

AD2700/AD2701/AD2702
1.1 Scope.

This specification covers the detail requirements for a hybrid precision voltage reference.

1.2 Part Number.

The complete part number per Table 1 of this specification is as follows:

| Device | Part Number |
|--------|---------------|
| -1 | AD2700SD/883B |
| -2 | AD2700UD/883B |
| -3 | AD2701SD/883B |
| -4 | AD2701UD/883B |
| -5 | AD2702SD/883B |
| -6 | AD2702UD/883B |

1.2.3 Case Outline.

See Appendix 1 of General Specification ADI-H-1000: package outline: DH-14C.

1.3 Absolute Maximum Ratings. ($T_A = +25^\circ\text{C}$ unless otherwise noted)

| | | | |
|--|----|-------|-----------------|
| Supply Voltage (+ V_{IN}) | -1 | ..... | +20 V |
| | -2 | ..... | +20 V |
| | -5 | ..... | +20 V |
| | -6 | ..... | +20 V |
| Supply Voltage (- V_{IN}) | -3 | ..... | -20 V |
| | -4 | ..... | -20 V |
| | -5 | ..... | -20 V |
| | -6 | ..... | -20 V |
| 10 V Short Circuit Protection (to GND) |  | ..... | Continuous |
| Storage Temperature Range |  | ..... | -65°C to +150°C |
| Lead Temperature (Soldering 10 sec) | | | +300°C |

1.5 Thermal Characteristics.

Thermal Resistance $\theta_{JC} = 7^\circ\text{C}/\text{W}$
 $\theta_{JA} = 20^\circ\text{C}/\text{W}$

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Table 1.

| Test | Symbol | Device | Design Limit @ +25°C | Sub Group 1 | Sub Group 2, 3 | Sub Group 7 | Test Condition ¹ | Units |
|---|------------------|-------------------------|----------------------|-------------|----------------|-------------|---|-------------------|
| Quiescent No Load Current | I_{CC} | -1, 2 | 14 | 14 | | | $V_{CC} = +15$ V No Load | +mA max |
| | I_{EE} | -3, 4 | 14 | 14 | | | $V_{EE} = -15$ V No Load | -mA max |
| | I_{CC} | -5, 6 | 17 | 17 | | | $V_{CC} = +15$ V $V_{EE} = -15$ V No Load | +mA max |
| | I_{EE} | -5, 6 | 4 | 4 | | | $V_{CC} = +15$ V $V_{EE} = -15$ V No Load | -mA max |
| Interim Output Error Initial End-Point Delta Limits | $+V_{RINT}$ | -1, 2 | | | | | +10.000 V Output | \pm mV max |
| | | -5, 6 | 5 | 5 | | | | |
| | | | 10 | 10 | | | | |
| Interim Output Error Initial End-Point Delta Limits | $-V_{RINT}$ | -3, 4 | | | | | -10.000 V Output | \pm mV max |
| | | -5, 6 | 5 | 5 | | | | |
| | | | 10 | 10 | | | | |
| Selection Output Error ² | $+V_R$ | -1 | 5.0 | | 8.0 | 5.0 | +10.000 V Output | \pm mV max |
| | $+V_R$ | -2, 6 | 2.5 | | 5.5 | 2.5 | +10.000 V Output | \pm mV max |
| | $+V_R$ | -5 | 5.0 | | 10.0 | 5.0 | +10.000 V Output | \pm mV max |
| | $-V_R$ | -3 | 5.0 | | 8.0 | 5.0 | -10.000 V Output | \pm mV max |
| | $-V_R$ | -5 | 5.0 | | 10.0 | 5.0 | -10.000 V Output | \pm mV max |
| | $-V_R$ | -4, 6 | 2.5 | | 5.5 | 2.5 | -10.000 V Output | \pm mV max |
| Positive Output Line Regulation | $+V_{RLINE}$ | -1, 2 -5, 6 | 900 | 900 | | | +10 V Output @ $V_{CC} = +13.5$ V to +16.5 V | \pm μ V max |
| Negative Output Line Regulation | $-V_{RLINE}$ | -3, 4 -5, 6 | 900 | 900 | | | -10 V Output @ $V_{EE} = -13.5$ V to -16.5 V | \pm μ V max |
| Positive Output Load Regulation | $+V_{RLOAD}$ | -1, 2 -5, 6 | 500 | 500 | | | +10 V Output @ 0 to 10 mA Load Change | \pm μ V max |
| Negative Output Load Regulation | $-V_{RLOAD}$ | -3, 4 -5, 6 | 500 | 500 | | | -10 V Output @ 0 to 10 mA Load Change | \pm μ V max |
| Positive Output Adjust Range ³ | $+V_{RADJ}$ | -1, 2 -5, 6 | 20 | 20 | | | @ +10 V Output | \pm mV min |
| Negative Output Adjust Range ³ | $-V_{RADJ}$ | -3, 4 -5, 6 | 20 | 20 | | | @ -10 V Output | \pm mV min |
| Output Current | $+I_L$ $-I_L$ | -1, 2 -3, 4 -5, 6 | 10 | 10 | 5 | | Thru a Resistive Load Tied to Pin 7, Common | \pm mA min |

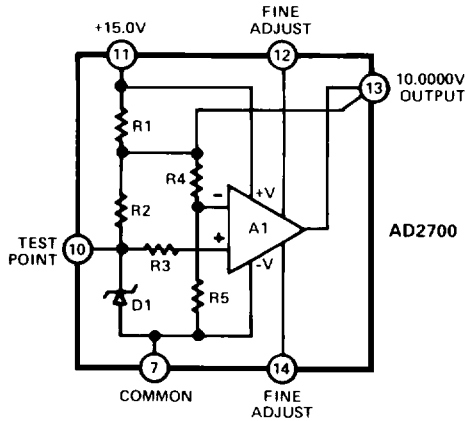
NOTES

¹ $T_A = +25^\circ\text{C}$, $V_S = +15$ V unless otherwise specified. All tests, after 3 minute warm-up period, at +15 V supplies and 2 k Ω load to common unless otherwise specified. All measurements are referenced to Pin 7 of the device.

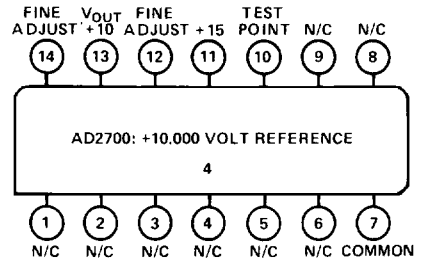
²Output voltage error as a function of temperature is determined using the box method. Each unit is tested at T_{min} , T_{max} and +25°C. At each temperature V_{OUT} must fall within the rectangular area bounded by the minimum and maximum temperature and whose maximum V_{OUT} value is equal to V_{OUT} nominal plus or minus the maximum +25°C error plus the maximum drift error from +25°C.

³See Figure 1 for trim circuits.

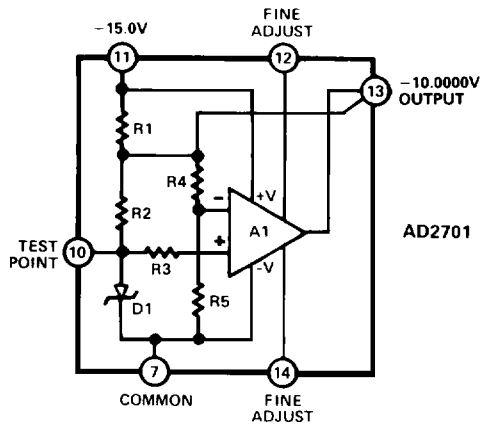
3.2.1 Functional Block Diagram and Terminal Assignments.



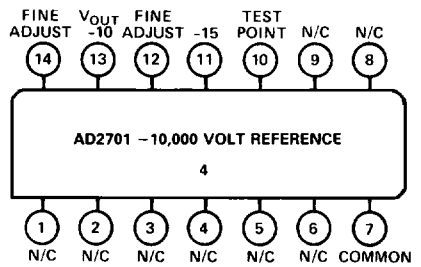
Device Type -1, -2



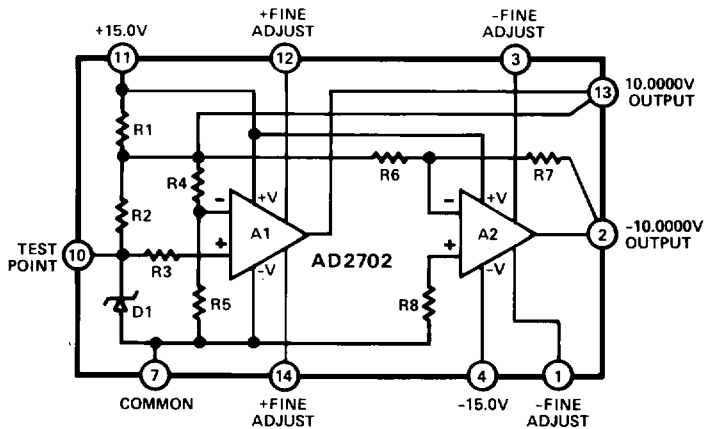
Device Type -1, -2



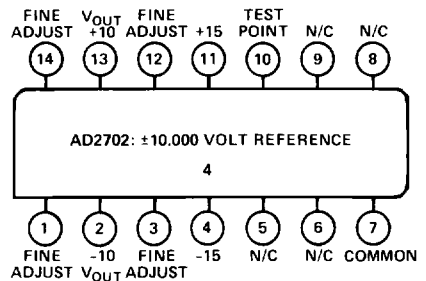
Device Type -3, -4



Device Type -3, -4



Device Type -5, -6



Device Type -5, -6

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VOLTAGE REFERENCES

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3.2.4 Microcircuit Technology Group.

This microcircuit is covered by technology group (I).

4.2.1 Life Test/Burn-In Circuit.

Steady state life test is per MIL-STD-883 Method 1005. Burn-in is per MIL-STD-883 Method 1015 test condition (B).

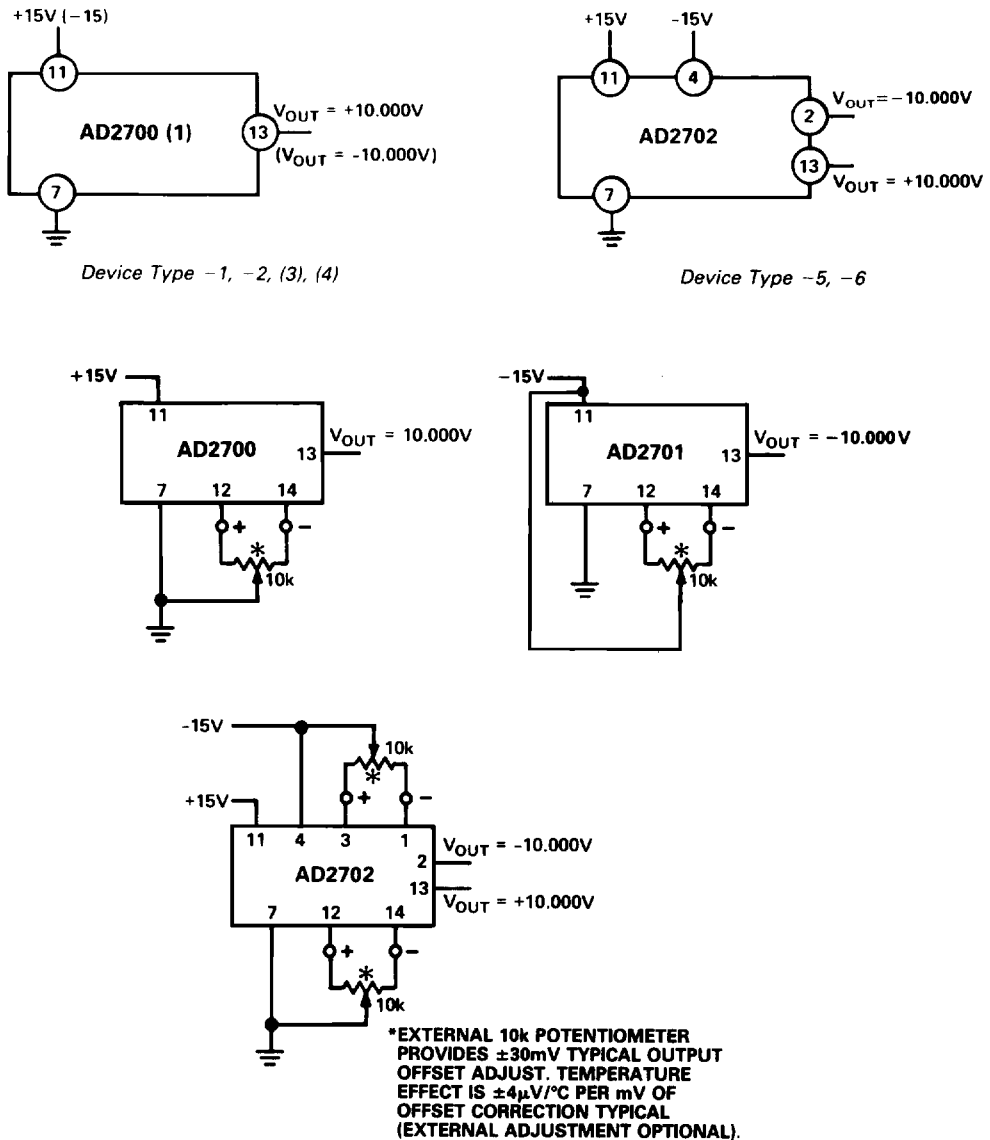


Figure 1. Fine Trim Connections