PRELIMINARY

CAT2700/2701

±10V Precision References

FEATURES

- High Accuracy: 10.000 Volt ± 2.5 mV
- Low Drift: 3 ppm/°C Drift
- 10 mA Output Drive capability
- Short Circuit Protected Output

APPLICATIONS

- A/D and D/A Converters
- Instrumentation Reference
- Calibration Standards
- V/F Converters

DESCRIPTION

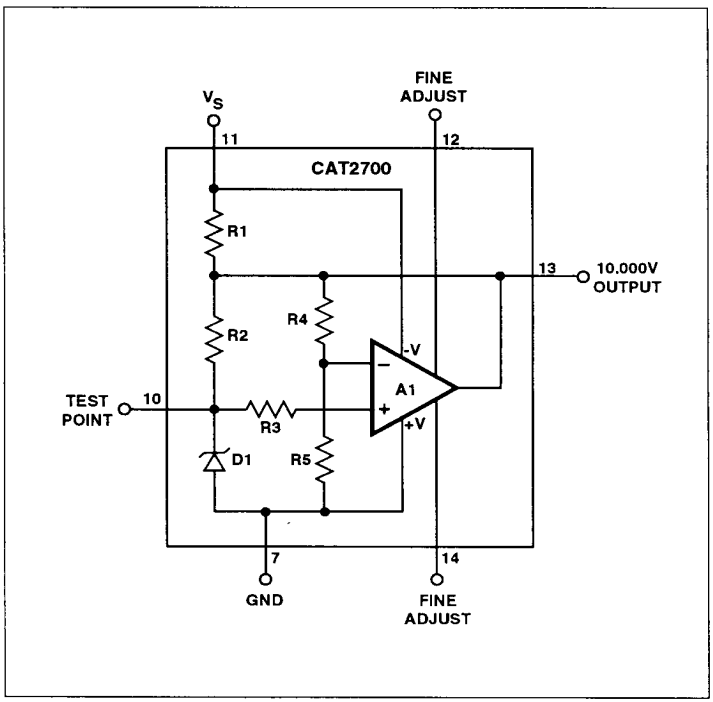
The CAT2700 & 2701 are precision 10.000 volt references providing high accuracy and excellent temperature stability. Fabricated in Catalyst's 2.0µ BiCMOS process, these references benefit from Catalyst's unique on-chip EEPROM trim circuitry and are factory adjusted for an output voltage error of < ± 2.5 mV and temperature coefficients as low as 3 ppm/°C.

The CAT2700 is a +10V reference is designed for use with high accuracy A/D and D/A converters of 10 and 12 bit resolution. The CAT2701 is a -10V reference designed for similar applications requiring a negative voltage input. For ease of use with Bipolar converters both references source and sink 10 mA of current which makes them an excellent choice for general purpose system references as well.

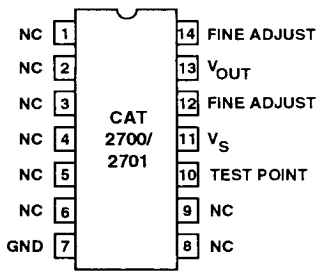
The CAT2700 and the CAT2701 are offered in plastic and ceramic DIPs with operation specified over the Commercial 0 to +70°C and the Industrial -40°C to +85°C temperature ranges.

The CAT2700 and CAT2701 are second source equivalents to Analog Device's AD 2700 and AD 2701.

FUNCTIONAL DIAGRAM



PIN CONFIGURATION



TD 5174

ABSOLUTE MAXIMUM RATINGS

Supply Voltage
- 2700 V_S to GND ..... –0.5V to +18V
- 2701 V_S to GND ..... +0.5V to -18V

Inputs
- 2700 Fine Adjust to GND ..... –0.5V to V_S +0.5V
- 2700 Test Point to GND ..... –0.5V to V_S +0.5V
- 2701 Fine Adjust to GND ..... +0.5V to V_S -0.5V
- 2701 Test Point to GND ..... +0.5V to V_S -0.5V

Outputs
- 2700 V_{OUT} ..... –0.5V to V_S +0.5V
- 2701 V_{OUT} ..... +0.5V to V_S -0.5V
- 2700 I_{OUT} to GND ..... ±25mA
- 2701 I_{OUT} to GND ..... ±25mA

Output Short Circuit Duration ..... Infinite

Operating Ambient Temperature
- Industrial ('I' Suffix) ..... -40°C to +85°C
- Commercial ('C' Suffix) ..... 0°C to +70°C

Storage Temperature ..... –65°C to +150°C

Lead Soldering (10 sec max) ..... +300°C

ORDERING INFORMATION

Device	Package	Temp	Output
CAT2700_P	14 pin Plastic DIP	C	10.000V
CAT2700_PI	14 pin Plastic DIP	I	10.000V
CAT2700_DI	14 pin CerDIP	I	10.000V
CAT2701_P	14 pin Plastic DIP	C	-10.000V
CAT2701_PI	14 pin Plastic DIP	I	-10.000V
CAT2701_DI	14 pin CerDIP	I	-10.000V

Temperature: C = 0°C to +70°C
I = –40°C to +85°C

Stresses above those listed under Absolute Maximum Ratings may cause permanent damage to the device. Absolute Maximum Ratings are limited values applied individually while other parameters are within specified operating conditions, and functional operation at any of these conditions is NOT implied. Device performance and reliability may be impaired by exposure to absolute rating conditions for extended periods of time.

RELIABILITY CHARACTERISTICS

Symbol	Parameter	Min	Max	Units	Test Method
V_{ZAP}(1)	ESD Susceptibility	2000		Volts	MIL-STD-883, Test Method 3015
I_{LTH}(1)(2)	Latch-Up	100		mA	JEDEC Standard 17

NOTES: 1. This parameter is tested initially and after a design or process change that affects the parameter.
2. Latch-up protection is provided for stresses up to 100mA on address and data pins from –1V to V_S + 1V.

DC ELECTRICAL CHARACTERISTICS: V_S = ±15V; T_A = -40°C to +85°C; R_L = 2kΩ

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{OUT}	Output Voltage	CAT2700	—	10.000	—	V
		CAT2701	—	-10.000	—	V
	Output Voltage Error	"A" Suffix	± .0025	—	± .0025	V
		"B" Suffix	± .005	—	± .005	V
ΔV_O	Output Voltage Adjustment Range	R_{ADJ} = 10kΩ	± 20	—	—	mV
TCV_O	Output Voltage Temp Coefficient	"A" Suffix	—	—	± 3	ppm/°C
		"B" Suffix	—	—	± 10	ppm/°C
	Change in V_O Temp Coefficient with Output Adjustment	R_{ADJ} = 10kΩ	—	± 4	—	µV/°C per mV of Adjustment
I_O	Output Current		—	—	± 10	mA
R_O	Output Resistance		—	—	0.05	Ω
	Line Regulation		—	—	300	µV/V
	Load Regulation	V_S= 13 to 16.5 V	—	—	50	µV/mA
	Long Term Stability		—	100	—	ppm/1000 hrs
Power Supply						
V_S	Supply Voltage Range	CAT2700	13	15	16.5	V
		CAT2701	-13	-15	-16.5	V
I_S	Supply Current		—	± 4	± 14	mA

AC ELECTRICAL CHARACTERISTICS: V_S = ±15V; T_A = -40°C to +85°C; R_L = 2kΩ

e_n	Noise	0.1 to 10 Hz	—	50	—	µVp-p