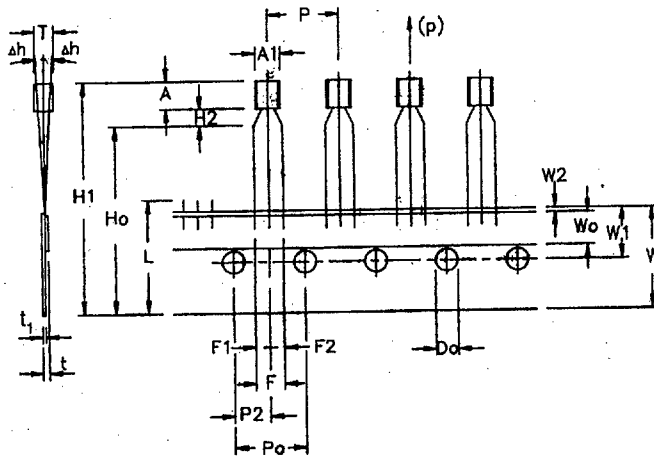


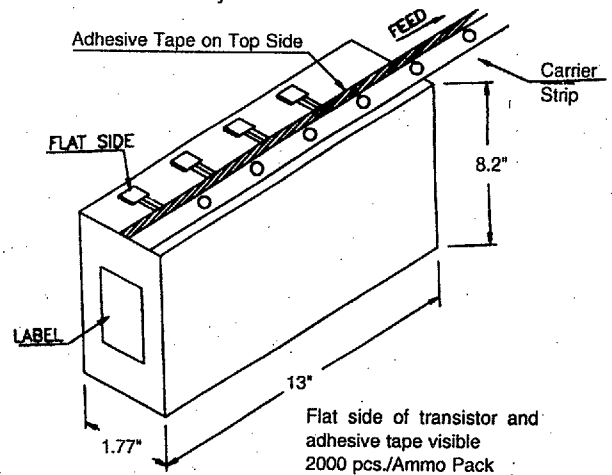
| Maximum Ratings |                             |                             |                             |                                |                    |                              | Electrical Characteristics (Ta=25°C, Unless Otherwise Specified) |                              |                                           |                                                                                |                                   |                                 |                                               |                             |                             |                             |                            |                               |                             |                 |         |  |  |
|-----------------|-----------------------------|-----------------------------|-----------------------------|--------------------------------|--------------------|------------------------------|------------------------------------------------------------------|------------------------------|-------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------|---------------------------------|-----------------------------------------------|-----------------------------|-----------------------------|-----------------------------|----------------------------|-------------------------------|-----------------------------|-----------------|---------|--|--|
| Type No.        | V <sub>CBO</sub> (V)<br>Min | V <sub>CEO</sub> (V)<br>Min | V <sub>EBO</sub> (V)<br>Min | P <sub>D</sub> (W)<br>@Tc=25°C | I <sub>C</sub> (A) | I <sub>CBO</sub> (μA)<br>Max | V <sub>CE</sub> (V)<br>@ I <sub>C</sub>                          | I <sub>CES</sub> (μA)<br>Max | V <sub>CE</sub> (V)<br>@ I <sub>CES</sub> | h <sub>FE</sub> @ I <sub>C</sub> & V <sub>CE</sub> (mA) (V)                    | V <sub>CE(SAT)</sub> (V)<br>Max   | V <sub>BE(SAT)</sub> (V)<br>Min | I <sub>C</sub> (mA)<br>@ V <sub>BE(SAT)</sub> | C <sub>ob</sub> (pF)<br>Typ | f <sub>T</sub> (MHz)<br>Min | t <sub>on</sub> (ns)<br>Max | N <sub>F</sub> (dB)<br>Max | Q <sub>max</sub> (MHz)<br>Max | C <sub>re</sub> (pF)<br>Max | CDIL Case Style |         |  |  |
| 2N4294          | 30                          | 12                          | 5                           | 0.625                          | 0.2                | 0.4                          | 20                                                               |                              |                                           | 20 120 100 2<br>30 10 1                                                        | 0.25                              | 0.6                             | 0.9 10                                        | 5                           | 400                         |                             | 10                         | 20                            |                             |                 | TO-92-1 |  |  |
| 2N4295          | 40                          | 15                          | 5                           | 0.625                          | 0.2                | 0.1                          | 20                                                               |                              |                                           | 20 120 100 2<br>40 10 1                                                        | 0.25                              | 0.6                             | 0.9 10                                        | 4                           | 500                         |                             | 10                         | 15                            |                             |                 | TO-92-1 |  |  |
| 2N4400          | 60                          | 40                          | 6                           | 0.625                          | 0.6                |                              |                                                                  | *0.1                         | 35                                        | 20 500 2<br>50 150 150 1<br>40 10 1<br>20 1 1                                  | 0.4 0.75 0.95 150<br>0.75 1.2 500 | 6.5                             | 200                                           |                             | 20                          | 255                         |                            |                               |                             | TO-92           |         |  |  |
| 2N4401          | 60                          | 40                          | 6                           | 0.625                          | 0.6                |                              |                                                                  | *0.1                         | 35                                        | 40 500 2<br>100 300 150 1<br>80 10 1<br>40 1 1<br>20 0.1 1                     | 0.4 0.75 0.95 150<br>0.75 1.2 500 | 6.5                             | 250                                           |                             | 20                          | 255                         |                            |                               |                             | TO-92           |         |  |  |
| 2N4409          | 80                          | 50                          | 5                           | 0.625                          | 0.25               | 0.01                         | 60                                                               |                              |                                           | 60 400 10 1<br>60 1 1                                                          | 0.2                               |                                 | 0.8 1                                         | 12                          | 2                           |                             | 10 10                      |                               |                             |                 | TO-92   |  |  |
| 2N4424          | 40                          | 40                          | 5                           | 0.625                          | 0.1                | 0.1                          | 25                                                               |                              |                                           | 180 540 2 4.5                                                                  | 0.3                               | 0.6                             | 1.3 50                                        |                             |                             |                             |                            |                               |                             |                 | TO-92-1 |  |  |
| 2N4944          | 80                          | 40                          | 5                           | 0.625                          | 0.6                | 0.05                         | 40                                                               |                              |                                           | 40 120 150 1<br>40 30 1                                                        | 0.25                              |                                 | 150                                           |                             | 60                          |                             | 900 50                     |                               |                             |                 | TO-92   |  |  |
| 2N4946          | 80                          | 40                          | 5                           | 0.625                          | 0.6                | 0.05                         | 40                                                               |                              |                                           | 100 300 150 1<br>100 30 1                                                      | 0.25                              |                                 | 150                                           |                             | 60                          |                             | 900 50                     |                               |                             |                 | TO-92   |  |  |
| 2N4951          | 60                          | 30                          | 5                           | 0.625                          | 0.6                | 0.05                         | 40                                                               |                              |                                           | 60 200 150 10<br>40 10 10<br>20 1 10                                           | 0.3                               |                                 | 1.3 150                                       | 8                           | 250                         |                             | 20                         | 400                           |                             |                 | TO-92-1 |  |  |
| 2N4952          | 60                          | 30                          | 5                           | 0.625                          | 0.6                | 0.05                         | 40                                                               |                              |                                           | 100 300 150 10<br>75 10 10<br>50 1 10                                          | 0.3                               |                                 | 1.3 150                                       | 8                           | 250                         |                             | 20                         | 400                           |                             |                 | TO-92-1 |  |  |
| 2N4953          | 60                          | 30                          | 5                           | 0.625                          | 0.6                | 0.05                         | 40                                                               |                              |                                           | 200 600 150 10<br>150 10 10<br>75 1 10                                         | 0.3                               |                                 | 1.3 150                                       | 8                           | 250                         |                             | 20                         | 400                           |                             |                 | TO-92-1 |  |  |
| 2N4954          | 40                          | 30                          | 5                           | 0.625                          | 0.6                | 0.05                         | 30                                                               |                              |                                           | 60 600 150 10<br>40 10 10<br>20 1 10                                           | 0.3                               |                                 | 1.3 150                                       | 8                           | 250                         |                             | 20                         | 400                           |                             |                 | TO-92-1 |  |  |
| 2N4966          | 50                          | 40                          | 6                           | 0.625                          | 0.05               | 0.025                        | 25                                                               |                              |                                           | 40 200 0.01 5<br>50 10 5                                                       | 0.4                               |                                 | 10                                            | 6                           | 40                          |                             | 1                          |                               |                             |                 | TO-92   |  |  |
| 2N4967          | 50                          | 40                          | 6                           | 0.625                          | 0.05               | 0.025                        | 25                                                               |                              |                                           | 100 600 0.01 5<br>120 10 5                                                     | 0.4                               |                                 | 10                                            | 6                           | 40                          |                             | 1                          |                               |                             |                 | TO-92   |  |  |
| 2N4968          | 30                          | 25                          | 6                           | 0.625                          | 0.05               | 0.05                         | 25                                                               |                              |                                           | 40 200 0.01 5<br>50 10 5                                                       | 0.4                               |                                 | 10                                            | 6                           |                             |                             |                            |                               |                             |                 | TO-92   |  |  |
| 2N4969          | 60                          | 30                          | 5                           | 0.6                            | 0.5                | 0.01                         | 50                                                               |                              |                                           | 20 500 10<br>20 150 1<br>40 120 150 10<br>35 10 10<br>25 1 10<br>20 120 0.1 10 | 0.4 1.3 150<br>1.6 2.6 500        | 8                               | 250                                           |                             | 20                          |                             |                            |                               |                             | TO-92           |         |  |  |
| 2N4970          | 50                          | 30                          | 5                           | 0.6                            | 0.5                |                              |                                                                  |                              |                                           | 100 350 150 10<br>70 10 10<br>50 350 150 1                                     | 0.4 0.6 1.2 150                   | 8                               | 200                                           |                             | 20                          |                             |                            |                               |                             | TO-92           |         |  |  |
| 2N5030          | 30                          | 12                          | 4                           | 0.625                          | 0.2                | 0.25                         | 20                                                               |                              |                                           | 30 10 1                                                                        | 0.25                              | 0.72                            | 0.87 10                                       | 4                           | 400                         |                             | 10                         | 30                            |                             |                 | TO-92-1 |  |  |

\* NOTE: I<sub>CEX</sub>

## MECHANICAL DATA



## Ammo Pack Style



| Item                                    | Symbol | Specification |      |       |              | Remarks                                                                            |
|-----------------------------------------|--------|---------------|------|-------|--------------|------------------------------------------------------------------------------------|
|                                         |        | Min.          | Nom. | Max.  | Tol.         |                                                                                    |
| Body Width                              | A1     | 4.0           |      | 4.8   |              | Cumulative Pitch Error<br>1.0 mm/20 Pitch<br>To be measured at<br>bottom of Clinch |
| 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         |                                                                                    |
| Feed Hole Centre to<br>Component Centre | P2     |               | 6.35 |       | ±0.4         | At Top of Body                                                                     |
| Distance between Outer<br>Leads         | F      |               | 5.08 |       | ±0.6         |                                                                                    |
| Component Alignment                     | Δh     |               | 0    | 1     | -0.2         |                                                                                    |
| Tape Width                              | W      |               | 18   |       | ±0.5         |                                                                                    |
| Hold-Down Tape Width                    | Wo     |               | 6    |       | ±0.2         |                                                                                    |
| Hole Position                           | W1     |               | 9    |       | ±0.7         | t <sub>1</sub> 0.3-0.6                                                             |
| Hold-Down Tape Position                 | W2     |               | 0.5  |       | ±0.2         |                                                                                    |
| Lead Wire Clinch Height                 | Ho     |               | 16   |       | ±0.5         |                                                                                    |
| Component Height                        | H1     |               |      | 32.25 |              |                                                                                    |
| Length of Snipped leads                 | L      |               |      | 11.0  |              |                                                                                    |
| Feed Hole Diameter                      | Do     |               | 4    |       | ±0.2         |                                                                                    |
| 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            |      |       |              |                                                                                    |

Dimensions in m.m.

## Notes:

- Maximum alignment deviation between leads not to be greater than 0.2 mm.
- Maximum non-cumulative variation between tape feed holes shall not exceed 1 mm in 20 pitches
- Hold-down tape not to exceed beyond the edge(s) of carrier tape and there shall be no exposure of adhesive.
- No more than 3 consecutive missing components permitted.
- A tape trailer, having at least three feed holes is required after the last component.
- Splices shall not interfere with the sprocket feed holes.