BURR-BROWN®

3627

High Accuracy Unity-Gain DIFFERENTIAL AMPLIFIER

FEATURES

- LOW COST
- EASY TO USE
- COMPLETELY SELF-CONTAINED
- HIGH ACCURACY
  - Gain Error, 0.005%
  - Nonlinearity, 0.0005%
  - CMR, 106dB
- NO TRIMMING REQUIRED

DESCRIPTION

The 3627 is a high accuracy committed-gain differential amplifier. It consists of a high quality monolithic operation amplifier, a low drift thin-film resistor network and laser-trimmed offset circuitry - all inside a single integrated circuit package.

The fact that the 3627 is completely self-contained in a TO-99 package has several user benefits:

The total performance is guaranteed as a single component.

No gain adjustments are required.

No offset trimming is required.

The whole circuit, including the gain setting resistors and offset trim circuitry, is protected by the environmentally rugged hermetically sealed package.

The total amplifier function is very small in size (0.108 square inches of area and 0.025 cubic inches of volume).

The 3627 is offered in two grades; the 3627AM and the 3627BM. They differ only in common-mode rejection (94dB typ. vs 106dB typ.) and offset voltage drift (15μV/°C typ. vs 10μV/°C typ.)

The 3627 offers excellent total performance with no fuss and a very-low total installed cost.

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PDS-364A

SPECIFICATIONS

ELECTRICAL

Specifications at T_A = +25°C and ±15VDC power supply unless otherwise noted.

MODELS	3627AM	3627BM
GAIN		
Gain Equation	G = 1V/V(1)	
Gain Error	±0.01%, max (±0.005% typ)	
Gain Nonlinearity(2)	±0.001%, max (±0.0005% typ)	
Gain Temp. Coefficient, max	±0.0005%/°C (5ppm/°C)	
Gain Temp. Coefficient, typ	±0.0002%/°C (2ppm/°C)	
OUTPUT		
Rated Output, min	±10V at ±5mA	
Rated Output, typ	±12V at ±10mA	
Output Impedance	0.01Ω	
INPUT		
Input Impedance		
Differential	50kΩ	
Common-mode	50kΩ	
Input Voltage Range		
Differential	±20V	
Common-mode	±20V	
Common-mode Rejection, DC to 60Hz		
CMR, at 25°C	90dB, min (94dB, typ)	100dB, min (106dB, typ)
CMR, -25°C to +85°C	80dB, min (90dB, typ)	86dB, min (94dB, typ)
OFFSET AND NOISE		
Offset Voltage, RTO(4)(5)		
at 25°C	250µV, max (100µV, typ)	
vs Temperature, µV/°C	30, max (15, typ)	20, max (10, typ)
vs Supply	20µV/V	
vs Time	20µV/mo	
Noise Voltage, RTO(4)(6)		
0.01Hz to 10Hz	2µV, p-p	
10Hz to 100Hz	1.5µV, rms	
DYNAMIC RESPONSE		
Small Signal, ±1% Flatness	5kHz min (8kHz, typ)	
Small Signal, ±3dB Flatness	0.8MHz min (1.2MHz, typ)	
Full Power Bandwidth	14kHz min (18kHz, typ)	
Slew Rate	0.6V/µsec min (1V/µsec, typ)	
Settling Time, 0.1% (±10mV)	20µsec	
Settling Time, 0.01% (±1mV)	50µsec	
POWER SUPPLY		
Rated Voltage	±15VDC	
Voltage Range	±5VDC to ±18VDC	
Quiescent Supply Current	±2mA	
TEMPERATURE RANGE		
Specifications, min	-25°C to +85°C	
Operation	-55°C to +125°C	
Storage	-65°C to +150°C	

NOTES:

1. Connected as unity-gain amplifier. Several other configurations are possible. See the figures in Discussion and Typical Applications.
2. Nonlinearity is the maximum peak deviation from the best straightline as a percent of full scale peak-to-peak output.
3. With zero source impedance unbalance.
4. Referred to output in unity-gain difference configuration. Note that this circuit has a gain of 2 for the operational amplifiers offset voltage and noise voltage.
5. Includes effects of amplifiers' input bias currents.
6. Includes effects of amplifiers' input current noise.

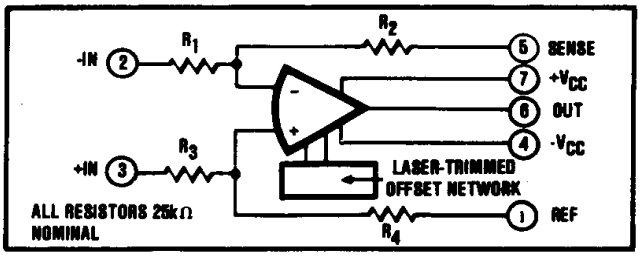
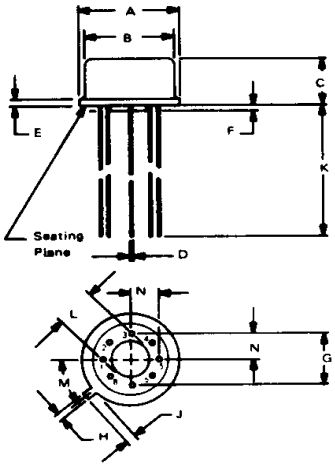


FIGURE 1. Simplified Circuit Diagram.

MECHANICAL
TO-99

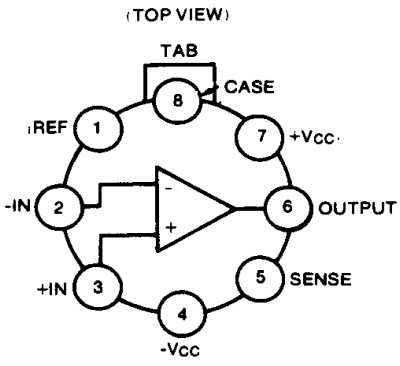


NOTE
Leads in true position within .010" (.25mm) R @ MMC at seating plane

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.335	.370	8.51	9.40
B	.305	.335	7.75	8.51
C	.165	.185	4.19	4.70
D	.016	.021	0.41	0.53
E	.010	.040	0.25	1.02
F	.010	.040	0.25	1.02
G	.200 BASIC		5.08 BASIC	
H	.028	.034	0.71	0.86
J	.029	.045	0.74	1.14
K	.500	---	12.7	
L	.110	.160	2.79	4.06
M	45° BASIC		45° BASIC	
N	.095	.105	2.41	2.67

Pin material and plating compostion conform to method 2003 (solderability) of MIL-STD-883 (except paragraph 3.2).

CONNECTION DIAGRAM



See Figure 1 for circuit diagram.