

# FOR USE BY ELECTRICIANS OVERSEAS :

**最新トランジスタ規格表** (New Transistor Manual) lists all the transistors registered with the Electronic Industries Association of Japan (EIAJ), arranged in a manner easy to look up. We hope that you will make full use of the data provided in this manual by referring to the Japanese-English translation key given below.

| 型名 | 社名 | 用途 | 構造 | 最大定格 (T <sub>b</sub> =25°C) |                         |                        |                        |                        | 電気的特性 (T <sub>b</sub> =25°C) |                        |   |      |   |                 |                                     |  |                                      |  | 外形 | 備考 |
|----|----|----|----|-----------------------------|-------------------------|------------------------|------------------------|------------------------|------------------------------|------------------------|---|------|---|-----------------|-------------------------------------|--|--------------------------------------|--|----|----|
|    |    |    |    | V <sub>ceo</sub><br>(V)     | V <sub>ceo</sub><br>(V) | I <sub>c</sub><br>(mA) | P <sub>c</sub><br>(mW) | T <sub>j</sub><br>(°C) | I <sub>ceo</sub> 最大値<br>(μA) | 直流又はパルスI <sub>BE</sub> |   | バイアス |   | h <sub>FE</sub> | h <sub>FE</sub> <sup>*</sup><br>(Ω) | h <sub>FE</sub> <sup>*</sup><br>(×10 <sup>-3</sup> ) | h <sub>FE</sub> <sup>*</sup><br>(μS) | f <sub>αb</sub><br>fr <sup>*</sup><br>(Mc) |    |    |
| 1  | 2  | 3  | 4  | 5                           |                         |                        |                        |                        | 6                            |                        | 7 |      | 8 |                 |                                     |  | 9                                    | 10   | 11 | 12 |

- 1 TYPE NUMBER
- 2 ORIGINAL MANUFACTURER
- 3 USES
- 4 MATERIAL AND STRUCTURE
- 5 MAXIMUM RATINGS
- 6 I<sub>CBO</sub> MAXIMUM VALUE AND V<sub>CB</sub> VALUE (CRITERIA FOR MEASURING I<sub>CBO</sub>)
- 7 STANDARD VALUE OF DC/PULSE h<sub>FE</sub> AND V<sub>CE</sub>, I<sub>C</sub> (CRITERIA FOR MEASURING DC/PULSE h<sub>FE</sub>)
- 8 STANDARD VALUE OF h PARAMETERS AND BIAS V<sub>CB</sub>, I<sub>E</sub> (CRITERIA FOR MEASURING h PARAMETERS)

- \* INDICATES VALUE IN GROUNDED-BASE OPERATION, OTHERWISE VALUE IN EMITTER-GROUNDED OPERATION.
- 9 f<sub>αb</sub> OF RF CHARACTERISTIC, EXCEPT IN CASE OF \* WHICH INDICATES VALUE OF f<sub>r</sub>.
- 10 C<sub>ob</sub> AND r<sub>bb'</sub> OF RF CHARACTERISTICS EXCEPT IN CASE OF \* IN r<sub>bb'</sub> COLUMN WHICH INDICATES VALUE OF h<sub>ie</sub> (real)
- 11 OUTLINE
- 12 REMARKS

:とコンプリ: COMPLEMENTARY TO .....

| 型名      | 社名   | 用途                    | 構造     | 最大定格 ( $T_a = 25^\circ\text{C}$ ) |                  |               |                                     | 電 気 的 特 性 ( $T_a = 25^\circ\text{C}$ ) |                                    |                  |                  |                  |            |            |                                    |                               |          |          | 外 形                                     | 備 考 |               |   |          |      |       |                  |                  |                  |        |      |     |                  |
|---------|------|-----------------------|--------|-----------------------------------|------------------|---------------|-------------------------------------|--|------------------------------------|------------------|------------------|------------------|------------|------------|------------------------------------|-------------------------------|----------|----------|---|-----|---------------|---|----------|------|-------|------------------|------------------|------------------|--------|------|-----|------------------|
|         |      |                       |        | $V_{CBO}$<br>(V)                  | $V_{EBO}$<br>(V) | $I_C$<br>(mA) | $P_C$<br>(mW)                       | $T_j$<br>( $^\circ\text{C}$ )          | $I_{CBO}$ 最大値<br>( $\mu\text{A}$ ) | $V_{CB(V)}$      | 直流又はパルス $h_{FE}$ |                  | バ イ ア ス    |            | $h_{fe}$                           | $h_{ie}$                      | $h_{re}$ | $h_{ob}$ |   |     | $f_{\beta B}$ | $C_{ob}$  | $r_{bb}$ |      |       |                  |                  |                  |        |      |     |                  |
|         |      |                       |        |                                   |                  |               |                                     |  | $V_{CE(V)}$                        | $I_C(\text{mA})$ | $V_{CB(V)}$      | $I_E(\text{mA})$ | $h_{fb}^*$ | $h_{ib}^*$ | $h_{rb}^*$<br>( $\times 10^{-4}$ ) | $h_{ob}^*$<br>( $\mu\Omega$ ) | (Mc)     | (pF)     | $h_{ie}(\text{real})^*$<br>( $\Omega$ ) |     |               |   |          |      |       |                  |                  |                  |        |      |     |                  |
| 2SC2382 | 東 芝  | PA                    | Si.EP  | 40                                | 4                | 12A           | 100W<br>( $T_c=25^\circ\text{C}$ )  | 175                                    | 2mA                                | 15               | >10              | 5                | 10A        |            |                                    |                               |          |          |   |     |               | 120   | 281      |      |       |                  |                  |                  |        |      |     |                  |
| " 2383  | "    | "                     | Si.E   | 160                               | 6                | 1A            | 900                                 | 150                                    | 1                                  | 150              | 60-320           | 5                | 200        | 5          | -200                               |                               |          |          |   |     |               | >20*  | <20      | 20   | 241   | 2SA1013<br>とコンパリ |                  |                  |        |      |     |                  |
| " 2384  | "    | "                     | "      | 160                               | 6                | 1A            | 10W<br>( $T_c=25^\circ\text{C}$ )   | 150                                    | 1                                  | 150              | 60-320           | 5                | 200        | 5          | -200                               |                               |          |          |   |     |               | >20*  | <20      | 20   | 249   | 2SA1014<br>とコンパリ |                  |                  |        |      |     |                  |
| " 2385  | 三 菱  | AF.LN.RF              | Si.EP  | 70                                | 5                | 100           | 200                                 | 125                                    | 0.1                                | 50               | 250-1200         | 6                | 1          | 6          | -10                                |                               |          |          |   |     |               | $V_{NO} < 300\text{mV}$<br>(10V, 1mA, $R_C = 100\text{k}\Omega$ , $A_s = 80\text{dB}$ ) | 130*     | 11.5 | 12    | 138B             |                  |                  |        |      |     |                  |
| " 2386  | "    | RF                    | "      | 70                                | 5                | 300           | 500                                 | 125                                    | 0.1                                | 70               | 600              | 6                | 1          | 6          | -10                                |                               |          |          |   |     |               | 125*  | 12.5     | 10   | 138B  |                  |                  |                  |        |      |     |                  |
| " 2387  | 日 立  | SW                    | Si.T   | 500                               | 5                | 8A            | 100W<br>( $T_c=25^\circ\text{C}$ )  | 150                                    | 100                                | 400              | >15              | 5                | 3A         |            |                                    |                               |          |          |   |     |               |   |          |      | 102   |                  |                  |                  |        |      |     |                  |
| " 2388  | 富士通  | SW.PA                 | Si.TMe | 450                               | 5                | 4A            | 75W<br>( $T_c=25^\circ\text{C}$ )   | 175                                    | 100                                | 450              | 20               | 5                | 2A         |            |                                    |                               |          |          |   |     |               |   |          |      | 102   |                  |                  |                  |        |      |     |                  |
| " 2389  | 東洋電機 | AF.LN                 | Si.EP  | 120                               | 5                | 50            | 300                                 | 125                                    | 0.5                                | 100              | 180-820          | 6                | 2          | 12         | -2                                 |                               |          |          |   |     |               | $V_{NO} < 150\text{mV}$<br>(10V, 1mA, $R_C = 100\text{k}\Omega$ , $A_s = 80\text{dB}$ ) | 140*     | 2.5  |       | 138              | 2SA1033<br>とコンパリ |                  |        |      |     |                  |
| " 2390  | "    | "                     | "      | 80                                | 5                | 50            | 300                                 | 125                                    | 0.5                                | 75               | 180-820          | 6                | 2          | 12         | -2                                 |                               |          |          |   |     |               | $V_{NO} < 150\text{mV}$<br>(10V, 1mA, $R_C = 100\text{k}\Omega$ , $A_s = 80\text{dB}$ ) | 140*     | 2.5  |       | 138              | 2SA1033<br>とコンパリ |                  |        |      |     |                  |
| " 2391  | 東 芝  | PA                    | "      | 35                                | 3.5              | 800           | 7.5W<br>( $T_c=25^\circ\text{C}$ )  | 175                                    | 1mA                                | 15               | >10              | 5                | 500        |            |                                    |                               |          |          |   |     |               |   |          | <10  | 325   |                  |                  |                  |        |      |     |                  |
| " 2392  | "    | "                     | "      | 35                                | 3.5              | 3.5A          | 30W<br>( $T_c=25^\circ\text{C}$ )   | 175                                    | 1mA                                | 15               | >10              | 5                | 1A         |            |                                    |                               |          |          |   |     |               |   |          |      | 30    | 325              |                  |                  |        |      |     |                  |
| " 2393  | "    | "                     | Si.E   | 80                                | 4                | 4A            | 12.5W<br>( $T_c=25^\circ\text{C}$ ) | 150                                    | 15                                 | 40               | 50               | 5                | 2A         |            |                                    |                               |          |          |   |     |               |   |          |      | 268   |                  |                  |                  |        |      |     |                  |
| " 2394  | "    | "                     | Si.EP  | 45                                | 4                | 6A            | 20W<br>( $T_c=25^\circ\text{C}$ )   | 150                                    | 100                                | 35               | 20-100           | 5                | 1A         |            |                                    |                               |          |          |   |     |               |   |          |      | 268   |                  |                  |                  |        |      |     |                  |
| " 2395  | "    | "                     | "      | 40                                | 4                | 5A            | 40W<br>( $T_c=25^\circ\text{C}$ )   | 150                                    |                                    |                  | >20              | 5                | 1A         | 5          | -1A                                |                               |          |          |   |     |               |   |          |      | 200*  | <150             | 325              |                  |        |      |     |                  |
| " 2396  | 日 立  | AF                    | Si.E   | 60                                | 5                | 100           | 400                                 | 125                                    | 0.1                                | 50               | 250-1200         | 12               | 2          | 12         | -2                                 |                               |          |          |   |     |               |   |          |      | 90*   | 3                | 138              | 2SA1025<br>とコンパリ |        |      |     |                  |
| " 2397  | "    | PA                    | "      | 60                                | 5                | 8A            | 25W<br>( $T_c=25^\circ\text{C}$ )   | 150                                    | 1                                  | 45               | 100-200          | 10               | 2A         | 10         | -100                               |                               |          |          |   |     |               |   |          |      | 100   | 120              | 268              |                  |        |      |     |                  |
| " 2398  | ソニー  | PA.SW                 | Si.EPa | 100                               | 5                | 10A           | 95W<br>( $T_c=25^\circ\text{C}$ )   | 120                                    | 10                                 | 50               | >50              | 2                | 100        | 2          | -1A                                |                               |          |          |   |     |               |   |          |      | 80*   | 240              | 102              | 2SA1028<br>とコンパリ |        |      |     |                  |
| " 2399  | 日 立  | RF                    | Si.EP  | 30                                | 4                | 20            | 310                                 | 125                                    | 0.5                                | 10               | 35-200           | 6                | 1          | 6          | -5                                 |                               |          |          |   |     |               |   |          |      | 940*  | 0.9              | $C_{cs}$<br>12pS | 138D             |        |      |     |                  |
| " 2400  | "    | SW                    | "      | 40                                | 5                | 100           | 310                                 | 125                                    | 0.25                               | 20               | 100              | 1                | 10         | 10         | -10                                |                               |          |          |   |     |               |   |          |      | 1200* | 1.8              |                  | 138D             |        |      |     |                  |
| " 2401  | "    | RF.SW                 | Si.P   | 40                                | 10               | 300           | 310                                 | 125                                    | 0.1                                | 30               | 10000            | 5                | 10         | 5          | -10                                |                               |          |          |   |     |               |   |          |      | 200*  | 3.5              | $C_{cs}$<br>12pS | 138D             | ゲ-リントン |      |     |                  |
| " 2402  | 富士通  | SW.PA                 | Si.TMe | 300                               | 7                | 15A           | 150W<br>( $T_c=25^\circ\text{C}$ )  | 175                                    | 100                                | 300              | 20               | 5                | 5A         |            |                                    |                               |          |          |   |     |               |   |          |      |       |                  |                  | 102              |        |      |     |                  |
| " 2403  | "    | "                     | "      | 300                               | 7                | 40A           | 300W<br>( $T_c=25^\circ\text{C}$ )  | 175                                    | 100                                | 300              | 20               | 5                | 20A        |            |                                    |                               |          |          |   |     |               |   |          |      |       |                  |                  | 41               |        |      |     |                  |
| " 2404  | 松 下  | RF                    | Si.EP  | 30                                | 3                | 15            | 100                                 | 125                                    |                                    |                  | >40              | 6                | 1          | 6          | -1                                 |                               |          |          |   |     |               |   |          |      |       | 650*             | $C_{cs}$<br>0.8  | 176              |        |      |     |                  |
| " 2405  | "    | AF.IV                 | "      | 35                                | 5                | 50            | 200                                 | 125                                    | 0.1                                | 10               | 180-1040         | 5                | 2          |            |                                    |                               |          |          |   |     |               |   |          |      |       |                  |                  | 176              |        |      |     |                  |
| " 2406  | "    | "                     | "      | 55                                | 5                | 50            | 200                                 | 125                                    | 0.1                                | 10               | 180-1040         | 5                | 2          |            |                                    |                               |          |          |   |     |               |   |          |      |       |                  |                  | 176              |        |      |     |                  |
| " 2407  | 日 電  | RF                    | Si.E   | 35                                | 3                | 150           | 600                                 | 150                                    | 0.5                                | 20               | 60               | 10               | 50         |            |                                    |                               |          |          |   |     |               |   |          |      |       |                  |                  | 1                | 138C   |      |     |                  |
| " 2408  | "    | "                     | "      | 35                                | 3                | 150           | 600                                 | 150                                    | 0.5                                | 20               | 100              | 10               | 50         | 10         | -50                                |                               |          |          |   |     |               |   |          |      |       |                  |                  | 3500*            | 1.25   | 138C |     |                  |
| " 2409  | 東洋電機 | AF                    | Si.EP  | 50                                | 9                | 100           | 300                                 | 125                                    | 0.5                                | 30               | 180-560          | 6                | 1          | 12         | -2                                 |                               |          |          |   |     |               |   |          |      |       |                  |                  |                  | 180*   | 2    | 138 |                  |
| " 2410  | "    | RF.IF.Conv<br>Mix.Osc | "      | 40                                | 5                | 100           | 250                                 | 125                                    | 0.5                                | 24               | 39-180           | 6                | 2          | 12         | -2                                 |                               |          |          |   |     |               |   |          |      |       |                  |                  |                  | 230*   | 1.8  | 138 |                  |
| " 2411  | "    | AF.Osc.SW             | "      | 40                                | 5                | 500           | 200                                 | 125                                    | 1                                  | 20               | 82-390           | 3                | 10         | 5          | -20                                |                               |          |          |   |     |               |   |          |      |       |                  |                  |                  | 250*   | 6    | 335 | 2SA1035<br>とコンパリ |