

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

# TA75071P, TA75071S

## SINGLE OPERTIONAL AMPLIFIER

The TA75071P and TA75071S are J-FET input low-noise operational amplifiers with low input bias and offset current, fast slew rate and wide bandwidth.

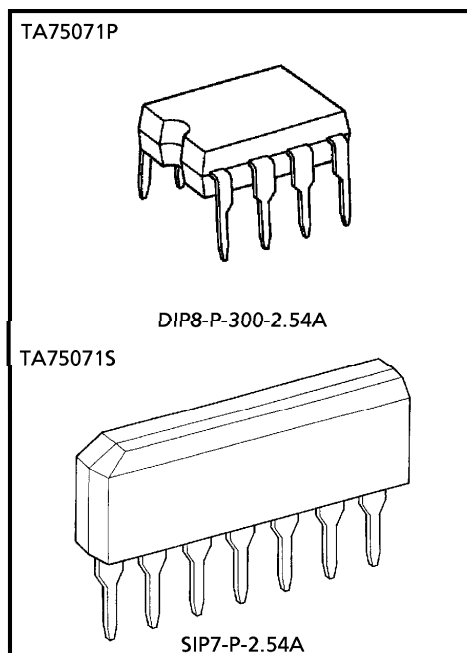
The TA75071P is pin compatible with the TA7504P and 741.

The TA75071S is single-in-line package.

The TA75071P series are excellent choice for active filters, integrators, buffers and sample-and-hold circuits.

### FEATURES

- Low Input Bias Current : 200pA MAX.
- Low Input Offset Current : 50pA MAX.
- High Slew Rate :  $13V / \mu s$
- Low Noise :  $18nV / \sqrt{Hz}$
- Wide Bandwidth : 3MHz
- Wide Supply Voltage Range :  $\pm 4 \sim \pm 18V$
- Internal Frequency Compensation
- Output Short Circuit Protection
- Offset Null Capability



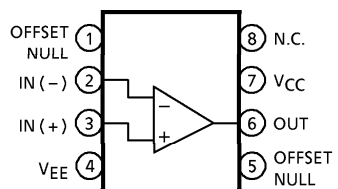
Weight  
 DIP8-P-300-2.54A : 0.5g (Typ.)  
 SIP7-P-2.54A : 0.7g (Typ.)

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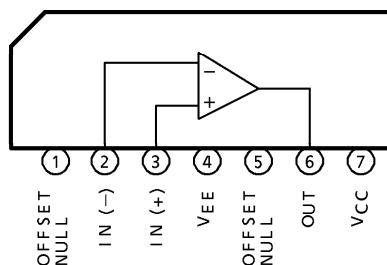
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## PIN CONNECTION (TOP VIEW)

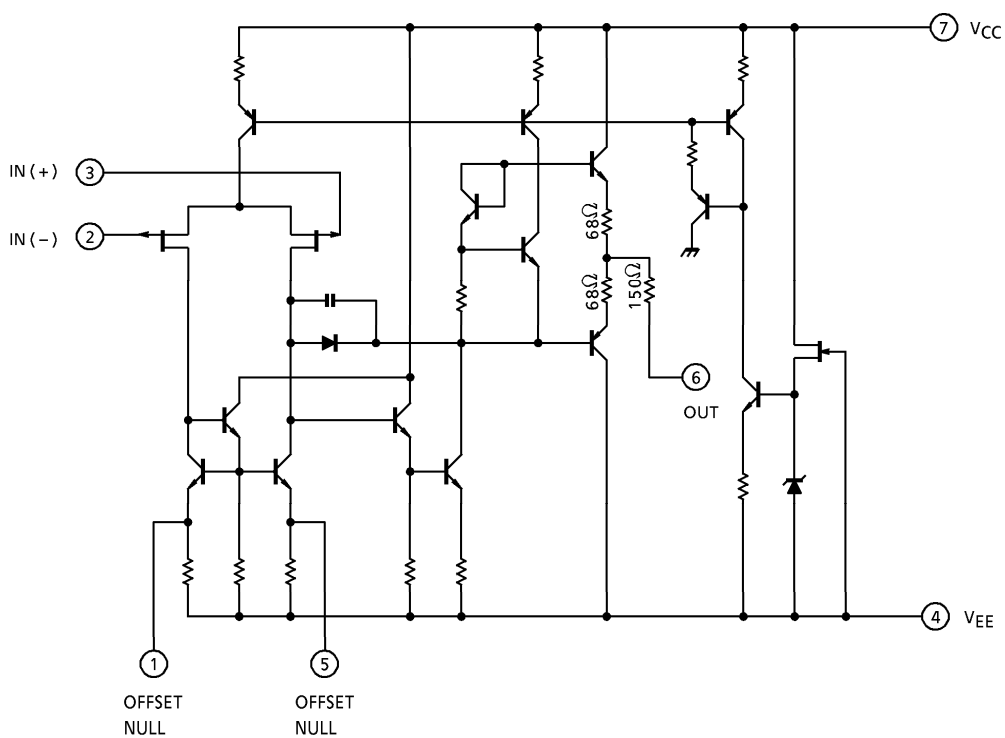
TA75071P



TA75071S



## EQUIVALENT CIRCUIT



## MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC        | SYMBOL           | RATING   | UNIT |
|-----------------------|------------------|----------|------|
| Supply Voltage        | V <sub>CC</sub>  | + 18     | V    |
|                       | V <sub>EE</sub>  | - 18     |      |
| Supply Voltage Surge) | 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> | - 50~125 | °C   |

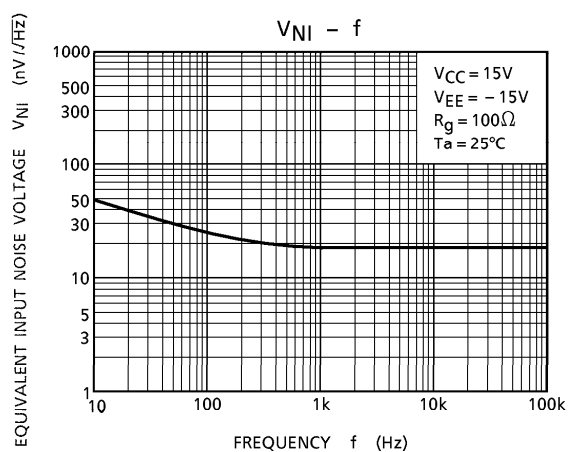
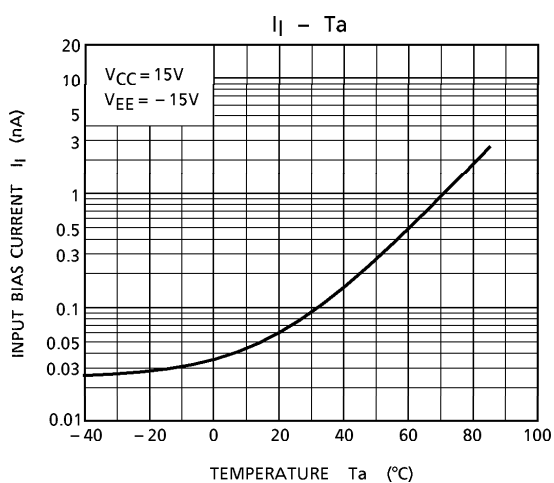
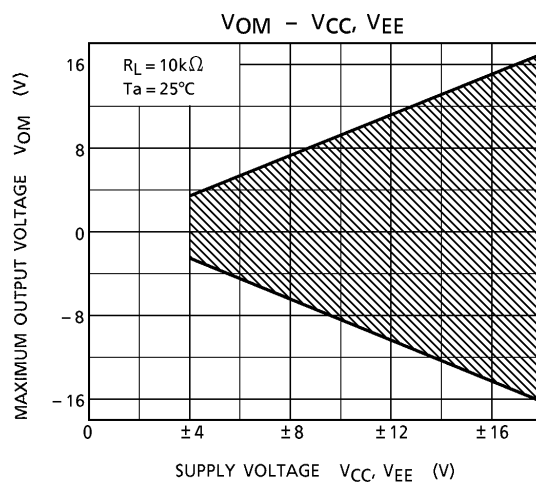
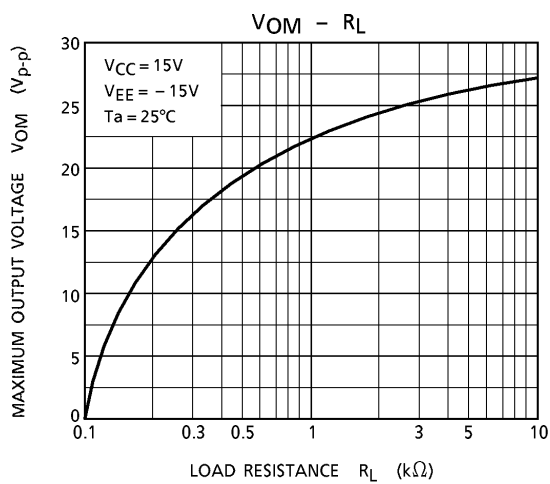
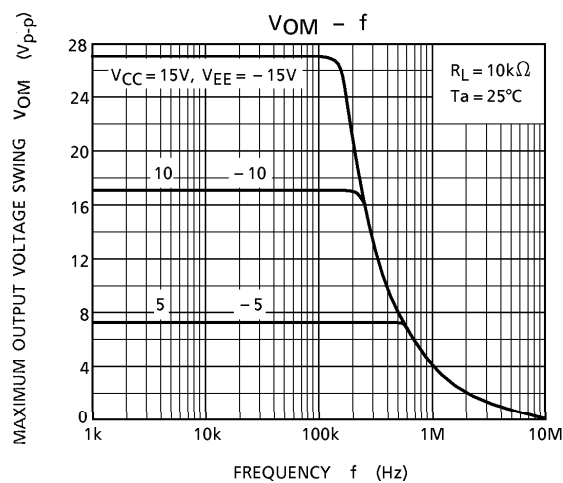
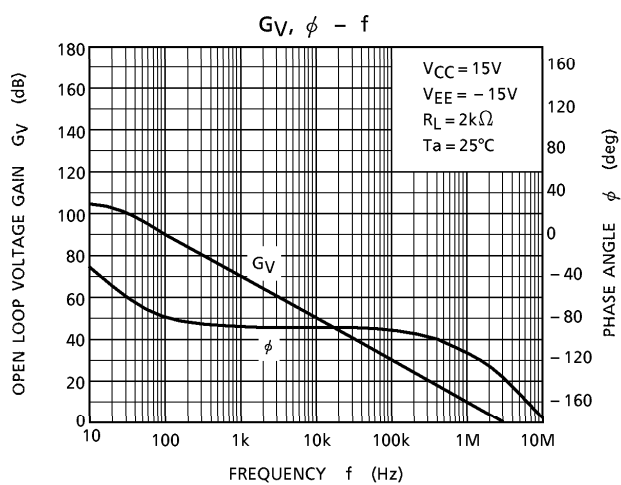
ELECTRICAL CHARACTERISTICS (V<sub>CC</sub> = 15V, V<sub>EE</sub> = - 15V, Ta = 25°C)

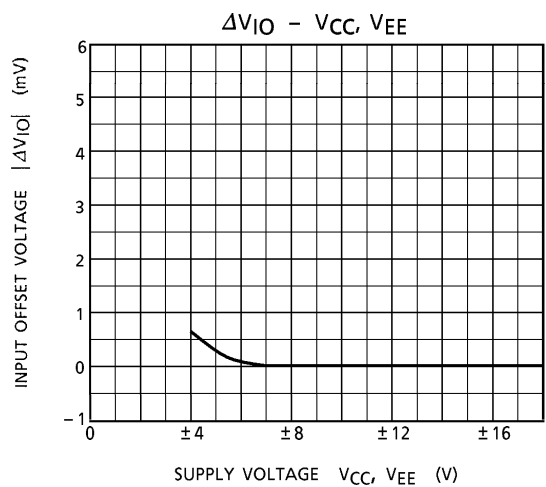
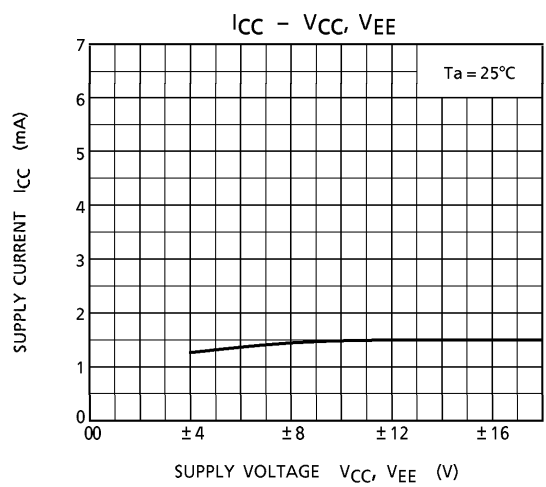
| CHARACTERISTIC                           | SYMBOL                            | TEST CIR-CUIT | TEST CONDITION                                 | MIN. | TYP.             | MAX. | UNIT             |
|------------------------------------------|-----------------------------------|---------------|------------------------------------------------|------|------------------|------|------------------|
| Input Offset Voltage                     | V <sub>IO</sub>                   | —             | R <sub>g</sub> ≤ 10kΩ                          | —    | 3                | 10   | mV               |
| TC Of Input Offset Voltage               | TCV <sub>IO</sub>                 | —             | —                                              | —    | 10               | —    | μV / °C          |
| Input Offset Current                     | I <sub>IO</sub>                   | —             | —                                              | —    | 10               | 50   | pA               |
| Input Bias Current                       | I <sub>I</sub>                    | —             | —                                              | —    | 30               | 200  | pA               |
| Common Mode Input Voltage                | CMV <sub>IN</sub>                 | —             | —                                              | ± 11 | ± 12             | —    | V                |
| Maximum Output Voltage                   | V <sub>OM</sub>                   | —             | R <sub>L</sub> = 10kΩ                          | 24   | —                | —    | V <sub>p-p</sub> |
|                                          | V <sub>OMR</sub>                  | —             | R <sub>L</sub> = 2kΩ                           | 20   | 24               | —    |                  |
| Voltage Gain (Open Loop)                 | G <sub>V</sub>                    | —             | V <sub>OUT</sub> = ± 10V, R <sub>L</sub> = 2kΩ | 25   | 200              | —    | V / mV           |
| Unity Gain Cross Frequency               | f <sub>T</sub>                    | —             | Open Loop, R <sub>L</sub> = 10kΩ               | —    | 3                | —    | MHz              |
| Input Resistance                         | R <sub>IN</sub>                   | —             | —                                              | —    | 10 <sup>12</sup> | —    | Ω                |
| Common Mode Input Signal Rejection Ratio | CMRR                              | —             | R <sub>g</sub> ≤ 10kΩ                          | 70   | 76               | —    | dB               |
| Supply Voltage Rejection Ratio           | SVRR                              | —             | R <sub>g</sub> ≤ 10kΩ                          | 70   | 76               | —    | dB               |
| Supply Current                           | I <sub>CC</sub> , I <sub>EE</sub> | —             | Non Load                                       | —    | 1.4              | 2.5  | mA               |

OPERATING CHARACTERISTICS (V<sub>CC</sub> = 15V, V<sub>EE</sub> = - 15V, Ta = 25°C)

| CHARACTERISTIC                 | SYMBOL          | TEST CIR-CUIT | TEST CONDITION                                                                                 | MIN.           | TYP. | MAX. | UNIT              |
|--------------------------------|-----------------|---------------|------------------------------------------------------------------------------------------------|----------------|------|------|-------------------|
| Slew Rate                      | SR              | —             | V <sub>IN</sub> = 10V <sub>p-p</sub> , R <sub>L</sub> = 2kΩ<br>C <sub>L</sub> = 100pF          | —              | 13   | —    | V / μs            |
| Equivalent Input Noise Voltage | V <sub>NI</sub> | —             | R <sub>S</sub> = 100Ω                                                                          | f = 1kHz       | 18   | —    | nV / √Hz          |
|                                |                 |               |                                                                                                | f = 10Hz~10kHz | 4    | —    | μV <sub>rms</sub> |
| Equivalent Input Noise Current | I <sub>NI</sub> | —             | R <sub>S</sub> = 100Ω, f = 1kHz                                                                | —              | 0.01 | —    | pA / √Hz          |
| Total Harmonic Distortion      | THD             | —             | V <sub>OUT</sub> = 10V <sub>rms</sub> , R <sub>S</sub> ≤ 1kΩ<br>R <sub>L</sub> ≥ 2kΩ, f = 1kHz | —              | 0.01 | —    | %                 |

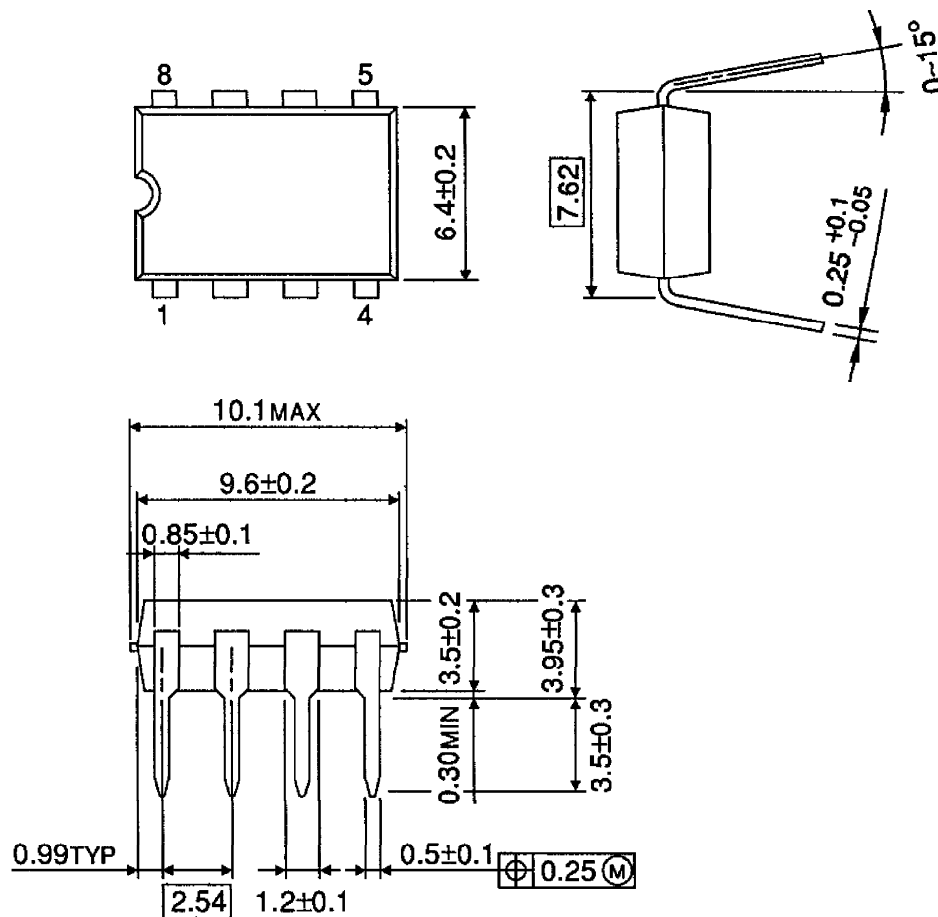
## CHARACTERISTICS





**OUTLINE DRAWING**  
DIP8-P-300-2.54A

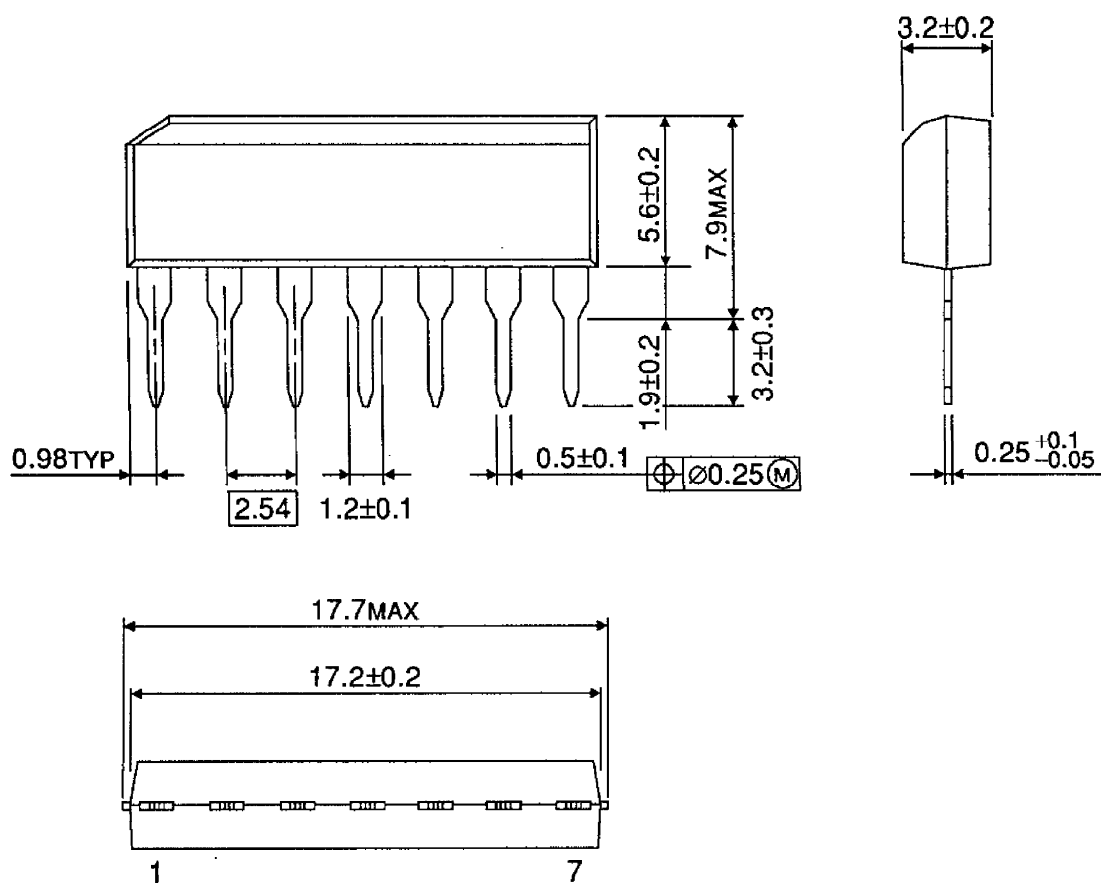
Unit : mm



Weight : 0.5g (Typ.)

**OUTLINE DRAWING**  
SIP7-P-2.54A

Unit : mm



Weight : 0.7g (Typ.)

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