

SYMBOLS & CODES EXPLAINED

6. "P" Channel

7. "N" Channel — SILICON FIELD EFFECT TRANSISTORS

| LINE No. | TYPE No. | 1 MAX. DEVICE DISS @ 25°C (W) | 2 MAX. V_p (V) | 3 MAX. V_{DS} (V) | 4 ABS. MAX. RATINGS @ 25°C $V_{GS} = 0$ (V) | 5 MAX. V_{DS} (V) | 6 MAX. I_D (A) | 7 MAX. I_G (A) | 8 MAX. I_{DSS} @ $V_{GS} = 0$ & $V_{DS} > V_p$ (A) | 9 MAX. I_{GSS} @ $V_{GS} > V_p$ & $V_{DS} = 0$ (A) | 10 TEST COND. V_{GS} (V) | 11 TEST COND. V_{DS} (V) | 12 COMMON SOURCE g_{fs} (mhos) | 13 COMMON SOURCE V_{OS} (V) | 14 R_{DS} (Ω) | 15 MAX. C_{is} (F) | 16 DERATE IN FREE AIR W/°C | 17 MAX. TEMP (°C) | 18 STRUCTURE | 19 DWG. # | 20 Y200 E O A D E |
|----------|----------|-------------------------------|------------------|---------------------|---|---------------------|------------------|------------------|--|--|----------------------------|----------------------------|----------------------------------|-------------------------------|-----------------|----------------------|----------------------------|-------------------|--------------|-----------|-------------------|
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▼ — Matched Type, also listed in Section 13, Category 6
 ◆ — Phototransistor, also listed in Section 13, Category 7 (See Above Also)

△ — With infinite heat sink
 † — Above 25°C; For additional information, consult manufacturer.

† — V_{GS} (Cut Off)
 △ — V_{GST} (Threshold)
 % — Typical
 # — Minimum

△ — Depletion Mode, Type A
 \$ — Depletion-Enhancement Mode, Type B
 * — Enhancement Mode, Type C

△ — BV_{DSO}
 † — BV_{DSX}

△ — BV_{DGO}

△ — Typical § — g_{fg}
 † — Pulsed
 % — High Frequency (V_{fs})
 □ — V_{FS}

△ — V_{is} § — V_{og}
 † — Not at given test conditions
 % — Maximum
 * — Pulsed

△ — V_{GD}
 † — V_{DG}

% — Maximum
 △ — Not given at test conditions
 † — $R_{DS(on)}$ at $V_{DS} = 0$

□ — I_D in mA

△ — I_{GDO}

△ — I_{DSS} @ $V_{GS} = 0$ and $V_{DS} \approx V_p$
 □ — $V_{GS} > 0$
 # — Minimum
 * — Typical
 % — Pulsed

— C_{iss} (Output Shorted)
 △ — C_{dgs}
 † — C_{gss}
 % — Not given at test conditions
 * — Typical
 □ — C_{dss}
 □ — C_{dgo} § — C_{igs}

STRUCTURE
 D — Diffused
 E — Epitaxial
 Ge — GermaniumPE
 PE — Planar Epitaxial
 PL — Planar
 # — Junction Type
 * — Insulated Gate (MOS Type)
 △ — Matched pair or dual
 % — Switching, other uses
 □ — Chopper, Other uses
 † — Noise figure 8db or below
 H — Plastic Package
 \$ — Hometaxial
 % — Tetraode
 % — Insulated Gate (MNOS Type)

A—Ambient J—Junction
 C—Case S—Storage

□ — Phototransistor Device
 △ — Tetraode Device
 % — Composite Type

8. GERMANIUM PNP

9. GERMANIUM NPN

10. SILICON PNP

11. SILICON NPN — High Power Transistors

| LINE No. | TYPE No. | 1 MIN. DERATE J to C W/°C | 2 MAX. FREE AIR @ 25°C (W) | 3 MAX. P_{CM} (W) | 4 ABS. MAX. RATINGS @ 25°C $V_{CE} = 0$ (A) | 5 MAX. I_C (A) | 6 MAX. I_B (A) | 7 MAX. BV_{CBO} (V) | 8 MAX. BV_{EBO} (V) | 9 MAX. BV_{CEO} (V) | 10 MAX. I_{CBO} @ 25°C (A) | 11 MAX. I_{CEO} @ 25°C (A) | 12 BIAS V_{CB} (V) | 13 MIN. V_{CE} (V) | 14 MAX. f_{ae} (Hz) | 15 MAX. SAT. RES. (Ω) | 16 tr (s) | 17 STRUCTURE | 18 DWG. # | 19 Y200 E O A D E |
|----------|----------|---------------------------|----------------------------|---------------------|---|------------------|------------------|-----------------------|-----------------------|-----------------------|------------------------------|------------------------------|----------------------|----------------------|-----------------------|-----------------------|-----------|--------------|-----------|-------------------|
|----------|----------|---------------------------|----------------------------|---------------------|---|------------------|------------------|-----------------------|-----------------------|-----------------------|------------------------------|------------------------------|----------------------|----------------------|-----------------------|-----------------------|-----------|--------------|-----------|-------------------|

† — 40°C
 * — 45°C
 # — 50°C
 □ — 60°C
 § — 75°C
 Symbols indicate temperature at which derating starts.

□ — With infinite heat sink
 Following symbols indicate temp at which derating starts:
 † — 40°C
 * — 45°C
 # — 50°C
 □ — 60°C
 § — 70°C
 \$ — 100°C
 % — Min.

* — 50-65°C
 □ — 70-80°C
 # — 85-100°C
 § — 110-125°C
 † — 130-135°C
 \$ — 140-165°C
 % — 170-200°C
 ▼ — Over 200°C

□ — I_E § — Minimum
 # — Pulsed or Peak
 † — At temperature 25°C Case

□ — At $V_{CB} < \text{Max. } V_{CB}$ (see mfr. spec.)
 # — I_{CEX} * — I_{cer} △ — I_{CEO}
 § — I_{CES} ◆ — At Temp. 25°C Case
 \$ — Typical † — At Temp. > 25°C

— BV_{CEX} or punch-through
 □ — BV_{CES} * — Pulsed
 § — BV_{CER} □ — $BV_{ceo(SUS)}$
 \$ — Minimum

† — At Temp. 25°C Case
 \$ — Minimum

□ — I_E
 # — Pulsed
 \$ — Minimum

† — h_{fe}
 # — Pulsed
 □ — Typical
 * — Available to selected range narrower than indicated

□ — Maximum
 □ — $t_d + t_r = T_{on}$
 § — t_s
 # — t_f
 † — $t_s + t_f = T_{off}$
 * — $T_{on} + T_{off}$

▼ — Typical Value # — Pulsed

— Rated max. operating frequency
 † — f_{α_b}
 § — Gain bandwidth product (f_T)
 * — Maximum frequency of oscillation
 □ — Figure of merit (frequency for unity power gain)
 △ — Minimum □ — Maximum

\$ — Tetraode
 # — Radiation Resistant Device (Also see top of reverse side of card.)

8. GERMANIUM PNP - HIGH POWER TRANSISTORS

IN ORDER OF (1) MIN. DERATING FACTOR
& (2) TYPE No.

| LINE No. | TYPE No. | 1 MIN. DERATE J to C (W/°C) | MAX. FREE AIR @ 25°C (W) | M T A E X P | ABSOLUTE MAX. RATINGS @ 25°C | | | | | MAX. MAX Vcb @ 25°C | | BIAS hFE | | MIN | MAX | fae (Hz) | MAX. SAT. RES. (Ω) | tr (s) | STRUC-TURE | DWG Y200 s/a TO200 Ser. | # C O A D E |
|----------|---------------|-----------------------------|--------------------------|-------------|------------------------------|--------|-----------|-----------|-----------|---------------------|-----------------|----------|------|-----|-------|----------|--------------------|--------|------------|-------------------------|-------------|
| | | | | | Ic (A) | Ib (A) | BVcbo (V) | BVebo (V) | BVceo (V) | Icbo @ 25°C (A) | MAX Vcb Vcb (V) | Ic (A) | BIAS | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| 1 | MP1535† | 1.2 | 90 Ø | •J | 5.0 | | 60 | 30 | 30 | 2.0mØ | 2.0Ø | 3.0 | 35 | 70 | | 400m | 8.0uØ | A | TO41 | CØ | |
| 2 | MP1535A† | 1.2 | 90 Ø | •J | 5.0 | | 60 | 30 | 30 | 2.0mØ | 2.0Ø | 3.0 | 35 | 70 | 5.0kΔ | 400m | 8.0uØ | A | TO41 | CØ | |
| 3 | MP1536† | 1.2 | 90 Ø | •J | 5.0 | | 80 | 40 | 40 | 2.0mØ | 2.0Ø | 3.0 | 35 | 70 | | 400m | 8.0uØ | A | TO41 | CØ | |
| 4 | MP1536A† | 1.2 | 90 Ø | •J | 5.0 | | 80 | 40 | 40 | 2.0mØ | 2.0Ø | 3.0 | 35 | 70 | 5.0kΔ | 400m | 8.0uØ | A | TO41 | CØ | |
| 5 | MP1537† | 1.2 | 90 Ø | •J | 5.0 | | 100 | 50 | 50 | 2.0mØ | 2.0Ø | 3.0 | 35 | 70 | | 400m | 8.0uØ | A | TO41 | CØ | |
| 6 | MP1537A† | 1.2 | 90 Ø | •J | 5.0 | | 100 | 50 | 50 | 2.0mØ | 2.0Ø | 3.0 | 35 | 70 | 5.0kΔ | 400m | 8.0uØ | A | TO41 | CØ | |
| 7 | MP1538† | 1.2 | 90 Ø | •J | 5.0 | | 120 | 60 | 60 | 2.0mØ | 2.0Ø | 3.0 | 35 | 70 | | 400m | 8.0uØ | A | TO41 | CØ | |
| 8 | MP1549 | 1.2 | 90 Ø | •J | 15 | | 40 | 20 | 20 | 3.0mØ | 2.0Ø | 10 | 10 | 30 | 10k | 100m | 5.0uØ | A | TO41 | CØ | |
| 9 | MP1549A† | 1.2 | 90 Ø | •J | 15 | | 40 | 20 | 20 | 3.0mØ | 2.0Ø | 10 | 10 | 30 | 10k | 100m | 5.0uØ | A | TO41 | CØ | |
| 10 | MP1550 | 1.2 | 90 Ø | •J | 15 | | 60 | 30 | 30 | 3.0mØ | 2.0Ø | 10 | 10 | 30 | 10k | 100m | 5.0uØ | A | TO41 | CØ | |
| 11 | MP1550A† | 1.2 | 90 Ø | •J | 15 | | 60 | 30 | 30 | 3.0mØ | 2.0Ø | 10 | 10 | 30 | 10k | 100m | 5.0uØ | A | TO41 | CØ | |
| 12 | MP1551 | 1.2 | 90 Ø | •J | 15 | | 80 | 40 | 40 | 3.0mØ | 2.0Ø | 10 | 10 | 30 | 10k | 100m | 5.0uØ | A | TO41 | CØ | |
| 13 | MP1551A† | 1.2 | 90 Ø | •J | 15 | | 80 | 40 | 40 | 3.0mØ | 2.0Ø | 10 | 10 | 30 | 10k | 100m | 5.0uØ | A | TO41 | CØ | |
| 14 | MP1552 | 1.2 | 90 Ø | •J | 15 | | 100 | 50 | 50 | 3.0mØ | 2.0Ø | 10 | 10 | 30 | 10k | 100m | 5.0uØ | A | TO41 | CØ | |
| 15 | MP1552A† | 1.2 | 90 Ø | •J | 15 | | 100 | 50 | 50 | 3.0mØ | 2.0Ø | 10 | 10 | 30 | 10k | 100m | 5.0uØ | A | TO41 | CØ | |
| 16 | MP1553 | 1.2 | 90 Ø | •J | 15 | | 40 | 20 | 20 | 3.0mØ | 2.0Ø | 10 | 30 | 60 | 6.0k | 70m | 10uØ | A | TO41 | CØ | |
| 17 | MP1553A† | 1.2 | 90 Ø | •J | 15 | | 40 | 20 | 20 | 3.0mØ | 2.0Ø | 10 | 30 | 60 | 6.0k | 70m | 10uØ | A | TO41 | CØ | |
| 18 | MP1554 | 1.2 | 90 Ø | •J | 15 | | 60 | 30 | 30 | 3.0mØ | 2.0Ø | 10 | 30 | 60 | 6.0k | 70m | 10uØ | A | TO41 | CØ | |
| 19 | MP1554A† | 1.2 | 90 Ø | •J | 15 | | 60 | 30 | 30 | 3.0mØ | 2.0Ø | 10 | 30 | 60 | 6.0k | 70m | 10uØ | A | TO41 | CØ | |
| 20 | MP1555 | 1.2 | 90 Ø | •J | 15 | | 80 | 40 | 40 | 3.0mØ | 2.0Ø | 10 | 30 | 60 | 6.0k | 70m | 10uØ | A | TO41 | CØ | |
| 21 | MP1555A† | 1.2 | 90 Ø | •J | 15 | | 80 | 40 | 40 | 3.0mØ | 2.0Ø | 10 | 30 | 60 | 6.0k | 70m | 10uØ | A | TO41 | CØ | |
| 22 | MP1556 | 1.2 | 90 Ø | •J | 15 | | 100 | 50 | 50 | 3.0mØ | 2.0Ø | 10 | 30 | 60 | 6.0k | 70m | 10uØ | A | TO41 | CØ | |
| 23 | MP1556A† | 1.2 | 90 Ø | •J | 15 | | 100 | 50 | 50 | 3.0mØ | 2.0Ø | 10 | 30 | 60 | 6.0k | 70m | 10uØ | A | TO41 | CØ | |
| 24 | MP1557 | 1.2 | 90 Ø | •J | 15 | | 40 | 20 | 20 | 3.0mØ | 2.0Ø | 10 | 50 | 100 | 5.0k | 50m | 10uØ | A | TO41 | CØ | |
| 25 | MP1557A† | 1.2 | 90 Ø | •J | 15 | | 40 | 20 | 20 | 3.0mØ | 2.0Ø | 10 | 50 | 100 | 5.0k | 50m | 10uØ | A | TO41 | CØ | |
| 26 | MP1558 | 1.2 | 90 Ø | •J | 15 | | 60 | 30 | 30 | 3.0mØ | 2.0Ø | 10 | 50 | 100 | 5.0k | 50m | 10uØ | A | TO41 | CØ | |
| 27 | MP1558A† | 1.2 | 90 Ø | •J | 15 | | 60 | 30 | 30 | 3.0mØ | 2.0Ø | 10 | 50 | 100 | 5.0k | 50m | 10uØ | A | TO41 | CØ | |
| 28 | MP1559 | 1.2 | 90 Ø | •J | 15 | | 80 | 40 | 40 | 3.0mØ | 2.0Ø | 10 | 50 | 100 | 5.0k | 50m | 10uØ | A | TO41 | CØ | |
| 29 | MP1559A† | 1.2 | 90 Ø | •J | 15 | | 80 | 40 | 40 | 3.0mØ | 2.0Ø | 10 | 50 | 100 | 5.0k | 50m | 10uØ | A | TO41 | CØ | |
| 30 | MP1560 | 1.2 | 90 Ø | •J | 15 | | 100 | 50 | 50 | 3.0mØ | 2.0Ø | 10 | 50 | 100 | 5.0k | 50m | 10uØ | A | TO41 | CØ | |
| 31 | MP1560A† | 1.2 | 90 Ø | •J | 15 | | 100 | 50 | 50 | 3.0mØ | 2.0Ø | 10 | 50 | 100 | 5.0k | 50m | 10uØ | A | TO41 | CØ | |
| 32 # | NKT501 | 1.2 | 90 Ø | •J | 25 | 4.0 | 60 | 12 | 60 | 300uØ | 1.5 | 25 | 12 | | | 650k† | | A | TO3 | | |
| 33 # | NKT502 | 1.2 | 90 Ø | •J | 25 | 4.0 | 60 | 12 | 30 | 300uØ | 1.5 | 25 | 12 | | | 650k† | | A | TO3 | | |
| 34 # | NKT503 | 1.2 | 90 Ø | •J | 25 | 4.0 | 60 | 12 | 60 | 300uØ | 1.5 | 10 | 12 | | | 650k† | | A | TO3 | | |
| 35 # | NKT504 | 1.2 | 90 Ø | •J | 25 | 4.0 | 60 | 12 | 30 | 300uØ | 1.5 | 10 | 12 | | | 650k† | | A | TO3 | | |
| 36 # | SFT264 | 1.2 | 87 Ø | •C | 15 | | 30 | 15 | 15 | 8.0m | 2.0Ø | 5.0 | 25 | 100 | 300k† | 600m | | A | TO36 | CØ | |
| 37 # | SFT265 | 1.2 | 87 Ø | •C | 15 | 2.5 | 40 | 20 | 40 | 8.0m | 2.0Ø | 5.0 | 25 | 45 | 300k† | 60m | 9.0u | A | TO36 | CØ | |
| 38 # | SFT266 | 1.2 | 87 Ø | •C | 15 | 2.5 | 60 | 40 | 50 | 8.0m | 2.0Ø | 5.0 | 25 | 45 | 300k† | 60m | 6.0u | AΔ | TO36 | CØ | |
| 39 # | SFT267 | 1.2 | 87 Ø | •S | 15 | 2.5 | 80 | 60 | 60 | 8.0m | 2.0Ø | 5.0 | 25 | 45 | 300k† | 60m | 6.0u | AΔ | TO36 | CØ | |
| 40 # | SFT268 | 1.2 | 87 Ø | •C | 15 | 2.5 | 100 | 60 | 70 | 8.0m | 2.0Ø | 5.0 | 25 | 45 | 300k† | 60m | 6.0u | AΔ | TO36 | CØ | |
| 41 | TI366A | 1.2 | 25 Ø | •C | 3.0 | | 60 | | 45 | 1.0mØ | 1.0Ø | 1.0 | 50 | | | .10 | | A | TO3 | | |
| 42 | TI367A | 1.2 | 25 Ø | •C | 3.0 | | 60 | | 40 | 1.0mØ | 1.0Ø | 1.0 | 50 | | | .15 | | A | TO3 | | |
| 43 | TI368A | 1.2 | 25 Ø | •C | 3.0 | | 45 | | 25 | 1.0mØ | 1.0Ø | 1.0 | 50 | | | .10 | | A | TO3 | | |
| 44 | TI369A | 1.2 | 25 Ø | •C | 3.0 | | 45 | | 23 | 1.0mØ | 1.0Ø | 1.0 | 50 | | | .15 | | A | TO3 | | |
| 45 | TI370A | 1.2 | 25 Ø | •C | 3.0 | | 30 | | 45 | 1.0mØ | 1.0Ø | 1.0 | 50 | | | .15 | | A | TO3 | | |
| 46 | TI3027 | 1.2 | 2.0 | •C | 7.0 | 3.0 | 45 | 20 | 40 | 1.0mØ | 2.0Ø | 3.0 | 40 | 250 | # | | | A | TO3 | CØ | |
| 47 | TI3028 | 1.2 | 2.0 | •C | 7.0 | 3.0 | 60 | 20 | 50 | 1.0mØ | 2.0Ø | 3.0 | 40 | 250 | # | | | A | TO3 | CØ | |
| 48 | TI3029 | 1.2 | 2.0 | •C | 7.0 | 3.0 | 80 | 20 | 55 | 1.0mØ | 2.0Ø | 3.0 | 40 | 250 | # | | | A | TO3 | CØ | |
| 49 | TI3030 | 1.2 | 2.0 | •C | 7.0 | 3.0 | 100 | 20 | 60 | 1.0mØ | 2.0Ø | 3.0 | 40 | 250 | # | | | A | TO3 | CØ | |
| 50 | TS610 | 1.2 | 106 Ø | •J | 5.0 | | 25 | 20 | 20 | 5.0m | 2.0Ø | 2.0 | 15 | | | 4.0k† | | A | TO3 | | |
| 51 | USAF506ES010M | 1.2 | 20 Ø | •J | 15 | 4.0 | 80 | 60 | 60 | 200uØ | 2.0Ø | 5.0 | 25 | 50 | 5.0kΔ | 100m | | A | TO36Ø | | |
| 52 | 2N301B | 1.3 | 90 | •J | 15 | | 40 | | 32 | 4.0m | 2.0Ø | 5.0 | 25 | 50 | 5.0k | .06 | 15u | A | TO3 | | |
| 53 | 2N301G | 1.3 | 90 | •J | 15 | | 40 | | 32 | 4.0m | 2.0Ø | 5.0 | 25 | 50 | 5.0k | .06 | 15u | A | TO3 | | |
| 54 | 2N301W | 1.3 | 90 | •J | 15 | 4.0 | 80 | 40 | 40 | 4.0m | 2.0Ø | 5.0 | 25 | 50 | 5.0k | .06 | 15u | A | TO36 | | |
| 55 | 2N1358M | 1.3 | 80 | •J | 20 | | 40 | | 30 | 5.0m | 1.5Ø | 15 | 20 | 40 | 100 | | | A | MD18 | | |
| 56 | 2N1419 | 1.3 | 80 | •J | 20 | | 40 | | 30 | 5.0m | 1.5Ø | 15 | 20 | 40 | 100 | | | A | MD18 | | |
| 57 # | 2SB203 | 1.3 | 80 Ø | •J | 20 | | 40 | | 30 | 5.0m | 1.5Ø | 15 | 20 | 40 | 100 | | | A | MD18 | | |
| 58 # | 2SB204 | 1.3 | 80 Ø | •J | 20 | | 40 | | 30 | 5.0m | 1.5Ø | 15 | 20 | 40 | 100 | | | A | MD18 | | |
| 59 # | 2SB205 | 1.3 | 80 Ø | •J | 20 | | 40 | | 30 | 5.0m | 1.5Ø | 15 | 20 | 40 | 100 | | | A | MD18 | | |
| 60 # | 2SB477 | 1.3 | 80 Ø | •J | 30 | 3.0 | 30 | 15 | 15 | 5.0m | 2.0Ø | 15 | 20 | 130 | | 80m | | A | TO36 | | |
| 61 # | 2SB478 | 1.3 | 80 Ø | •J | 30 | 3.0 | 60 | 30 | 30 | 5.0m | 2.0Ø | 15 | 20 | 130 | | 80m | | A | TO36 | | |
| 62 # | 2SB4 | | | | | | | | | | | | | | | | | | | | |