

# AN1339 (AN6912N), AN1339S

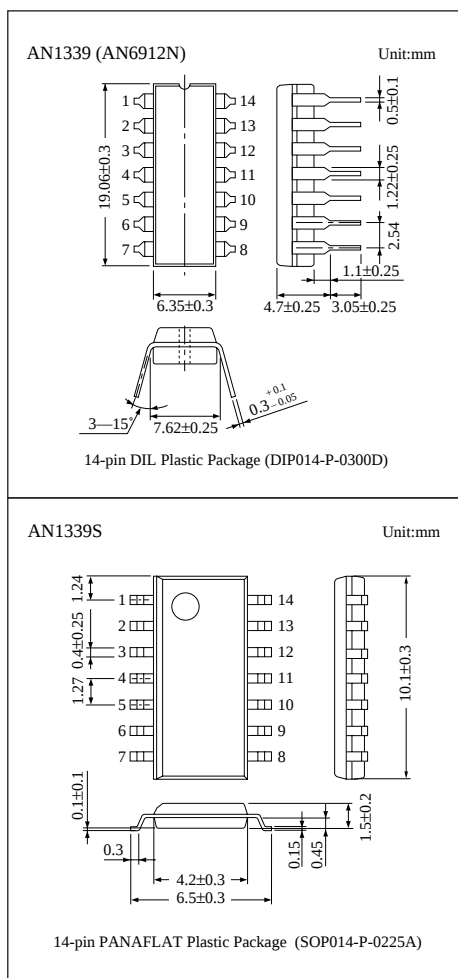
## Quadruple Comparators

### Overview

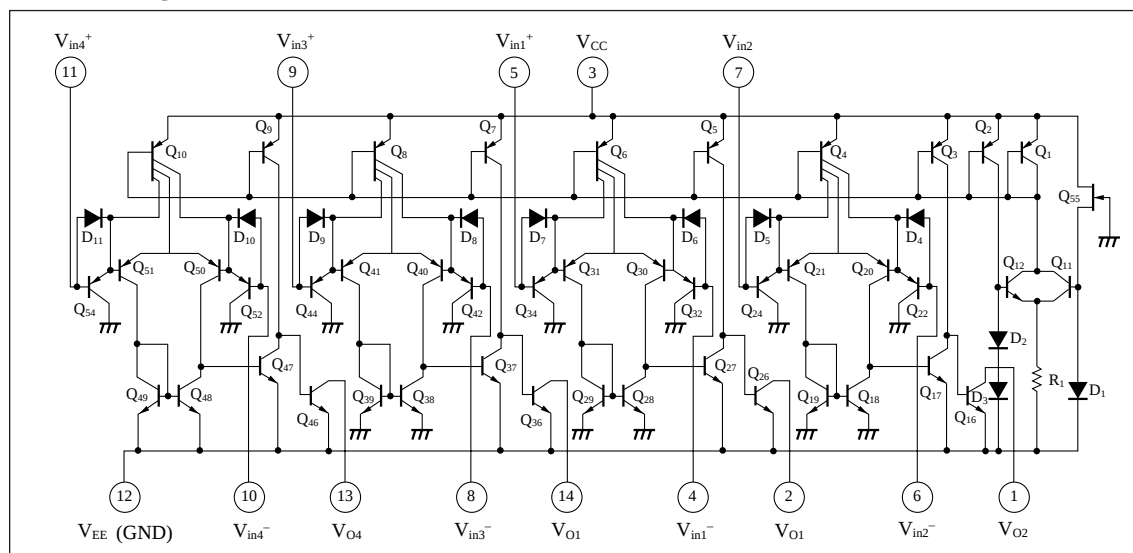
The AN1339 (AN6912N) and the AN1339S are quadruple (voltage) comparators with wide range of operating supply voltages.

### Features

- Wide range of supply voltage  
Single supply: 2 to 36V  
Dual supply:  $\pm 1$  to  $\pm 18$ V
- Low circuit current: 0.8mA typ.
- Wide range of common-mode input voltages  
: 0V to  $V_{CC}-1.5$ V (single supply)
- Open collector output



### Block Diagram



## Pin Descriptions

| Pin No. | Pin name                 | Pin No. | Pin name                 |
|---------|--------------------------|---------|--------------------------|
| 1       | Ch.2 output              | 8       | Ch.3 inverting input     |
| 2       | Ch.1 output              | 9       | Ch.3 non inverting input |
| 3       | V <sub>CC</sub>          | 10      | Ch.4 inverting input     |
| 4       | Ch.1 inverting input     | 11      | Ch.4 non inverting input |
| 5       | Ch.1 non inverting input | 12      | V <sub>EE</sub> (GND)    |
| 6       | Ch.2 inverting input     | 13      | Ch.4 output              |
| 7       | Ch.2 non inverting input | 14      | Ch.3 output              |

## Absolute Maximum Ratings (Ta=25°C)

| Parameter                     |                            | Symbol              | Rating      | Unit |
|-------------------------------|----------------------------|---------------------|-------------|------|
| Voltage                       | Supply voltage             | V <sub>CC</sub>     | 36          | V    |
|                               | Common-mode input voltage  | V <sub>ICM</sub> *1 | −0.3 to +36 | V    |
|                               | Differential input voltage | V <sub>ID</sub> *2  | 36          | V    |
| Power dissipation             | AN1339 (AN6912N)           | P <sub>D</sub>      | 570         | mW   |
|                               | AN1339S                    |                     | 380         |      |
| Operating ambient temperature |                            | T <sub>opr</sub>    | −30 to +85  | °C   |
| Storage temperature           | AN1339 (AN6912N)           | T <sub>stg</sub>    | −55 to +150 | °C   |
|                               | AN1339S                    |                     | −55 to +125 |      |

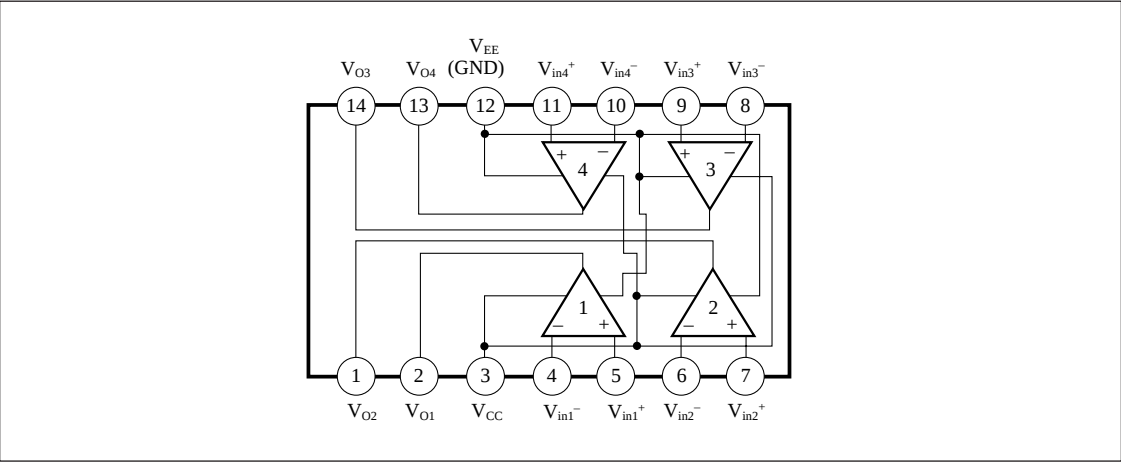
\*1 The common mode input voltage is a voltage applied to the non-inverting input pin and inverting input pin simultaneously.

\*2 Differential input is equivalent to the potential difference between the non-inverting input pin and inverting input pin.

## Electrical Characteristics (V<sub>CC</sub>=5V, Ta=25±2°C)

| Parameter                       | Symbol                  | Condition                                                         | min | typ | max                  | Unit |
|---------------------------------|-------------------------|-------------------------------------------------------------------|-----|-----|----------------------|------|
| Input offset voltage            | V <sub>I (offset)</sub> |                                                                   | —   | 2   | 5                    | mV   |
| Input offset current            | I <sub>IO</sub>         |                                                                   | —   | —   | 50                   | nA   |
| Input bias current              | I <sub>Bias</sub>       |                                                                   | —   | —   | 250                  | nA   |
| Voltage gain                    | G <sub>V</sub>          | R <sub>L</sub> =15kΩ                                              | —   | 200 | —                    | V/mV |
| Common-mode input voltage range | V <sub>CM</sub>         |                                                                   | 0   | —   | V <sub>CC</sub> −1.5 | V    |
| Supply current                  | I <sub>CC</sub>         | R <sub>L</sub> = ∞                                                | —   | 1.1 | 2                    | mA   |
| Response time                   | t <sub>r</sub>          | R <sub>L</sub> =5.1kΩ, V <sub>RL</sub> =5V                        | —   | 1.3 | —                    | μs   |
| Output sink current             | I <sub>SINK</sub>       | V <sub>REF</sub> =0V, V <sub>IN</sub> =1V, V <sub>O</sub> ≤1.5V   | 10  | —   | —                    | mA   |
| Low-level output voltage        | V <sub>OL</sub>         | V <sub>REF</sub> =0V, V <sub>IN</sub> =1V, I <sub>SINK</sub> =3mA | —   | 0.2 | 0.4                  | V    |
| Output terminal leakage current | I <sub>O (Leak)</sub>   | V <sub>IN</sub> =0V, V <sub>REF</sub> =1V, V <sub>O</sub> =5V     | —   | 0.1 | —                    | nA   |

■ Block Diagram



■ Characteristics Curve

