

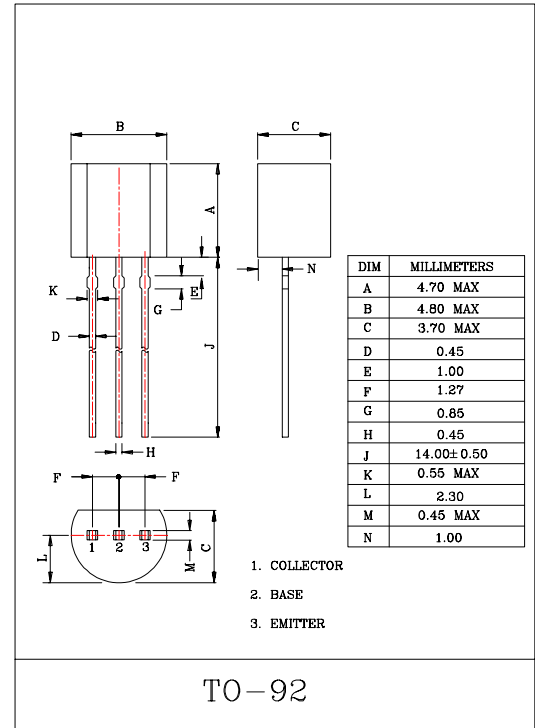
GENERAL PURPOSE APPLICATION.  
LOW NOISE AMPLIFIER APPLICATION.

#### FEATURES

- High Voltage : BC307  $V_{CE0} = -45V$ .
- Low Noise : BC309  $NF = 0.2dB(Typ.)$ ,  $3dB(Max.)$   
( $V_{CE} = -6V$ ,  $I_C = -0.1mA$ ,  $f = 1kHz$ ).
- For Complementary with NPN type BC237/238/239.

#### MAXIMUM RATINGS ( $T_a = 25^\circ C$ )

| CHARACTERISTIC              |       | SYMBOL    | RATING    | UNIT       |
|-----------------------------|-------|-----------|-----------|------------|
| Collector-Base Voltage      | BC307 | $V_{CBO}$ | -50       | V          |
|                             | BC308 |           | -30       |            |
|                             | BC309 |           | -30       |            |
| Collector-Emitter Voltage   | BC307 | $V_{CEO}$ | -45       | V          |
|                             | BC308 |           | -25       |            |
|                             | BC309 |           | -20       |            |
| Emitter-Base Voltage        | BC307 | $V_{EBO}$ | -5        | V          |
|                             | BC308 |           | -5        |            |
|                             | BC309 |           | -5        |            |
| Collector Current           | BC307 | $I_C$     | -100      | mA         |
|                             | BC308 |           | -100      |            |
|                             | BC309 |           | -50       |            |
| Emitter Current             | BC307 | $I_E$     | 100       | mA         |
|                             | BC308 |           | 100       |            |
|                             | BC309 |           | 50        |            |
| Collector Power Dissipation |       | $P_C$     | 625       | mW         |
| Junction Temperature        |       | $T_j$     | 150       | $^\circ C$ |
| Storage Temperature Range   |       | $T_{stg}$ | -55 ~ 150 | $^\circ C$ |



# BC307/8/9

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

| CHARACTERISTIC                          |       | SYMBOL        | TEST CONDITION                                      | MIN.  | TYP. | MAX. | UNIT |
|-----------------------------------------|-------|---------------|-----------------------------------------------------|-------|------|------|------|
| Collector Cut-off Current               |       | $I_{CBO}$     | $V_{CB}=-50V, I_E=0$                                | -     | -    | -15  | nA   |
| DC Current Gain<br>(Note)               | BC307 | $h_{FE}$      | $V_{CE}=-5V, I_C=-2mA$                              | 120   | -    | 460  |      |
|                                         | BC308 |               |                                                     | 120   | -    | 800  |      |
|                                         | BC309 |               |                                                     | 180   | -    | 800  |      |
| Collector-Emitter<br>Saturation Voltage | BC307 | $V_{CE(sat)}$ | $I_C=-100mA, I_B=-5mA$                              | -     | -    | -0.6 | V    |
|                                         | BC308 |               |                                                     | -     | -    | -0.6 |      |
|                                         | BC309 |               | $I_C=-10mA, I_B=-0.5mA$                             | -     | -    | -0.2 |      |
| Base-Emitter<br>Saturation Voltage      | BC307 | $V_{BE(sat)}$ | $I_C=-100mA, I_C=-5mA$                              | -     | -    | -1.0 | V    |
|                                         | BC308 |               |                                                     | -     | -    | -1.0 |      |
|                                         | BC309 |               | $I_C=-10mA, I_B=-0.5mA$                             | -     | -    | -0.8 |      |
| Base-Emitter Voltage                    |       | $V_{BE(ON)}$  | $V_{CE}=-5V, I_C=-2mA$                              | -0.55 | -    | -0.7 | V    |
| Transition Frequency                    |       | $f_T$         | $V_{CE}=-5V, I_C=-10mA,$<br>$f=100MHz$              | -     | 200  | -    | MHz  |
| Collector Output Capacitance            |       | $C_{ob}$      | $V_{CB}=-10V, f=1MHz$                               | -     | -    | 6.0  | pF   |
| Noise Figure                            | BC307 | NF            | $V_{CE}=-6V, I_C=-0.1mA$<br>$R_g=10k\Omega, f=1kHz$ | -     | 1.0  | 10   | dB   |
|                                         | BC308 |               |                                                     | -     | 1.0  | 10   |      |
|                                         | BC309 |               |                                                     | -     | 0.2  | 3.0  |      |

NOTE : According to the value of  $h_{FE}$  the BC307, BC308, BC309 are classified as follows.

| CLASSIFICATION |       | A       | B       | C       |
|----------------|-------|---------|---------|---------|
| $h_{FE}$       | BC307 | 120~220 | 180~460 | -       |
|                | BC308 | 120~220 | 180~460 | 380~800 |
|                | BC309 | -       | 180~460 | 380~800 |