

Germanium Transistors

| | Type No. | Case | Construction (see note 1) | Maximum Ratings at 25°C amb. | | | | | Characteristics | | | | | | | | | SPECIAL FEATURES |
|--|----------|---------|---------------------------|------------------------------|----------------------|----------------------|---------------------|-----------------------|----------------------|------|------|----------------------|--------------|----------------------|----------------------|-----------|--|------------------|
| | | | | V _{CB} V | V _{CE} V | V _{EB} V | I _C A | P _{tot} W | h _{FE} | | | f _T | | V _{CE(SAT)} | | | | |
| | | | | | | | | | I _C mA | Min. | Max. | I _C mA | Min. Mc/s | I _C mA | I _B mA | Max. V | | |
| NPN General Purpose and Switching | 2N388 | TO5 | A | 25 | 20 | 15 | 0.2 | 0.15 | 200 | 30 | — | 1 | 5.0φ | — | — | — | | |
| | 2N388A | TO5 | A | 40 | 40 | 15 | 0.2 | 0.15 | 200 | 30 | — | 1 | 5.0φ | — | — | — | | |
| | 2N1302 | TO5 | A | 25 | | 25 | 0.3 | 0.15 | 10 | 20 | — | 1 | 3.0φ | 10 | 0.5 | 0.2 | | |
| | 2N1304 | TO5 | A | 25 | | 25 | 0.3 | 0.15 | 10 | 40 | 200 | 1 | 5.0φ | 10 | 0.25 | 0.2 | | |
| | 2N1306 | TO5 | A | 25 | | 25 | 0.3 | 0.15 | 10 | 60 | 300 | 1 | 10.0φ | 10 | 0.17 | 0.2 | | |
| | 2N1308 | TO5 | A | 25 | | 25 | 0.3 | 0.15 | 10 | 80 | — | 1 | 15.0φ | 10 | 0.13 | 0.2 | | |
| PNP General Purpose and Switching | 2G301 | SO2 | A | -20 | -20 | -10 | 0.3 | 0.2 | -1 | 30* | — | -1 | 3.0 | -100 | -4.0 | -0.22 | | |
| | 2G302 | SO2 | A | -20 | -20 | -10 | 0.3 | 0.2 | -1 | 45* | — | -1 | 7.0 | -100 | -4.0 | -0.22 | | |
| | 2G303 | SO2 | A | -30 | -30 | -10 | 0.3 | 0.2 | -1 | 30* | — | -1 | 3.0 | -100 | -4.0 | -0.22 | | |
| | 2G304 | SO2 | A | -30 | -20 | -10 | 0.3 | 0.2 | -1 | 45* | — | -1 | 7.0 | -100 | -4.0 | -0.22 | | |
| | 2G306 | SO2 | A | -20 | | -10 | 0.3 | 0.2 | -1 | 90* | — | -1 | 12.0 | -100 | -4.0 | -0.20 | | |
| | 2N1303 | TO5 | A | -30 | | -25 | 0.3 | 0.15 | -10 | 20 | — | -1 | 3.0φ | -10 | -0.5 | -0.2 | | |
| | 2N1305 | TO5 | A | -30 | | -25 | 0.3 | 0.15 | -10 | 40 | 200 | -1 | 5.0φ | -10 | -0.25 | -0.2 | | |
| | 2N1307 | TO5 | A | -30 | | -25 | 0.3 | 0.15 | -10 | 60 | 300 | -1 | 10.0φ | -10 | -0.17 | -0.2 | | |
| | 2N1309 | TO5 | A | -30 | | -25 | 0.3 | 0.15 | -10 | 80 | — | -1 | 15.0φ | -10 | -0.13 | -0.2 | | |
| PNP General Purpose Amplifiers | 2G308 | SO2 | A | -20 | -20 | -10 | 0.3 | 0.20 | -1 | 50* | — | -1 | 3.0 | — | — | — | NF < 5dB at 1 Kc/s | |
| | 2G309 | SO2 | A | -20 | -20 | -10 | 0.3 | 0.20 | -1 | 170* | — | -1 | 12.0 | — | — | — | | |
| | 2G371 | SO2 | A | -20 | -20 | -10 | 0.3 | 0.20 | -1 | 35* | 130* | -1 | 1.0 | — | — | — | | |
| | 2G374 | SO2 | A | -20 | -20 | -10 | 0.3 | 0.20 | -1 | 75* | 265* | -1 | 1.0 | — | — | — | | |
| | 2G377 | SO2 | A | -60 | -60 | -10 | 0.3 | 0.20 | -250 | 15 | — | -1 | 1.0 | — | — | — | | |
| | 2N404 | TO5 | A | 25 | 24 | 12 | 0.1 | 0.15 | 24 | 24 | — | -1 | 4.0 | 24 | 1.0 | 0.2 | | |
| 2N404A | TO5 | A | 40 | 35 | 25 | 0.1 | 0.15 | 24 | 24 | — | -1 | 4.0 | 24 | 1.0 | 0.2 | | | |
| PNP High Speed Switches | 2N705 | TO18 | M | -15 | -15 | -35 | 0.05 | 0.30† | -10 | 25 | — | -10 | ‡300 | -10 | -0.4 | -0.3 | — 2G104 Total switching time 275nS — 2G103 — 2G106 | |
| | 2N711 | TO18 | M | -12 | -12 | -1.0 | 0.05 | 0.30‡ | -10 | 20 | — | -10 | ‡300 | -10 | -0.5 | -0.5 | | |
| | 2N711A | TO18 | M | -15 | -15 | -2.0 | 0.05 | 0.30† | -10 | 25 | — | -10 | ‡300φ | -10 | -0.4 | -0.5 | | |
| | 2N711B | TO18 | M | -18 | -15 | -2.0 | 0.10 | 0.15 | -10 | 30 | 150 | -10 | 150 | -10 | -0.4 | -0.25 | | |
| PNP High Frequency Amplifiers | GM290A | TO18-2 | EM | -20 | -15 | -0.3 | 0.05 | 0.075 | -3 | 20 | — | -3 | ‡700 | — | — | — | N.F. < 9dB at 800 Mc/s N.F. < 5.5dB at 200 Mc/s N.F. 7dB max. at 3 G/Cs N.F. 5.5 dB max. at 1.5 Gc/s N.F. 4.5 dB max. at 1.5 Gc/s available in modified pellet-pak TIXM106 N.F. 2.5 dB max. at 400 Mc/s N.F. 2.5 dB max. at 400 Mc/s Temperature range -65°C to 125°C. Specified in S-parameters Also available in modified pellet-pak as TIXM107/8 | |
| | GM378A | TO18-2 | EM | -20 | -15 | -0.3 | 0.05 | 0.075 | -3 | 20 | — | -3 | 400 | — | — | — | | |
| | TIXM103 | TI-LINE | P | 12 | 10 | 0.3 | 0.02 | 0.04 | 2 | 10 | 250 | 2 | 1800 | — | — | — | | |
| | TIXM104 | TI-LINE | P | 12 | 10 | 0.3 | 0.02 | 0.04 | 2 | 10 | 250 | 2 | 1400 | — | — | — | | |
| | TIXM105 | TI-LINE | P | 12 | 10 | 0.3 | 0.02 | 0.04 | 2 | 10 | 250 | 2 | 2200 | — | — | — | | |
| | 2N5043 | TO72 | P | 15 | 7 | 0.3 | 0.03 | 0.03 | 3 | 15 | 150 | 3 | 1500 | — | — | — | | |
| 2N5044 | TO72 | P | 15 | 7 | 0.3 | 0.03 | 0.03 | 3 | 15 | 150 | 3 | 1000 | — | — | — | | | |

NOTE 1: The following symbols have been used throughout the Product Summary:

Under "Construction":

A — Alloyed
D — Diffused
E — Epitaxial
G — Grown
M — Mesa
P — Planar

Under h_{FE}:

* — h_{FE}

Under f_T:

φ — f_{hfb}
△ — f_{hfe}
‡ — typical

Under Dissipation:

† — dissipation at T_{case} = 25°C

The transistor types tabulated in pp 7-17 form the Texas Instruments Limited Preferred and Guidance list for new designs. In addition, the types listed overleaf are readily available. Omission of a type from the Preferred list does not imply that a limit has been set to the production life.