

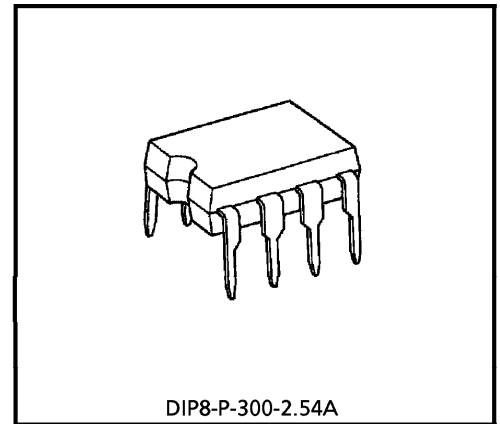
# TA75070P

## SINGLE OPERATIONAL AMPLIFIER

The TA75070P is a Low-Noise J-FET input operational amplifier with low input bias and offset current, fast slew rate and wide bandwidth. The TA75070P is pin compatible with the TA7506P and 301A allowing designers to immediately upgrade the overall performance of existing designs. The TA75070P is an excellent choice for active filters, integrators and sample-and-hold circuits.

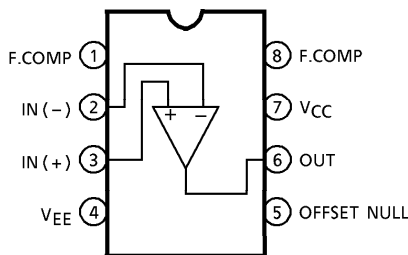
### FEATURES

- Low Input Bias Current : 200pA Max.
- Low Input Offset Current : 50pA Max.
- High Slew Rate : 13V /  $\mu$ s ( $A_V = 1$ )
- Low Noise : 18nV /  $\sqrt{\text{Hz}}$
- Wide Supply Voltage Range :  $\pm 4 \sim \pm 18\text{V}$
- Output Short Circuit Protection
- Offset Null Capability

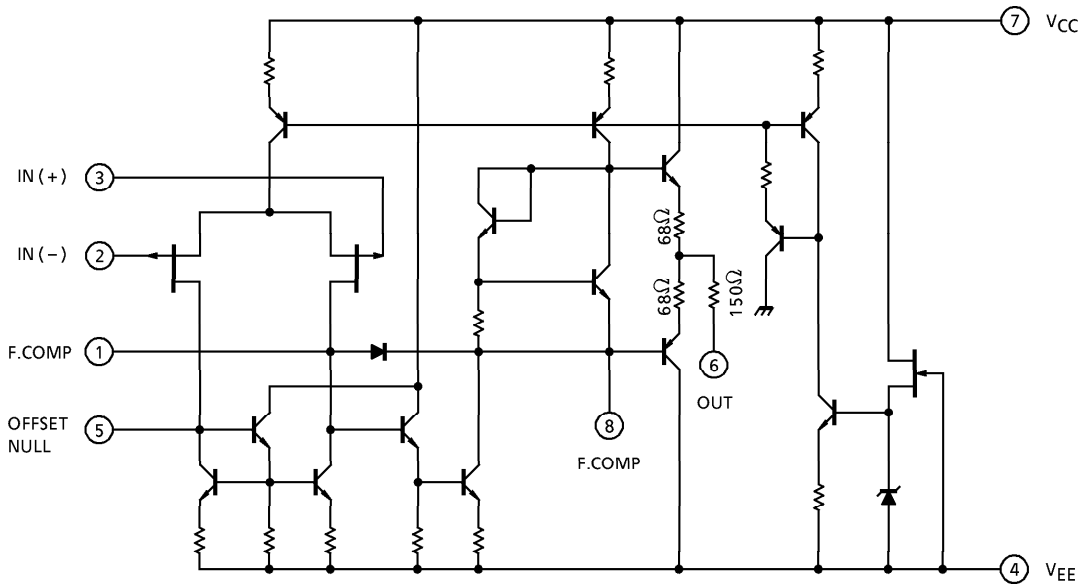


Weight : 0.5g (Typ.)

### PIN CONNECTION (TOP VIEW)



EQUIVALENT CIRCUIT



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>CC</sub>	+ 18	V
	V <sub>EE</sub>	- 18	V
Differential Input Voltage	DV <sub>IN</sub>	± 30	V
Input Voltage	V <sub>IN</sub>	± 15	V
Power Dissipation	P <sub>D</sub>	500	mW
Operating Temperature	T <sub>opr</sub>	- 40~85	°C
Storage Temperature	T <sub>stg</sub>	- 55~125	°C

ELECTRICAL CHARACTERISTICS ( $V_{CC} = 15V$ ,  $V_{EE} = -15V$ ,  $T_a = 25^\circ C$ )

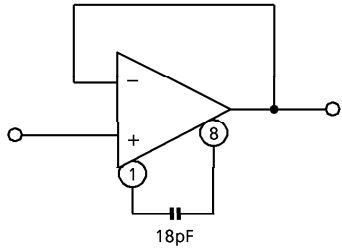
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	$V_{IO}$	—	$R_g \leq 10k\Omega$	—	3	10	mV
TC of Input Offset Voltage	$TCV_{IO}$	—	—	—	10	—	$\mu V / ^\circ C$
Input Offset Current	$I_{IO}$	—	—	—	5	50	pA
Input Bias Current	$I_I$	—	—	—	30	200	pA
Common Mode Input Voltage	$CMV_{IN}$	—	—	$\pm 11$	$\pm 12$	—	V
Maximum Output Voltage	$V_{OM}$	—	$R_L = 10k\Omega$	24	—	—	$V_{p-p}$
	$V_{OMR}$	—	$R_L = 2k\Omega$	20	24	—	
Voltage Gain (Open Loop)	$G_V$	—	$V_{OUT} = \pm 10V$ , $R_L = 2k\Omega$	25	200	—	V / mV
Unity Gain Cross Frequency	$f_T$	—	Open Loop, $R_L = 10k\Omega$	—	3	—	MHz
Input Resistance	$R_{IN}$	—	—	—	$10^{12}$	—	$\Omega$
Common Mode Input Signal Rejection Ratio	CMRR	—	$R_g \leq 10k\Omega$	70	76	—	dB
Supply Voltage Rejection Ratio	SVRR	—	$R_g \leq 10k\Omega$	70	76	—	dB
Supply Current	$I_{CC}$ , $I_{EE}$	—	Non Load	—	1.4	2.5	mA

OPERATING CHARACTERISTICS ( $V_{CC} = 15V$ ,  $V_{EE} = -15V$ ,  $T_a = 25^\circ C$ )

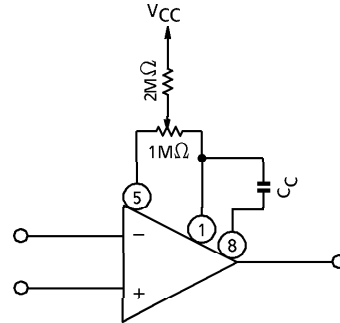
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Slew Rate	SR	—	$V_{IN} = 10V_{p-p}$ , $R_L = 2k\Omega$ , $C_L = 100pF$	—	13	—	V / $\mu s$	
Equivalent Input Noise Voltage	$V_{NI}$	—	$R_S = 100\Omega$	$f = 1kHz$	—	18	—	$nV \sqrt{Hz}$
				$f = 10Hz \sim 10kHz$	—	4	—	$\mu V_{rms}$
Equivalent Input Noise Current	$I_{NI}$	—	$R_S = 100\Omega$ , $f = 1kHz$	—	0.01	—	$pA \sqrt{Hz}$	
Total Harmonic Distortion	THD	—	$V_{OUT} = 10V_{rms}$ , $R_S \leq 1k\Omega$ , $R_L \geq 2k\Omega$ , $f = 1kHz$	—	0.01	—	%	

**TYPICAL APPLICATION**

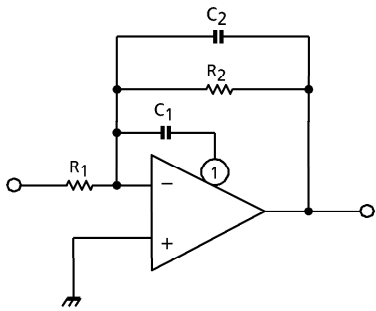
(1) UNITY-GAIN BUFFER



(2) OFFSET NULL CIRCUIT



(3) FEED FORWARD COMPENSATION

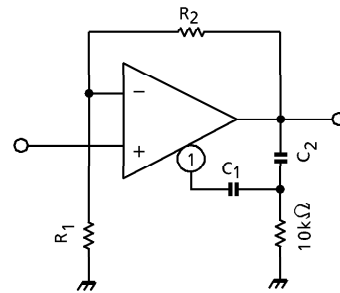


$$C_1 = 500\text{pF}$$

$$C_2 = \frac{1}{2\pi f_o R_2}$$

$$f_o \approx 3\text{MHz}$$

(4) TWO POLE COMPENSATION

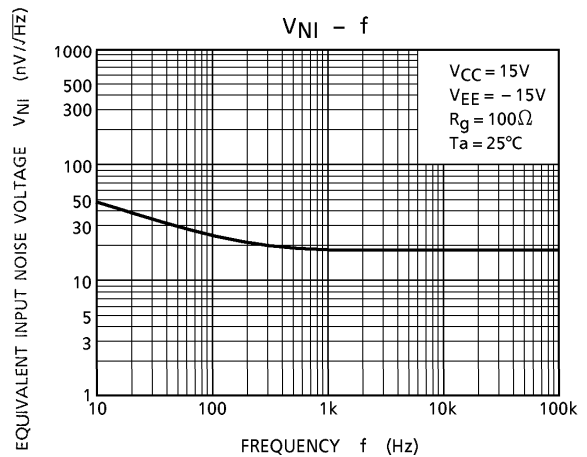
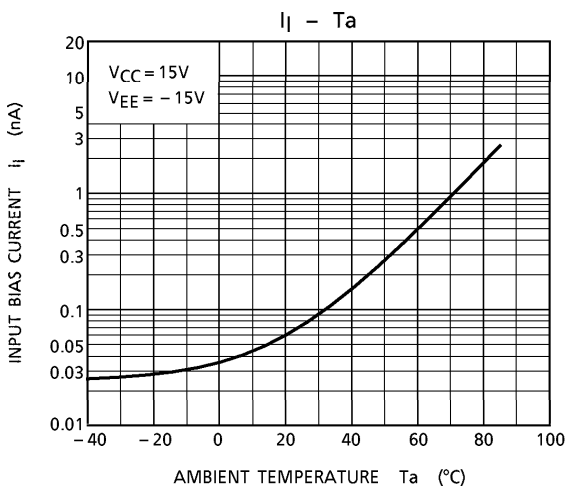
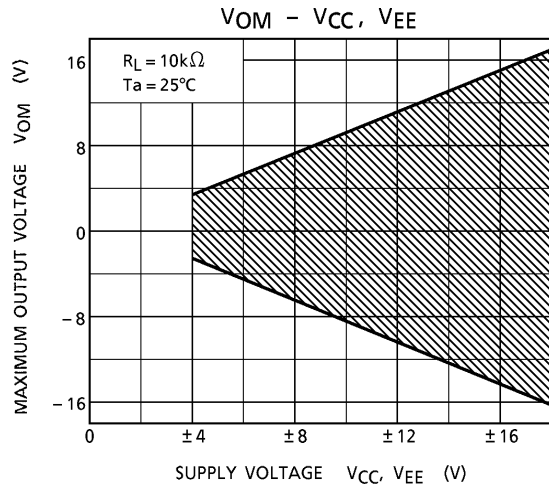
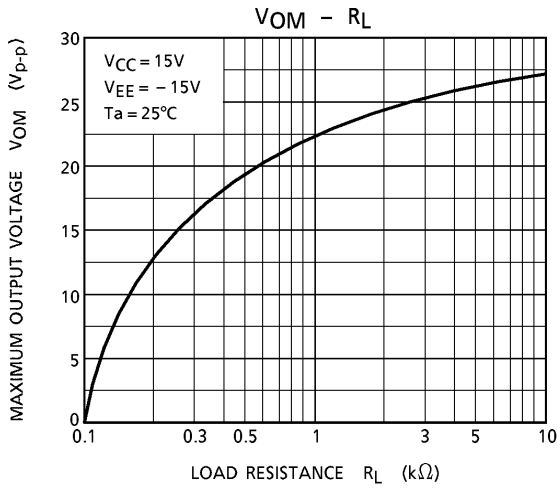
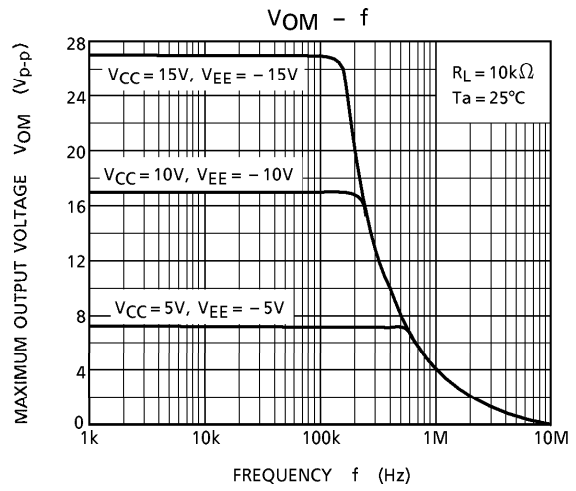
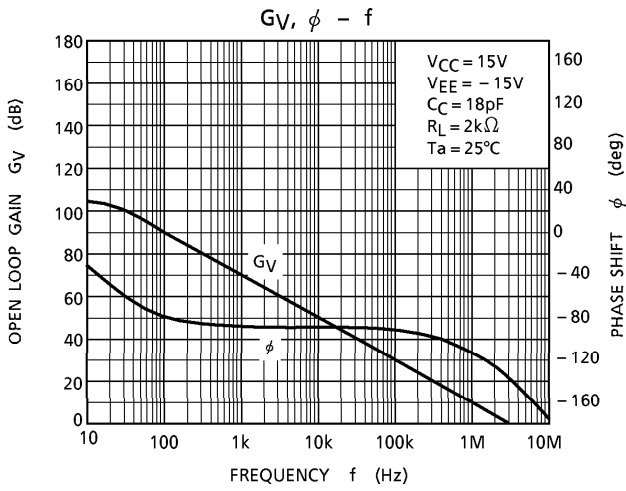


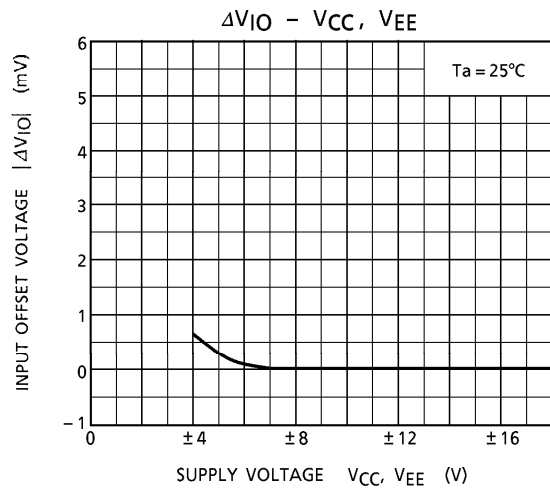
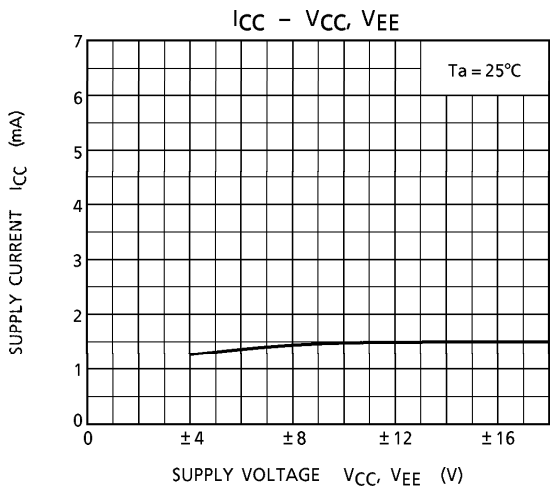
$$C_1 > \frac{R_1}{R_1 + R_2} C_S$$

$$C_S = 18\text{pF}$$

$$C_2 = 10C_1$$

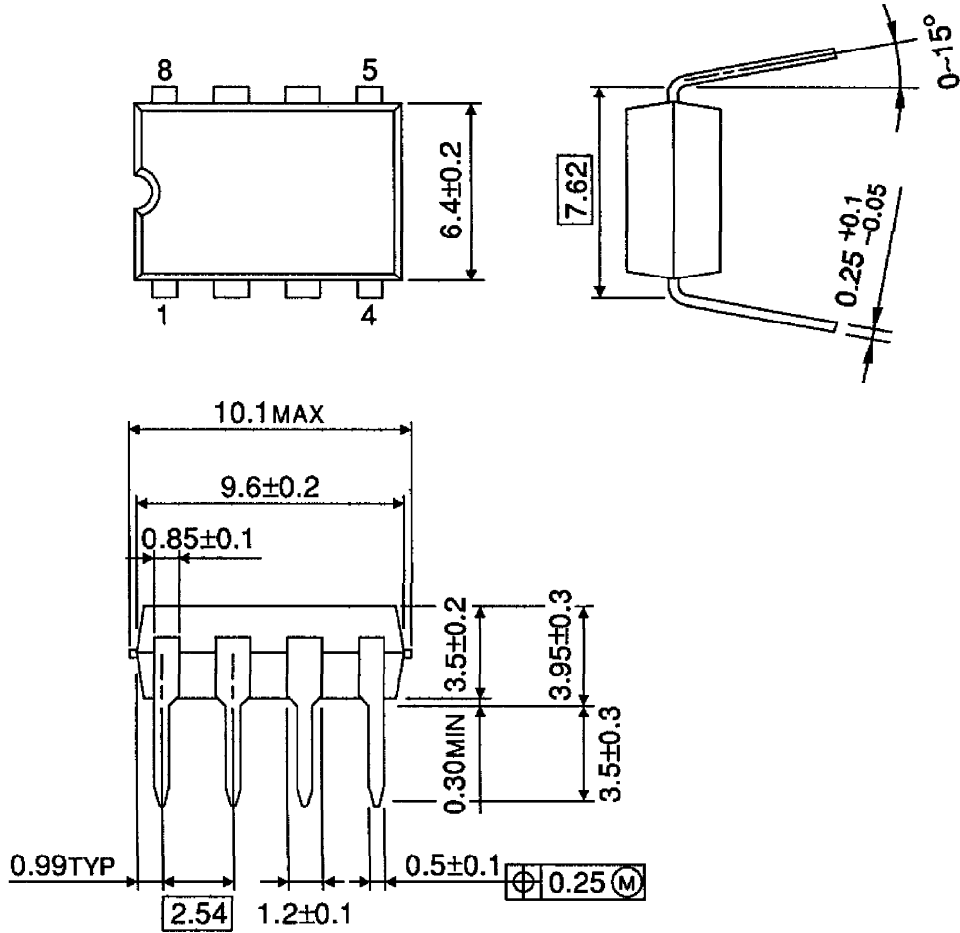
CHARACTERISTICS





PACKAGE DIMENSIONS  
DIP8-P-300-2.54A

Unit : mm



Weight : 0.5g (Typ.)

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