

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

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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			$V_{CC} = +15\text{ V}$ No Load	+mA max
	I_{EE}	-3, 4	14	14			$V_{EE} = -15\text{ V}$ No Load	-mA max
	I_{CC}	-5, 6	17	17			$V_{CC} = +15\text{ V}$ $V_{EE} = -15\text{ V}$ No Load	+mA max
	I_{EE}	-5, 6	4	4			$V_{CC} = +15\text{ V}$ $V_{EE} = -15\text{ V}$ No Load	-mA max
Interim Output Error Initial End-Point Delta Limits	$+V_{RINT}$	-1, 2 -5, 6	5 10 5	5 10 5			+10.000 V Output	±mV max
Interim Output Error Initial End-Point Delta Limits	$-V_{RINT}$	-3, 4 -5, 6	5 10 5	5 10 5			-10.000 V Output	±mV max
Selection Output Error ²	$+V_R$	-1	5.0		8.0	5.0	+10.000 V Output	±mV max
	$+V_R$	-2, 6	2.5		5.5	2.5	+10.000 V Output	±mV max
	$+V_R$	-5	5.0		10.0	5.0	+10.000 V Output	±mV max
	$-V_R$	-3	5.0		8.0	5.0	-10.000 V Output	±mV max
	$-V_R$	-5	5.0		10.0	5.0	-10.000 V Output	±mV max
	$-V_R$	-4, 6	2.5		5.5	2.5	-10.000 V Output	±mV max
Positive Output Line Regulation	$+V_{RLINE}$	-1, 2 -5, 6	900	900			+10 V Output @ $V_{CC} = +13.5\text{ V}$ to $+16.5\text{ V}$	±μV max
Negative Output Line Regulation	$-V_{RLINE}$	-3, 4 -5, 6	900	900			-10 V Output @ $V_{EE} = -13.5\text{ V}$ to -16.5 V	±μV max
Positive Output Load Regulation	$+V_{RLOAD}$	-1, 2 -5, 6	500	500			+10 V Output @ 0 to 10 mA Load Change	±μV max
Negative Output Load Regulation	$-V_{RLOAD}$	-3, 4 -5, 6	500	500			-10 V Output @ 0 to 10 mA Load Change	±μV max
Positive Output Adjust Range ³	$+V_{RADJ}$	-1, 2 -5, 6	20	20			@ +10 V Output	±mV min
Negative Output Adjust Range ³	$-V_{RADJ}$	-3, 4 -5, 6	20	20			@ -10 V Output	±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	±mA min

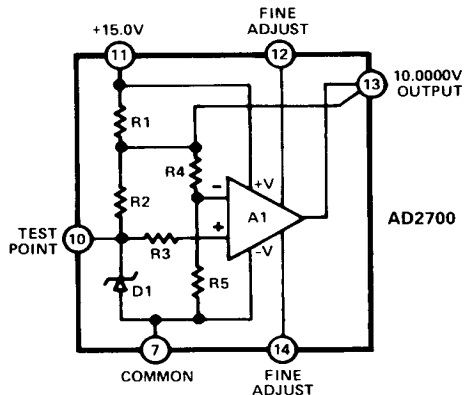
NOTES

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

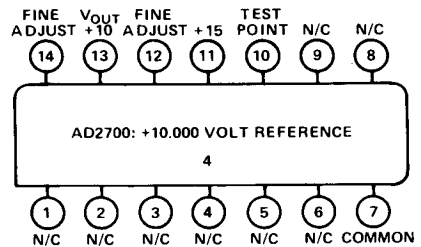
²Output voltage error as a function of temperature is determined using the box method. Each unit is tested at T_{min} , T_{max} and $+25^\circ\text{C}$. At each temperature V_{OUT} must fall within the rectangular area bounded by the minimum and maximum temperature and whose maximum V_{OUT} value is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

³See Figure 1 for trim circuits.

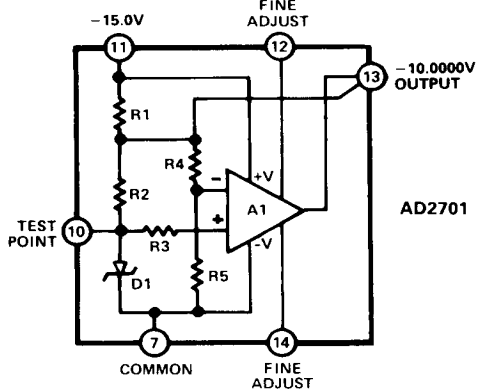
3.2.1 Functional Block Diagram and Terminal Assignments.



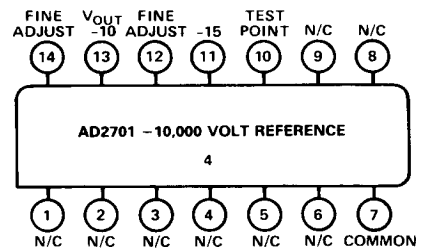
Device Type -1, -2



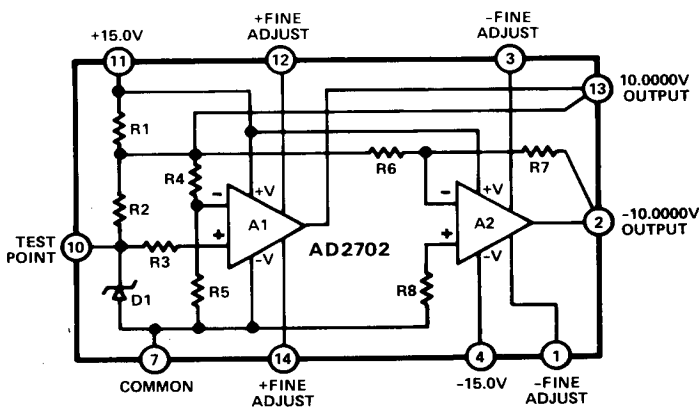
Device Type -1, -2



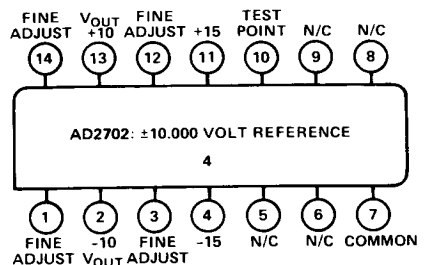
Device Type -3, -4



Device Type -3, -4



Device Type -5, -6



Device Type -5, -6

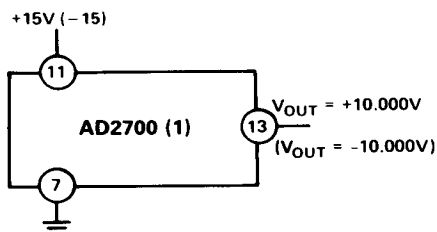
AD2700/AD2701/AD2702

3.2.4 Microcircuit Technology Group.

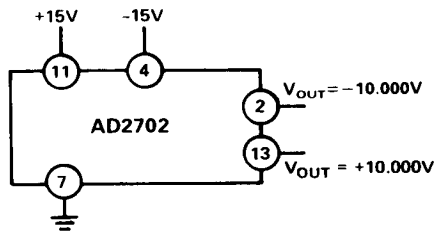
This microcircuit is covered by technology group (I).

4.2.1 Life Test/Burn-In Circuit.

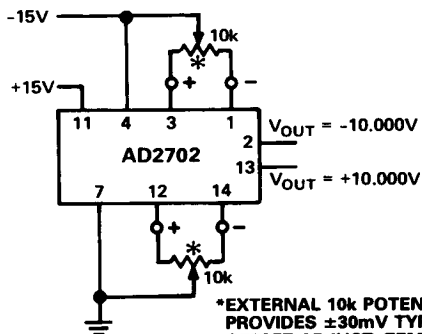
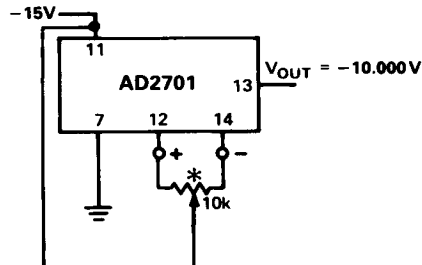
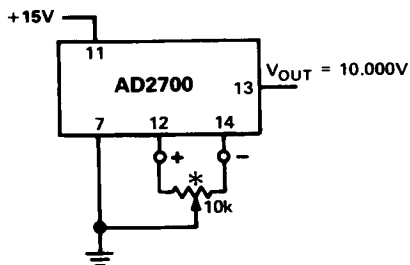
Steady state life test is per MIL-STD-883 Method 1005. Burn-in is per MIL-STD-883 Method 1015 test condition (B).



Device Type -1, -2, (3), (4)



Device Type -5, -6



*EXTERNAL 10k POTENTIOMETER PROVIDES $\pm 30\text{mV}$ TYPICAL OUTPUT OFFSET ADJUST. TEMPERATURE EFFECT IS $\pm 4\mu\text{V}/^\circ\text{C}$ PER mV OF OFFSET CORRECTION TYPICAL (EXTERNAL ADJUSTMENT OPTIONAL).

Figure 1. Fine Trim Connections