

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

**TA75072P, TA75072S, TA75072F****DUAL OPERATIONAL AMPLIFIER**

The TA75072P, TA75072S and TA75072F are J-FET input low-noise operational amplifiers with low input bias and offset current, fast slew rate and wide bandwidth.

The TA75072P is pin compatible with the TA75458P and 1458. The TA75072S is single-in-line package.

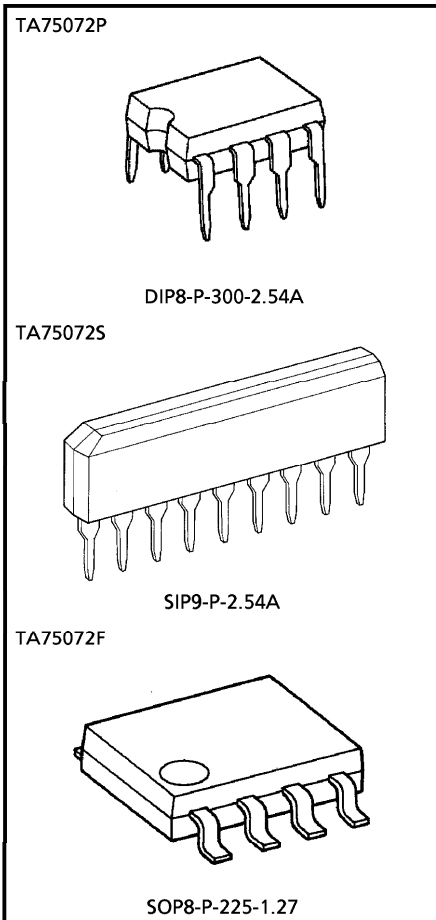
It is possible to exchange the position of 9 pin for 1 pin because of pin connection being symmetric.

The TA75072F is mini-flat package.

The TA75072P 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 /  $\sqrt{\text{Hz}}$
- Wide Bandwidth : 3MHz
- Wide Supply Voltage Range :  $\pm 4 \sim \pm 18\text{V}$
- Internal Frequency Compensation
- Output Short Circuit Protection

**Weight**

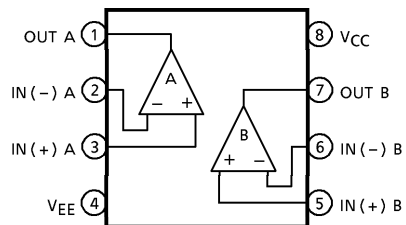
- DIP8-P-300-2.54A : 0.5g (Typ.)
- SIP9-P-2.54A : 0.9g (Typ.)
- SOP8-P-225-1.27 : 0.1g (Typ.)

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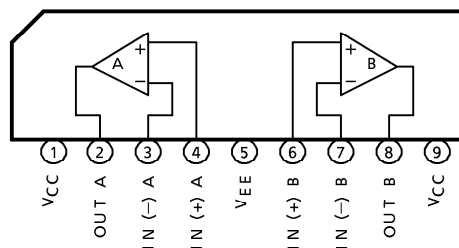
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**PIN CONNECTION (TOP VIEW)**

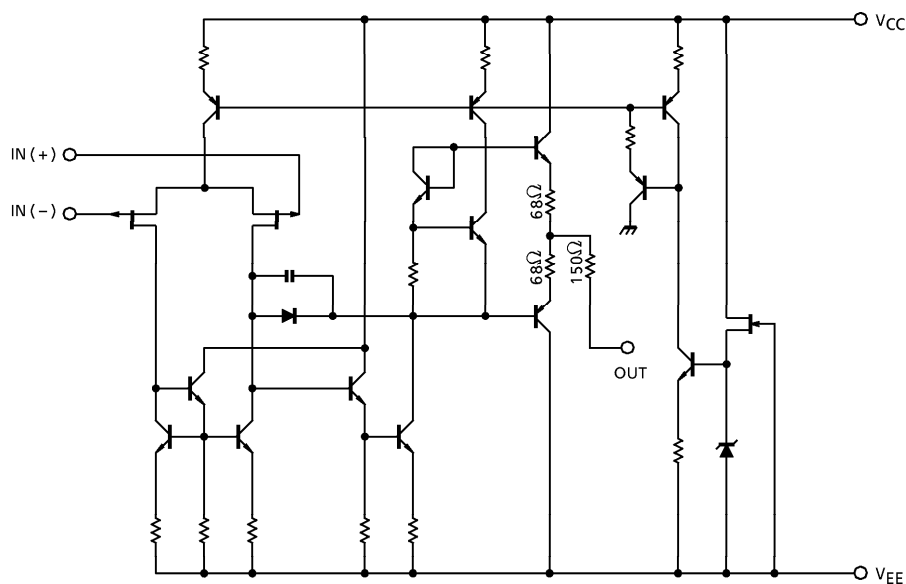
TA75072P, TA75072F



TA75072S



**EQUIVALENT CIRCUIT**



**MAXIMUM RATINGS (Ta = 25°C)**

| CHARACTERISTIC             | SYMBOL           | RATING   | UNIT |
|----------------------------|------------------|----------|------|
| Supply Voltage             | V <sub>CC</sub>  | + 18     | V    |
|                            | V <sub>EE</sub>  | - 18     |      |
| Differential Input Voltage | DV <sub>IN</sub> | ± 30     | V    |
| Input Voltage              | V <sub>IN</sub>  | ± 15     | V    |
| Power Dissipation          | TA75072P         | 500      | mW   |
|                            | TA75072S         |          |      |
|                            | TA75072F         | 240      |      |
| Operating Temperature      | T <sub>opr</sub> | - 40~85  | °C   |
| Storage Temperature        | T <sub>stg</sub> | - 55~125 | °C   |

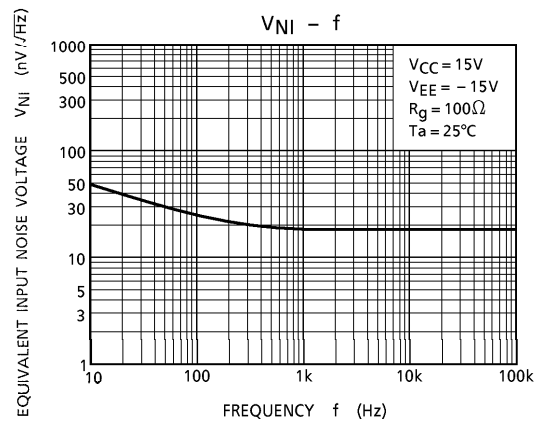
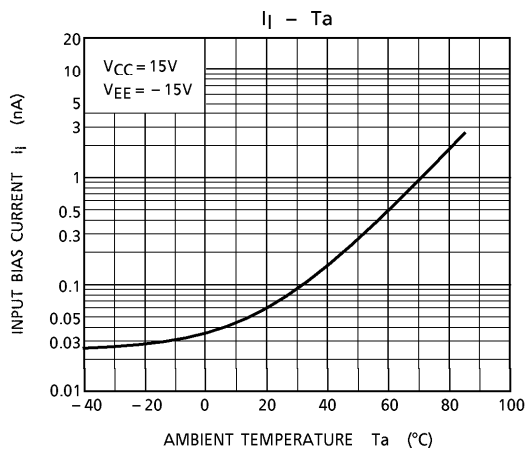
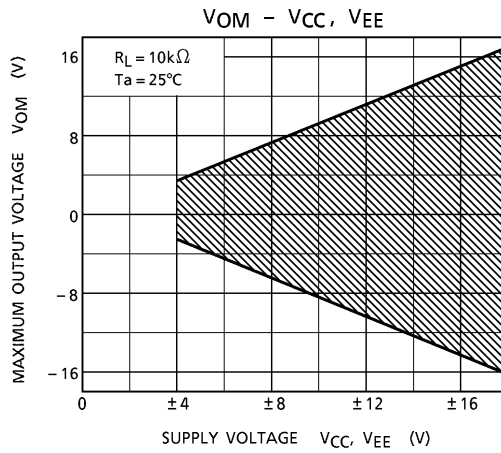
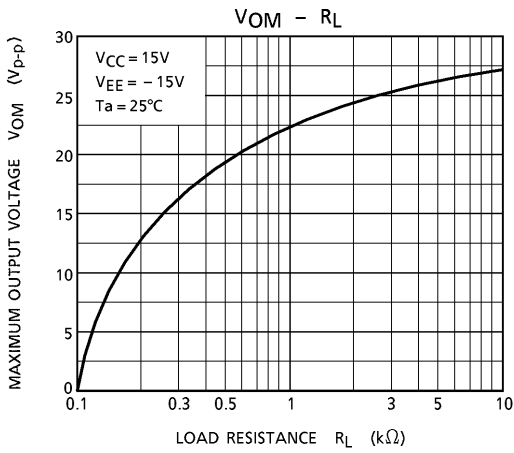
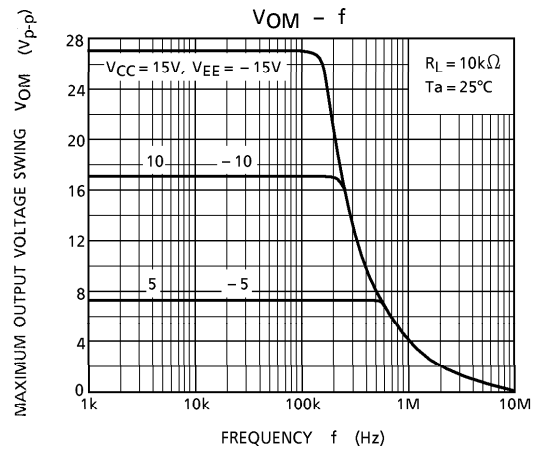
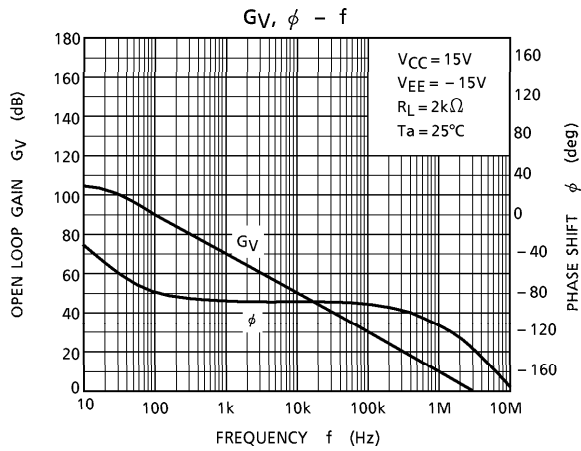
ELECTRICAL CHARACTERISTICS ( $V_{CC} = 15V$ ,  $V_{EE} = -15V$ ,  $T_a = 25^\circ C$ )

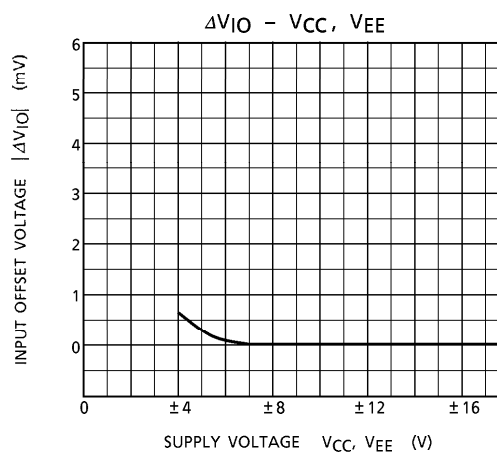
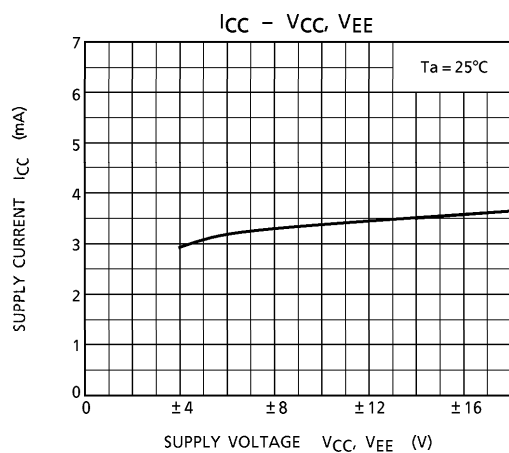
| CHARACTERISTIC                           | SYMBOL              | TEST CIRCUIT | TEST CONDITION                         | MIN.     | TYP.      | MAX. | UNIT               |
|--|---------------------|--------------|--|----------|-----------|------|--------------------|
| Input Offset Voltage                     | $V_{IO}$            | —            | $R_g \leq 10k\Omega$                   | —        | 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                               | —        | 2.8       | 5.0  | mA                 |
| Cross Talk                               |                     | —            | —                                      | —        | -120      | —    | dB                 |

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

| CHARACTERISTIC                 | SYMBOL   | TEST CIRCUIT | TEST CONDITION  | MIN.                  | TYP. | MAX. | UNIT             |                  |
|--------------------------------|----------|--------------|---|-----------------------|------|------|------------------|------------------|
| Slew Rate                      | SR       | —            | $V_{IN} = 10V_{p-p}$ , $R_L = 2k\Omega$<br>$C_L = 100pF$                        | —                     | 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      | —            | $V_{OUT} = 10V_{rms}$ , $R_S \leq 1k\Omega$<br>$R_L \geq 2k\Omega$ , $f = 1kHz$ | —                     | 0.01 | —    | %                |                  |

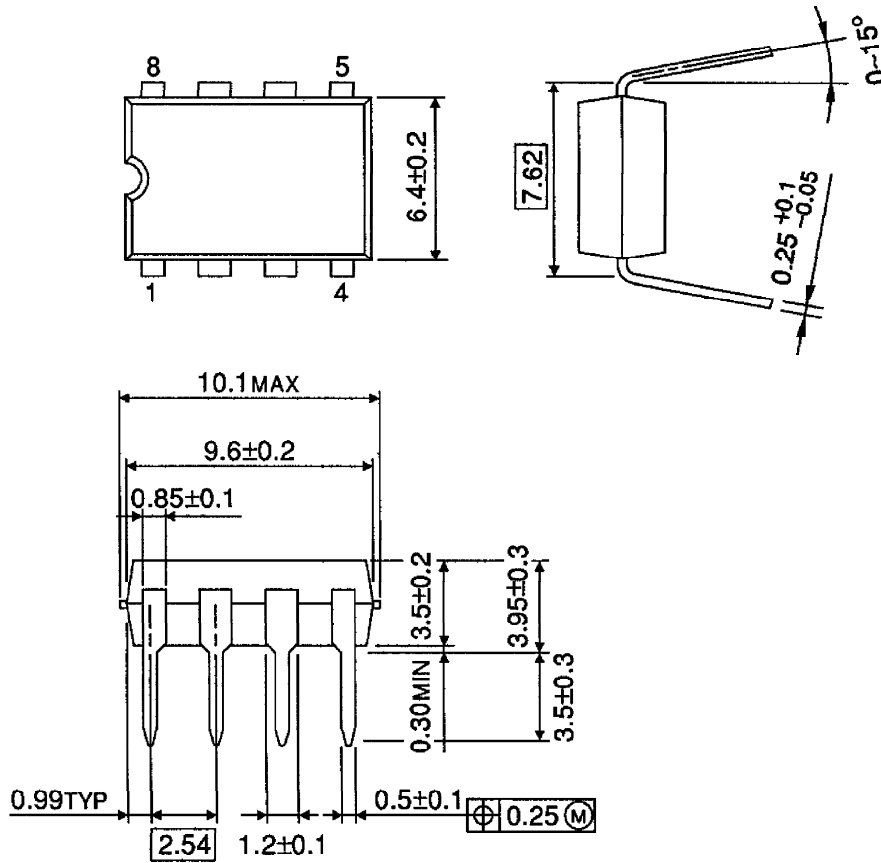
CHARACTERISTICS





OUTLINE DRAWING  
DIP8-P-300-2.54A

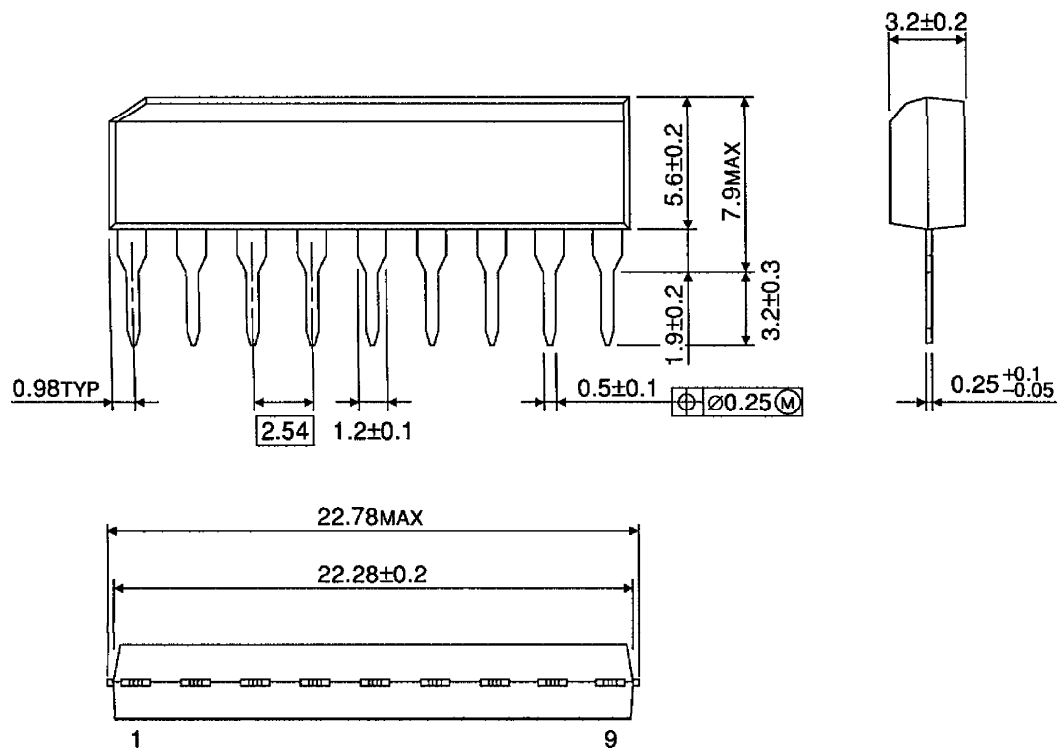
Unit : mm



Weight : 0.5g (Typ.)

OUTLINE DRAWING  
SIP9-P-2.54A

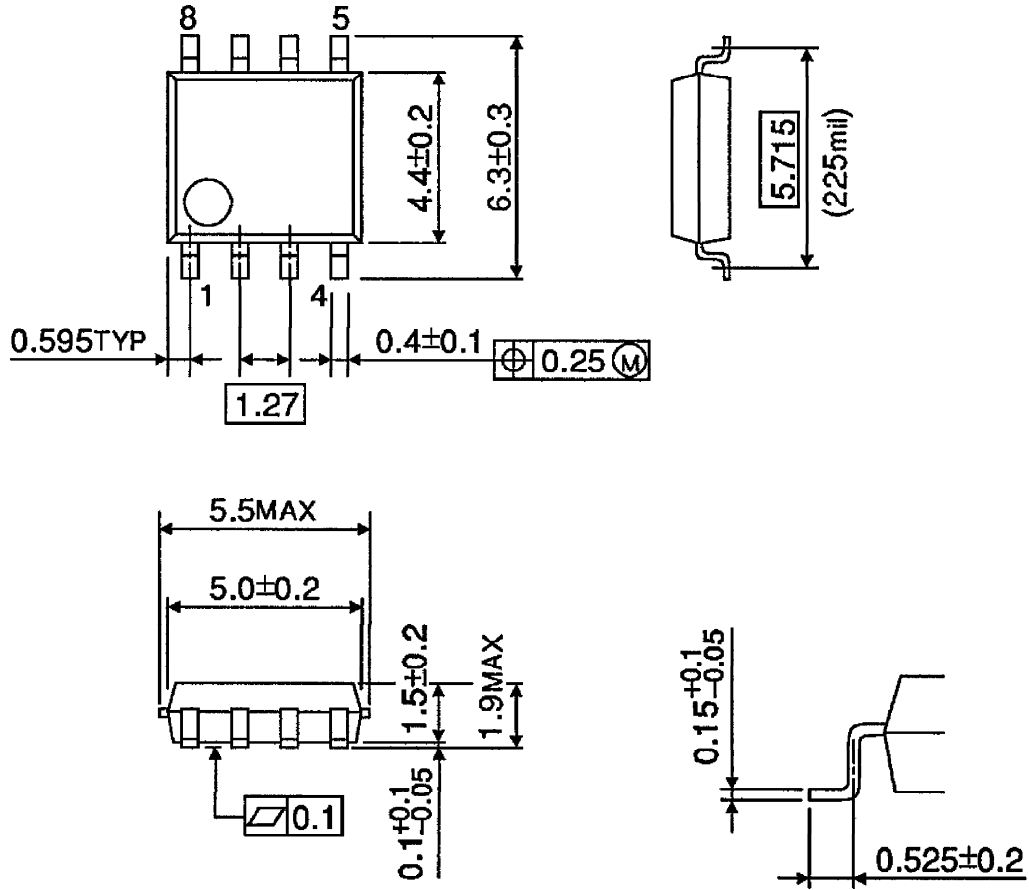
Unit : mm



Weight : 0.9g (Typ.)

OUTLINE DRAWING  
SOP8-P-225-1.27

Unit : mm



Weight : 0.1g (Typ.)