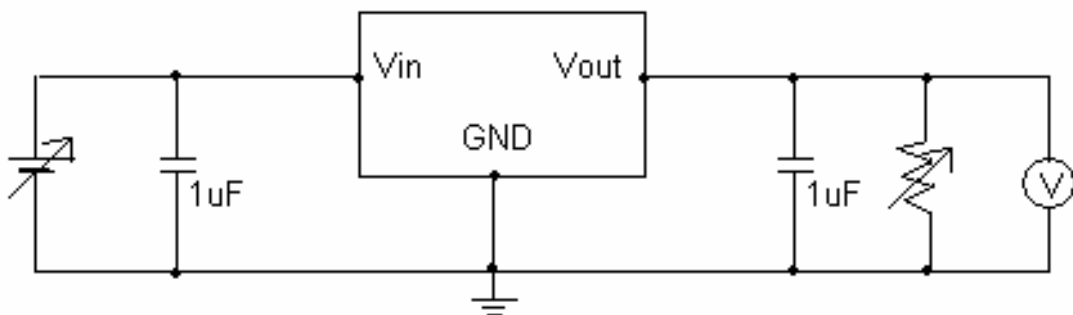


**MEASURING CIRCUITS**

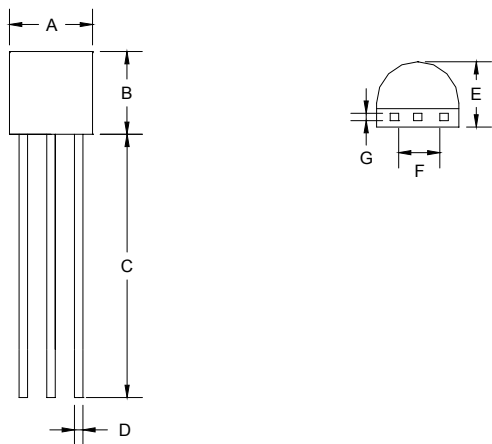
Measuring Circuit 1: Supply Current



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

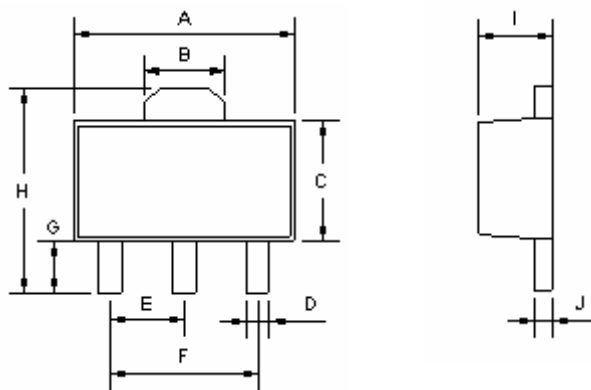


TO-92 Unit : mm



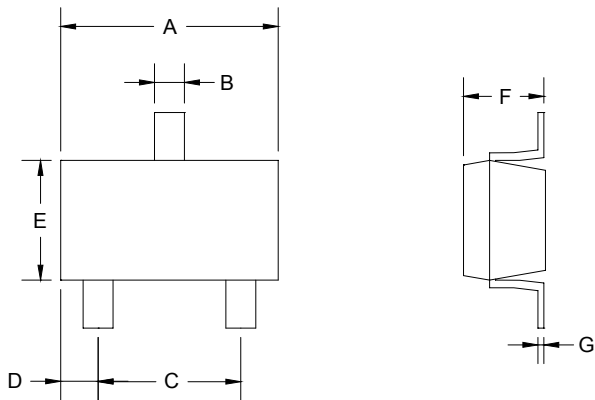
| TO-92 DIMENSION |             |        |        |       |
|-----------------|-------------|--------|--------|-------|
| DIM             | MILLIMETERS |        | INCHES |       |
|                 | MIN         | MAX    | MIN    | MAX   |
| A               | 4.300       | 4.700  | 0.169  | 0.185 |
| B               | 4.300       | 4.700  | 0.169  | 0.185 |
| C               | 14.300      | 14.350 | 0.563  | 0.565 |
| D               | 0.220       | 0.490  | 0.008  | 0.019 |
| E               | 3.300       | 3.700  | 0.129  | 0.146 |
| F               | 2.420       | 2.660  | 0.095  | 0.105 |
| G               | 0.375       | 0.425  | 0.014  | 0.017 |

TO-89 Unit : mm



| TO-89 DIMENSION |             |       |        |       |
|-----------------|-------------|-------|--------|-------|
| DIM             | MILLIMETERS |       | INCHES |       |
|                 | MIN         | MAX   | MIN    | MAX   |
| A               | 4.400       | 4.600 | 0.173  | 0.181 |
| B               | 1.500       | 1.700 | 0.059  | 0.070 |
| C               | 2.300       | 2.600 | 0.090  | 0.102 |
| D               | 0.400       | 0.520 | 0.016  | 0.020 |
| E               | 1.500       | 1.500 | 0.059  | 0.059 |
| F               | 3.000       | 3.000 | 0.118  | 0.118 |
| G               | 0.890       | 1.200 | 0.035  | 0.047 |
| H               | 4.050       | 4.250 | 0.159  | 0.167 |
| I               | 1.400       | 1.600 | 0.055  | 0.063 |
| J               | 0.350       | 0.440 | 0.014  | 0.017 |

SOT-23 Unit : mm



| SOT-23 DIMENSION |             |       |        |       |
|------------------|-------------|-------|--------|-------|
| DIM              | MILLIMETERS |       | INCHES |       |
|                  | MIN         | MAX   | MIN    | MAX   |
| A                | 2.780       | 3.030 | 0.109  | 0.119 |
| B                | 0.350       | 0.450 | 0.013  | 0.018 |
| C                | 1.780       | 2.030 | 0.070  | 0.080 |
| D                | 0.510       | 0.610 | 0.020  | 0.024 |
| E                | 1.550       | 1.650 | 0.061  | 0.065 |
| F                | 0.960       | 1.240 | 0.037  | 0.049 |
| G                | 0.076       | 0.127 | 0.003  | 0.005 |