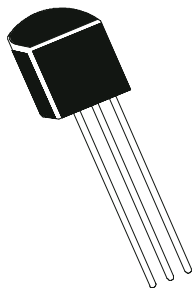


# PNP SILICON PLANAR EPITAXIAL TRANSISTORS

BC 556, A, B  
BC 557, 8, A, B, C  
TO-92  
EBC



Boca Semiconductor Corp.  
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## APPLICATION

PNP General Purpose Transistors, Especially Suited For Use in Driver Stages of Audio Amplifier, Low Noise Input Stages of Tape Recorders, HI-FI Amplifiers, Signal Processing Circuits of Television Receivers.

### ABSOLUTE MAXIMUM RATINGS(Ta=25 deg C unless otherwise specified)

| DESCRIPTION                   | SYMBOL | BC556 | BC557       | BC558 | UNITS    |
|-------------------------------|--------|-------|-------------|-------|----------|
| Collector -Emitter Voltage    | VCEO   | 65    | 45          | 30    | V        |
| Collector -Emitter Voltage    | VCES   | 80    | 50          | 30    | V        |
| Collector -Base Voltage       | VCBO   | 80    | 50          | 30    | V        |
| Emitter -Base Voltage         | VEBO   |       | 5.0         |       | V        |
| Collector Current Continuous  | IC     |       | 100         |       | mA       |
| Peak                          | ICM    |       | 200         |       | mA       |
| Base Current -Peak            | IBM    |       | 200         |       | mA       |
| Emitter Current- Peak         | IEM    |       | 200         |       | mA       |
| Power Dissipation@ Ta=25 degC | PTA    |       | 500         |       | mW       |
| Derate Above 25 deg C         |        |       | 4.0         |       | mW/deg C |
| Storage Temperature           | Tstg   |       | -65 to +150 |       | deg C    |
| Junction Temperature          | Tj     |       | 150         |       | deg C    |

### THERMAL RESISTANCE

|                     |          |  |     |  |         |
|---------------------|----------|--|-----|--|---------|
| Junction to Ambient | Rth(j-a) |  | 250 |  | deg C/W |
|---------------------|----------|--|-----|--|---------|

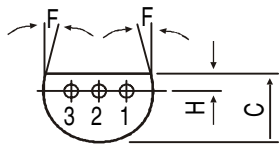
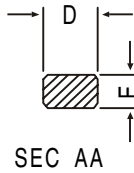
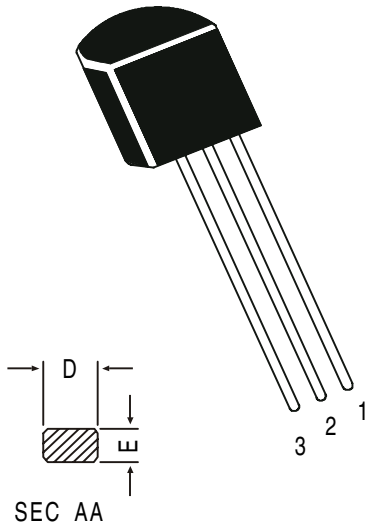
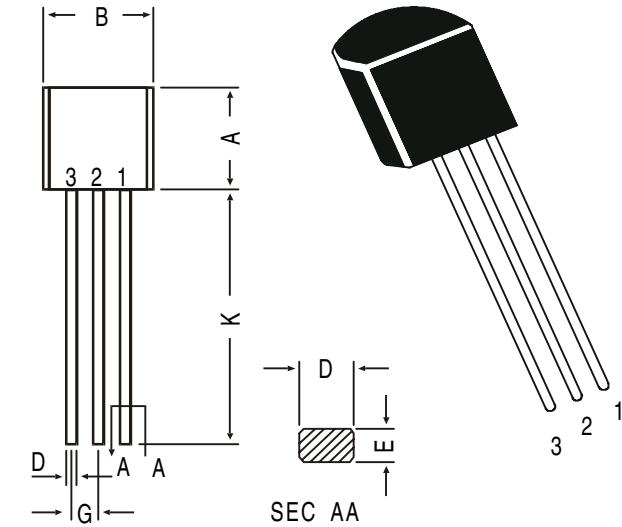
### ELECTRICAL CHARACTERISTICS (Ta=25 deg C Unless Otherwise Specified)

| DESCRIPTION                | SYMBOL | TEST CONDITION     | BC556 | BC557 | BC558 | UNITS |
|----------------------------|--------|--------------------|-------|-------|-------|-------|
| Collector -Emitter Voltage | VCEO   | IC=2mA, IB=0       | >65   | >45   | >30   | V     |
| Collector -Base Voltage    | VCBO   | IC=100uA, IE=0     | >80   | >50   | >30   | V     |
| Emitter-Base Voltage       | VEBO   | IE=100uA, IC=0 ALL |       | >5.0  |       | V     |
| Collector-Cut off Current  | ICBO   | VCB=30V, IE=0 ALL  |       | <15   |       | nA    |
|                            |        | Tj=150 deg C       |       |       |       |       |
|                            |        | VCB=30V, IE=0 ALL  |       | <5.0  |       | uA    |
|                            | ICES   | VCE=80V, VBE=0     | <15   | -     | -     | nA    |
|                            |        | VCE=50V, VBE=0     | -     | <15   | -     | nA    |
|                            |        | VCE=30V, VBE=0     | -     | -     | <15   | nA    |
|                            |        | TJ=125 deg C       |       |       |       |       |
| Collector-Cut off Current  | ICES   | VCE=80V, VBE=0     | <4.0  | -     | -     | uA    |
|                            |        | VCE=50V, VBE=0     | -     | <4.0  | -     | uA    |
|                            |        | VCE=30V, VBE=0     | -     | -     | <4.0  | uA    |

| ELECTRICAL CHARACTERISTICS (Ta=25 deg C Unless Otherwise Specified) |          |   | BC556-558        |           |        |
|---|----------|---|------------------|-----------|--------|
| DESCRIPTION   | SYMBOL   | TEST CONDITION                                  |                  | VALUE     | UNITS  |
| DC Current Gain   | hFE      | IC=10uA, VCE=5V                                 | A                | typ90     |        |
|   |          |   | B                | typ150    |        |
|   |          |   | C                | typ270    |        |
|   |          | IC=2mA, VCE=5V                                  | BC556            | 75-475    |        |
|   |          |   | BC557,8          | 75-800    |        |
|   |          |   | A                | 110-220   |        |
|   |          |   | B                | 200-450   |        |
|   |          |   | C                | 420-800   |        |
|   |          |   | IC=100mA, VCE=5V | A         | typ120 |
| B   | typ200   |   |                  |           |        |
| C   | typ400   |   |                  |           |        |
| Collector Emitter Saturation Voltage                                | VCE(Sat) | IC=10mA, IB=0.5mA                               |                  | <0.30     | V      |
|   |          | IC=100mA, IB=5mA                                |                  | <0.65     | V      |
| Base Emitter Saturation Voltage                                     | VBE(Sat) | IC=10mA, IB=0.5mA                               |                  | typ0.70   | V      |
|   |          | IC=100mA, IB=5mA                                |                  | typ0.90   | V      |
| Base Emitter on Voltage   | VBE(on)  | IC=2mA, VCE=5V                                  |                  | 0.55-0.70 | V      |
|   |          | IC=10mA, VCE=5V                                 |                  | <0.82     | V      |
| <b><u>DYNAMIC CHARACTERISTICS</u></b>                               |          |   |                  |           |        |
| Transistors Frequency   | ft       | IC=10mA, VCE=5V<br>f=100MHz                     |                  | typ150    | MHz    |
| Collector out-put Capacitance                                       | Ccbo     | VCB=10V, f=1MHz                                 |                  | <6.0      | pF     |
| Emitter Input Capacitance   | Cib      | VEB=0.5V, f=1MHz                                |                  | typ9.0    | pF     |
| Noise Figure  | NF       | IC=0.2mA, VCE=5V<br>Rs=2kohm, f=1kHz<br>B=200Hz |                  | <10       | dB     |
| Small Signal Current Gain   | hfe      | ALL f=1KHz<br>IC=2mA, VCE=5V                    | A                | typ220    |        |
|   |          |   | B                | typ330    |        |
|   |          |   | C                | typ600    |        |
|   |          |   | A                | 1.6-4.5   | khoms  |
| Input Impedance   | hie      | IC=2mA, VCE=5V                                  | B                | 3.2-8.5   |        |
|   |          |   | C                | 6.0-15    |        |
|   |          |   | A                | typ1.5    | X`10-4 |
| Voltage Feedback Ratio  | hre      | IC=2mA, VCE=5V                                  | B                | typ2.0    |        |
|   |          |   | C                | typ3.0    |        |
|   |          |   | A                | <30       | umhos  |
| Out put Adimttance  | hoe      | IC=2mA, VCE=5V                                  | B                | <60       |        |
|   |          |   | C                | <110      |        |
|   |          |   | A                | <30       | umhos  |

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# TO-92 Plastic Package

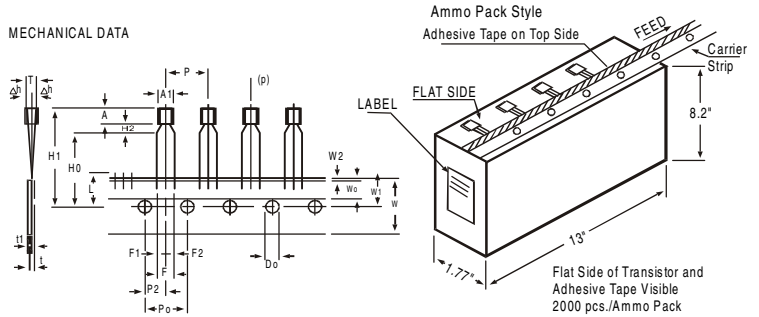


**PIN CONFIGURATION**  
 1. EMITTER  
 2. BASE  
 3. COLLECTOR

All dimensions in mm.

| DIM | MIN.  | MAX. |
|-----|-------|------|
| A   | 4.32  | 5.33 |
| B   | 4.45  | 5.20 |
| C   | 3.18  | 4.19 |
| D   | 0.41  | 0.55 |
| E   | 0.35  | 0.50 |
| F   | 5 DEG |      |
| G   | 1.14  | 1.40 |
| H   | 1.14  | 1.53 |
| K   | 12.70 | —    |

## TO-92 Transistors on Tape and Ammo Pack



All dimensions in mm unless specified otherwise

| ITEM                                 | SYMBOL | SPECIFICATION |      |       |              | REMARKS                                |
|--------------------------------------|--------|---------------|------|-------|--------------|--|
|                                      |        | MIN.          | NOM. | MAX.  | TOL.         |  |
| BODY WIDTH                           | A1     | 4.0           |      | 4.8   |              |  |
| BODY HEIGHT                          | A      | 4.8           |      | 5.2   |              |  |
| BODY THICKNESS                       | T      | 3.9           |      | 4.2   |              |  |
| PITCH OF COMPONENT                   | P      |               | 12.7 |       | ±1           |  |
| FEED HOLE PITCH                      | Po     |               | 12.7 |       | ±0.3         | CUMULATIVE PITCH ERROR 1.0 mm/20 PITCH |
| FEED HOLE CENTRE TO COMPONENT CENTRE | P2     |               | 6.35 |       | ±0.4         | TO BE MEASURED AT BOTTOM OF CLINCH     |
| DISTANCE BETWEEN OUTER LEADS         | F      |               | 5.08 |       | +0.6<br>-0.2 |  |
| COMPONENT ALIGNMENT                  | Δh     |               | 0    | 1     |              | AT TOP OF BODY                         |
| TAPE WIDTH                           | W      |               | 18   |       | ±0.5         |  |
| HOLD-DOWN TAPE WIDTH                 | Wo     |               | 6    |       | ±0.2         |  |
| HOLE POSITION                        | W1     |               | 9    |       | +0.7<br>-0.5 |  |
| HOLD-DOWN TAPE POSITION              | W2     |               | 0.5  |       | ±0.2         |  |
| LEAD WIRE CLINCH HEIGHT              | Ho     |               | 16   |       | ±0.5         |  |
| COMPONENT HEIGHT                     | H1     |               |      | 23.25 |              |  |
| LENGTH OF SNIPPED LEADS              | L      |               |      | 11.0  |              |  |
| FEED HOLE DIAMETER                   | Do     |               | 4    |       | ±0.2         | t1 0.3 - 0.6                           |
| TOTAL TAPE THICKNESS                 | t      |               |      | 1.2   |              |  |
| LEAD - TO - LEAD DISTANCE F1,        | F2     |               | 2.54 |       | +0.4<br>-0.1 |  |
| CLINCH HEIGHT                        | H2     |               |      | 3     |              |  |
| PULL - OUT FORCE                     | (P)    | 6N            |      |       |              |  |

### NOTES

1. MAXIMUM ALIGNMENT DEVIATION BETWEEN LEADS NOT TO BE GREATER THAN 0.2 mm.
2. MAXIMUM NON-CUMULATIVE VARIATION BETWEEN TAPE FEED HOLES SHALL NOT EXCEED 1 mm IN 20 PITCHES.
3. HOLDDOWN TAPE NOT TO EXCEED BEYOND THE EDGE(S) OF CARRIER TAPE AND THERE SHALL BE NO EXPOSURE OF ADHESIVE.
4. NO MORE THAN 3 CONSECUTIVE MISSING COMPONENTS ARE PERMITTED.
5. A TAPE TRAILER, HAVING AT LEAST THREE FEED HOLES ARE REQUIRED AFTER THE LAST COMPONENT.
6. SPLICES SHALL NOT INTERFERE WITH THE SPROCKET FEED HOLES.

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