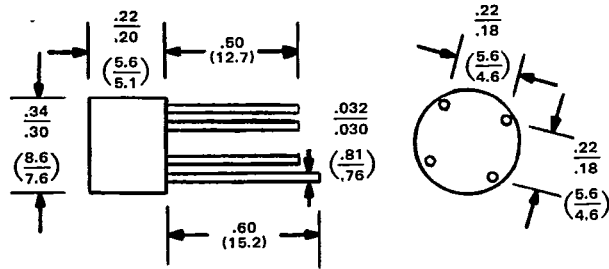


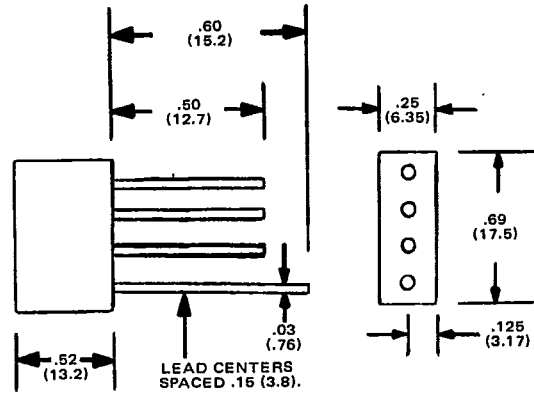
## NPN METAL CAN - SWITCHING AND GENERAL PURPOSE (Cont'd.)

| TYPE NO. | V <sub>CB</sub> | V <sub>CE</sub> | V <sub>EB</sub> | h <sub>FE</sub> | at  | I <sub>C</sub> | V <sub>CE</sub> | V <sub>CE(s)</sub> at I <sub>B</sub> |      | I <sub>C</sub> | f <sub>T</sub> | C <sub>ob</sub> | I <sub>CBO</sub> at V <sub>CB</sub> | CASE |       |
|----------|-----------------|-----------------|-----------------|-----------------|-----|----------------|-----------------|--------------------------------------|------|----------------|----------------|-----------------|-------------------------------------|------|-------|
|          | V               | V               | V               | min             | max | mA             | V               | V                                    | mA   | mA             | MHz            | pF              | μA                                  |      | V     |
| 2N2219   | 60              | 30              | 5               | 100             | 300 | 150            | 10              | 0.4                                  | 15   | 150            | 250            | 8               | 0.01                                | 50   | TO-5  |
| 2N2219A  | 75              | 40              | 6               | 100             | 300 | 150            | 10              | 0.3                                  | 15   | 150            | 250            | 8               | 0.01                                | 60   | TO-5  |
| 2N2220   | 60              | 30              | 5               | 20              | 60  | 150            | 10              | 0.4                                  | 15   | 150            | 250            | 8               | 0.01                                | 50   | TO-18 |
| 2N2221   | 60              | 30              | 5               | 40              | 120 | 150            | 10              | 0.4                                  | 15   | 150            | 250            | 8               | 0.01                                | 50   | TO-18 |
| 2N2221A  | 75              | 40              | 6               | 40              | 120 | 150            | 10              | 0.3                                  | 15   | 150            | 250            | 8               | 0.01                                | 60   | TO-18 |
| 2N2222   | 60              | 30              | 5               | 100             | 300 | 150            | 10              | 0.4                                  | 15   | 150            | 250            | 8               | 0.01                                | 50   | TO-18 |
| 2N2222A  | 75              | 40              | 6               | 100             | 300 | 150            | 10              | 0.3                                  | 15   | 150            | 250            | 8               | 0.01                                | 60   | TO-18 |
| 2N2236   | 40              | 20              | 6               | 15              | 60  | 100            | 10              | 0.25                                 | 20   | 100            | 50             | 35              | —                                   | —    | TO-5  |
| 2N2237   | 40              | 20              | 6               | 40              | 125 | 100            | 10              | 0.25                                 | 20   | 100            | 50             | 35              | —                                   | —    | TO-5  |
| 2N2243   | 120             | 80              | 7               | 40              | 120 | 150            | 10              | .35                                  | 15   | 150            | 50             | 15              | 10                                  | 60   | TO-5  |
| 2N2243A  | 120             | 80              | 8               | 40              | 120 | 150            | 10              | .25                                  | 15   | 150            | 50             | 15              | 10                                  | 60   | TO-5  |
| 2N2270   | 60              | 45              | 7               | 50              | 200 | 150            | 10              | 0.9                                  | 15   | 150            | 100            | 15              | .05                                 | 60   | TO-39 |
| 2N2297   | 80              | 35              | 7               | 40              | 120 | 150            | 10              | 1                                    | 100  | 1000           | 60             | 12              | 0.01                                | 60   | TO-5  |
| 2N2309   | 30              | 30              | 5               | 25              | 125 | 0.2            | 5               | —                                    | —    | —              | 40             | 25              | —                                   | —    | TO-5  |
| 2N2350   | 60              | 40              | 5               | 100             | 300 | 150            | 10              | .35                                  | 15   | 150            | 50             | 20              | .01                                 | 30   | TO-46 |
| 2N2350A  | 60              | 40              | 5               | 100             | 300 | 150            | 10              | .25                                  | 15   | 150            | 50             | 20              | .01                                 | 30   | TO-46 |
| 2N2351   | 80              | 50              | 8               | 40              | 120 | 150            | 10              | .35                                  | 15   | 150            | 50             | 20              | .01                                 | 60   | TO-46 |
| 2N2351A  | 80              | 50              | 8               | 40              | 120 | 150            | 10              | .25                                  | 15   | 150            | 50             | 20              | .01                                 | 60   | TO-46 |
| 2N2352   | 60              | 40              | 5               | 20              | 60  | 150            | 10              | .35                                  | 15   | 150            | 50             | 20              | .01                                 | 30   | TO-46 |
| 2N2352A  | 60              | 40              | 5               | 20              | 60  | 150            | 10              | .25                                  | 15   | 150            | 50             | 20              | .01                                 | 30   | TO-46 |
| 2N2353   | 45              | 25              | 5               | 20              | —   | 150            | 10              | .35                                  | 15   | 150            | 50             | 20              | .10                                 | 30   | TO-46 |
| 2N2353A  | 45              | 25              | 5               | 20              | —   | 150            | 10              | .25                                  | 15   | 150            | 50             | 20              | .10                                 | 30   | TO-46 |
| 2N2380   | 80              | 40              | 5               | 20              | 120 | 150            | 10              | 1.3                                  | 15   | 150            | 100            | 14              | —                                   | —    | TO-5  |
| 2N2380A  | 80              | 40              | 5               | 20              | 120 | 150            | 10              | 1.3                                  | 15   | 150            | 100            | 14              | —                                   | —    | TO-5  |
| 2N2405   | 30              | 30              | 7               | 30              | 120 | 150            | 10              | 0.45                                 | 15   | 150            | 200            | 11              | —                                   | —    | TO-5  |
| 2N2476   | 60              | 20              | 5               | 20              | —   | 150            | 10              | 0.4                                  | 15   | 150            | 250            | 10              | 0.2                                 | 50   | TO-5  |
| 2N2477   | 60              | 20              | 5               | 40              | —   | 150            | 10              | 0.4                                  | 15   | 150            | 250            | 10              | 0.2                                 | 50   | TO-5  |
| 2N2479   | 80              | 40              | 5               | 30              | 120 | 150            | 10              | 0.85                                 | 15   | 150            | 150            | 14              | —                                   | —    | TO-5  |
| 2N2594   | 80              | 80              | 7               | 50              | 150 | 100            | 5               | 1                                    | 20   | 200            | 40             | 20              | 0.1                                 | 60   | TO-5  |
| 2N2645   | 75              | 40              | 7               | 100             | 300 | 150            | 10              | .4                                   | 1    | 10             | 50             | 25              | .01                                 | 60   | TO-18 |
| 2N2657   | 80              | 60              | 7               | 40              | 120 | 1000           | 2               | 0.5                                  | 100  | 1000           | 20             | 150             | 0.1                                 | 60   | TO-39 |
| 2N2658   | 100             | 80              | 7               | 40              | 120 | 1000           | 2               | 0.5                                  | 100  | 1000           | 20             | 150             | 0.1                                 | 60   | TO-39 |
| 2N2726   | 200             | 180             | 10              | 30              | 90  | 200            | 10              | 2                                    | 40   | 200            | 5              | —               | 1                                   | 100  | TO-5  |
| 2N2727   | 200             | 180             | 10              | 75              | 150 | 200            | 10              | 2                                    | 40   | 200            | 5              | —               | 1                                   | 100  | TO-5  |
| 2N2868   | 60              | 40              | 7               | 40              | 120 | 150            | 10              | .25                                  | 15   | 150            | 50             | 20              | .1                                  | 30   | TO-5  |
| 2N2890   | 100             | 80              | 5               | 30              | 90  | 1000           | 2               | .5                                   | 100  | 1000           | 30             | 70              | .1                                  | 60   | TO-5  |
| 2N2891   | 100             | 80              | 5               | 50              | 150 | 1000           | 2               | .5                                   | 100  | 1000           | 30             | 70              | .1                                  | 60   | TO-5  |
| 2N2895   | 120             | 65              | 7               | 40              | 120 | 150            | 10              | 0.5                                  | 50   | 500            | 120            | 15              | —                                   | —    | TO-18 |
| 2N2896   | 140             | 90              | 7               | 60              | 200 | 150            | 10              | 0.5                                  | 50   | 500            | 120            | 15              | —                                   | —    | TO-18 |
| 2N2897   | 60              | 45              | 7               | 50              | 200 | 150            | 10              | 0.5                                  | 50   | 500            | 100            | 15              | —                                   | —    | TO-18 |
| 2N2951   | 60              | 20              | 5               | 20              | —   | 150            | 10              | 0.5                                  | 15   | 150            | 200            | 8               | 0.1                                 | 50   | TO-5  |
| 2N2952   | 60              | 20              | 5               | 20              | —   | 150            | 10              | 0.5                                  | 15   | 150            | 200            | 8               | 0.1                                 | 50   | TO-18 |
| 2N2958   | 20              | 20              | 5               | 40              | 120 | 150            | 10              | 0.5                                  | 15   | 150            | 250            | 8               | —                                   | —    | TO-5  |
| 2N2959   | 20              | 20              | 5               | 100             | 300 | 150            | 10              | 0.5                                  | 15   | 150            | 250            | 8               | —                                   | —    | TO-5  |
| 2N2960   | 60              | 30              | 5               | 100             | 300 | 150            | 10              | 0.5                                  | 50   | 150            | 250            | 8               | —                                   | —    | TO-5  |
| 2N2961   | 60              | 30              | 5               | 100             | 300 | 150            | 10              | 2.0                                  | 50   | 500            | 250            | 8               | —                                   | —    | TO-5  |
| 2N2987   | 95              | 80              | 7               | 25              | 75  | .200           | 5               | .8                                   | .020 | .200           | 30             | 50              | .025                                | 90   | TO-5  |
| 2N2988   | 155             | 100             | 7               | 25              | 75  | .200           | 5               | .8                                   | .020 | .200           | 30             | 50              | .025                                | 150  | TO-5  |
| 2N2989   | 95              | 80              | 7               | 60              | 120 | .200           | 5               | .8                                   | .020 | .200           | 30             | 50              | .025                                | 90   | TO-5  |
| 2N2990   | 155             | 100             | 7               | 60              | 120 | .200           | 5               | .8                                   | .020 | .200           | 30             | 50              | .025                                | 150  | TO-5  |
| 2N3019   | 140             | 80              | 7               | 100             | 300 | 150            | 10              | 0.2                                  | 15   | 150            | 100            | 12              | .01                                 | 90   | TO-5  |
| 2N3020   | 140             | 80              | 7               | 40              | 120 | 150            | 10              | 0.2                                  | 15   | 150            | 100            | 12              | .01                                 | 90   | TO-5  |
| 2N3036   | 120             | 80              | 7               | 50              | 150 | 150            | 10              | 0.25                                 | 15   | 150            | 50             | 15              | —                                   | —    | TO-5  |
| 2N3053   | 60              | 40              | 5               | 50              | 250 | 150            | 10              | 1.4                                  | 15   | 150            | 100            | 15              | —                                   | —    | TO-5  |
| 2N3056   | 100             | 60              | 7               | 40              | 120 | 150            | 10              | .25                                  | 15   | 150            | 80             | 12              | .01                                 | 60   | TO-46 |
| 2N3056A  | 140             | 80              | 7               | 30              | 120 | 150            | 10              | .25                                  | 15   | 150            | 80             | 12              | .01                                 | 80   | TO-46 |
| 2N3057   | 100             | 60              | 7               | 100             | 300 | 150            | 10              | .25                                  | 15   | 150            | 100            | 12              | .01                                 | 60   | TO-46 |
| 2N3057A  | 140             | 80              | 7               | 80              | 300 | 150            | 10              | .25                                  | 15   | 150            | 100            | 12              | .01                                 | 80   | TO-46 |
| 2N3107   | 100             | 60              | 7               | 100             | 300 | 150            | 10              | .25                                  | 15   | 150            | 70             | 20              | .01                                 | 60   | TO-5  |
| 2N3108   | 100             | 60              | 7               | 40              | 120 | 150            | 10              | .25                                  | 15   | 150            | 60             | 20              | .01                                 | 60   | TO-5  |
| 2N3109   | 80              | 40              | 7               | 100             | 300 | 150            | 10              | .25                                  | 15   | 150            | 70             | 25              | .01                                 | 60   | TO-5  |
| 2N3110   | 80              | 40              | 7               | 40              | 120 | 150            | 10              | .25                                  | 15   | 150            | 60             | 25              | .01                                 | 60   | TO-5  |
| 2N3114   | 150             | 150             | 5               | 30              | 120 | .030           | 10              | 1                                    | .005 | .050           | 40             | 9               | 10                                  | 100  | TO-5  |
| 2N3115   | 20              | 20              | 5               | 40              | 120 | 150            | 10              | 0.5                                  | 15   | 150            | 250            | 8               | —                                   | —    | TO-18 |
| 2N3116   | 20              | 20              | 5               | 100             | 300 | 150            | 10              | 0.5                                  | 15   | 150            | 250            | 8               | —                                   | —    | TO-18 |
| 2N3117   | 60              | 60              | 6               | 250             | 500 | .01            | 10              | .35                                  | .1   | 1              | 60             | 4.5             | .01                                 | 45   | TO-18 |
| 2N3122   | 50              | 30              | 5               | 25              | 100 | 300            | 10              | 1.5                                  | 30   | 300            | 60             | 25              | —                                   | —    | TO-5  |
| 2N3299   | 60              | 30              | 5               | 40              | 120 | 150            | 10              | .22                                  | 15   | 150            | 250            | 8               | .01                                 | 50   | TO-5  |
| 2N3300   | 60              | 30              | 5               | 100             | 300 | 150            | 10              | .22                                  | 15   | 150            | 250            | 8               | .01                                 | 50   | TO-5  |
| 2N3301   | 60              | 30              | 5               | 40              | 120 | 150            | 10              | .22                                  | 15   | 150            | 250            | 8               | .01                                 | 50   | TO-18 |

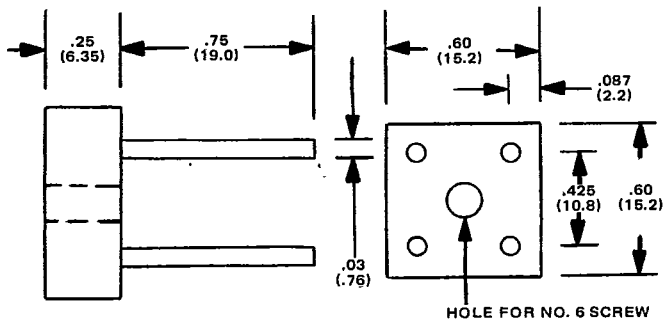
## CASE OUTLINE DRAWINGS



CASE A

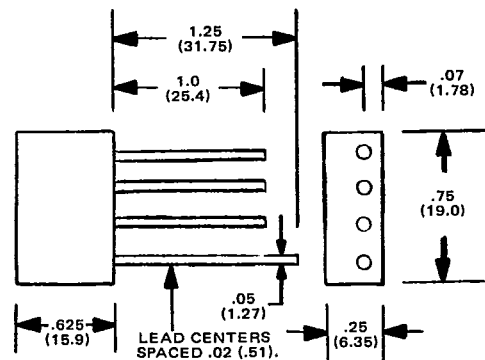
CBR1 Series  
CBR2 Series

CASE B

CBR1-L Series  
CBR2-L Series

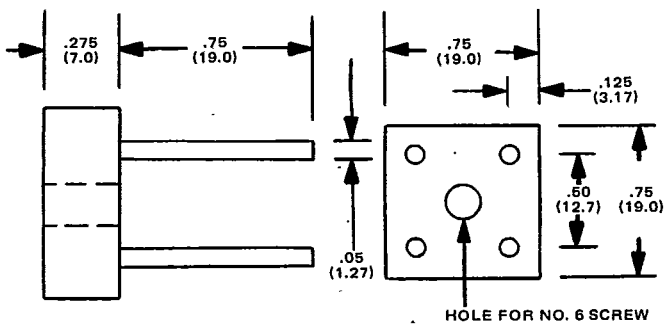
CASE C

CBR3-P Series



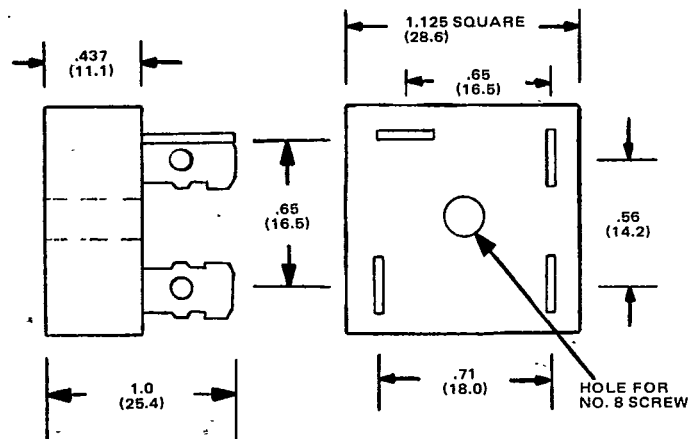
CASE D

CBR4-L Series



CASE E

CBR8 Series



CASE F

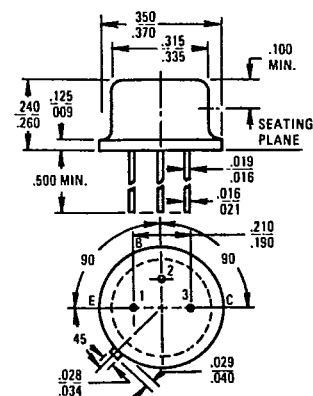
CBR10 Series, CBR25 Series  
CBR12 Series, CBR30 Series

All Dimensions in Inches (Millimeters)

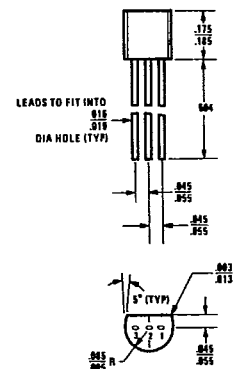
Drawings Not To Scale

## カ

TO-39



TO-92



**TO-106**

