

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

# 2SC1815

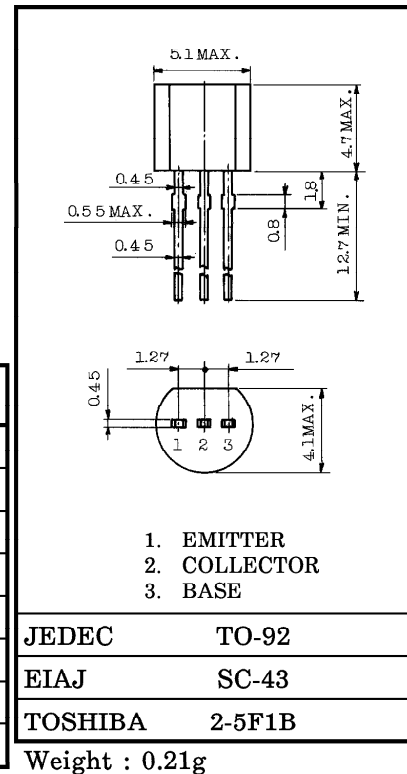
AUDIO FREQUENCY GENERAL PURPOSE AMPLIFIER APPLICATIONS.  
DRIVER STAGE AMPLIFIER APPLICATIONS.

Unit in mm

- High Voltage and High Current  
:  $V_{CEO} = 50V$  (Min.),  $I_C = 150mA$  (Max.)
- Excellent  $h_{FE}$  Linearity  
:  $h_{FE(2)} = 100$  (Typ.) at  $V_{CE} = 6V$ ,  $I_C = 150mA$   
:  $h_{FE}(I_C = 0.1mA) / h_{FE}(I_C = 2mA) = 0.95$  (Typ.)
- Low Noise :  $NF = 1dB$  (Typ.) at  $f = 1kHz$
- Complementary to 2SA1015 (O, Y, GR class)

MAXIMUM RATINGS ( $T_a = 25^\circ C$ )

| CHARACTERISTIC              | SYMBOL    | RATING  | UNIT       |
|-----------------------------|-----------|---------|------------|
| Collector-Base Voltage      | $V_{CBO}$ | 60      | V          |
| Collector-Emitter Voltage   | $V_{CEO}$ | 50      | V          |
| Emitter-Base Voltage        | $V_{EBO}$ | 5       | V          |
| Collector Current           | $I_C$     | 150     | mA         |
| Base Current                | $I_B$     | 50      | mA         |
| Collector Power Dissipation | $P_C$     | 400     | mW         |
| Junction Temperature        | $T_j$     | 125     | $^\circ C$ |
| Storage Temperature Range   | $T_{stg}$ | -55~125 | $^\circ C$ |



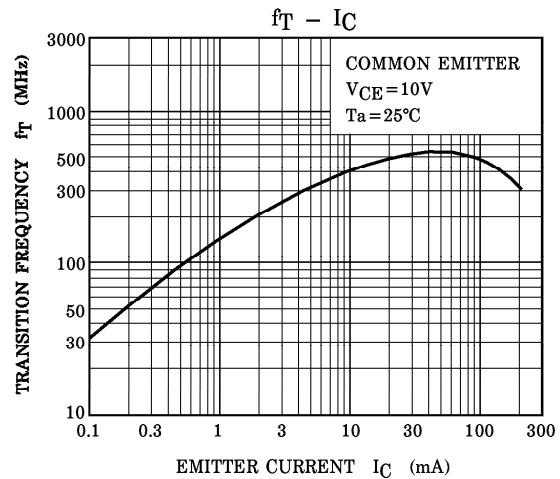
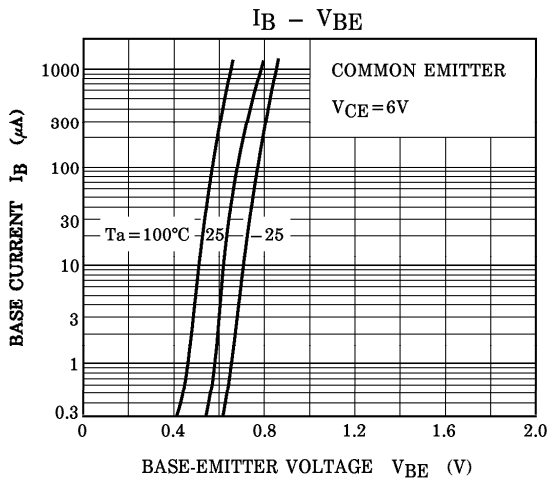
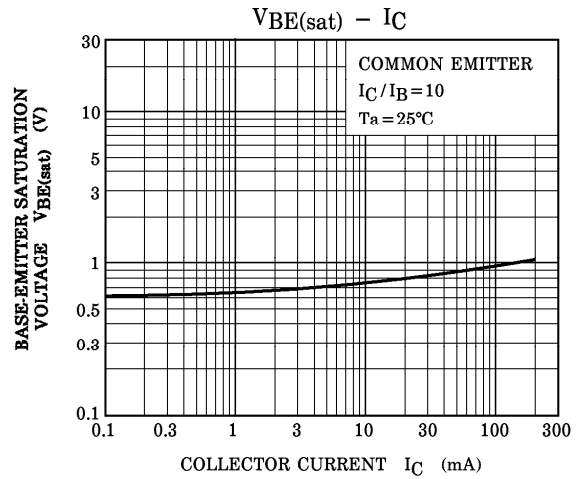
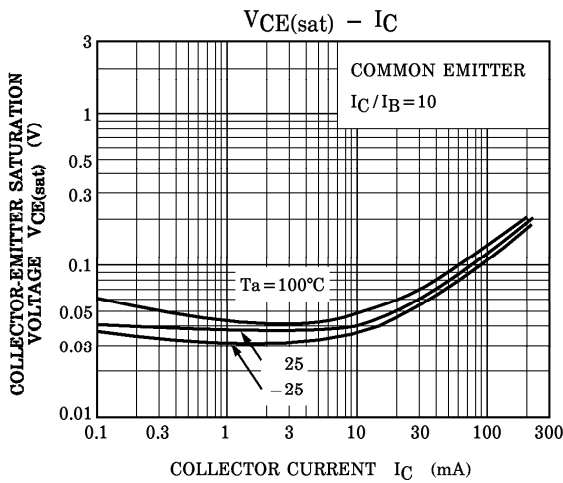
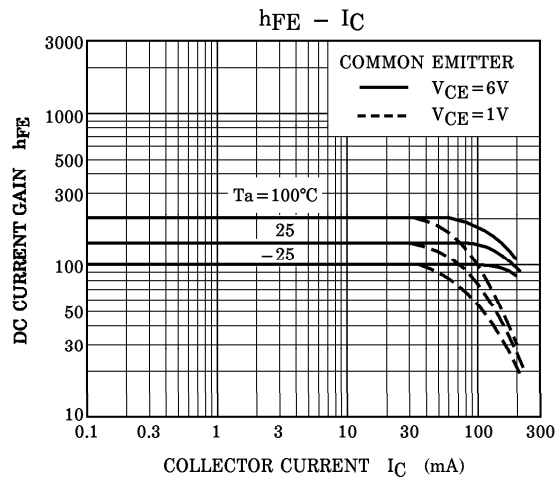
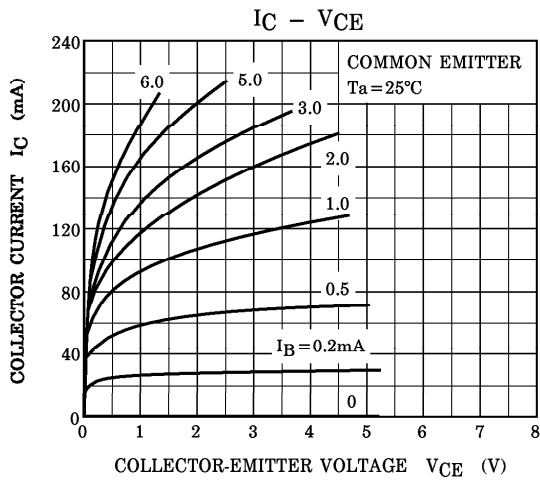
ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ C$ )

| CHARACTERISTIC                       | SYMBOL                | TEST CONDITION  | MIN. | TYP. | MAX. | UNIT     |
|--------------------------------------|-----------------------|---|------|------|------|----------|
| Collector Cut-off Current            | $I_{CBO}$             | $V_{CB} = 60V, I_E = 0$                                   | —    | —    | 0.1  | $\mu A$  |
| Emitter Cut-off Current              | $I_{EBO}$             | $V_{EB} = 5V, I_C = 0$                                    | —    | —    | 0.1  | $\mu A$  |
| DC Current Gain                      | $h_{FE(1)}$<br>(Note) | $V_{CE} = 6V, I_C = 2mA$                                  | 70   | —    | 700  |          |
|                                      | $h_{FE(2)}$           | $V_{CE} = 6V, I_C = 150mA$                                | 25   | 100  | —    |          |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$         | $I_C = 100mA, I_B = 10mA$                                 | —    | 0.1  | 0.25 | V        |
| Base-Emitter Saturation Voltage      | $V_{BE(sat)}$         | $I_C = 100mA, I_B = 10mA$                                 | —    | —    | 1.0  | V        |
| Transition Frequency                 | $f_T$                 | $V_{CE} = 10V, I_C = 1mA$                                 | 80   | —    |      | MHz      |
| Collector Output Capacitance         | $C_{ob}$              | $V_{CB} = 10V, I_E = 0, f = 1MHz$                         | —    | 2.0  | 3.5  | pF       |
| Base Intrinsic Resistance            | $r_{bb'}$             | $V_{CE} = 10V, I_E = -1mA$<br>$f = 30MHz$                 | —    | 50   | —    | $\Omega$ |
| Noise Figure                         | NF                    | $V_{CE} = 6V, I_C = 0.1mA$<br>$f = 1kHz, R_G = 10k\Omega$ | —    | 1.0  | 10   | dB       |

Note :  $h_{FE}$  Classification    0 : 70~140    Y : 120~240    GR : 200~400    BL : 350~700

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