

## General Purpose Operational Amplifiers

### GENERAL DESCRIPTION

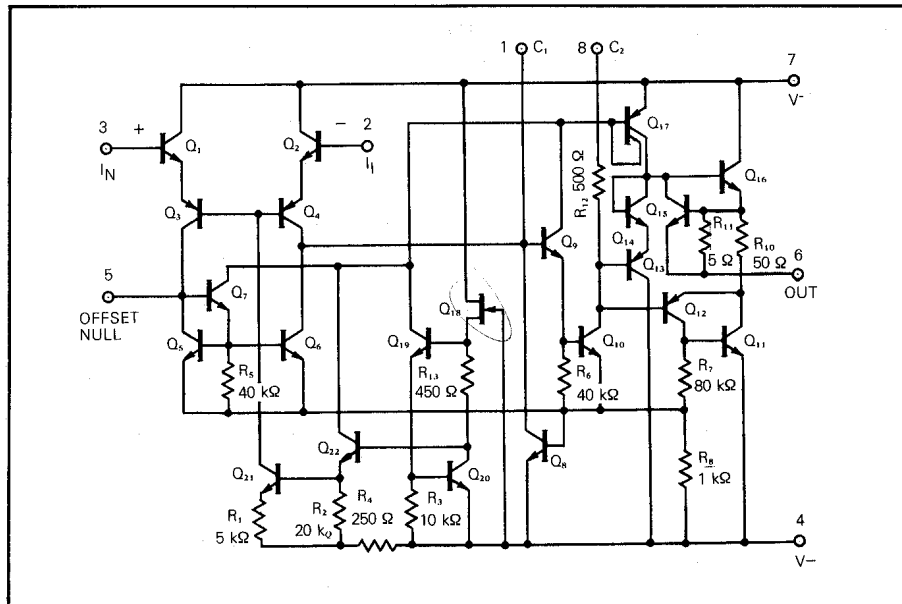
μPC157/301A are general purpose operational amplifiers which features higher performance than that of 709 type. This amplifier offers many features which make its application nearly foolproof: overload protection on the input and output, no latch up when the common mode range is exceeded, freedom from oscillations with a single 30 pF capacitor. Frequency compensation can be tailored to the individual circuit with single external capacitor.

Two kinds of ICs are available according to reliability, the μPC157 for industry, the μPC301A for commercial.

### FEATURES

- Wide Common Mode and Differential Voltage Range
- Short Circuit Protection
- No Latch Up
- Offset Voltage Null Capability
- Frequency and Transient Response Characteristics Adjustable
- LM301A Direct Replacement

### EQUIVALENT CIRCUIT



### ORDERING INFORMATION

μPC157A



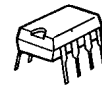
8 pin Metal Can Package

μPC157D



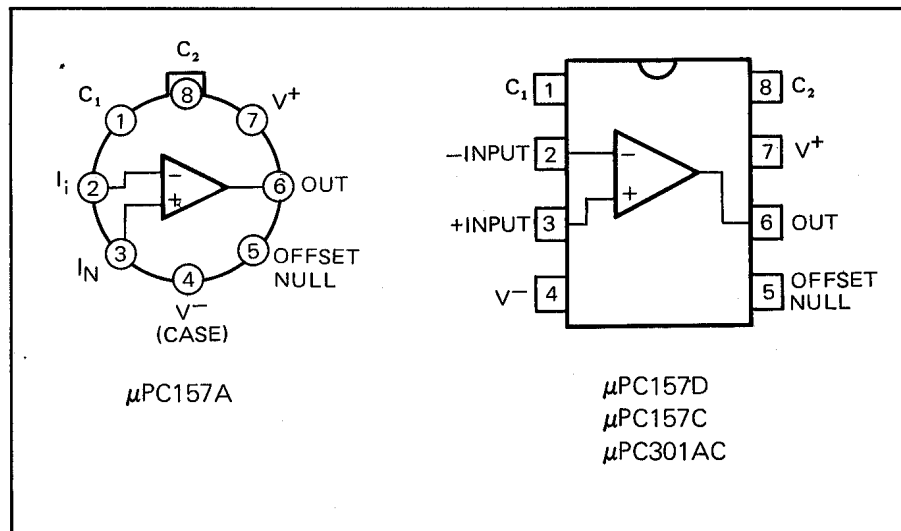
8 pin Ceramic DIP  
(Dual In-Line Package)

μPC157C/μPC301AC



8 pin Plastic Molded DIP  
(Dual In-Line Package)

### CONNECTION DIAGRAM (Top View)



**ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)**

PARAMETER		μPC157	μPC301A	UNIT
Voltage between V <sup>+</sup> and V <sup>-</sup>		36	36	V
Power Dissipation*	A or D Package	500	—	mW
	C Package	350	350	
Differential Input Voltage		±30	±30	V
Input Voltage (Note 1)		±15	±15	V
Output Short Circuit Duration		Indefinite	Indefinite	s
Operating Temperature Range	A or D Package	-20 to +80	—	°C
	C Package	-20 to +70	0 to +70	
Storage Temperature Range	A Package	-65 to +175	—	°C
	D Package	-55 to +150	—	
	C Package	-55 to +125	-55 to +125	

Note 1: For supply voltages less than ±15 V, the absolute maximum input voltage is equal to the supply voltage.

\* See thermal information in Chapter 11.

**ELECTRICAL CHARACTERISTICS (Ta = 25°C, V<sup>±</sup> = ±5 V to ±15 V)**

CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Input Offset Voltage		2.0	7.5	mV	R <sub>s</sub> ≤ 50 kΩ
Average Input Offset Voltage Drift		6.0	30	μV/°C	R <sub>s</sub> ≤ 50 kΩ, V <sup>±</sup> = ±15 V
Input Offset Current		3	50	nA	
Average Input Offset Current Drift		0.02	0.6	nA/°C	V <sup>±</sup> = ±15 V
Input Bias Current		70	250	nA	
Input Impedance	0.5	2		MΩ	
Large Signal Voltage Gain	25,000	160,000			V <sup>±</sup> = ±15 V, V <sub>O</sub> = ±10 V, R <sub>L</sub> ≥ 2 kΩ
Supply Current		1.8	3	mA	
Output Voltage Swing	±12	±14		V	V <sup>±</sup> = ±15 V, R <sub>L</sub> ≥ 10 kΩ
Output Voltage Swing	±10	±13		V	V <sup>±</sup> = ±15 V, R <sub>L</sub> ≥ 2 kΩ
Common-Mode Input Voltage Range	±12			V	V <sup>±</sup> = ±15 V
Common-Mode Rejection Ratio	70	90		dB	R <sub>s</sub> ≤ 50 kΩ
Supply Voltage Rejection Ratio	70	90		dB	R <sub>s</sub> ≤ 50 kΩ

Standard Compensation and Offset Balance Circuit

