

TOSHIBA TRANSISTOR SILICON PNP EPITAXIAL TYPE (PCT PROCESS)

## 2SA1015

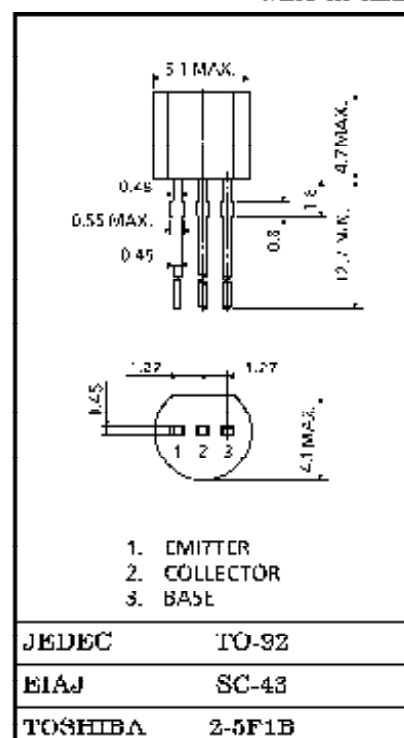
AUDIO FREQUENCY GENERAL PURPOSE AMPLIFIER APPLICATIONS  
DRIVER STAGE AMPLIFIER APPLICATIONS

Unit in mm

- High Voltage and High Current.  
:  $V_{CEO} = -50V$  (Min.),  $I_C = -150mA$  (Max.)
- Excellent  $h_{FE}$  Linearity  
:  $h_{FE(2)} = 80$  (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 2SC1816.

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

| CHARACTERISTIC              | SYMBOL    | RATING  | UNIT       |
|-----------------------------|-----------|---------|------------|
| Collector-Base Voltage      | $V_{CBO}$ | -50     | 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 | $^\circ C$ |



JEDEC TO-92

EIAJ SC-43

TOSHIBA 2-5F1B

Weight : 0.21g

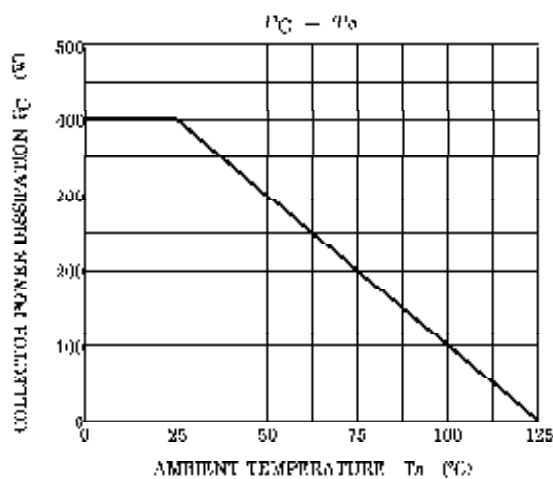
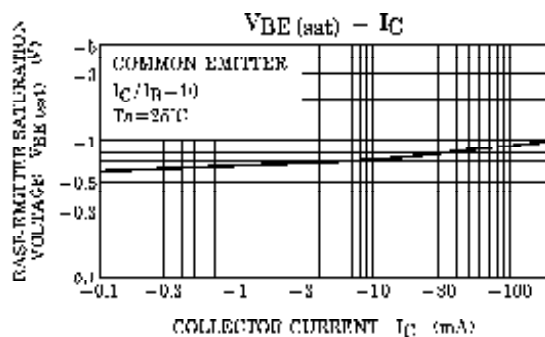
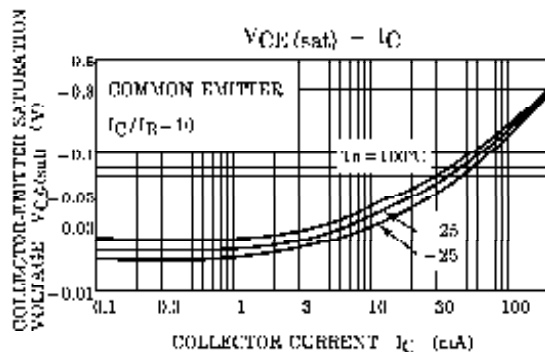
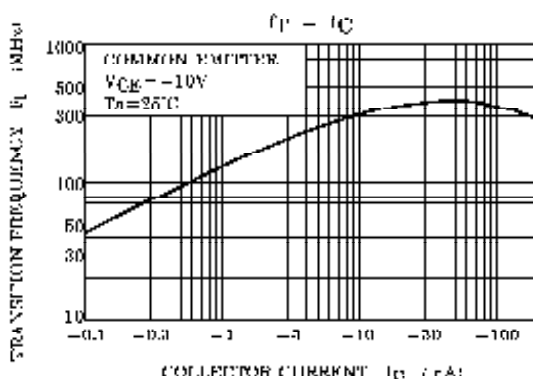
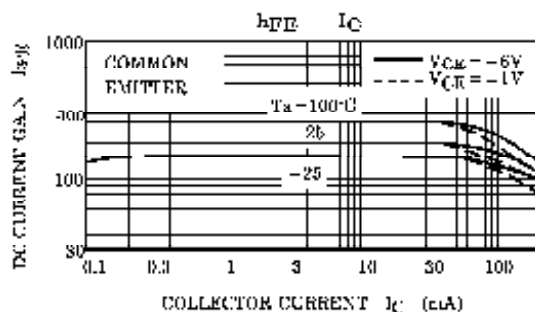
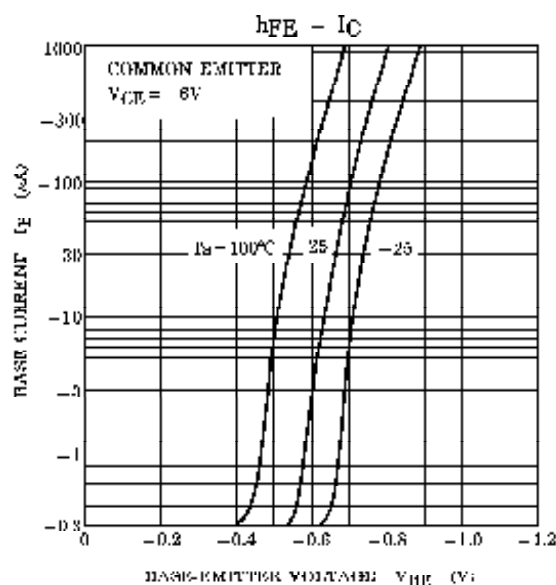
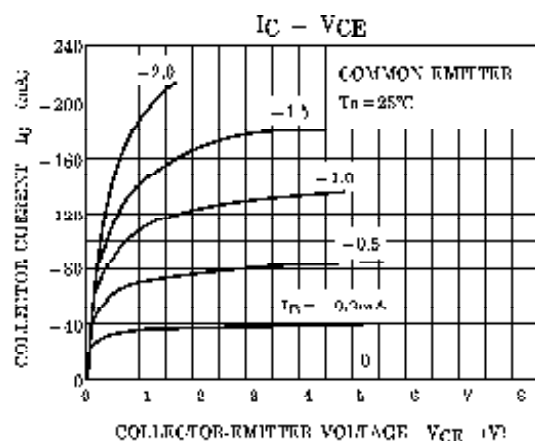
ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ C$ )

| CHARACTERISTIC                       | SYMBOL             | TEST CONDITION                                                      | MIN. | TYP. | MAX. | UNIT     |
|--------------------------------------|--------------------|---------------------------------------------------------------------|------|------|------|----------|
| Collector Cut-off Current            | $I_{CBO}$          | $V_{CB} = -50V$ , $I_E = 0$                                         | —    | —    | -0.1 | $\mu A$  |
| Emitter Cut-off Current              | $I_{EBO}$          | $V_{EB} = -5V$ , $I_C = 0$                                          | —    | —    | -0.1 | $\mu A$  |
| DC Current Gain                      | $h_{FE(1)}$ (Note) | $V_{CE} = -6V$ , $I_C = -2mA$                                       | 70   | —    | 400  |          |
|                                      | $h_{FE(2)}$        | $V_{CE} = -6V$ , $I_C = -150mA$                                     | 25   | 80   | —    |          |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$      | $I_C = -100mA$ , $I_B = -10mA$                                      | —    | -0.1 | -0.3 | V        |
| Base-Emitter Saturation Voltage      | $V_{BE(sat)}$      | $I_C = -100mA$ , $I_B = -10mA$                                      | —    | —    | -1.1 | V        |
| Transition Frequency                 | $f_T$              | $V_{CE} = -10V$ , $I_C = -1mA$                                      | 80   | —    | —    | MHz      |
| Collector Output Capacitance         | $C_{ob}$           | $V_{CB} = -10V$ , $I_E = 0$ ,<br>$f = 1MHz$                         | —    | 4    | 7    | pF       |
| Base Intrinsic Resistance            | $r_{bb'}$          | $V_{CE} = -10V$ , $I_E = 1mA$ ,<br>$f = 30MHz$                      | —    | 30   | —    | $\Omega$ |
| Noise Figure                         | NF                 | $V_{CE} = -6V$ , $I_C = -0.1mA$ ,<br>$R_G = 10k\Omega$ , $f = 1kHz$ | —    | 1.0  | 10   | dB       |

Note :  $h_{FE(1)}$  Classification O : 70~140, Y : 120~240, GR : 200~400

96100-2A32

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