

# BC307/308/309

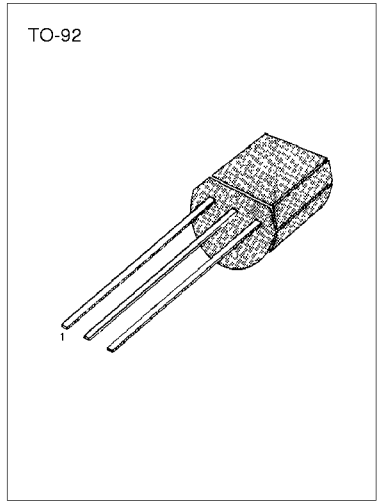
# PNP EPITAXIAL SILICON TRANSISTOR

## SWITCHING AND AMPLIFIER APPLICATIONS

- LOW NOISE: BC309

## ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C)

| Characteristic                       | Symbol           | Rating    | Unit |
|--------------------------------------|------------------|-----------|------|
| Collector-Emitter Voltage<br>: BC307 | V <sub>CE</sub>  | -50       | V    |
| : BC308/309                          |                  | -30       | V    |
| Collector-Emitter Voltage<br>: BC307 | V <sub>CEO</sub> | -45       | V    |
| : BC308/309                          |                  | -25       | V    |
| Emitter-Base Voltage                 | V <sub>EBO</sub> | -5        | V    |
| Collector Current (DC)               | I <sub>C</sub>   | -100      | mA   |
| Collector Dissipation                | P <sub>C</sub>   | 500       | mW   |
| Junction Temperature                 | T <sub>J</sub>   | 150       | °C   |
| Storage Temperature                  | T <sub>STG</sub> | -55 ~ 150 | °C   |



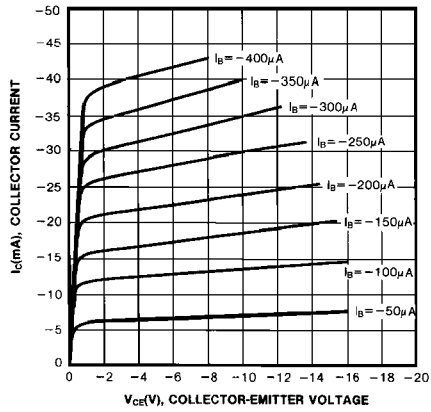
## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C)

| Characteristic                                 | Symbol                | Test Conditions                                 | Min   | Typ | Max   | Unit |
|--|-----------------------|---|-------|-----|-------|------|
| Collector-Emitter Breakdown Voltage<br>: BC307 | BV <sub>CEO</sub>     | I <sub>C</sub> = -2mA, I <sub>B</sub> =0        | -45   |     |       | V    |
| : BC308/309                                    |                       |   | -25   |     |       | V    |
| Collector-Emitter Breakdown Voltage<br>: BC307 | BV <sub>CES</sub>     | I <sub>C</sub> = -10μA, I <sub>B</sub> =0       | -50   |     |       | V    |
| : BC308/309                                    |                       |   | -30   |     |       | V    |
| Emitter-Base Breakdown Voltage                 | BV <sub>EBO</sub>     | I <sub>E</sub> = -10μA, I <sub>B</sub> =0       | -5    |     |       | V    |
| Collector Cut-off Current<br>: BC307           | I <sub>CES</sub>      | V <sub>CE</sub> = -45V, I <sub>B</sub> =0       |       | -2  | -15   | nA   |
| : BC238/239                                    |                       | V <sub>CE</sub> = -25V, I <sub>B</sub> =0       |       | -2  | -15   | nA   |
| DC Current Gain                                | h <sub>FE</sub>       | V <sub>CE</sub> = -5V, I <sub>C</sub> = -2mA    | 120   |     | 800   |      |
| Collector-Emitter Saturation Voltage           | V <sub>CE</sub> (sat) | I <sub>C</sub> = -10mA, I <sub>B</sub> = -0.5mA |       |     | -0.3  | V    |
|  |                       | I <sub>C</sub> = -100mA, I <sub>B</sub> = -5mA  |       |     | -0.5  | V    |
| Collector Base Saturation Voltage              | V <sub>BE</sub> (sat) | I <sub>C</sub> = -10mA, I <sub>B</sub> = -0.5mA |       |     | -0.7  | V    |
|  |                       | I <sub>C</sub> = -100mA, I <sub>B</sub> = -5mA  |       |     | -0.85 | V    |
| Base-Emitter On Voltage                        | V <sub>BE</sub> (on)  | V <sub>CE</sub> = -5V, I <sub>C</sub> = -2mA    | -0.55 |     | -0.7  | V    |
| Current Gain Bandwidth Product                 | f <sub>T</sub>        | V <sub>CE</sub> = -5V, I <sub>C</sub> = -10mA   |       | 130 |       | MHz  |
| Collector Base Capacitance                     | C <sub>CB0</sub>      | V <sub>CB</sub> = -10V, f=1MHz                  |       |     | 6     | pF   |
| Emitter Base Capacitance                       | C <sub>EB0</sub>      | V <sub>EB</sub> = -0.5V, f=1MHz                 |       | 12  |       | pF   |
| Noise Figure<br>: BC237/238                    | NF                    | V <sub>CE</sub> = -5V, I <sub>C</sub> = -0.2mA, |       |     | 10    | dB   |
| : BC239  |                       | R <sub>G</sub> =2KΩ, f=1KHz                     |       |     | 4     | dB   |
| : BC239  | NF                    | V <sub>CE</sub> = -5V, I <sub>C</sub> = -0.2mA, |       |     | 2     | dB   |
|  |                       | R <sub>G</sub> =2KΩ, f=30~15KHz                 |       |     | 4     | dB   |

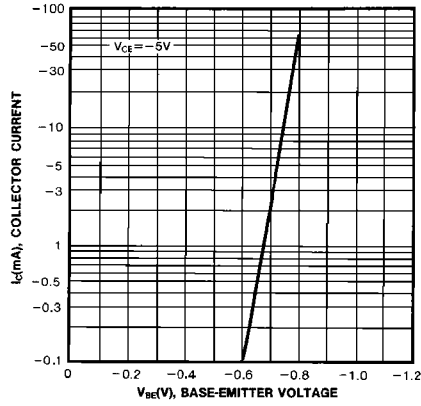
## h<sub>FE</sub> CLASSIFICATION

| Classification  | A       | B       | C       |
|-----------------|---------|---------|---------|
| h <sub>FE</sub> | 120-220 | 180-460 | 380-800 |

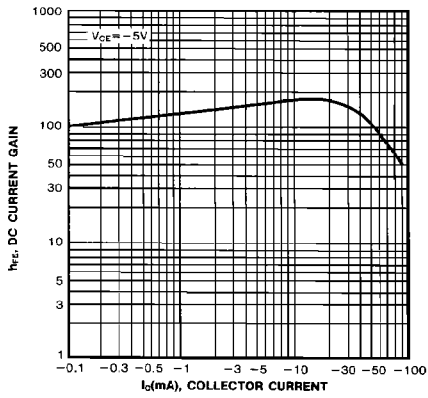
STATIC CHARACTERISTIC



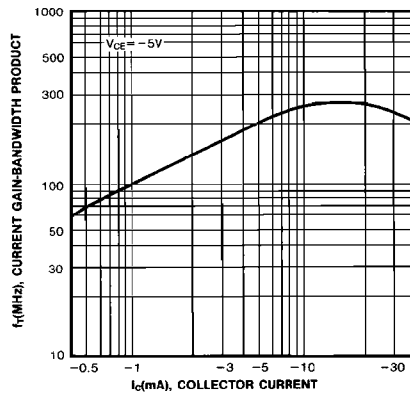
BASE-EMITTER ON VOLTAGE



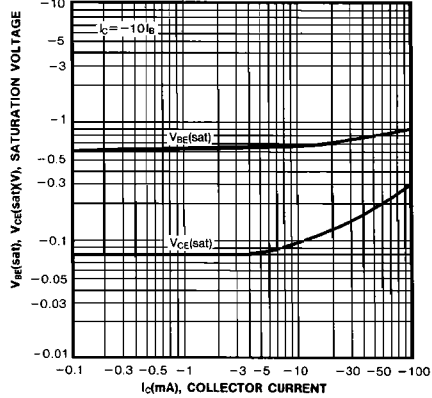
DC CURRENT GAIN



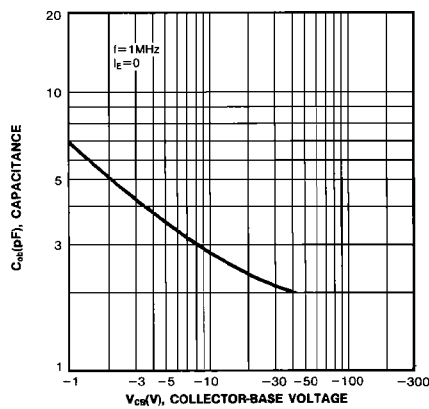
CURRENT GAIN-BANDWIDTH PRODUCT



BASE-EMITTER SATURATION VOLTAGE  
COLLECTOR-EMITTER SATURATION VOLTAGE



COLLECTOR OUTPUT CAPACITANCE



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| FACT™                | QS™           |
| FACT Quiet Series™   | Quiet Series™ |
| FAST®                | SuperSOT™-3   |
| FAST <sub>r</sub> ™  | SuperSOT™-6   |
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