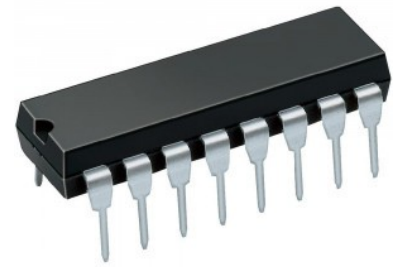




PRODUCT NAME : LM13700 Dual Operational Transconductance Amplifier

PRICE : Rs 250.00

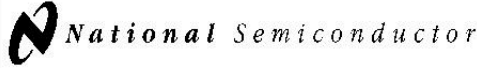
SKU : RM1990



DESCRIPTION

Features

- Two Current Controlled Amplifiers with Differential Inputs
- Excellent Matching Between Amplifiers
- Linearizing Diodes
- Controlled Impedance Buffers
- High Output Signal-to-Noise Ratio
- Ideal for Current Controlled Amplifiers, Filters and Oscillators



May 1998

LM13700/LM13700A Dual Operational Transconductance Amplifiers with Linearizing Diodes and Buffers

General Description

The LM13700 series consists of two current controlled transconductance amplifiers, each with differential inputs and a push-pull output. The two amplifiers share common supplies but otherwise operate independently. Linearizing diodes are provided at the inputs to reduce distortion and allow higher input levels. The result is a 10 dB signal-to-noise improvement referenced to 0.5 percent THD. High impedance buffers are provided which are especially designed to complement the dynamic range of the amplifiers. The output buffers of the LM13700 differ from those of the LM13600 in that their input bias currents (and hence their output DC levels) are independent of I_{ABC} . This may result in performance superior to that of the LM13600 in audio applications.

- Excellent g_m linearity
- Excellent matching between amplifiers
- Linearizing diodes
- High impedance buffers
- High output signal-to-noise ratio

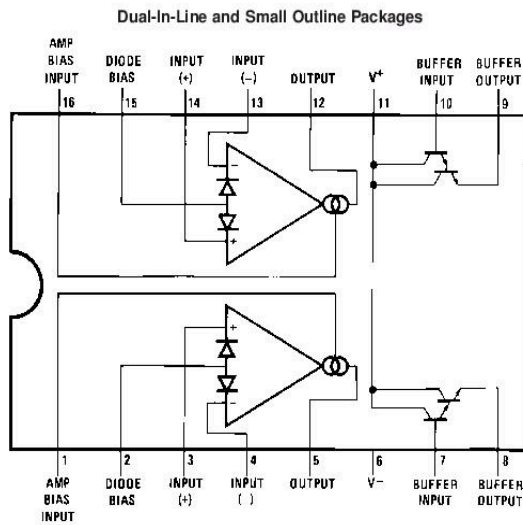
Applications

- Current-controlled amplifiers
- Current-controlled impedances
- Current-controlled filters
- Current-controlled oscillators
- Multiplexers
- Timers
- Sample-and-hold circuits

Features

- g_m adjustable over 6 decades

Connection Diagram



DS007981-2

Top View
Order Number LM13700M, LM13700N or LM13700AN
See NS Package Number M16A or N16A

LM13700/LM13700A Dual Operational Transconductance Amplifiers with Linearizing Diodes and Buffers

Absolute Maximum Ratings (Note 1)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage (Note 2)	
LM13700	36 V _{DC} or ±18V
LM13700A	44 V _{DC} or ±22V
Power Dissipation (Note 3) T _A = 25°C	
LM13700N, LM13700AN	570 mW
Differential Input Voltage	±5V
Diode Bias Current (I _D)	2 mA
Amplifier Bias Current (I _{ABC})	2 mA
Output Short Circuit Duration	Continuous
Buffer Output Current (Note 4)	20 mA

Operating Temperature Range

LM13700N, LM13700AN	0°C to +70°C
DC Input Voltage	+V _S to -V _S
Storage Temperature Range	-65°C to +150°C
Soldering Information	
Dual-In-Line Package	
Soldering (10 sec.)	260°C
Small Outline Package	
Vapor Phase (60 sec.)	215°C
Infrared (15 sec.)	220°C

See AN-450 "Surface Mounting Methods and Their Effect on Product Reliability" for other methods of soldering surface mount devices.

Electrical Characteristics (Note 5)

Parameter	Conditions	LM13700			LM13700A			Units
		Min	Typ	Max	Min	Typ	Max	
Input Offset Voltage (V _{OS})	Over Specified Temperature Range		0.4	4		0.4	1	mV
	I _{ABC} = 5 μA		0.3	4		0.3	1	
V _{OS} Including Diodes	Diode Bias Current (I _D) = 500 μA		0.5	5		0.5	2	mV
Input Offset Change	5 μA ≤ I _{ABC} ≤ 500 μA		0.1	3		0.1	1	mV
Input Offset Current			0.1	0.6		0.1	0.6	μA
Input Bias Current	Over Specified Temperature Range		0.4	5		0.4	5	μA
			1	8		1	7	
Forward Transconductance (g _m)	Over Specified Temperature Range	6700	9600	13000	7700	9600	12000	μmho
g _m Tracking			0.3			0.3		dB
Peak Output Current	R _L = 0, I _{ABC} = 5 μA		5		3	5	7	μA
	R _L = 0, I _{ABC} = 500 μA	350	500	650	350	500	650	
	R _L = 0, Over Specified Temp Range	300			300			
Peak Output Voltage	Positive		+12	+14.2		+12	+14.2	V
	Negative		-12	-14.4		-12	-14.4	
Supply Current	I _{ABC} = 500 μA, Both Channels		2.6			2.6		mA
V _{OS} Sensitivity	Positive		20	150		20	150	μV/V
	Negative		20	150		20	150	
CMRR		80	110		80	110		dB
Common Mode Range		±12	±13.5		±12	±13.5		V
Crosstalk	Referred to Input (Note 6) 20 Hz < f < 20 kHz		100			100		dB
Differential Input Current	I _{ABC} = 0, Input = ±4V		0.02	100		0.02	10	nA
Leakage Current	I _{ABC} = 0 (Refer to Test Circuit)		0.2	100		0.2	5	nA
Input Resistance		10	26		10	26		kΩ
Open Loop Bandwidth			2			2		MHz
Slew Rate	Unity Gain Compensated		50			50		V/μs
Buffer Input Current	(Note 6)		0.5	2		0.5	2	μA
Peak Buffer Output Voltage	(Note 6)	10			10			V

Note 1: "Absolute Maximum Ratings" indicate limits beyond which damage to the device may occur. Operating Ratings indicate conditions for which the device is functional, but do not guarantee specific performance limits.

Note 2: For selections to a supply voltage above ±22V, contact factory.

