

8514019 SPRAGUE, SEMICONDUCTORS/ICS

93D 03596 D

T-27-90

PLASTIC-CASE BIPOLAR TRANSISTORS

PNP Transistors

'2N' and 'TP' Device Types

ELECTRICAL CHARACTERISTICS at  $T_A = 25^\circ\text{C}$

| Device Type | $I_C$ Max. (mA) | $V_{(BR)CBO}$ (V) | $V_{(BR)CEO}$ (V) | $V_{(BR)EBO}$ (V) | $I_{CBO}$            |                     | DC Current Gain |               |              |                | $V_{CE(sat)}$    |                   | $f_T$              |                   | $C_{ob}^1$ (pF) | $t_s^1$ (ns) | NF <sup>1</sup> (dB) | Process |
|-------------|-----------------|-------------------|-------------------|-------------------|----------------------|---------------------|-----------------|---------------|--------------|----------------|------------------|-------------------|--------------------|-------------------|-----------------|--------------|----------------------|---------|
|             |                 |                   |                   |                   | Max. @ $V_{CB}$ (nA) | Max. @ $V_{CB}$ (V) | $h_{FE}$ Min.   | $h_{FE}$ Max. | @ $I_C$ (mA) | @ $V_{CE}$ (V) | Max. @ $I_C$ (V) | Min. @ $I_C$ (mA) | Min. @ $I_C$ (MHz) | Min. @ $I_C$ (mA) |                 |              |                      |         |
| 2N5087      | 100             | 50                | 50                | —                 | 50                   | 35                  | 250             | 800           | 0.1          | 5.0            | 0.3              | 10                | 40                 | 0.5               | 4.0             | —            | 2.0                  | BXE     |
| TP5138      | 100             | 30                | 30                | 5.0               | 50                   | 20                  | 50              | 800           | 0.1          | 10             | 0.3              | 10                | 30                 | 0.5               | 7.0             | —            | —                    | BXE     |
| TP5139      | 200             | 20                | 20                | 5.0               | 50 <sup>3</sup>      | 15                  | 30              | —             | 0.1          | 10             | 0.2              | 10                | 300                | 10                | 5.0             | 200          | —                    | BTB     |
| 2N5142      | 500             | 20                | 20                | 4.0               | 50 <sup>3</sup>      | 12                  | 30              | —             | 50           | 1.0            | 0.5              | 50                | 100                | 50                | 10              | 200          | —                    | JFA     |
| 2N5221      | 500             | 15                | 15                | 3.0               | 100                  | 10                  | 30              | 600           | 50           | 10             | 0.5              | 150               | 100                | 20                | 15              | —            | —                    | JFA     |
| 2N5226      | 500             | 25                | 25                | 4.0               | 300                  | 15                  | 30              | 600           | 50           | 10             | 0.8              | 100               | 50                 | 20                | 20              | —            | —                    | JFA     |
| 2N5227      | 100             | 30                | 30                | 3.0               | 100                  | 10                  | 50              | 700           | 2.0          | 10             | 0.4              | 10                | 100                | 10                | 5.0             | —            | —                    | BXE     |
| 2N5354      | 500             | 25                | 25                | 4.0               | 100                  | 25                  | 40              | 120           | 50           | 1.0            | 0.25             | 50                | 250                | 2.0               | 8.0             | —            | —                    | JFA     |
| 2N5355      | 500             | 25                | 25                | 4.0               | 100                  | 25                  | 100             | 300           | 50           | 1.0            | 0.25             | 50                | 250                | 2.0               | 8.0             | —            | —                    | JFA     |
| 2N5356      | 500             | 25                | 25                | 4.0               | 100                  | 25                  | 250             | 500           | 50           | 1.0            | 0.25             | 50                | 250                | 2.0               | 8.0             | —            | —                    | JFA     |
| 2N5365      | 500             | 40                | 40                | 4.0               | 100                  | 40                  | 40              | 120           | 50           | 1.0            | 0.25             | 50                | 250                | 2.0               | 8.0             | —            | —                    | JFA     |
| 2N5366      | 500             | 40                | 40                | 4.0               | 100                  | 40                  | 100             | 300           | 50           | 1.0            | 0.25             | 50                | 250                | 2.0               | 8.0             | —            | —                    | JFA     |
| 2N5367      | 500             | 40                | 40                | 4.0               | 100                  | 40                  | 250             | 500           | 50           | 1.0            | 0.25             | 50                | 250                | 2.0               | 8.0             | —            | —                    | JFA     |
| TP5372      | 500             | 60                | 30                | 5.0               | 50                   | 40                  | 40              | 120           | 150          | 10             | 0.3              | 150               | 150                | 20                | 10              | 150          | —                    | JFA     |
| TP5373      | 500             | 60                | 30                | 5.0               | 50                   | 40                  | 100             | 300           | 150          | 10             | 0.3              | 150               | 150                | 20                | 10              | 150          | —                    | JFA     |
| TP5374      | 500             | 60                | 30                | 5.0               | 50                   | 40                  | 200             | 400           | 150          | 10             | 0.3              | 150               | 150                | 20                | 10              | 175          | —                    | JFA     |
| TP5375      | 500             | 40                | 30                | 5.0               | 50                   | 30                  | 40              | 400           | 150          | 10             | 0.3              | 150               | 150                | 20                | 10              | 175          | —                    | JFA     |
| TP5378      | 500             | 40                | 30                | 5.0               | 10                   | 30                  | 120             | —             | 1.0          | 5.0            | —                | —                 | —                  | —                 | 10              | —            | —                    | JFA     |
| TP5379      | 500             | 40                | 30                | 5.0               | 10                   | 30                  | 100             | 500           | 0.1          | 5.0            | 0.2              | 10                | 200                | 0.5               | —               | —            | 3.0                  | JFA     |
| TP5382      | 200             | 40                | 40                | 5.0               | 50                   | 30                  | 50              | —             | 10           | 1.0            | 0.25             | 10                | 200                | 10                | 4.5             | —            | 5.0                  | BTB     |
| TP5383      | 200             | 40                | 40                | 5.0               | 50                   | 30                  | 100             | 300           | 10           | 1.0            | 0.25             | 10                | 250                | 10                | 4.5             | —            | 4.0                  | BTB     |
| 2N5400      | 300             | 130               | 120               | 5.0               | 50                   | 100                 | 40              | 180           | 10           | 5.0            | 0.2              | 10                | 100                | 10                | 6.0             | —            | 8.0                  | VHB     |
| 2N5401      | 300             | 160               | 150               | 5.0               | 50                   | 120                 | 60              | 240           | 10           | 5.0            | 0.2              | 10                | 100                | 10                | 6.0             | —            | 8.0                  | VHB     |
| TP5447      | 500             | 40                | 25                | 5.0               | 100                  | 20                  | 60              | 300           | 50           | 5.0            | 0.25             | 50                | 100                | 50                | 12              | —            | —                    | JFA     |
| TP5448      | 500             | 50                | 30                | 5.0               | 100                  | 20                  | 30              | 150           | 50           | 5.0            | 0.25             | 50                | 100                | 50                | 12              | —            | —                    | JFA     |
| TP5811      | 800             | 35                | 25                | 5.0               | 100                  | 25                  | 60              | 200           | 2.0          | 2.0            | 0.75             | 500               | 100                | 50                | 15              | —            | —                    | JMA     |
| TP5813      | 800             | 35                | 25                | 5.0               | 100                  | 25                  | 150             | 500           | 2.0          | 2.0            | 0.75             | 500               | 135                | 50                | 15              | —            | —                    | JMA     |
| TP5815      | 800             | 50                | 40                | 5.0               | 100                  | 25                  | 60              | 120           | 2.0          | 2.0            | 0.75             | 500               | 100                | 50                | 15              | —            | —                    | JMA     |
| TP5817      | 800             | 50                | 40                | 5.0               | 100                  | 25                  | 100             | 200           | 2.0          | 2.0            | 0.75             | 500               | 120                | 50                | 15              | —            | —                    | JMA     |
| TP5819      | 800             | 50                | 40                | 5.0               | 100                  | 25                  | 150             | 300           | 2.0          | 2.0            | 0.75             | 500               | 135                | 50                | 15              | —            | —                    | JMA     |
| TP5821      | 800             | 70                | 60                | 5.0               | 100                  | 25                  | 60              | 120           | 2.0          | 2.0            | 0.75             | 500               | 100                | 50                | 15              | —            | —                    | JMA     |
| TP5823      | 800             | 70                | 60                | 5.0               | 100                  | 25                  | 100             | 200           | 2.0          | 2.0            | 0.75             | 500               | 120                | 50                | 15              | —            | —                    | JMA     |
| TP5855      | 1000            | 60                | 60                | 5.0               | 100                  | 40                  | 50              | 300           | 150          | 10             | 0.4              | 150               | 100                | 50                | 15              | —            | —                    | DJC     |
| TP5857      | 1000            | 80                | 80                | 5.0               | 100                  | 60                  | 50              | 300           | 150          | 10             | 0.4              | 150               | 100                | 50                | 15              | —            | —                    | DJC     |
| 2N5999      | 500             | 35                | 25                | 5.0               | 30                   | 25                  | 150             | 300           | 10           | 2.0            | 0.25             | 50                | 140                | 10                | —               | —            | 1.5                  | JFA     |
| 2N6009      | 500             | 35                | 25                | 5.0               | 30                   | 25                  | 250             | 500           | 10           | 2.0            | 0.25             | 50                | 140                | 10                | —               | —            | 1.5                  | JFA     |
| 2N6076      | 500             | 25                | 25                | 5.0               | 100                  | 25                  | 100             | 500           | 10           | 10             | 0.25             | 10                | —                  | —                 | 13              | —            | —                    | JFA     |

NOTES:

- 1) Maximum at typical JEDEC conditions.
- 2)  $\mu\text{A}$ .

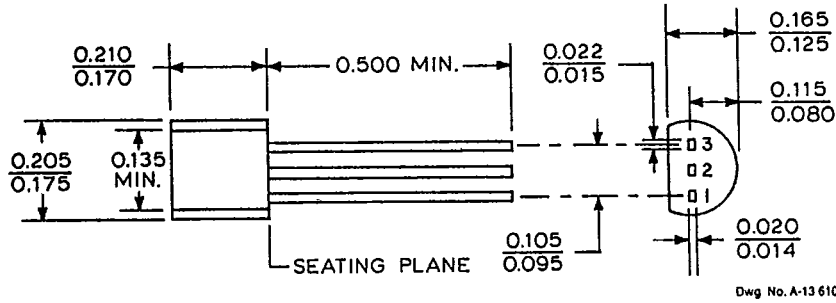
- 3)  $V_{(BR)CES}/I_{CES}$ , as applicable.
- 4) mA.
- 5)  $V_{(BR)CER}$  at  $R=10\Omega$ .

T-91-20

PACKAGE INFORMATION

TO-226AA/STYLE CT

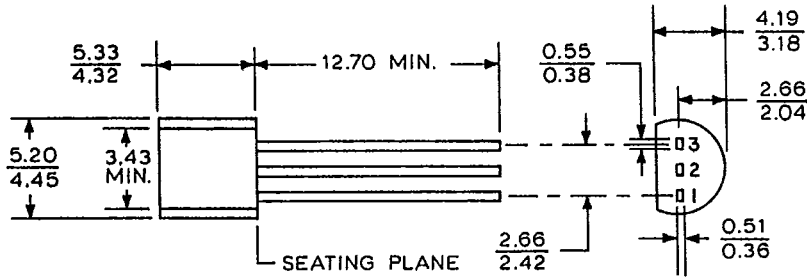
DIMENSIONS IN INCHES



Dwg. No. A-13.610

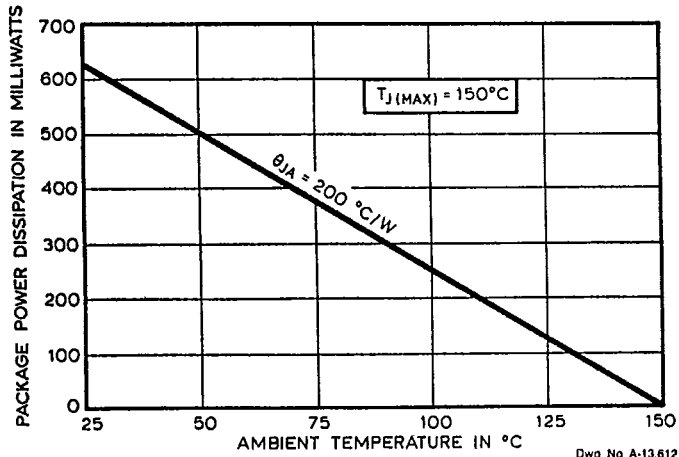
DIMENSIONS IN MILLIMETERS

Based on 1" = 25.4 mm



Dwg. No. A-13.611

MAXIMUM ALLOWABLE PACKAGE POWER DISSIPATION AS A FUNCTION OF AMBIENT TEMPERATURE



Dwg No A-13.612



CT PINOUT

| Pin | Terminal  |
|-----|-----------|
| 1   | Emitter   |
| 2   | Base      |
| 3   | Collector |

3044

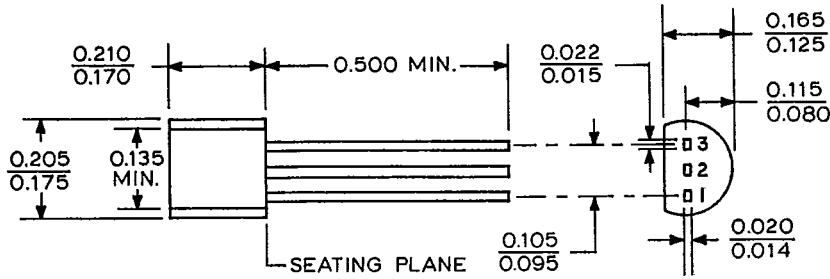
A-01

7-R

**T-91-20**  
**PACKAGE INFORMATION**

**TO-226AA/STYLE CZ**

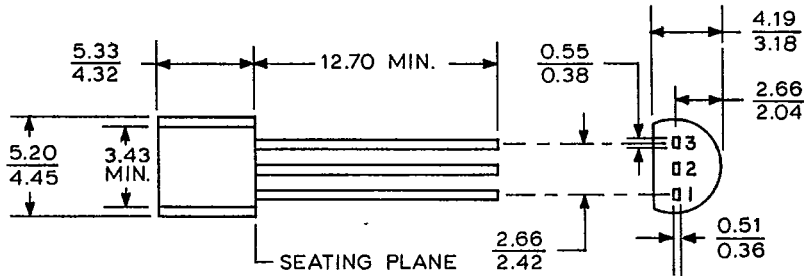
DIMENSIONS IN INCHES



Dwg No. A-13,610

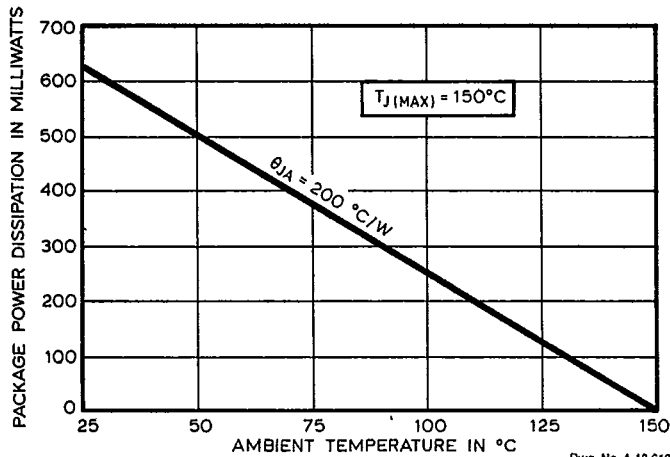
DIMENSIONS IN MILLIMETERS

Based on 1" = 25.4 mm



Dwg. No. A-13,611

**MAXIMUM ALLOWABLE PACKAGE POWER DISSIPATION AS A FUNCTION OF AMBIENT TEMPERATURE**



Dwg No A-13 612



**CZ PINOUT**

| Pin | Terminal  |
|-----|-----------|
| 1   | Emitter   |
| 2   | Collector |
| 3   | Base      |