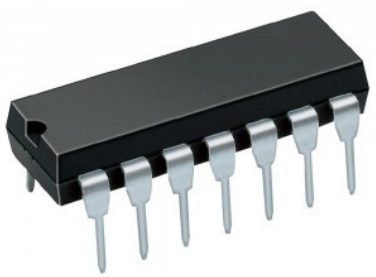
PRODUCT NAME : LM725 Instrumentation Operational Amplifier



PRICE : Rs 39.00
SKU : RM1976

DESCRIPTION

Features

- Designed for Low Noise, Low Drift and Accurate Closed Loop Gain Applications
- Input Offset Voltage: 0.5 mV
- Input Offset Current: 2 nA
- High Open Loop Gain: 3,000,000
- High Common Mode Rejection: 120 dB
- Supply Voltage: ±3V to ±22V

National Semiconductor

May 1998

LM725
Operational Amplifier

General Description

The LM725/LM725A/LM725C are operational amplifiers featuring superior performance in applications where low noise, low drift, and accurate closed-loop gain are required. With high common mode rejection and offset null capability, it is especially suited for low level instrumentation applications over a wide supply voltage range.

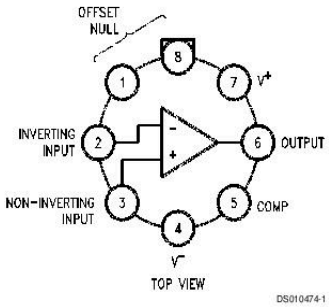
The LM725A has tightened electrical performance with higher input accuracy and like the LM725, is guaranteed over a −55˚C to +125˚C temperature range. The LM725C has slightly relaxed specifications and has its performance guaranteed over a 0˚C to 70˚C temperature range.

Features

- High open loop gain 3,000,000
- Low input voltage drift 0.6 µV/˚C
- High common mode rejection 120 dB
- Low input noise current 0.15 pA/√Hz
- Low input offset current 2 nA
- High input voltage range ±14V
- Wide power supply range ±3V to ±22V
- Offset null capability
- Output short circuit protection

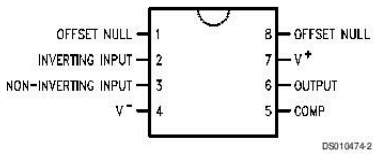
Connection Diagrams

Metal Can Package



Order Number LM725H/883, LM725CH or LM725AH/883
See NS Package Number H08C

Dual-In-Line Package



Order Number LM725CN
See NS Package Number N08E

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	±22V
Internal Power Dissipation (Note 2)	500 mW
Differential Input Voltage	±5V
Input Voltage (Note 3)	±22V
Storage Temperature Range	−65˚C to +150˚C
Lead Temperature (Soldering, 10 Sec.)	260˚C
Maximum Junction Temperature	150˚C

Operating Temperature Range	$T_{A(MIN)}$		$T_{A(MAX)}$
LM725	−55˚C	to	+125˚C
LM725A	−55˚C	to	+125˚C
LM725C	0˚C	to	+70˚C

Electrical Characteristics (Note 4)

Parameter	Conditions	LM725A			LM725			LM725C			Units
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Offset Voltage (Without External Trim)	T_A = 25˚C, $R_S \le 10$ kΩ			0.5		0.5	1.0		0.5	2.5	mV
Input Offset Current	T_A = 25˚C		2.0	5.0		2.0	20		2.0	35	nA
Input Bias Current	T_A = 25˚C		42	80		42	100		42	125	nA
Input Noise Voltage	T_A = 25˚C										
	f_o = 10 Hz		15			15			15		nV/√Hz
	f_o = 100 Hz		9.0			9.0			9.0		nV/√Hz
	f_o = 1 kHz		8.0			8.0			8.0		nV/√Hz
Input Noise Current	T_A = 25˚C										
	f_o = 10 Hz		1.0			1.0			1.0		pA/√Hz
	f_o = 100 Hz		0.3			0.3			0.3		pA/√Hz
	f_o = 1 kHz		0.15			0.15			0.15		pA/√Hz
Input Resistance	T_A = 25˚C		1.5			1.5			1.5		MΩ
Input Voltage Range	T_A = 25˚C	±13.5	±14		±13.5	±14		±13.5	±14		V
Large Signal Voltage Gain	T_A = 25˚C, $R_L \ge 2$ kΩ, V_{OUT} = ±10V	1000	3000		1000	3000		250	3000		V/mV
Common-Mode Rejection Ratio	T_A = 25˚C, $R_S \le 10$ kΩ	120			110	120		94	120		dB
Power Supply Rejection Ratio	T_A = 25˚C, $R_S \le 10$ kΩ		2.0	5.0		2.0	10		2.0	35	µV/V
Output Voltage Swing	T_A = 25˚C,										
	$R_L \ge 10$ kΩ	±12.5	±13.5		±12	±13.5		±12	±13.5		V
	$R_L \ge 2$ kΩ	±12.0	±13.5		±10	±13.5		±10	±13.5		V
Power Consumption	T_A = 25˚C		80	105		80	105		80	150	mW
Input Offset Voltage (Without External Trim)	$R_S \le 10$ kΩ			0.7			1.5			3.5	mV
Average Input Offset Voltage Drift (Without External Trim)	R_S = 50Ω			2.0		2.0	5.0		2.0		µV/˚C
Average Input Offset Voltage Drift (With External Trim)	R_S = 50Ω		0.6	1.0		0.6			0.6		µV/˚C
Input Offset Current	$T_A = T_{MAX}$		1.2	4.0		1.2	20		1.2	35	nA
	$T_A = T_{MIN}$		7.5	18.0		7.5	40		4.0	50	nA
Average Input Offset Current Drift			35	90		35	150		10		pA/˚C
Input Bias Current	$T_A = T_{MAX}$		20	70		20	100			125	nA
	$T_A = T_{MIN}$		80	180		80	200			250	nA