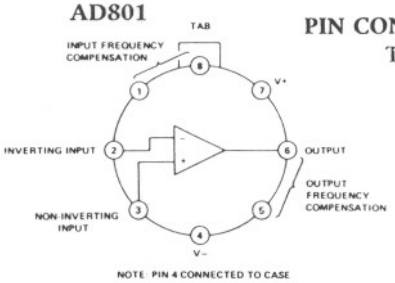
LOW INPUT CURRENT 709, 741 REPLACEMENTS
AD801, AD502

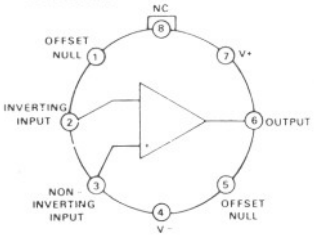
AD801

PIN CONFIGURATIONS
Top View



TO-99

AD502



GENERAL DESCRIPTION

The AD801 and AD502 are low input current replacements for the popular 709 and 741 operational amplifiers. Levels of I_b below 4nA and I_{OS} below 1nA are achieved by utilizing a Darlington input modification of the basic 709 and 741 designs, with no significant change in other operating parameters. Thus the user is afforded the opportunity of upgrading performance in his 709 and 741 sockets without resorting to a new amplifier design. The AD801 offers the 709's flexibility of external compensation; the AD502, like the 741, is internally compensated. Both devices are supplied in the TO-99 metal can package.

SPECIFICATION SUMMARY (Typical @ T_A = +25°C and V_S = ±15V unless otherwise noted)

	AD801			AD502		
	A	B	S	J	K	L
Open Loop Gain						
$R_L \geq 2k\Omega$, E_O = ±10V, min	15,000	*	*	20,000	**	**
Rated Output Voltage						
$R_L \geq 2k\Omega$, min	±10V	*	*	±10V	**	**
Frequency Response						
Unity Gain, Small Signal	500kHz (note 1)	*	*	1MHz	**	**
Full Power Response	200kHz (note 2)	*	*	10kHz	**	**
Slew Rate	10V/μsec (note 2)	*	*	0.5V/μsec	**	**
Input Offset Voltage						
@ +25°C max	±5mV	*	*	±6mV	±5mV	±5mV
Over Temp Range (T_l to T_h), max	±7.4mV	±5.6mV	±7.0mV	±7.5mV	±6mV	±6mV
Avg. vs Temp (T_l to +25°C to T_h), max	±40μV/°C	±10μV/°C	±20μV/°C	±40μV/°C	±20μV/°C	±10μV/°C
vs Supply Voltage, max	±200μV/V	*	*	±150μV/V	**	**
Input Bias Current						
@ +25°C, max	4nA	*	*	25nA	7nA	4nA
Over Temp Range (T_l to T_h), max	11nA	*	16nA	50nA	15nA	10nA
Input Difference Current						
@ +25°C, max	±2nA	±1nA	±2nA	±12nA	±4nA	±1nA
Over Temp Range (T_l to T_h), max	±8nA	±2nA	±5nA	±24nA	±8nA	±2nA
Input Impedance						
Differential, min	25MΩ	*	*	25MΩ	**	**
Common Mode	500MΩ	*	*	500MΩ	**	**
Input Voltage Noise[1]						
0.01 to 10Hz, p-p	100μV	*	*	100μV	**	**
10Hz to 5kHz, rms	6μV	*	*	6μV	**	**
Input Voltage Range						
Common Mode Voltage, Min	±8V	*	*	±10V	**	**
Common Mode Rejection, Min	65dB	*	*	70dB	**	**
Max Safe Differential Voltage	±10V	*	*	±V_S	**	**
Power Supply						
Voltage, Rated Specification	±(15 to 16)V	*	*	±(15 to 16)V	**	**
Voltage, Derated Specification	±(5 to 18)V	*	*	±(5 to 18)V	**	**
Current, Quiescent, max	±6mA	*	*	±2.8mA	**	**
Temperature Range						
Operating, Rated Specifications	T_l = -25°C, T_h = +85°C	T_l = -25°C, T_h = +85°C	T_l = -55°C, T_h = +125°C	T_l = 0, T_h = +70°C	**	**
Operating, Derated Specifications	-55°C to +125°C	*	*	-55°C to +125°C	**	**
Storage	-65°C to +150°C	*	*	-65°C to +150°C	**	**
Mechanical						
Case Style - Pin Configuration	TO-99	*	*	TO-99	**	**
Price						
1-24	$14.00	$19.00	$23.00	$4.50	$9.00	$19.00
25-99	$12.00	$16.00	$19.00	$3.60	$7.20	$15.00
100-999	$9.75	$13.00	$15.00	$3.00	$6.00	$12.50

NOTES:

1. C_1 = 5000pF, R_1 = 1.5kΩ, C_2 = 200pF (A_{CL} = 1).
2. C_1 = 10pF, R_1 = 0Ω, C_2 = 3pF (A_{CL} = 1000).

*Specifications same as for AD801A.
**Specifications same as for AD502J.