# NPN Transistors

## '2N' and 'TP' Device Types

**ELECTRICAL CHARACTERISTICS at $T_A$ = 25°C**

| Device Type | $I_C$ Max. (mA) | $V_{(BR)CBO}$ (V) | $V_{(BR)CEO}$ (V) | $V_{(BR)EBO}$ (V) | $I_{CBO}$ Max. (nA) | $I_{CBO}$ @$V_{CB}$ (V) | DC Current Gain $h_{FE}$ Min. | DC Current Gain $h_{FE}$ Max. | DC Current Gain @$I_C$ (mA) | DC Current Gain @$V_{CE}$ (V) | $V_{CE(sat)}$ Max. (V) | $V_{CE(sat)}$ @$I_C$ (mA) | $f_T$ Min. (MHz) | $f_T$ @$I_C$ (mA) | $C_{ob}$[1] (pF) | $t_s$[1] (ns) | NF[1] (dB) | Process |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP5131 | 100 | 20 | 15 | 3.0 | 50 | 10 | 35 | 500 | 10 | 1.0 | 1.0 | 10 | 100 | 10 | 6.0 | — | — | FEE |
| TP5132 | 100 | 20 | 20 | 3.0 | 50 | 10 | 30 | 400 | 10 | 10 | 2.0 | 10 | 200 | 10 | 3.5 | — | — | FEE |
| TP5133 | 100 | 20 | 18 | 3.0 | 50 | 15 | 60 | 1000 | 1.0 | 5.0 | 0.4 | 1.0 | 40 | 1.0 | 5.0 | — | — | FEE |
| 2N5135 | 800 | 30 | 25 | 4.0 | 300 | 15 | 50 | 600 | 10 | 10 | 1.0 | 100 | 40 | 30 | 25 | — | — | JLA |
| 2N5136 | 800 | 30 | 20 | 3.0 | 100 | 20 | 20 | 400 | 150 | 1.0 | 0.25 | 150 | 40 | 50 | 35 | — | — | JLA |
| TP5137 | 800 | 30 | 20 | 3.0 | 100 | 20 | 20 | 400 | 150 | 1.0 | 0.25 | 150 | 40 | 50 | 35 | — | — | JLA |
| 2N5172 | 500 | 25 | 25 | 5.0 | 100 | 25 | 100 | 500 | 10 | 10 | 0.25 | 10 | — | — | 10 | — | — | JGA |
| 2N5174 | 100 | 90 | 75 | 5.0 | 500 | 60 | 40 | 600 | 10 | 5.0 | 0.95 | 10 | — | — | 5.0 | — | — | FEE |
| TP5189 | 800 | 60 | 35 | 5.0 | 500 | 30 | 35 | — | 500 | 1.0 | 1.0 | 1000 | 250 | 50 | 12 | 70 | — | BHB |
| 2N5209 | 100 | 50 | 50 | — | 50 | 35 | 100 | 300 | 0.1 | 5.0 | 0.7 | 10 | 30 | 0.5 | 4.0 | — | 4.0 | FEE |
| 2N5210 | 100 | 50 | 50 | — | 50 | 35 | 200 | 600 | 0.1 | 5.0 | 0.7 | 10 | 30 | 0.5 | 4.0 | — | 3.0 | FEE |
| 2N5219 | 100 | 20 | 15 | 3.0 | 100 | 10 | 35 | 500 | 2.0 | 10 | 0.4 | 10 | 150 | 10 | 4.0 | — | — | FFB |
| 2N5220 | 500 | 15 | 15 | 3.0 | 100 | 10 | 30 | 600 | 50 | 10 | 0.5 | 150 | 100 | 20 | 10 | — | — | JGA |
| 2N5223 | 100 | 25 | 20 | 3.0 | 100 | 10 | 50 | 800 | 2.0 | 10 | 0.7 | 10 | 150 | 10 | 4.0 | — | — | FFB |
| 2N5225 | 100 | 25 | 25 | 4.0 | 300 | 15 | 30 | 600 | 50 | 10 | 0.8 | 100 | 50 | 20 | 20 | — | — | FEE |
| 2N5232 | 100 | 70 | 50 | 5.0 | 30 | 50 | 250 | 500 | 2.0 | 5.0 | 0.125 | 10 | — | — | 4.0 | — | — | FEE |
| 2N5232A | 100 | 70 | 50 | 5.0 | 30 | 50 | 250 | 500 | 2.0 | 5.0 | 0.125 | 10 | — | — | 4.0 | — | 5.0 | FEE |
| 2N5249 | 100 | 70 | 50 | 5.0 | 30 | 50 | 400 | 800 | 2.0 | 5.0 | 0.125 | 10 | — | — | — | — | — | FEE |
| 2N5249A | 100 | 70 | 50 | 5.0 | 30 | 50 | 400 | 800 | 2.0 | 5.0 | 0.125 | 10 | — | — | — | — | 3.0 | FEE |
| 2N5305 | 500 | 25 | 25 | 12 | 100 | 25 | 2k | 20k | 2.0 | 5.0 | 1.4 | 200 | 60 | 2.0 | 10 | — | — | TPM |
| 2N5306 | 500 | 25 | 25 | 12 | 100 | 25 | 7k | 70k | 2.0 | 5.0 | 1.4 | 200 | 60 | 2.0 | 10 | — | — | TPM |
| 2N5307 | 500 | 40 | 40 | 12 | 100 | 40 | 2k | 20k | 2.0 | 5.0 | 1.4 | 200 | 60 | 2.0 | 10 | — | — | TPM |
| 2N5308 | 500 | 40 | 40 | 12 | 100 | 40 | 7k | 70k | 2.0 | 5.0 | 1.4 | 200 | 60 | 2.0 | 10 | — | — | TPM |
| 2N5310 | 100 | 70 | 50 | 5.0 | 10 | 50 | 100 | 300 | 0.01 | 5.0 | 0.125 | 10 | — | — | — | — | — | FEE |
| TP5368 | 500 | 60 | 30 | 5.0 | 50 | 40 | 60 | 200 | 150 | 10 | 0.3 | 150 | 250 | 20 | 8.0 | 350 | — | DCA |
| TP5369 | 500 | 60 | 30 | 5.0 | 50 | 40 | 100 | 300 | 150 | 10 | 0.3 | 150 | 250 | 20 | 8.0 | 350 | — | DCA |
| TP5370 | 500 | 60 | 30 | 5.0 | 50 | 40 | 200 | 600 | 150 | 10 | 0.3 | 150 | 250 | 20 | 8.0 | 400 | — | DCA |
| TP5371 | 500 | 40 | 30 | 5.0 | 50 | 30 | 60 | 600 | 150 | 10 | 0.3 | 150 | 250 | 20 | 8.0 | 400 | — | DCA |
| TP5376 | 500 | 60 | 30 | 5.0 | 10 | 30 | 120 | — | 1.0 | 5.0 | — | — | — | — | 8.0 | — | — | JGA |
| TP5377 | 500 | 60 | 30 | 5.0 | 10 | 30 | 100 | — | 1.0 | 5.0 | — | — | — | — | 8.0 | — | — | JGA |
| TP5380 | 100 | 60 | 40 | 6.0 | 50 | 30 | 50 | 150 | 10 | 1.0 | 0.2 | 10 | 250 | 10 | 4.0 | 225 | 6.0 | FFB |
| TP5381 | 100 | 60 | 40 | 6.0 | 50 | 30 | 100 | 300 | 10 | 1.0 | 0.2 | 10 | 300 | 10 | 4.0 | 250 | 5.0 | FFB |
| 2N5418 | 500 | 25 | 25 | 4.0 | 100 | 25 | 40 | 120 | 50 | 1.0 | 0.25 | 50 | — | — | 6.0 | — | — | JGA |
| 2N5419 | 500 | 25 | 25 | 4.0 | 100 | 25 | 100 | 300 | 50 | 1.0 | 0.25 | 50 | — | — | 6.0 | — | — | JGA |
| 2N5420 | 500 | 25 | 25 | 4.0 | 100 | 25 | 250 | 500 | 50 | 1.0 | 0.25 | 50 | — | — | 6.0 | — | — | JGA |
| TP5449 | 500 | 50 | 30 | 5.0 | 100 | 20 | 100 | 300 | 50 | 2.0 | 0.6 | 100 | 100 | 50 | 12 | — | — | JGA |
| TP5450 | 500 | 50 | 30 | 5.0 | 100 | 20 | 50 | 150 | 50 | 2.0 | 0.8 | 100 | 100 | 50 | 12 | — | — | JGA |
| TP5451 | 500 | 40 | 20 | 5.0 | 100 | 20 | 30 | 600 | 50 | 2.0 | 1.0 | 100 | 100 | 50 | 12 | — | — | JGA |
| 2N5550 | 600 | 160 | 140 | 6.0 | 100 | 100 | 60 | 250 | 10 | 5.0 | 0.15 | 10 | 100 | 10 | 6.0 | — | 10 | VXA |
| 2N5551 | 600 | 180 | 160 | 6.0 | 50 | 120 | 80 | 250 | 10 | 5.0 | 0.15 | 10 | 100 | 10 | 6.0 | — | 8.0 | VXA |
| 2N5770 | 50 | 30 | 15 | 4.5 | 10 | 15 | 50 | 200 | 8.0 | 10 | 0.4 | 10 | 90 | 8.0 | 1.1 | — | 6.0 | DMA |
| 2N5772 | 500 | 40 | 15 | 5.0 | 500 | 20 | 30 | 120 | 30 | 0.4 | 0.2 | 30 | 350 | 30 | 5.0 | 28 | — | BJB |

NOTES:
1) Maximum at typical JEDEC conditions.
2) μA.
3) $V_{(BR)CES}/I_{CES}$, as applicable.
4) mA.
5) $V_{(BR)CER}$ at R = 10Ω.