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# 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 ( $T_c=25^\circ\text{C}$ ) |                  |               |               |                               | 電気的特性 ( $T_c=25^\circ\text{C}$ )  |                  |                          |                                  |                               |                      |                  |                           |          |              | 外形 | 備考 |          |
|----|----|----|----|---------------------------------|------------------|---------------|---------------|-------------------------------|-----------------------------------|------------------|--------------------------|----------------------------------|-------------------------------|----------------------|------------------|---------------------------|----------|--------------|----|----|----------|
|    |    |    |    | $V_{ce0}$<br>(V)                | $V_{be0}$<br>(V) | $I_c$<br>(mA) | $P_c$<br>(mW) | $T_c$<br>( $^\circ\text{C}$ ) | $I_{c0}$ 最大値<br>( $\mu\text{A}$ ) | 直流又はパルス $h_{FE}$ |                          | バイアス                             |                               | $h_{FE}$             | $h_{ie}$         | $h_{re}$                  | $h_{oe}$ | $f_{\alpha}$ |    |    | $C_{ob}$ |
|    |    |    |    | $V_{ce}$ (V)                    | $I_c$ (mA)       | $V_{ce}$ (V)  | $I_c$ (mA)    | $V_{ce}$ (V)                  | $I_c$ (mA)                        | $h_{FE}$ *       | $h_{ie}$<br>( $\Omega$ ) | $h_{re}$<br>( $\times 10^{-4}$ ) | $h_{oe}$<br>( $\mu\text{S}$ ) | $f_{\alpha}$<br>(Mc) | $C_{ob}$<br>(pF) | $r_{bb'}$<br>( $\Omega$ ) |          |              |    |    |          |
| 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  $I_{cB0}$  MAXIMUM VALUE AND  $V_{cB}$  VALUE (CRITERIA FOR MEASURING  $I_{cB0}$ )
- 7 STANDARD VALUE OF DC/PULSE  $h_{FE}$  AND  $V_{cE}$ ,  $I_c$  (CRITERIA FOR MEASURING DC/PULSE  $h_{FE}$ )
- 8 STANDARD VALUE OF  $h$  PARAMETERS AND BIAS  $V_{cB}$ ,  $I_E$  (CRITERIA FOR MEASURING  $h$  PARAMETERS)

- \* INDICATES VALUE IN GROUNDED-BASE OPERATION, OTHERWISE VALUE IN EMITTER-GROUNDED OPERATION.
- 9  $f_{\alpha b}$  OF RF CHARACTERISTIC, EXCEPT IN CASE OF \* WHICH INDICATES VALUE OF  $f_T$ .
- 10  $C_{ob}$  AND  $r_{bb'}$  OF RF CHARACTERISTICS EXCEPT IN CASE OF \* IN  $r_{bb'}$  COLUMN WHICH INDICATES VALUE OF  $h_{ie}$  (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   |  |   |                                |                  |  |
|----------|-----|----|--------|-----------------------------------|-----------------|---------------|------------------------------------|-------------------------------|--|-------------|---------------|-----------------|---------------|-------------|---------------|--|------------------------|--|----|------|--|---|--------------------------------|------------------|--|
|          |     |    |        | $V_{CB0}$<br>(V)                  | $V_{E0}$<br>(V) | $I_C$<br>(mA) | $P_C$<br>(mW)                      | $T_j$<br>( $^\circ\text{C}$ ) | 最大値                                    |             | 直流又はパルス       |                 | hFE           |             | バイアス          |  | $h_{fe}$<br>$h_{fe}^*$ | $h_{ie}$<br>$h_{ib}^*$<br>( $\Omega$ ) |    |      | $h_{re}$<br>$h_{rb}^*$<br>( $\times 10^{-4}$ ) | $h_{oe}$<br>$h_{ob}^*$<br>( $\mu\text{U}$ ) | $f_{\beta}$<br>$f_T^*$<br>(Mc) | $C_{ob}$<br>(pF) | $r_{bb'}$<br>$r_{bb'(real)}^*$<br>( $\Omega$ ) |
|          |     |    |        |                                   |                 |               |                                    |                               | $I_{CB0}$<br>( $\mu\text{A}$ )         | $V_{CB(V)}$ | $I_C$<br>(mA) | $V_{CE(V)}$     | $I_C$<br>(mA) | $V_{CB(V)}$ | $I_E$<br>(mA) |  |                        |  |    |      |  |   |                                |                  |  |
| ★ 2SB511 | 三洋  | PA | Si.E   | -35                               | -5              | -1.5A         | 10W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -100                                   | -20         | 40-320        | -2              | -1A           | -5          | 500           |  |                        |  |    | 8*   |  |   | 268                            |                  |  |
| " 512    | 松下  | "  | Si.EMe | -60                               | -8              | -3A           | 25W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -30                                    | -20         | 60            | -3              | -1A           |             |               |  |                        |  |    |      |  |   | 268                            | 2SD365<br>とコンプリ  |  |
| ★ " 513  | "   | "  | "      | -60                               | -8              | -3A           | 25W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -30                                    | -20         | 60            | -3              | -1A           |             |               |  |                        |  |    |      |  |   | 267                            |                  |  |
| ★ " 514  | 三洋  | "  | Si.E   | -50                               | -5              | -2A           | 20W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -100                                   | -20         | 40-320        | -2              | -1A           | -5          | 500           |  |                        |  |    | 8*   |  |   | 268                            | 2SD330<br>とコンプリ  |  |
| ★ " 515  | "   | "  | "      | -50                               | -5              | -2A           | 20W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -100                                   | -20         | 40-320        | -2              | -1A           | -5          | 300           |  |                        |  |    | 8*   |  |   | 267                            | 2SD331<br>とコンプリ  |  |
| ★ " 516  | 日立  | "  | Ge.A   | -20                               |                 | -100          | 150                                | 85                            | -25                                    | -12         | 110           | -1.5            | -50           |             |               |  |                        |  |    |      |  |   | 12C                            |                  |  |
| " 517    |     |    |        |                                   |                 |               |                                    |                               |  |             |               |                 |               |             |               |  |                        |  |    |      |  |   |                                |                  |  |
| ★ " 518  | ソニー | PA | Si.EMe | -90                               | -8              | -7A           | 60W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -100                                   | -50         | 50            | -2              | -1A           |             |               |  |                        |  |    |      |  |   | 103                            |                  |  |
| ★ " 519  | "   | "  | "      | -110                              | -8              | -10A          | 80W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -100                                   | -50         | 50            | -2              | -1A           |             |               |  |                        |  |    |      |  |   | 102                            |                  |  |
| ★ " 520  | "   | "  | "      | -140                              | -8              | -12A          | 100W<br>( $T_c=25^\circ\text{C}$ ) | 150                           | -100                                   | -50         | 50            | -2              | -5A           | -2          | 5A            |  |                        |  |    | >3*  |  |   | 102                            | 2SD340<br>とコンプリ  |  |
| " 521    | "   | "  | "      | -60                               |                 | -5A           | 25W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -100                                   | -50         | 50            | -2              | -2.5A         |             |               |  |                        |  |    |      |  |   | 268                            |                  |  |
| " 522    | "   | "  | "      | -60                               |                 | -5A           | 25W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -100                                   | -50         | 50            | -2              | -2.5A         |             |               |  |                        |  |    |      |  |   | 267                            |                  |  |
| ★ " 523  | 三菱  | "  | Si.EP  | -40                               | -5              | -2A           | 10W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -1                                     | -25         | 120           | -4              | -500          |             |               |  |                        |  |    |      |  |   | 180                            | 2SD360<br>とコンプリ  |  |
| " 524    | "   | "  | "      | -60                               | -5              | -1.5A         | 10W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -1                                     | -25         | 100           | -4              | -500          |             |               |  |                        |  |    |      |  |   | 180                            | 2SD361<br>とコンプリ  |  |
| " 525    | "   | "  | "      | -30                               | -4              | -1A           | 800                                | 135                           | -1                                     | -25         | 150           | -1              | -500          | -6          | 10            |  |                        |  |    | 100* |  |   | 242                            | 2SD355<br>とコンプリ  |  |
| ★ " 526  | "   | "  | "      | -90                               | -5              | -800          | 10W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -10                                    | -25         | 100           | -4              | -300          |             |               |  |                        |  |    |      |  |   | 180                            | 2SD356<br>とコンプリ  |  |
| " 527    | "   | "  | "      | -110                              | -5              | -800          | 10W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -10                                    | -25         | 100           | -4              | -300          |             |               |  |                        |  |    |      |  |   | 180                            | 2SD357<br>とコンプリ  |  |
| " 528    | "   | "  | "      | -130                              | -5              | -800          | 10W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -10                                    | -25         | 100           | -4              | -300          |             |               |  |                        |  |    |      |  |   | 180                            | 2SD358<br>とコンプリ  |  |
| " 529    | "   | "  | "      | -40                               | -5              | -2A           | 10W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -1                                     | -25         | 110           | -4              | -500          |             |               |  |                        |  |    |      |  |   | 180                            | 2SD359<br>とコンプリ  |  |
| ★ " 530  | 東芝  | "  | Si.EMe | -110                              | -5              | -8A           | 80W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -100                                   | -50         | 80            | -5              | -1A           |             |               |  |                        |  |    |      |  |   | 102                            |                  |  |
| " 531    | "   | "  | Si.TMe | -100                              | -5              | -6A           | 50W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -100                                   | -50         | 40-240        | -5              | -1A           | -5          | 1A            |  |                        |  |    | 8*   | 180  |   | 102                            |                  |  |
| ★ " 532  | 松下  | "  | Si.EMe | -80                               | -5              | -5A           | 60W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -1mA                                   | -50         | 100           | -4              | -1A           | -10         | 500           |  |                        |  |    | 10*  |  |   | 102                            |                  |  |
| ★ " 533  | "   | "  | Ge.A   | -20                               | -12             | -2A           | 6 W<br>( $T_c=25^\circ\text{C}$ )  | 85                            | -200                                   | -20         | 150           | $V_{CB}$<br>0 V | $I_E$ 2A      | -2          | 100           |  |                        |  |    | 1.2* |  |   | 84C                            |                  |  |
| ★ " 534  | 日立  | "  | "      | -20                               | -6              | -500          | 200                                | 85                            | -25                                    | -12         | 150           | -1              | -150          |             |               |  |                        |  |    |      |  |   | 12A                            |                  |  |
| ★ " 535  | "   | "  | "      | -35                               |                 | -1A           | 5 W<br>( $T_c=25^\circ\text{C}$ )  | 85                            | -20                                    | -12         | 100           | -0.5            | -500          |             |               |  |                        |  |    |      |  |   | 84B                            |                  |  |
| " 536    | 日電  | PA | SiE    | -130                              | -5              | -1.5A         | 20W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -1                                     | -120        | 110           | -5              | -300          | -5          | 100           |  |                        |  |    | 40*  | 35   |   | 268                            | 2SD381<br>とコンプリ  |  |
| " 537    | "   | "  | "      | -130                              | -5              | -1.5A         | 20W<br>( $T_c=25^\circ\text{C}$ )  | 150                           | -1                                     | -120        | 110           | -5              | -300          | -5          | 100           |  |                        |  |    | 40*  | 35   |   | 267                            | 2SD382<br>とコンプリ  |  |
| ★ " 538  | 日立  | PA | GeA    | -65                               | -30             | -15A          | 75W<br>( $T_c=25^\circ\text{C}$ )  | 100                           | -10mA                                  | -65         | 100           | -2              | -10A          |             |               |  |                        |  |    |      |  |   | 102                            |                  |  |
| ★ " 539  | 日電  | PA | Si.TMe | -130                              | -6              | -10A          | 100W<br>( $T_c=25^\circ\text{C}$ ) | 150                           | -100                                   | -120        | 75            | -5              | -2A           |             |               |  |                        |  |    |      |  |   | 102                            | 2SD287<br>とコンプリ  |  |
| ★ " 540  | 東芝  | "  | GeA    | -50                               | -12             | -2A           | 6 W<br>( $T_c=25^\circ\text{C}$ )  | 85                            | -100                                   | -25         | 120           | -2              | -3A           | -1          | 100           |  |                        |  |    | 1.4  |  |   | 84B                            |                  |  |