

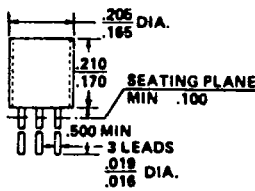
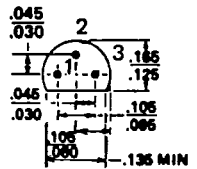
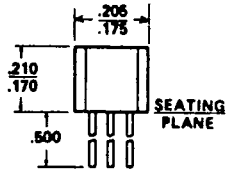
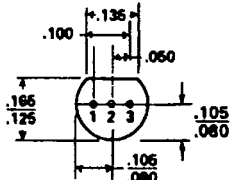
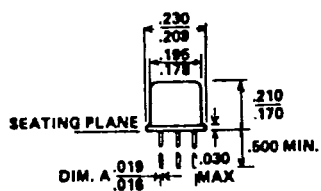
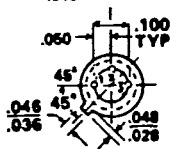
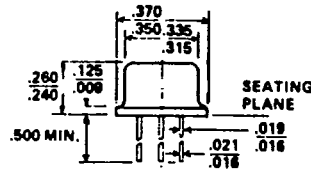
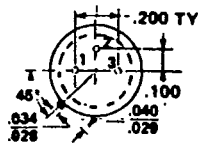
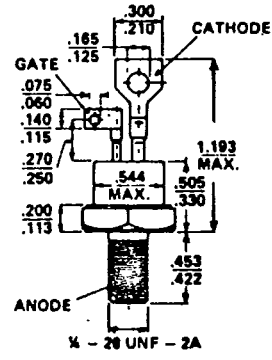
High Speed Switching Transistors

| TYPE NO. | CASE | P _D @T _A = 25°C mW | BV _{CBO} V | LV _{CEO} V | BV _{EBO} V | h _{FE} | | I _C mA | V _{CE(sat)} V | I _C mA | t _{on} ns | t _{off} ns | f _T MHz | C _{ob} pF |
|--------------|--------|--|------------------------|------------------------|------------------------|-----------------|-----|----------------------|---------------------------|----------------------|-----------------------|------------------------|-----------------------|-----------------------|
| | | | | | | min | max | | | | | | | |
| | | | | | | NPN | | | | | | | | |
| WA 9001 | TO-106 | 250 | 40 | 15 | 4.5 | 40 | 120 | 10 | 0.25 | 10 | 12 | 18 | 400 | 4 |
| WA 9002 | TO-106 | 250 | 30 | 12 | 4.5 | 30 | 150 | 10 | 0.25 | 10 | 15 | 20 | 400 | 4 |
| WA 9003 | TO-106 | 250 | 18 | 12 | 4 | 25 | 200 | 10 | 0.25 | 10 | 15 | 20 | 400 | 4 |
| WA 9021 | TO-106 | 250 | 40 | 15 | 5 | 30 | 120 | 10 | 0.25 | 10 | 30 | 25 | 300 | 6 |
| WA 9022 | TO-106 | 250 | 25 | 12 | 4 | 30 | — | 10 | 0.4 | 10 | 50 | 70 | 300 | 6 |
| WA 9001 | TO-18 | 360 | 40 | 15 | 4.5 | 40 | 120 | 10 | 0.25 | 10 | 12 | 18 | 750 | 4 |
| WA 9002 | TO-18 | 360 | 30 | 12 | 4.5 | 30 | 150 | 10 | 0.25 | 10 | 15 | 20 | 750 | 4 |
| WA 9003 | TO-18 | 360 | 18 | 12 | 4 | 25 | 200 | 10 | 0.25 | 10 | 15 | 20 | 750 | 4 |
| 2N 706 | TO-18 | 300 | 25 | 15 | 3 | 20 | — | 10 | 0.6 | 10 | 40 | 75 | 200 | 6 |
| 2N 708 | TO-18 | 360 | 40 | 15 | 5 | 30 | 120 | 10 | 0.4 | 10 | 40 | 75 | 300 | 6 |
| 2N 744 | TO-18 | 300 | 20 | 12 | 5 | 40 | 120 | 10 | 0.35 | 10 | 16 | 24 | 300 | 5 |
| 2N 753 | TO-18 | 300 | 25 | 15 | 5 | 40 | 120 | 10 | 0.6 | 10 | 40 | 75 | 200 | 5 |
| 2N 834 | TO-18 | 300 | 40 | — | 5 | 25 | — | 10 | 0.25 | 10 | 33 | 75 | 350 | 4 |
| 2N 914 | TO-18 | 360 | 40 | 15 | 5 | 30 | 120 | 10 | 0.25 | 20 | — | 20 | 300 | 6 |
| 2N 2220 | TO-18 | 500 | 60 | 30 | 5 | 20 | 60 | 150 | 0.4 | 150 | 35 | 285 | 250 | 8 |
| 2N 2221 | TO-18 | 500 | 60 | 30 | 5 | 40 | 120 | 150 | 0.4 | 150 | 35 | 285 | 250 | 8 |
| 2N 2222 | TO-18 | 500 | 60 | 30 | 5 | 100 | 300 | 150 | 0.4 | 150 | 35 | 285 | 250 | 8 |
| 2N 2222A | TO-18 | 500 | 75 | 40 | 6 | 100 | 300 | 150 | 0.3 | 150 | 35 | 285 | 250 | 8 |
| 2N 2243 | TO-5 | 800 | 120 | 80 | 7 | 40 | 120 | 150 | 0.35 | 150 | 35 | 285 | 50 | 15 |
| 2N 2243A | TO-5 | 800 | 120 | 80 | 7 | 40 | 120 | 150 | 0.25 | 150 | 35 | 285 | 50 | 15 |
| 2N 2368 | TO-18 | 360 | 40 | 15 | 4.5 | 20 | 60 | 10 | 0.25 | 10 | 12 | 15 | 400 | 4 |
| 2N 2369 | TO-18 | 360 | 40 | 15 | 4.5 | 40 | 120 | 10 | 0.25 | 10 | 12 | 18 | 500 | 4 |
| 2N 2369A | TO-18 | 360 | 40 | 15 | 4.5 | 40 | 120 | 10 | 0.3 | 10 | 12 | 18 | 500 | 4 |
| 2N 3011 | TO-18 | 360 | 30 | 12 | 5 | 30 | 120 | 10 | 0.2 | 10 | 15 | 20 | 400 | 4 |
| 2N 3014 | TO-18 | 360 | 40 | 20 | 5 | 30 | 120 | 30 | 0.18 | 30 | 16 | 25 | 350 | 5 |
| 2N 3299 | TO-5 | 800 | 60 | 30 | 5 | 40 | 120 | 150 | 0.22 | 150 | 60 | 150 | 250 | 8 |
| 2N 3300 | TO-5 | 800 | 60 | 30 | 5 | 100 | 300 | 150 | 0.22 | 150 | 60 | 150 | 250 | 8 |
| 2N 3301 | TO-18 | 360 | 60 | 30 | 5 | 40 | 120 | 150 | 0.22 | 150 | 60 | 150 | 250 | 8 |
| 2N 3302 | TO-18 | 360 | 60 | 30 | 5 | 100 | 300 | 150 | 0.22 | 150 | 60 | 150 | 250 | 8 |
| 2N 3646 | TO-106 | 200 | 40 | 15 | 5 | 30 | 120 | 30 | 0.2 | 30 | — | 18 | 350 | 5 |
| 2N 3903 | TO-92A | 310 | 60 | 40 | 6 | 50 | 150 | 10 | 0.2 | 10 | 70 | 225 | 250 | 4 |
| 2N 3904 | TO-92A | 310 | 60 | 40 | 6 | 100 | 300 | 10 | 0.2 | 10 | 70 | 250 | 300 | 4 |
| 2N 4274 | TO-106 | 280 | 30 | 12 | 4.5 | 20 | 150 | 10 | 0.25 | 10 | 12 | 12 | 400 | 4 |
| 2N 4275 | TO-106 | 280 | 40 | 15 | 4.5 | 20 | 150 | 10 | 0.25 | 10 | 12 | 12 | 400 | 4 |
| 2N 5134 | TO-106 | 200 | 20 | 10 | 3.5 | 20 | 150 | 10 | 0.25 | 10 | 18 | 18 | 250 | 4 |
| BSX 20 | TO-18 | 360 | 40 | 15 | 4.5 | 40 | 120 | 10 | 0.3 | 10 | 12 | 18 | 500 | 4 |
| BSX 21 | TO-18 | 300 | 120 | 80 | 5 | 20 | — | 4 | 0.7 | 4 | 40 | 40 | 60 | 6 |
| BSX 27 | TO-18 | 300 | 15 | 6 | 4 | 25 | 125 | 10 | 0.38 | 30 | 12 | 12 | 600 | 3 |
| BSY 26 | TO-18 | 360 | 20 | 15 | 5 | 20 | 60 | 10 | 0.35 | 10 | — | — | — | 6 |
| BSY 27 | TO-18 | 360 | 20 | 15 | — | 40 | 120 | 10 | 0.35 | 10 | — | — | — | 6 |
| BSY 39 | TO-18 | 300 | 20 | — | 5 | 40 | 120 | 10 | 0.25 | 10 | 14 | 45 | 350 | 5 |
| BSY 95 | TO-18 | 300 | 20 | 15 | 5 | 50 | 200 | 10 | 0.35 | 10 | — | — | 200 | 8 |
| P N P | | | | | | | | | | | | | | |
| WA 0491 | TO-106 | 250 | 30 | 20 | 5 | 30 | 120 | 30 | 0.15 | 10 | 25 | 35 | 500 | 4 |
| WA 0492 | TO-106 | 250 | 25 | 16 | 5 | 50 | 150 | 30 | 0.15 | 10 | 25 | 35 | 500 | 4 |
| WA 0493 | TO-106 | 250 | 15 | 12 | 5 | 30 | 150 | 30 | 0.25 | 10 | 60 | 90 | 500 | 6 |
| WA 0491 | TO-18 | 360 | 30 | 20 | 5 | 30 | 120 | 30 | 0.15 | 10 | 25 | 35 | 500 | 4 |
| WA 0492 | TO-18 | 360 | 25 | 16 | 5 | 50 | 150 | 30 | 0.15 | 10 | 25 | 35 | 500 | 4 |
| WA 0493 | TO-18 | 360 | 15 | 12 | 5 | 30 | 150 | 30 | 0.25 | 10 | 60 | 90 | 500 | 6 |
| 2N 3133 | TO-5 | 600 | 50 | 35 | 4 | 40 | 120 | 150 | 0.6 | 150 | 75 | 150 | 200 | 10 |

High Speed Switching Transistors

| TYPE NO. | CASE | P _D @T _A =25°C mW | BV _{CEO} V | LV _{CEO} V | BV _{EBO} V | h _{FE} | | I _C mA | V _{CE(sat)} V | I _C mA | t _{on} ns | t _{off} ns | f _T MHz | C _{ob} pF |
|----------|--------------|---|------------------------|------------------------|------------------------|-----------------|-----|----------------------|---------------------------|----------------------|-----------------------|------------------------|-----------------------|-----------------------|
| | | | | | | min | max | | | | | | | |
| | P N P | | | | | | | | | | | | | |
| 2N3134 | TO-5 | 600 | 50 | 35 | 4 | 100 | 300 | 150 | 0.6 | 150 | 75 | 150 | 200 | 10 |
| 2N3135 | TO-18 | 400 | 50 | 35 | 4 | 40 | 120 | 150 | 0.6 | 150 | 75 | 150 | 200 | 10 |
| 2N3136 | TO-18 | 400 | 50 | 35 | 4 | 100 | 300 | 150 | 0.6 | 150 | 75 | 100 | 200 | 10 |
| 2N3248 | TO-18 | 360 | 15 | 12 | 5 | 50 | 150 | 0.10 | 0.125 | 10 | 20 | 80 | 250 | 8 |
| 2N3249 | TO-18 | 360 | 15 | 12 | 5 | 100 | 300 | 0.10 | 0.125 | 10 | 90 | 100 | 300 | 8 |
| 2N3250 | TO-18 | 360 | 50 | 40 | 5 | 50 | 150 | 10 | 0.25 | 10 | 70 | 225 | 250 | 6 |
| 2N3250A | TO-18 | 360 | 60 | 60 | 5 | 50 | 150 | 10 | 0.25 | 10 | 70 | 225 | 250 | 6 |
| 2N3251 | TO-18 | 360 | 50 | 40 | 5 | 100 | 300 | 10 | 0.25 | 10 | 70 | 250 | 300 | 6 |
| 2N3251A | TO-18 | 360 | 60 | 60 | 5 | 100 | 300 | 10 | 0.25 | 10 | 70 | 250 | 300 | 6 |
| 2N3639 | TO-106 | 200 | 6 | 6 | 4 | 30 | 120 | 10 | 0.25 | 10 | 25 | 25 | 500 | 6 |
| 2N3640 | TO-106 | 200 | 12 | 12 | 4 | 30 | 120 | 10 | 0.3 | 10 | 25 | 35 | 500 | 3.5 |
| 2N3905 | TO-92A | 310 | 40 | 40 | 5 | 50 | 150 | 10 | 0.25 | 10 | 70 | 260 | 200 | 3.5 |
| 2N3906 | TO-92A | 310 | 40 | 40 | 5 | 100 | 300 | 10 | 0.25 | 10 | 70 | 300 | 250 | 4.5 |
| 2N4971 | TO-106 | 200 | 50 | 40 | 5 | 40 | 120 | 150 | 0.15 | 150 | — | 150 | 200 | 8 |
| 2N4972 | TO-106 | 200 | 50 | 40 | 5 | 100 | 300 | 150 | 0.4 | 150 | — | — | 200 | 8 |
| 2N5138 | TO-106 | 200 | 30 | 30 | 5 | 50 | 800 | 0.1 | 0.25 | 10 | 50 | 200 | 300 | 5 |
| 2N5139 | TO-106 | 200 | 20 | 20 | 5 | 40 | — | 10 | 0.5 | 50 | 50 | 200 | 300 | 5 |
| 2N5142 | TO-105 | 300 | 20 | 20 | 4 | 15 | — | 300 | 2 | 300 | — | 200 | 100 | 10 |
| 2N5143 | TO-106 | 200 | 20 | 20 | 4 | 15 | — | 300 | 2 | 300 | — | 200 | 100 | 10 |
| BSX 29 | TO-18 | 360 | 12 | 12 | 4 | 30 | 120 | 30 | 0.5 | 100 | 60 | 90 | 400 | 6 |
| BSY 40 | TO-18 | 300 | 25 | 20 | 5 | 20 | 60 | 10 | 0.2 | 10 | 25 | 100 | 140 | — |
| BSY 41 | TO-18 | 300 | 25 | 20 | 5 | 50 | 200 | 10 | 0.2 | 10 | 25 | 100 | 140 | — |

Packaging Information

| | | |
|--|---|---|
| <p>PACKAGING INFORMATION</p> | <p>1. CATHODE 2. GATE 3. ANODE</p>   | <p>SCR 1. CATHODE 2. GATE 3. ANODE</p>   |
| | <p>TO-18 (PLASTIC)</p> | <p>TO-92</p> |
| <p>1. CATHODE 2. GATE 3. ANODE</p>   | <p>SCR 1. CATHODE 2. GATE 3. ANODE</p>   | <p>TRIAC 1. MT 1 2. GATE 3. MT 2</p>  |
| <p>TO-18</p> | <p>TO-39</p> | <p>TO-48D</p> |