

μ A7300 ✓

DOLBY B-TYPE NOISE REDUCTION SYSTEM FAIRCHILD LINEAR INTEGRATED CIRCUIT

GENERAL DESCRIPTION — The μ A7300 is a monolithic circuit which performs *Dolby B-Type noise reduction processing on an audio signal. The Dolby B-Type noise reduction system is used to reduce hiss in consumer tape recording equipment and in FM broadcast receivers. The circuit is constructed using the Fairchild Planar** process.

The versatile circuit configuration of the μ A7300 allows a complete record/playback system for a stereo tape recorder, or a complete stereo Dolby FM decoder, to be built with just two μ A7300's and a few discrete components.

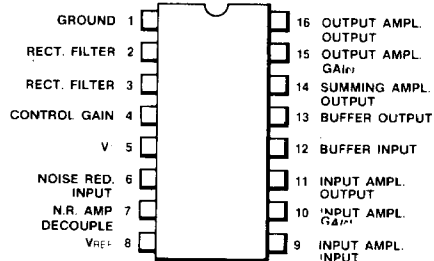
- **VERSATILE CONFIGURATION WITH PROGRAMMABLE INPUT, OUTPUT AMPLIFIERS**
- **SUPERIOR MATCHING TO DOLBY B-TYPE STANDARD**
- **EXCELLENT HIGH-FIDELITY CHARACTERISTICS**
- **WIDE OPERATING VOLTAGE RANGE: 10-20 V**

CONNECTION DIAGRAM

16-PIN DIP TOP VIEW

PACKAGE OUTLINE 9B

PACKAGE CODE P



ORDER INFORMATION

TYPE	PART NO.
μ A7300	μ A7300PC (Note 1)

ABSOLUTE MAXIMUM RATINGS:

Supply Voltage	24 V
Operating Temperature Range	0° C to +70° C
Storage Temperature Range	-65° C to +150° C
Power Dissipation (TA ≤ 70° C)	730 mW
Pin Temperature Soldering 10 s	280° C

Note 1

This circuit is available only to licensees of Dolby Laboratories. Licensing and application information may be obtained from Dolby Laboratories, San Francisco.



ELECTRICAL CHARACTERISTICS:

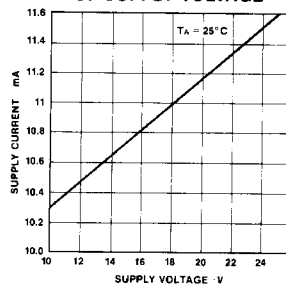
($T_A = 25^\circ\text{C}$, $V^+ = 12\text{ V}$, input amplifier gain = 10 dB, source impedance less than 10 K, output amplifier gain = 17.7 dB (Output Level equals 775 mV for Dolby Level), encode mode, 0 dB = 100 mV_{rms} at test point unless otherwise specified. †See test circuit.)

CHARACTERISTICS	TEST CONDITIONS		MIN	TYP	MAX	UNITS	
Operating Voltage Range			10		20	V	
Supply Current				11	17	mA	
Input Amplifier Current (Pins 10-11)				6		μA	
Output Amplifier Current (Pins 15-16)				13		μA	
Total Harmonic Distortion (Pin 16)	0 dB at Pin 13 +10 dB at Pin 13	f = 20-20,000 Hz f = 1 kHz		.04 0.1	0.1 0.3	% %	
Signal Handling (Pin 16)	THD = 1.0%	R _L = 2 kΩ		6.4		V _{pk-pk}	
Signal Handling (Pin 14)	THD = 1.0%		20			dB	
Signal to Noise Ratio (Pin 16)	CCIR/ARM Weighting	ENCODE	65	68		dB	
Noise Level Relative to Dolby Level		DECODE	75	78		dB	
Encode Mode	f = 1.4 kHz	0 dB	-1	0	-1	dB	
Frequency Response	Input at Pin 9	-20 dB	-17.1	-15.6	-14.1	dB	
		-30 dB	-24.0	-22.5	-21.0	dB	
	f = 5 kHz	0 dB	-0.7	+0.3	+1.3	dB	
		Input at Pin 9	-20 dB	-18.3	-16.8	-15.3	dB
			-30 dB	-23.3	-21.8	-20.3	dB
	-40 dB		-29.0	-29.7	-30.2	dB	
	f = 20 kHz	0 dB	-0.3	+0.7	+1.7	dB	
		Input at Pin 9	-20 dB	-18.8	-17.3	-15.8	dB
-30 dB			-25.0	-23.5	-22.0	dB	
-40 dB	-29.0		-29.7	-30.2	dB		
Back-to-Back Frequency Response	f = 20 - 20 kHz with respect to standard	+10 dB	-1.0		+1.0	dB	
		0 dB	-1.0		+1.0	dB	
		-10 dB	-1.0		+1.0	dB	
		-20 dB	-1.5		+1.5	dB	
		-30 dB	-1.5		+1.5	dB	
		-40 dB	-0.5		+0.7	dB	
Reference Voltage	I _S = -100 μA		6.0	6.6	7.2	V	
Input Resistance	Pin 9		50	100		kΩ	
Input Resistance	Pin 12		50	100		kΩ	
Voltage Gain	Pin 12 to Pin 13;	f = 1 kHz		0		dB	
Voltage Gain	Pin 12 to Pin 14;	f = 1 kHz		0		dB	
Power Supply Ripple Rejection	f _R = 120 Hz			45		dB	

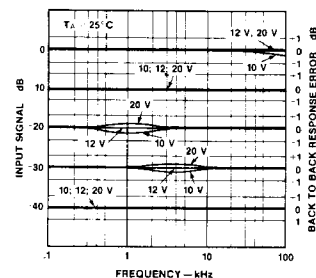
See Dolby Laboratories Engineering Field Bulletin 19/2.

TYPICAL PERFORMANCE CURVES

**SUPPLY CURRENT AS A FUNCTION
OF SUPPLY VOLTAGE**

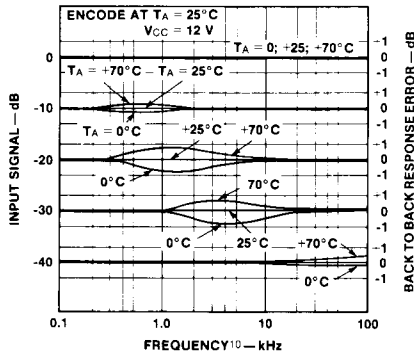


**BACK TO BACK RESPONSE AS A
FUNCTION OF POWER
SUPPLY VOLTAGE**

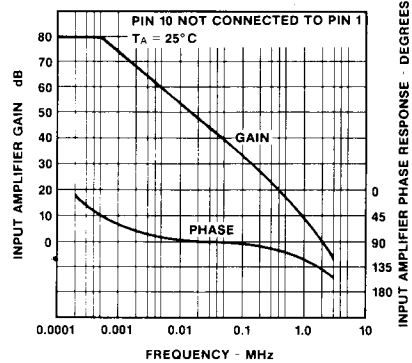
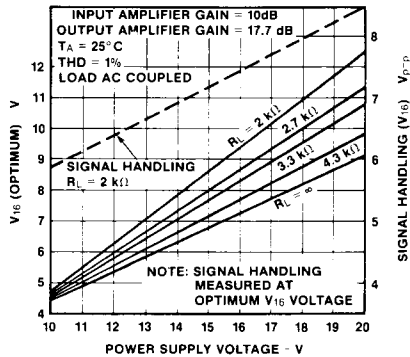


TYPICAL PERFORMANCE CURVES

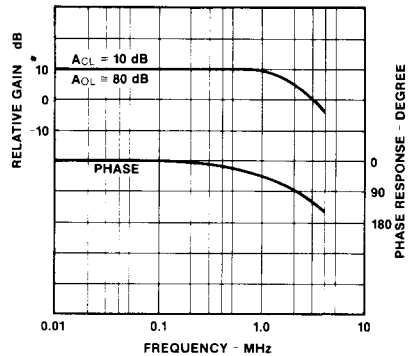
BACK TO BACK RESPONSE AS A FUNCTION OF TEMPERATURE



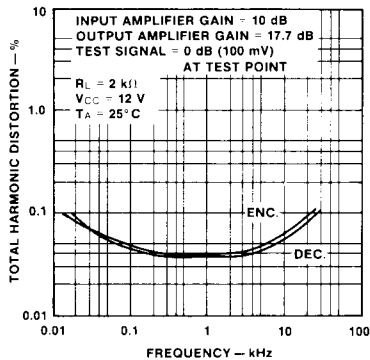
INPUT AMPLIFIER OPEN LOOP, GAIN, AND PHASE RESPONSE AS A FUNCTION OF FREQUENCY

OUTPUT AMPLIFIER OPTIMUM V_{16} VOLTAGE AND SIGNAL HANDLING AS A FUNCTION OF POWER SUPPLY VOLTAGE

INPUT AMPLIFIER AMPLITUDE AND PHASE RESPONSE



TOTAL HARMONIC DISTORTION AS A FUNCTION OF FREQUENCY



SIGNAL TO NOISE AS A FUNCTION OF INPUT AMPLIFIER GAIN

