# BC547B
# BC547C

## SMALL SIGNAL NPN TRANSISTORS

| Type | Marking |
|---|---|
| BC547B | BC547B |
| BC547C | BC547C |

- SILICON EPITAXIAL PLANAR NPN TRANSISTORS
- TO-92 PACKAGE SUITABLE FOR THROUGH-HOLE PCB ASSEMBLY
- BC547B - THE PNP COMPLEMENTARY TYPE IS BC557B
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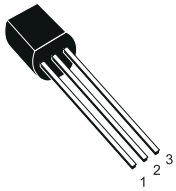
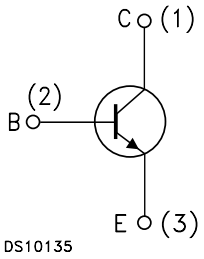
**APPLICATIONS**

- WELL SUITABLE FOR TV AND HOME APPLIANCE EQUIPMENT
- SMALL LOAD SWITCH TRANSISTORS WITH HIGH GAIN AND LOW SATURATION VOLTAGE




**TO-92**

**INTERNAL SCHEMATIC DIAGRAM**




**ABSOLUTE MAXIMUM RATINGS**

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage ($I_E$ = 0) | 50 | V |
| $V_{CEO}$ | Collector-Emitter Voltage ($I_B$ = 0) | 45 | V |
| $V_{EBO}$ | Emitter-Base Voltage ($I_C$ = 0) | 6 | V |
| $I_C$ | Collector Current | 100 | mA |
| $I_{CM}$ | Collector Peak Current | 200 | mA |
| $P_{tot}$ | Total Dissipation at $T_C$ = 25 $^oC$ | 500 | mW |
| $T_{stg}$ | Storage Temperature | -65 to 150 | $^oC$ |
| $T_j$ | Max. Operating Junction Temperature | 150 | $^oC$ |

## THERMAL DATA

| | | | | |
|---|---|---|---|---|
| $R_{thj\text{-}amb}$ • | Thermal Resistance Junction-Ambient | Max | 250 | $^oC/W$ |
| $R_{thj\text{-}Case}$ • | Thermal Resistance Junction-Case | Max | 83.3 | $^oC/W$ |

## ELECTRICAL CHARACTERISTICS ($T_{case}$ = 25 $^oC$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_{CBO}$ | Collector Cut-off Current ($I_E$ = 0) | $V_{CB}$ = 30 V<br>$V_{CB}$ = 30 V $T_C$ = 150 $^oC$ | | | 15<br>5 | nA<br>µA |
| $I_{EBO}$ | Emitter Cut-off Current ($I_C$ = 0) | $V_{EB}$ = 5 V | | | 100 | nA |
| $V_{(BR)CEO}$* | Collector-Emitter Breakdown Voltage ($I_B$ = 0) | $I_C$ = 10 mA | 45 | | | V |
| $V_{CE(sat)}$* | Collector-Emitter Saturation Voltage | $I_C$ = 10 mA $I_B$ = 0.5 mA<br>$I_C$ = 100 mA $I_B$ = 5 mA | | 0.09<br>0.2 | 0.25<br>0.6 | V<br>V |
| $V_{BE(sat)}$* | Base-Emitter Saturation Voltage | $I_C$ = 10 mA $I_B$ = 0.5 mA<br>$I_C$ = 100 mA $I_B$ = 5 mA | | 0.7<br>0.9 | | V<br>V |
| $V_{BE(on)}$* | Base-Emitter On Voltage | $I_C$ = 2 mA $V_{CE}$ = 5 V<br>$I_C$ = 10 mA $V_{CE}$ = 5 V | 0.58 | 0.66 | 0.7<br>0.77 | V<br>V |
| $h_{FE}$ | DC Current Gain | $I_C$ = 2 mA $V_{CE}$ = 5 V<br>for **BC547B**<br>for **BC547C** | <br>200<br>420 | | <br>450<br>800 | |
| $f_T$ | Transition Frequency | $I_C$ = 10 mA $V_{CE}$ = 5 V f = 100MHz | 100 | | | MHz |
| $C_{CBO}$ | Collector-Base Capacitance | $I_E$ = 0 $V_{CB}$ = 10 V f = 1 MHz | | 1.5 | | pF |
| $C_{EBO}$ | Emitter-Base Capacitance | $I_C$ = 0 $V_{EB}$ = 0.5 V f = 1 MHz | | 11 | | pF |
| NF | Noise Figure | $V_{CE}$ = 5 V $I_C$ = 200 µA f = 1KHz<br>$\Delta f$ = 200 Hz $R_G$ = 2 KΩ | | 2 | 10 | dB |

* Pulsed: Pulse duration = 300 µs, duty cycle ≤ 2 %

## TO-92 MECHANICAL DATA

| DIM. | mm | | | inch | | |
|---|---|---|---|---|---|---|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 4.32 | | 4.95 | 0.170 | | 0.195 |
| b | 0.36 | | 0.51 | 0.014 | | 0.020 |
| D | 4.45 | | 4.95 | 0.175 | | 0.194 |
| E | 3.30 | | 3.94 | 0.130 | | 0.155 |
| e | 2.41 | | 2.67 | 0.095 | | 0.105 |
| e1 | 1.14 | | 1.40 | 0.045 | | 0.055 |
| L | 12.70 | | 15.49 | 0.500 | | 0.609 |
| R | 2.16 | | 2.41 | 0.085 | | 0.094 |
| S1 | 1.14 | | 1.52 | 0.045 | | 0.059 |
| W | 0.41 | | 0.56 | 0.016 | | 0.022 |
| V | 4 degree | | 6 degree | 4 degree | | 6 degree |