

**Pin Configuration:**

1. Base
2. Collector
3. Emitter

**Description:**

- General Purpose NPN Silicon Planar Epitaxial Amplifier Transistors.

**Absolute Maximum Ratings**

| Parameter                                                                               | Symbol    | Value         | Units                      |
|-----------------------------------------------------------------------------------------|-----------|---------------|----------------------------|
| Collector-Emitter Voltage                                                               | $V_{CEO}$ | 50            | V                          |
| Collector-Base Voltage                                                                  | $V_{CBO}$ | 60            |                            |
| Emitter-Base Voltage                                                                    | $V_{EBO}$ | 6             |                            |
| Collector Current Continuous                                                            | $I_C$     | 100           | mA                         |
| Power Dissipation at $T_a = 25^\circ\text{C}$<br>Derate Above $25^\circ\text{C}$        | $P_D$     | 350<br>2.8    | mW<br>mW/ $^\circ\text{C}$ |
| Total Device Dissipation at $T_c = 25^\circ\text{C}$<br>Derate Above $25^\circ\text{C}$ |           | 1<br>8        | W<br>mW/ $^\circ\text{C}$  |
| Junction Temperature                                                                    | $T_J$     | 150           | $^\circ\text{C}$           |
| Storage Temperature                                                                     | $T_{stg}$ | - 55 to + 150 |                            |

**Thermal Resistance**

|                     |               |     |                    |
|---------------------|---------------|-----|--------------------|
| Junction to Ambient | $R_{th(j-a)}$ | 375 | $^\circ\text{C/W}$ |
| Junction to Case    | $R_{th(j-c)}$ | 125 |                    |

## Electrical Characteristics ( $T_a = 25^\circ\text{C}$ unless otherwise specified)

| Parameter                            | Symbol        | Test Condition                                                                                                                     | Min. | Typ.        | Max.        | Units |
|--------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------|------|-------------|-------------|-------|
| Collector-Emitter Voltage            | $V_{CEO}$     | $I_C = 2\text{mA}, I_B = 0$                                                                                                        | 50   | -           | -           | V     |
| Collector-Base Voltage               | $V_{CBO}$     | $I_C = 10\mu\text{A}, I_E = 0$                                                                                                     | 60   | -           | -           |       |
| Emitter-Base Voltage                 | $V_{EBO}$     | $I_E = 100\mu\text{A}, I_C = 0$                                                                                                    | 6    | -           | -           |       |
| Collector Cut off Current            | $I_{CBO}$     | $V_{CB} = 50\text{V}, I_E = 0$                                                                                                     | -    | -           | 15          | nA    |
| Emitter-Base Leakage Current         | $I_{EB0}$     | $V_{EB} = 4.0\text{V}, I_C = 0$                                                                                                    | -    | -           |             |       |
| DC Current Gain                      | $h_{FE}$      | $I_C = 2\text{mA}$ <b>BC182L</b>                                                                                                   | 125  | -           | -           | -     |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 10\text{mA}, I_B = 0.5\text{mA}$<br>* $I_C = 100\text{mA}, I_B = 5\text{mA}$                                                | -    | -           | 0.25<br>0.6 | V     |
| Base-Emitter Saturation Voltage      | $V_{BE(sat)}$ | * $I_C = 100\text{mA}, I_B = 5\text{mA}$                                                                                           | -    | -           | 1.2         |       |
| Base-Emitter On Voltage              | $V_{BE(on)}$  | $I_C = 100\mu\text{A}, V_{CE} = 5\text{V}$<br>$I_C = 2\text{mA}, V_{CE} = 5\text{V}$<br>* $I_C = 100\text{mA}, V_{CE} = 5\text{V}$ | 0.55 | 0.5<br>0.83 | 0.7         |       |

## Dynamic Characteristics

|                                |          |                                                                                                                                     |     |     |     |     |
|--------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|-----|
| Current-Gain Bandwidth Product | $f_T$    | $I_C = 0.5\text{mA}, V_{CE} = 3\text{V},$<br>$f = 100\text{MHz}$<br>$I_C = 10\text{mA}, V_{CE} = 5\text{V},$<br>$f = 100\text{MHz}$ | 150 | 100 | -   | MHz |
| Common Base Output Capacitance | $C_{ob}$ | $V_{CB} = 10\text{V}, I_C = 0,$<br>$f = 1\text{MHz}$                                                                                | -   | -   | 5   | pF  |
| Common Base Input Capacitance  | $C_{ib}$ | $V_{BE} = 0.5\text{V}, I_C = 0,$<br>$f = 1\text{MHz}$                                                                               | -   | 8   | -   | pF  |
| Small-Signal Current Gain      | $h_{fe}$ | $I_C = 2\text{mA}, V_{CE} = 5\text{V},$<br>$f = 1\text{kHz}$                                                                        | 125 | -   | 500 | -   |
| Noise Figure                   | NF       | $V_{CE} = 5\text{V}, I_C = 0.2\text{mA},$<br>$R_s = 2\text{K}\Omega,$<br>$f = 1\text{kHz}, F = 200\text{Hz}$                        | -   | -   | 10  | dB  |

\*Pulse Condition : Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .