

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

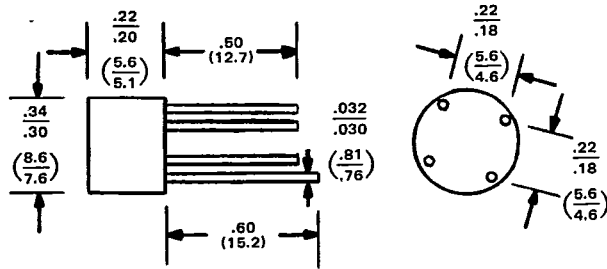
| TYPE NO. | V <sub>CB</sub> | V <sub>CE</sub> | V <sub>EB</sub> | h <sub>FE</sub> | at  | I <sub>C</sub> | V <sub>CE</sub> | V <sub>CE(s)</sub> at I <sub>B</sub> | I <sub>C</sub> | f <sub>T</sub> | C <sub>ob</sub> | I <sub>CBO</sub> at V <sub>CB</sub> | CASE  |
|----------|-----------------|-----------------|-----------------|-----------------|-----|----------------|-----------------|--------------------------------------|----------------|----------------|-----------------|-------------------------------------|-------|
|          | V               | V               | V               | min             | max | mA             | V               | V                                    | mA             | MHz            | pF              | μA                                  |       |
| 2N3302   | 60              | 30              | 5               | 100             | 300 | 150            | 10              | .22                                  | 15             | 150            | 250             | 8                                   | TO-18 |
| 2N3326   | 60              | 40              | 5               | 40              | 120 | 150            | 10              | .4                                   | 15             | 150            | 250             | 8                                   | TO-5  |
| 2N3388   | 125             | 100             | 6               | 60              | —   | 2.5            | 5               | 1.0                                  | .05            | 2.5            | 36              | 35                                  | TO-5  |
| 2N3418   | 80              | 60              | 8               | 20              | 60  | 1              | 2               | .25                                  | .100           | 1              | 40              | 130                                 | TO-5  |
| 2N3419   | 125             | 80              | 8               | 20              | 60  | 1              | 2               | .25                                  | .100           | 1              | 40              | 130                                 | TO-5  |
| 2N3420   | 85              | 60              | 8               | 40              | 120 | 1              | 2               | .25                                  | .100           | 1              | 40              | 130                                 | TO-5  |
| 2N3421   | 125             | 80              | 8               | 40              | 120 | 1              | 2               | .25                                  | .100           | 1              | 40              | 130                                 | TO-5  |
| 2N3498   | 100             | 100             | 6               | 40              | 120 | .150           | 10              | .6                                   | 30             | 300            | 150             | 80                                  | TO-5  |
| 2N3499   | 100             | 100             | 6               | 100             | 300 | .150           | 10              | .6                                   | 30             | 300            | 150             | 80                                  | TO-5  |
| 2N3500   | 150             | 150             | 6               | 40              | 120 | .150           | 10              | .4                                   | 15             | 150            | 150             | 80                                  | TO-5  |
| 2N3501   | 150             | 150             | 6               | 100             | 300 | .150           | 10              | .4                                   | 15             | 150            | 150             | 80                                  | TO-5  |
| 2N3665   | 120             | 80              | 10              | 40              | 120 | 150            | 10              | .5                                   | 15             | 150            | 60              | 12                                  | TO-5  |
| 2N3666   | 120             | 80              | 10              | 100             | 300 | 150            | 10              | .5                                   | 15             | 150            | 60              | 12                                  | TO-5  |
| 2N3678   | 75              | 55              | 6               | 40              | 120 | 150            | 10              | .4                                   | 15             | 150            | 250             | 8                                   | TO-5  |
| 2N3700   | 140             | 80              | 7               | 100             | 300 | 150            | 10              | .2                                   | 15             | 150            | 100             | 12                                  | TO-18 |
| 2N3701   | 140             | 80              | 7               | 40              | 120 | 150            | 10              | .2                                   | 15             | 150            | 80              | 12                                  | TO-18 |
| 2N3945   | 70              | 50              | 8               | 40              | 250 | 150            | 10              | .5                                   | 15             | 150            | 60              | 12                                  | TO-5  |
| 2N3946   | 60              | 40              | 6               | 20              | —   | 50             | 1               | 0.3                                  | 5              | 50             | 250             | 4                                   | TO-18 |
| 2N3947   | 60              | 40              | 6               | 40              | —   | 50             | 1               | 0.3                                  | 5              | 50             | 300             | 4                                   | TO-18 |
| 2N4000   | 100             | 80              | 8               | 30              | 120 | 500            | 2               | .3                                   | 50             | 500            | 40              | 60                                  | TO-5  |
| 2N4001   | 120             | 100             | 8               | 40              | 120 | 500            | 2               | .3                                   | 50             | 500            | 40              | 60                                  | TO-5  |
| 2N4237   | 50              | 40              | 6               | 30              | 150 | 250            | 1               | .6                                   | 100            | 1000           | 1               | 100                                 | TO-5  |
| 2N4238   | 80              | 60              | 6               | 30              | 150 | 250            | 1               | .6                                   | 100            | 1000           | 1               | 100                                 | TO-5  |
| 2N4239   | 100             | 80              | 6               | 30              | 150 | 250            | 1               | .6                                   | 100            | 1000           | 1               | 100                                 | TO-5  |
| 2N4269   | 200             | 140             | 15              | 40              | 200 | 10             | 10              | 1.0                                  | 1              | 10             | —               | 5                                   | TO-18 |
| 2N4270   | 200             | 140             | 15              | 40              | 200 | 10             | 10              | 1.0                                  | 1              | 10             | —               | 5                                   | TO-5  |
| 2N4271   | 175             | 140             | 8               | 20              | 140 | 200            | 10              | .8                                   | 20             | 200            | 20              | 25                                  | TO-5  |
| 2N4272   | 175             | 140             | 9               | 20              | 140 | 200            | 10              | .2                                   | 667            | 2000           | 10              | 75                                  | TO-5  |
| 2N4300   | 100             | 80              | 8               | 30              | 120 | 1              | 2               | .3                                   | .100           | 1              | 30              | 10                                  | TO-5  |
| 2N4863   | 140             | 120             | 8               | 50              | 150 | 0.5            | 5               | 0.2                                  | 0.05           | 0.5            | 50              | 50                                  | TO-5  |
| 2N4877   | 70              | 60              | 5               | 20              | 100 | 4              | 2               | 1.0                                  | 0.4            | 4              | 4               | 100                                 | TO-5  |
| 2N4943   | 120             | 80              | 7               | 100             | 300 | 150            | 10              | 0.25                                 | 15             | 150            | 150             | 12                                  | TO-39 |
| 2N4960   | 60              | 60              | 6               | 100             | 300 | 150            | 10              | 0.5                                  | 50             | 500            | 250             | 15                                  | TO-39 |
| 2N4961   | 80              | 80              | 6               | 100             | 300 | 150            | 10              | 0.5                                  | 50             | 500            | 250             | 15                                  | TO-39 |
| 2N4962   | 60              | 60              | 6               | 100             | 300 | 150            | 10              | 0.5                                  | 50             | 500            | 250             | 15                                  | TO-18 |
| 2N4963   | 80              | 80              | 6               | 100             | 300 | 150            | 10              | 0.5                                  | 50             | 500            | 250             | 15                                  | TO-18 |

## NPN METAL CAN - SATURATED SWITCH

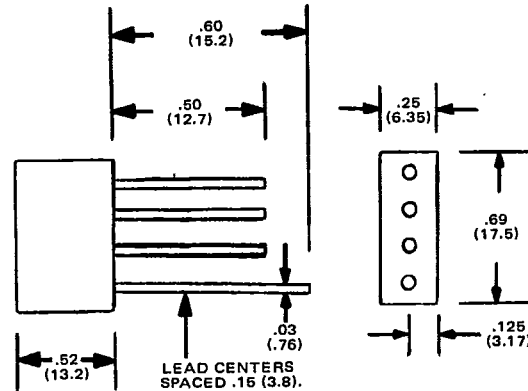
| TYPE NO. | V <sub>CB</sub> | V <sub>CE</sub> | V <sub>EB</sub> | h <sub>FE</sub> | at  | I <sub>C</sub> | V <sub>CE</sub> | V <sub>CE(s)</sub> at I <sub>B</sub> | I <sub>C</sub> | f <sub>T</sub> | C <sub>ob</sub> | t <sub>on</sub> | t <sub>off</sub> | I <sub>CBO</sub> at V <sub>CB</sub> | CASE  |
|----------|-----------------|-----------------|-----------------|-----------------|-----|----------------|-----------------|--------------------------------------|----------------|----------------|-----------------|-----------------|------------------|-------------------------------------|-------|
|          | V               | V               | V               | min             | ma  | mA             | V               | V                                    | mA             | MHz            | pF              | nS              | nS               | μA                                  |       |
| 2N706    | 25              | 20              | 3               | 20              | —   | 10             | 1               | 0.6                                  | 10             | 400            | 6               | —               | —                | 0.5                                 | TO-18 |
| 2N706A   | 25              | 20              | 5               | 20              | 60  | 10             | 1               | 0.6                                  | 10             | 400            | 5               | 40              | 75               | 0.5                                 | TO-18 |
| 2N706B   | 25              | 20              | 5               | 20              | 60  | 10             | 1               | 0.4                                  | 10             | 400            | 5               | 40              | 75               | 0.5                                 | TO-18 |
| 2N706C   | 40              | 15              | 5               | 20              | 60  | 10             | 5               | 0.3                                  | 30             | 200            | 5               | 40              | 75               | —                                   | TO-18 |
| 2N708    | 40              | 15              | 5               | 30              | 120 | 10             | 1               | 0.4                                  | 10             | 400            | 6               | 40              | 70               | .025                                | TO-18 |
| 2N709    | 15              | 6               | 4               | 20              | 120 | 10             | 0.5             | 0.3                                  | 3              | 600            | 3               | 15              | 15               | 0.5                                 | TO-18 |
| 2N709A   | 15              | 6               | 4               | 30              | 90  | 10             | 0.5             | 0.3                                  | 3              | 900            | 3               | 15              | 15               | .005                                | TO-18 |
| 2N743    | 20              | 12              | 5               | 20              | 60  | 10             | 1               | .35                                  | 10             | 280            | 5               | 16              | 24               | 1                                   | TO-18 |
| 2N743A   | 40              | 15              | 5               | 20              | 60  | 10             | 5               | 0.6                                  | 100            | 500            | 4               | 12              | 15               | —                                   | TO-18 |
| 2N744    | 20              | 12              | 5               | 40              | 120 | 10             | 1               | .35                                  | 10             | 280            | 5               | 16              | 24               | 1                                   | TO-18 |
| 2N744A   | 40              | 15              | 5               | 40              | 120 | 10             | 5               | 0.6                                  | 100            | 500            | 4               | 12              | 15               | —                                   | TO-18 |
| 2N753    | 25              | 20              | 5               | 40              | 120 | 10             | 1               | .60                                  | 10             | 200            | 5               | 40              | 75               | .05                                 | TO-18 |
| 2N783    | 40              | 15              | 5               | 20              | 60  | 10             | 1               | .25                                  | 10             | 200            | 3.5             | 16              | 30               | .25                                 | TO-18 |
| 2N784    | 30              | 12              | 5               | 25              | —   | 10             | 1               | .19                                  | 10             | 200            | 3.5             | 20              | 40               | .25                                 | TO-18 |
| 2N784A   | 40              | 15              | 5               | 25              | 150 | 10             | 5               | 0.19                                 | 10             | 300            | 3.5             | 20              | 40               | —                                   | TO-18 |
| 2N834    | 40              | 25              | 5               | 25              | —   | 10             | 1               | .25                                  | 10             | 350            | 4               | 35              | 75               | .50                                 | TO-18 |
| 2N834A   | 40              | 25              | 5               | 25              | —   | 10             | 1               | .25                                  | 10             | 500            | 4               | 16              | 24               | .50                                 | TO-18 |
| 2N835    | 25              | 20              | 5               | 20              | —   | 10             | 1               | .30                                  | 10             | 300            | 4               | 20              | 35               | .50                                 | TO-18 |
| 2N914    | 40              | 15              | 5               | 30              | 120 | 10             | 1               | 0.7                                  | 0.8            | 60             | 6               | 40              | 40               | .025                                | TO-18 |
| 2N947    | 15              | 12              | 3               | 30              | —   | 10             | 1               | 0.4                                  | 5              | 200            | 8               | —               | 50               | —                                   | TO-18 |
| 2N1252   | 20              | 15              | 5               | 15              | 45  | 150            | 10              | 1.5                                  | 150            | 40             | 45              | —               | 150              | —                                   | TO-5  |
| 2N1253   | 20              | 15              | 5               | 30              | 90  | 150            | 10              | 1.5                                  | 150            | 50             | 45              | —               | 150              | —                                   | TO-5  |
| 2N1708   | 25              | 12              | 3               | 20              | —   | 10             | 1               | .35                                  | 50             | 200            | 6               | 40              | 75               | .025                                | TO-46 |
| 2N2205   | 25              | 12              | 3               | 20              | —   | 10             | 1               | .22                                  | 10             | 200            | 6               | 40              | 75               | .025                                | TO-18 |
| 2N2206   | 25              | 12              | 3               | 40              | 120 | 10             | 10              | .22                                  | 10             | 200            | 6               | 40              | 75               | .025                                | TO-46 |

## CASE OUTLINE DRAWINGS

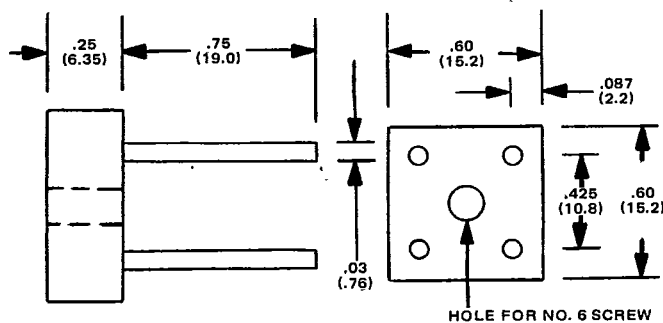
D



CASE A

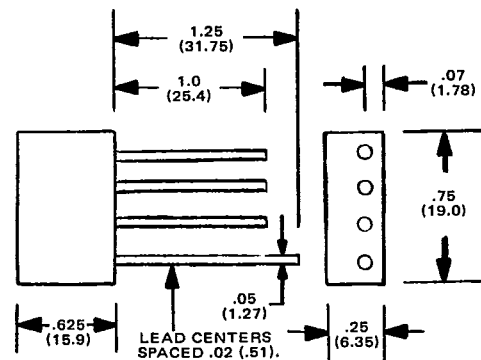
CBR1 Series  
CBR2 Series

CASE B

CBR1-L Series  
CBR2-L Series

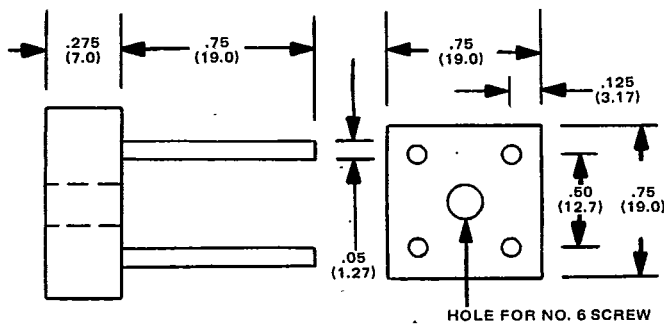
CASE C

CBR3-P Series



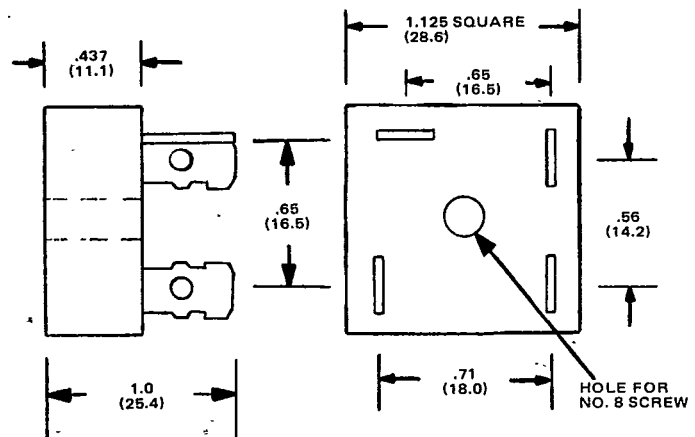
CASE D

CBR4-L Series



CASE E

CBR8 Series



CASE F

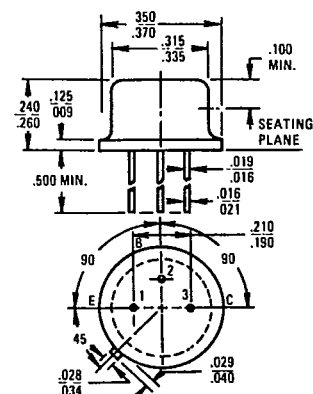
CBR10 Series, CBR25 Series  
CBR12 Series, CBR30 Series

All Dimensions in Inches (Millimeters)

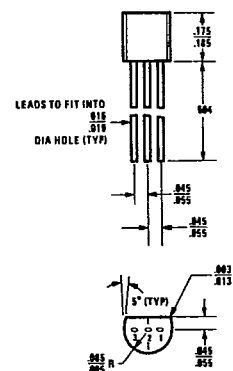
Drawings Not To Scale

## カ

TO-39



TO-92

**TO-106**