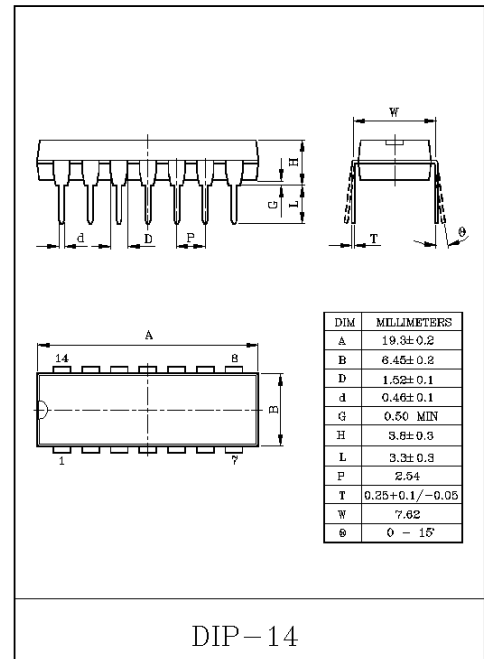
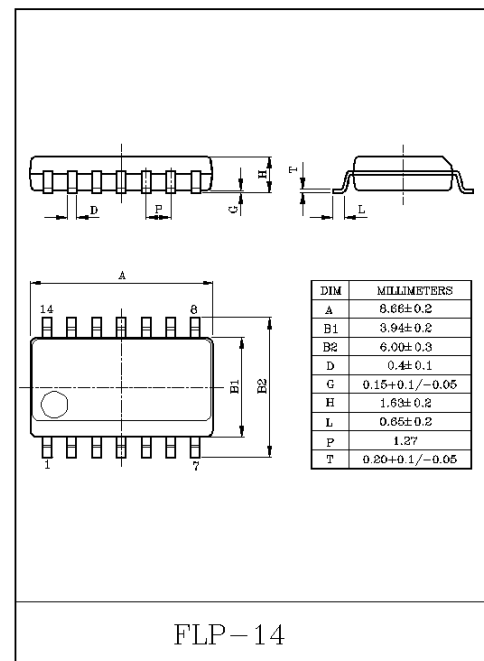
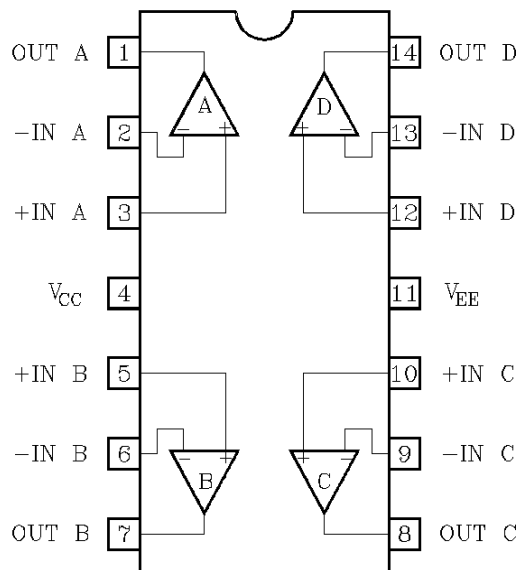


### QUAD OPERATIONAL AMPLIFIER

- In the Linear Mode the Input Common Mode Voltage Range Includes Ground.
- Four Internally Compensated OP Amps are in Single Package.
- Low Power Dissipation and Power Drain Suitable for Battery Operation.
- Differential Input Voltage Range Equal to the Power Supply Voltage.
- Wide Power Supply Voltage Range and Signal Power Supply : Single Supply  $3V_{DC}$  to  $36V_{DC}$   
Dual Supplies  $\pm 1.5V_{DC}$  to  $\pm 18V_{DC}$ .
- Large Output Voltage Swing :  $0V_{DC}$  to  $V_{CC}-1.5V_{DC}$ .
- Low Input Biasing Current :  $I_I=45nA_{DC}$  (Typ.).



### PIN CONNECTION (TOP VIEW)

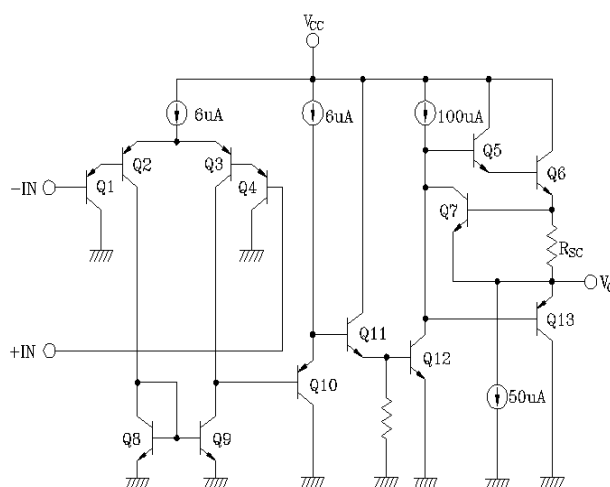


# KIA324P/F

## MAXIMUM RATINGS (Ta=25℃)

| CHARACTERISTIC             |         | SYMBOL           | RATING  | UNIT |
|----------------------------|---------|------------------|---------|------|
| Supply Voltage             |         | V <sub>CC</sub>  | 36, +18 | V    |
|                            |         | V <sub>EE</sub>  | 0, -18  |      |
| Differential Input Voltage |         | DV <sub>IN</sub> | ±36     | V    |
| Input Voltage              |         | V <sub>IN</sub>  | -0.3~36 | V    |
| Power Dissipation          | KIA324P | P <sub>D</sub>   | 625     | mW   |
|                            | KIA324F |                  | 280     |      |
| Operating Temperature      |         | T <sub>opr</sub> | -40~85  | ℃    |
| Storage Temperature        |         | T <sub>stg</sub> | -55~125 | ℃    |

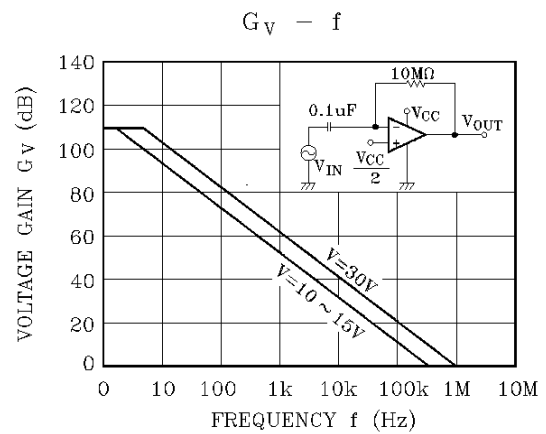
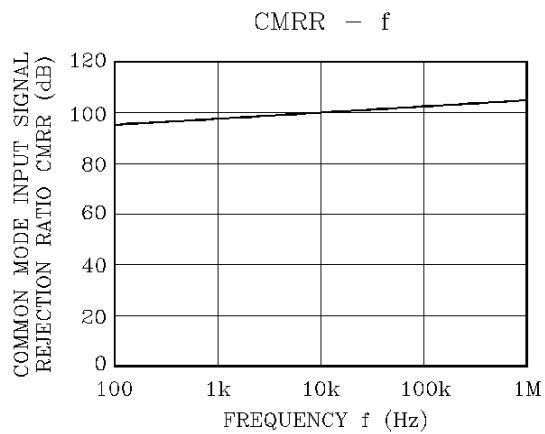
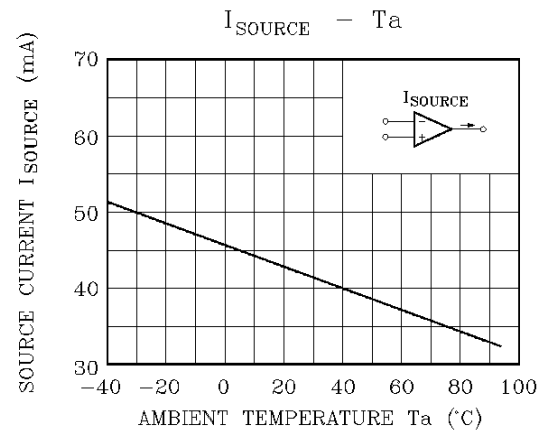
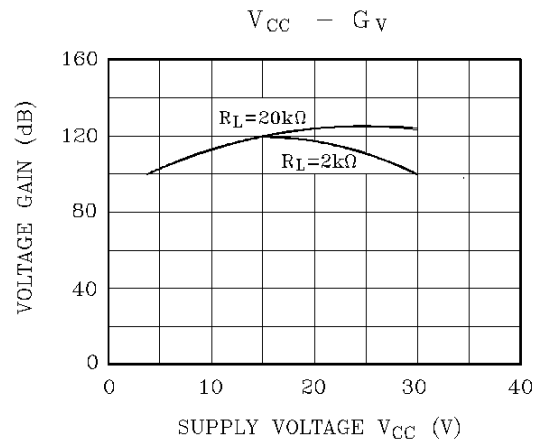
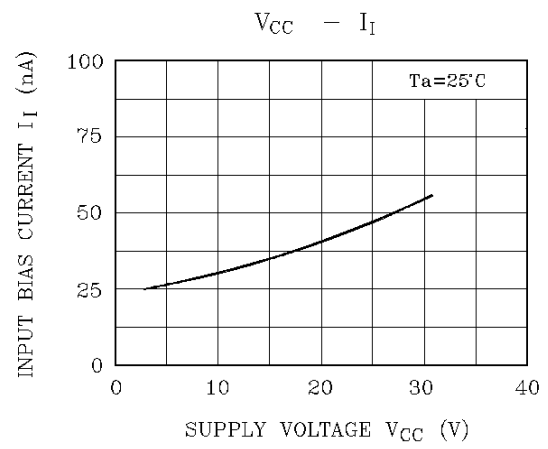
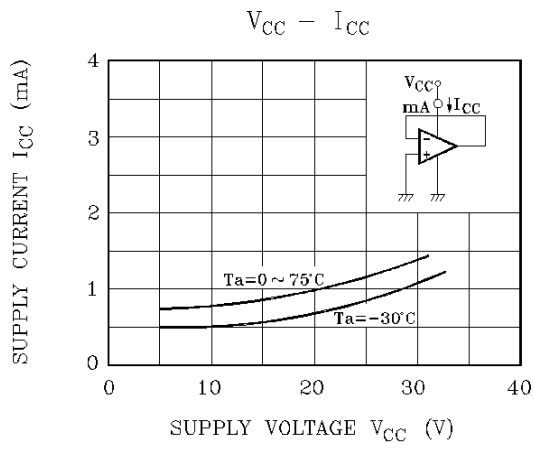
## EQUIVALENT CIRCUIT



## ELECTRICAL CHARACTERISTICS (V<sub>CC</sub>=5V, V<sub>EE</sub>=GND, Ta=25℃)

| CHARACTERISTIC                           | SYMBOL                            | TEST CONDITION                              | MIN. | TYP.                 | MAX. | UNIT |
|------------------------------------------|-----------------------------------|---------------------------------------------|------|----------------------|------|------|
| Input Offset Voltage                     | V <sub>IO</sub>                   | R <sub>g</sub> ≤ 10kΩ                       | -    | 2                    | 7    | mV   |
| Input Offset Current                     | I <sub>IO</sub>                   | -                                           | -    | 5                    | 30   | nA   |
| Input Bias Current                       | I <sub>I</sub>                    | -                                           | -    | 45                   | 150  | nA   |
| Common Mode Input Voltage                | CMV <sub>IN</sub>                 | V <sub>CC</sub> =30V, V <sub>EE</sub> =GND  | 0    | V <sub>CC</sub> -1.5 | -    | V    |
| Supply Current                           | I <sub>CC</sub> , I <sub>EE</sub> | R <sub>L</sub> =∞, All OP Amps              | -    | 0.7                  | 1.2  | mA   |
| Voltage Gain                             | G <sub>V</sub>                    | R <sub>L</sub> ≥ 2kΩ                        | 86   | 100                  | -    | dB   |
| Maximum Output Voltage Swing             | V <sub>OP-P</sub>                 | R <sub>L</sub> =2kΩ                         | 0    | V <sub>CC</sub> -1.5 | -    | V    |
| Common Mode Input Signal Rejection Ratio | CMRR                              | -                                           | 60   | 85                   | -    | dB   |
| Supply Voltage Rejection Ratio           | SVRR                              | R <sub>g</sub> =10kΩ                        | 60   | 100                  | -    | dB   |
| Source Current                           | I <sub>source</sub>               | -IN=0V <sub>DC</sub> , +IN=1V <sub>DC</sub> | 20   | 40                   | -    | mA   |
| Sink Current                             | I <sub>sink</sub>                 | -IN=1V <sub>DC</sub> , +IN=0V <sub>DC</sub> | 10   | 20                   | -    | mA   |

# KIA324P/F



# KIA324P/F

