

# AN6592, AN6592S

## Dual Low Power Consumption Operational Amplifiers

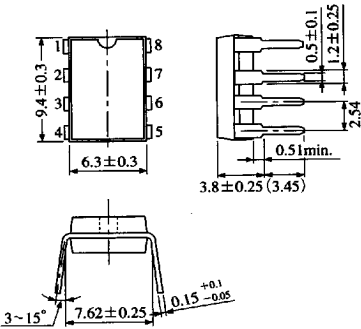
### Overview

The AN6592 and the AN6592S are dual operational amplifiers allowing very low power consumption operation, with phase compensation circuits built-in and wide supply voltage range, so that they are very easy to use. They are suitable for application to various electronic circuits such as portable equipments operated by the battery.

### Features

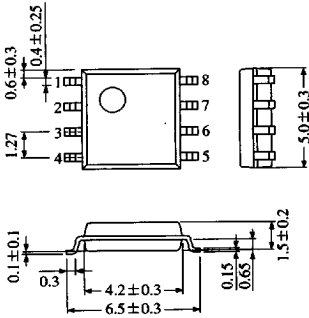
- Phase compensation circuit built-in
- Wide supply voltage range :  $\pm 1$  to  $\pm 18V$
- Output short-circuit protection built-in
- Low power consumption :  $I_{CC} = 250 \mu A$  max.
- High voltage gain :  $G_V = 100dB$  typ.

AN6592 Unit : mm



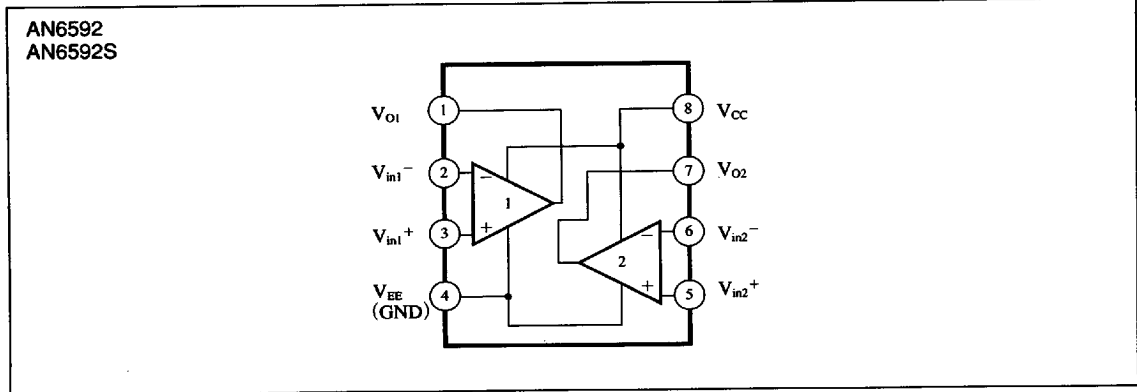
8-pin DIP Plastic Package (DIP008-P-0300B)

AN6592S Unit : mm



8-pin PANAFLAT Plastic Package (SOP008-P-0225A)

### Block Diagram



6932852 0012432 842

Pin Descriptions

| Pin No. | Pin name                 |
|---------|--------------------------|
| 1       | Ch.1 output              |
| 2       | Ch.1 inverting input     |
| 3       | Ch.1 non inverting input |
| 4       | V <sub>EE</sub> (GND)    |
| 5       | Ch.2 non inverting input |
| 6       | Ch.2 inverting input     |
| 7       | Ch.2 output              |
| 8       | V <sub>CC</sub>          |

Absolute Maximum Ratings (Ta=25℃)

| Parameter                     |                            | Symbol           | Rating      | Unit |
|-------------------------------|----------------------------|------------------|-------------|------|
| Voltage                       | Supply voltage             | V <sub>CC</sub>  | ±18         | V    |
|                               | Differential input voltage | V <sub>ID</sub>  | ±30         | V    |
|                               | Common-mode input voltage  | V <sub>ICM</sub> | ±15         | V    |
| Power dissipation             | AN6592                     | P <sub>D</sub>   | 500         | mW   |
|                               | AN6592S                    |                  | 360         |      |
| Operating ambient temperature |                            | T <sub>opr</sub> | −20 to +75  | ℃    |
| Storage temperature           | AN6592                     | T <sub>stg</sub> | −55 to +150 | ℃    |
|                               | AN6592S                    |                  | −55 to +125 |      |

Operational  
Amplifiers

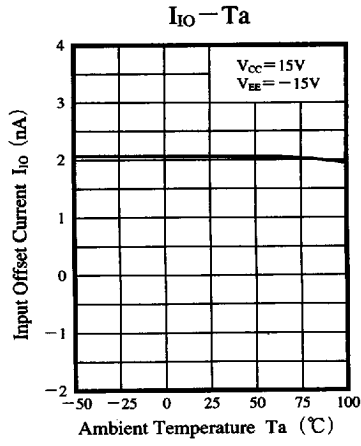
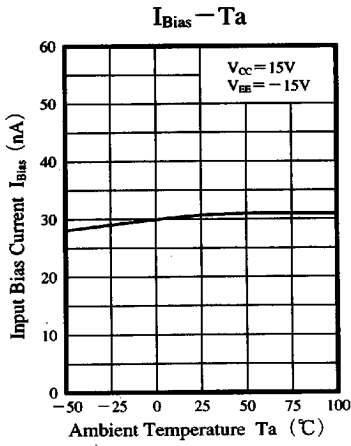
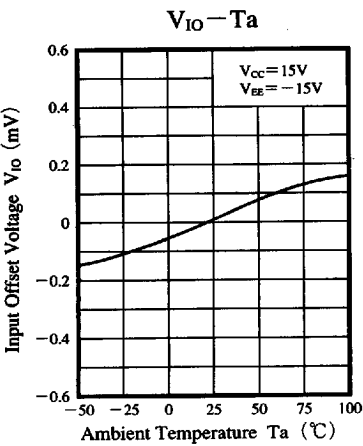
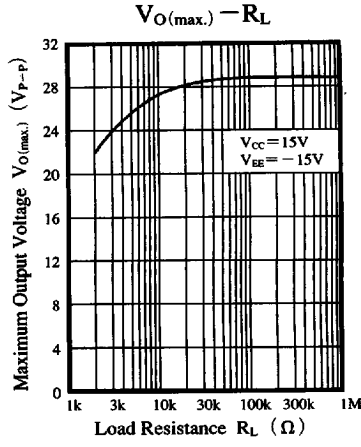
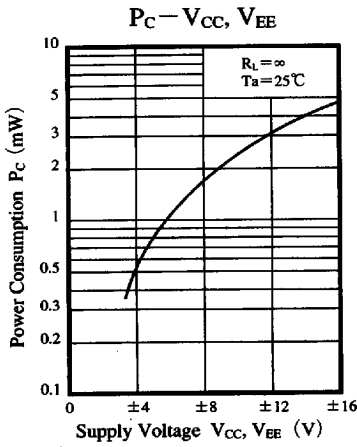
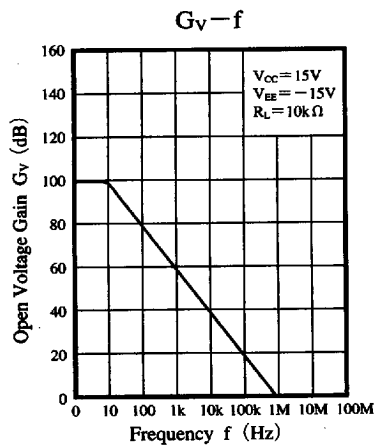
Electrical Characteristics (V<sub>CC</sub>=15V, V<sub>EE</sub>=−15V, Ta=25℃)

| Parameter                       | Symbol                 | Condition                                    | min | typ | max | Unit  |
|---------------------------------|------------------------|----------------------------------------------|-----|-----|-----|-------|
| Input offset voltage            | V <sub>I(offset)</sub> | R <sub>S</sub> ≤ 10kΩ                        | —   | 1   | 5   | mV    |
| Input offset current            | I <sub>IO</sub>        |                                              | —   | 5   | 80  | nA    |
| Input bias current              | I <sub>Bias</sub>      |                                              | —   | 50  | 250 | nA    |
| Voltage gain                    | G <sub>V</sub>         | R <sub>L</sub> ≥ 10kΩ, V <sub>O</sub> = ±10V | 70  | 100 | —   | dB    |
| Maximum output voltage          | V <sub>O(max.)</sub>   | R <sub>L</sub> ≥ 10kΩ                        | ±12 | ±13 | —   | V     |
| Common-mode input voltage width | V <sub>CM</sub>        |                                              | ±12 | ±13 | —   | V     |
| Common-mode rejection ratio     | CMR                    |                                              | 60  | 80  | —   | dB    |
| Supply voltage rejection ratio  | SVR                    |                                              | —   | 30  | 200 | μV/V  |
| Supply current                  | I <sub>CC</sub>        | R <sub>L</sub> = ∞                           | —   | 130 | 250 | μA    |
| Slew rate                       | SR                     | R <sub>L</sub> ≥ 10kΩ                        | —   | 0.5 | —   | V/μs  |
| Equivalent input noise voltage  | V <sub>ni</sub>        | R <sub>S</sub> = 1kΩ, DIN/AUDIO              | —   | 4   | —   | μVrms |

6932852 0012433 789

Panasonic

■ Characteristics Curve



■ 6932852 0012434 615 ■

Panasonic