

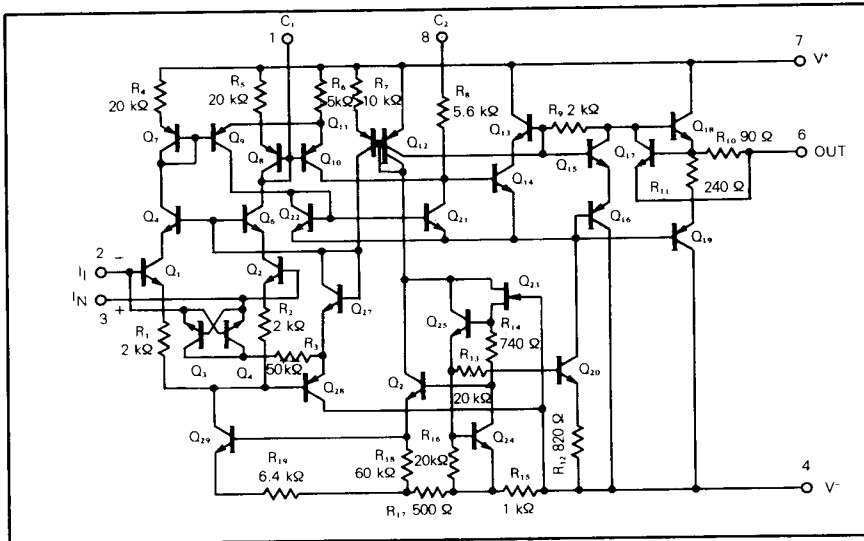
### GENERAL DESCRIPTION

The μPC156 is a precision operational amplifier having specifications better than FET amplifiers over a temperature range. High input impedance, low noise, low input offset and temperature drift are made possible through use of super beta transistors. Increased slew rate is also available by use of feedforward compensation techniques. In addition to the above features, the wide supply voltage range and excellent SVRR assure maximum flexibility in general applications.

### FEATURES

- Extremely Low Input Bias Current of 1.5 nA Typ.
- High Input Impedance of 40 MΩ
- Low Input Offset Voltage Drift
- Low Power Consumption
- LM308 Direct Replacement

### EQUIVALENT CIRCUIT



### ORDERING INFORMATION

μPC156A



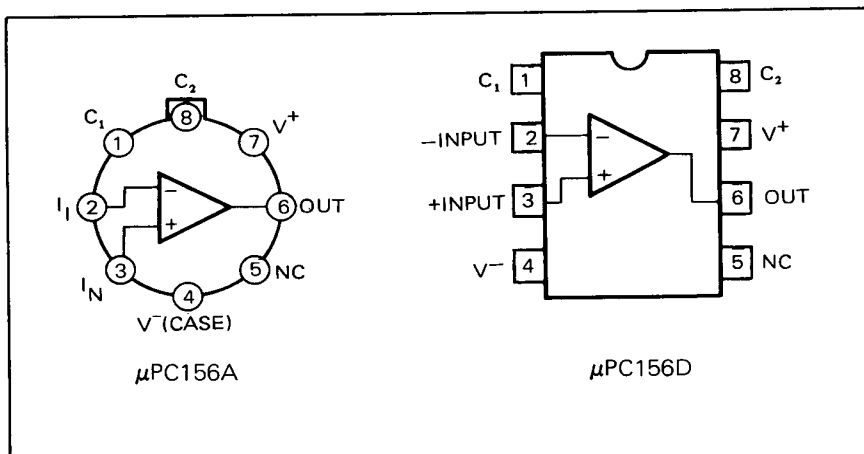
8 pin Metal Can Package

μPC156D



8 pin Ceramic DIP  
(Dual In-Line Package)

### CONNECTION DIAGRAM (Top View)



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

PARAMETER		μPC156	UNIT
Voltage between V <sup>+</sup> and V <sup>-</sup>		36	V
Power Dissipation*	A or D Package	500	mW
Differential Input Current (Note 1)		±10	mA
Input Voltage (Note 2)		±15	V
Output Short Circuit Duration		Indefinite	s
Operating Temperature Range	A or D Package	-20 to +80	°C
Storage Temperature Range	A Package	-65 to +175	°C
	D Package	-55 to +150	

Note 1: The inputs are shunted with back-to-back diodes for over voltage protection. Therefore excessive current will flow if a differential input voltage in excess of 1 V is applied between the inputs unless adequate limiting resistance is used.

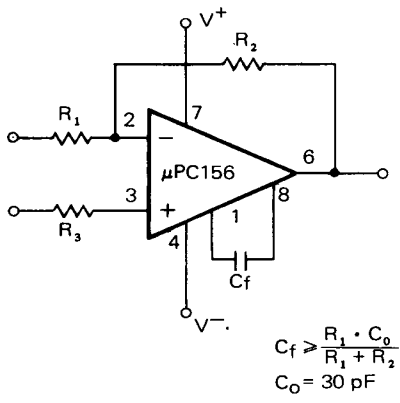
- 2: For supply voltages less than ±15 V, the absolute maximum input voltage is equal to the supply voltage.
- \* See thermal information in chapter 11.

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

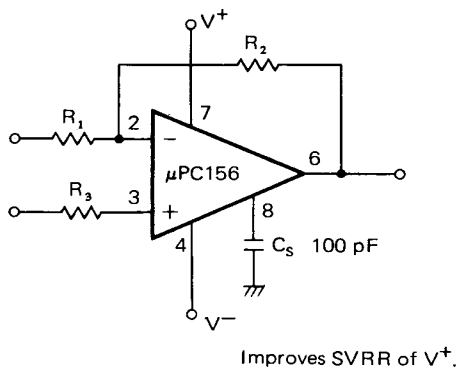
CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Input Offset Voltage		2	7.5	mV	R <sub>S</sub> ≤ 100 kΩ
Average Input Offset Voltage Drift		6		μV/°C	
Input Bias Current		1.5	7	nA	
Input Offset Current		0.2	1	nA	
Average Input Offset Current Drift		2		pA/°C	
Input Impedance	10	40		MΩ	
Large Signal Voltage Gain	25,000	300,000			R <sub>L</sub> ≥ 10 kΩ
Output Voltage Swing	±13	±14		V	R <sub>L</sub> ≥ 10 kΩ
Common Mode Rejection Ratio	80	100		dB	
Supply Voltage Rejection Ratio		20	100	μV/V	
Supply Current			0.8	mA	

**Compensation Circuit**

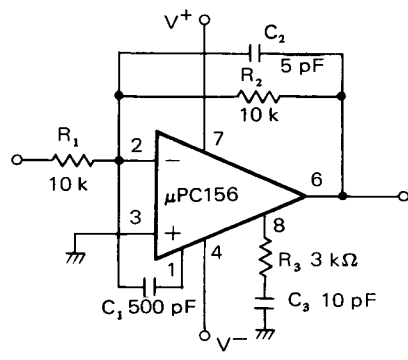
Standard Compensation



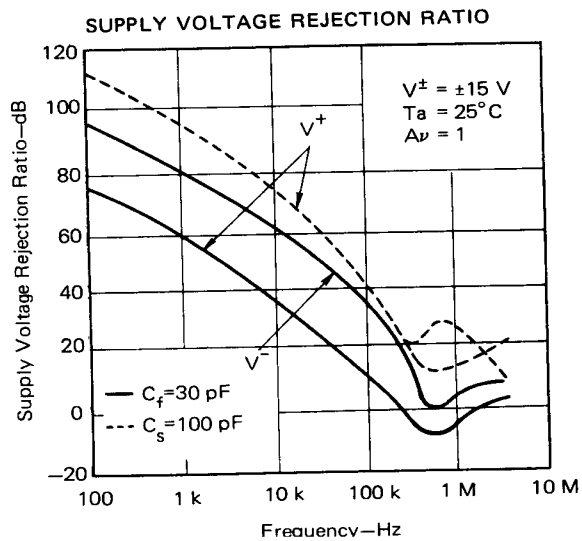
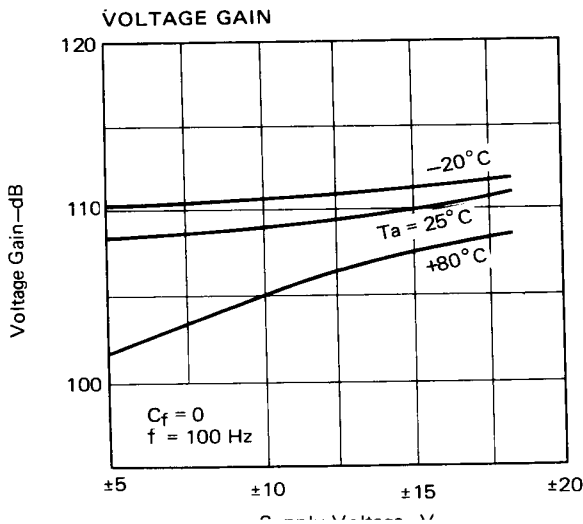
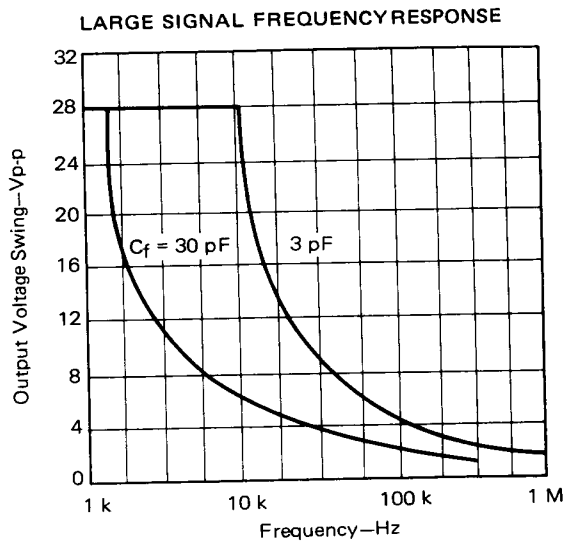
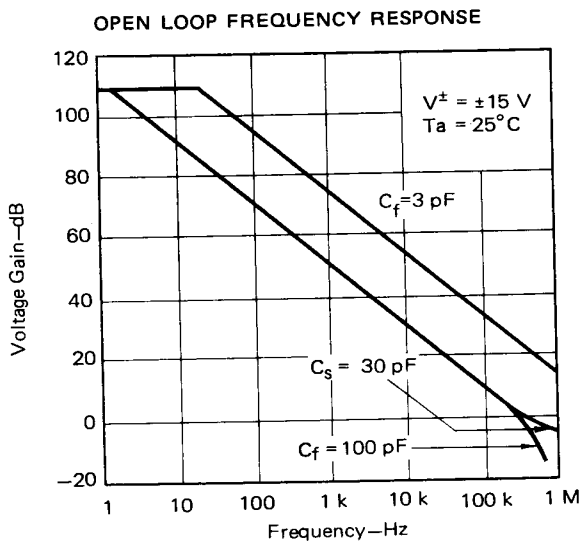
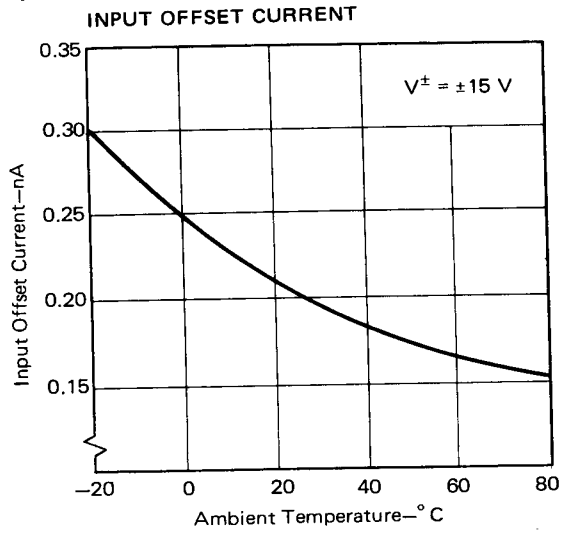
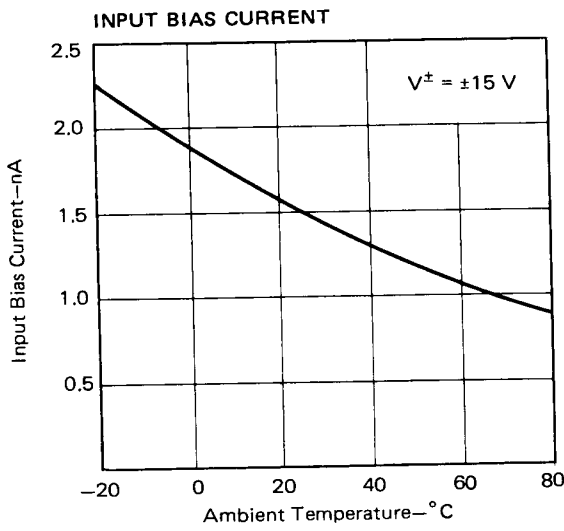
Alternate Frequency Compensation



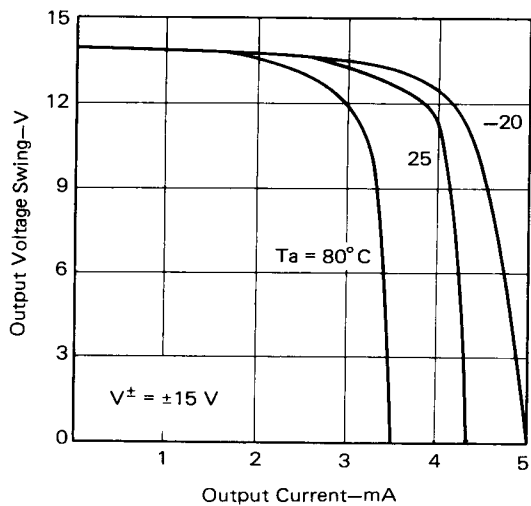
Feedforward Compensation



TYPICAL PERFORMANCE CHARACTERISTICS (Ta = 25°C)



**CURRENT LIMITING**



**VOLTAGE FOLLOWER PULSE RESPONSE**

