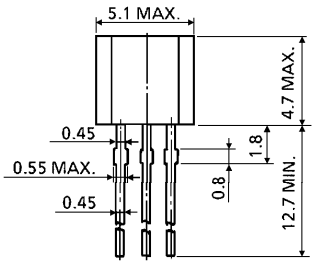
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

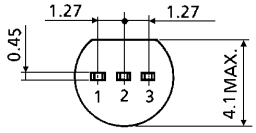
# 2SC3112

FOR AUDIO AMPLIFIER AND SWITCHING APPLICATIONS

Unit in mm

- High DC Current Gain : $h_{FE}$ = 600~3600
- High Breakdown Voltage : $V_{CEO}$ = 50V
- High Collector Current : $I_C$ = 150mA (Max.)




1. EMITTER
2. COLLECTOR
3. BASE

| | |
|---|---|
| JEDEC | TO-92 |
| EIAJ | SC-43 |
| TOSHIBA | 2-5F1B |

Weight : 0.21g

MAXIMUM RATINGS (Ta = 25°C)

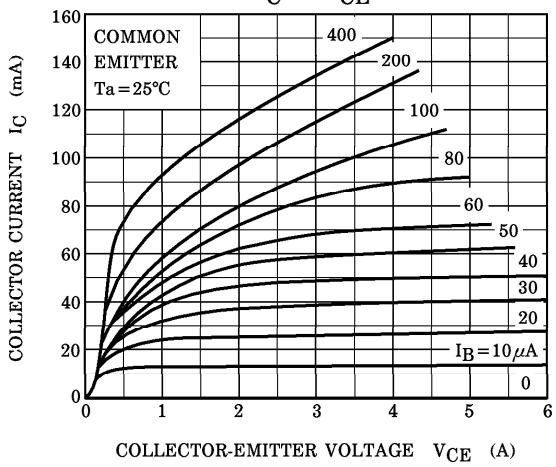
| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 50 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 50 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 5 | V |
| Collector Current | $I_C$ | 150 | mA |
| Base Current | $I_B$ | 30 | mA |
| Collector Power Dissipation | $P_C$ | 400 | mW |
| Junction Temperature | $T_j$ | 125 | °C |
| Storage Temperature Range | $T_{stg}$ | −55~125 | °C |

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

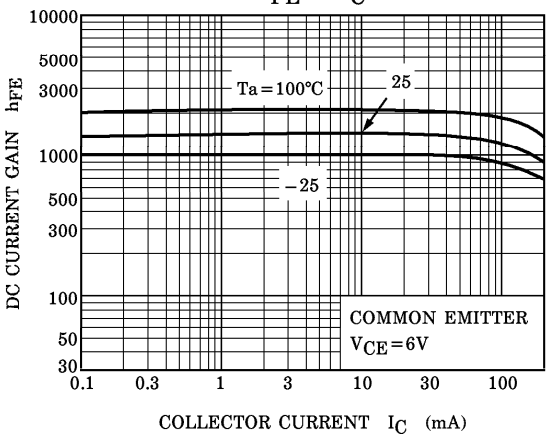
| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Collector Cut-off Current | $I_{CBO}$ | $V_{CB}$ = 50V, $I_E$ = 0 | — | — | 0.1 | μA |
| Emitter Cut-off Current | $I_{EBO}$ | $V_{EB}$ = 5V, $I_C$ = 0 | — | — | 0.1 | μA |
| DC Current Gain | $h_{FE}$ (Note) | $V_{CE}$ = 6V, $I_C$ = 2mA | 600 | — | 3600 | |
| Collector-Emitter Saturation Voltage | $V_{CE\ (sat)}$ | $I_C$ = 100mA, $I_B$ = 10mA | — | 0.12 | 0.25 | V |
| Transition Frequency | $f_T$ | $V_{CE}$ = 10V, $I_C$ = 10mA | 100 | 250 | — | MHz |
| Collector Output Capacitance | $C_{ob}$ | $V_{CB}$ = 10V, $I_E$ = 0, f = 1MHz | — | 3.5 | — | pF |
| Noise Figure | NF (1) | $V_{CE}$ = 6V, $I_C$ = 0.1mA, f = 100Hz, $R_G$ = 10kΩ | — | 0.5 | — | dB |
| | NF (2) | $V_{CE}$ = 6V, $I_C$ = 0.1mA, f = 1kHz, $R_G$ = 10kΩ | — | 0.3 | — | dB |

(Note) : $h_{FE}$ Classification A : 600~1800, B : 1200~3600

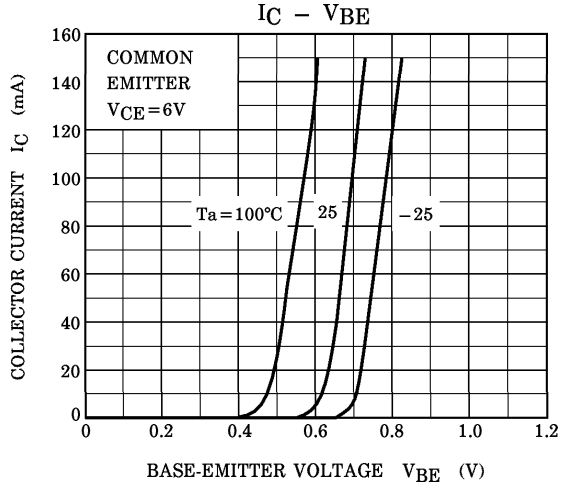
$I_C - V_{CE}$



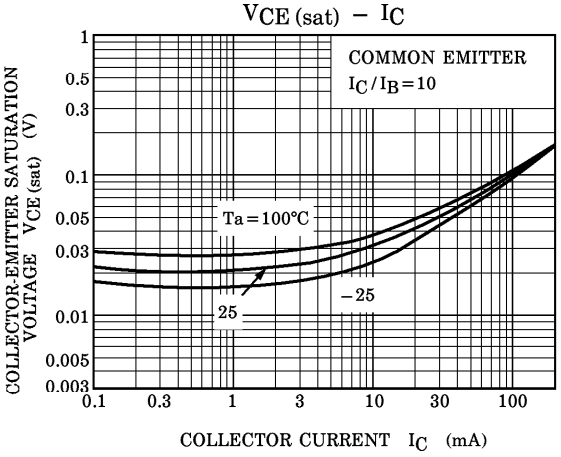

$h_{FE} - I_C$



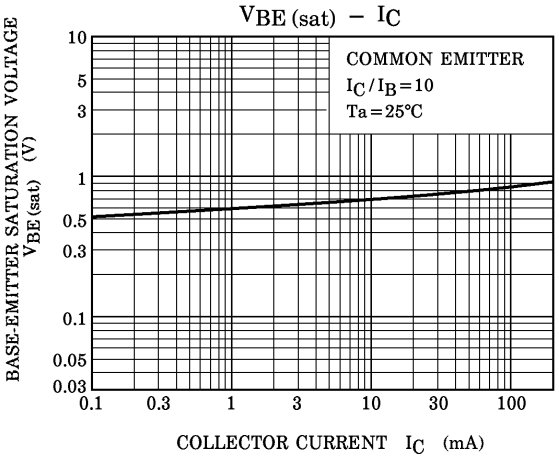

$I_C - V_{BE}$



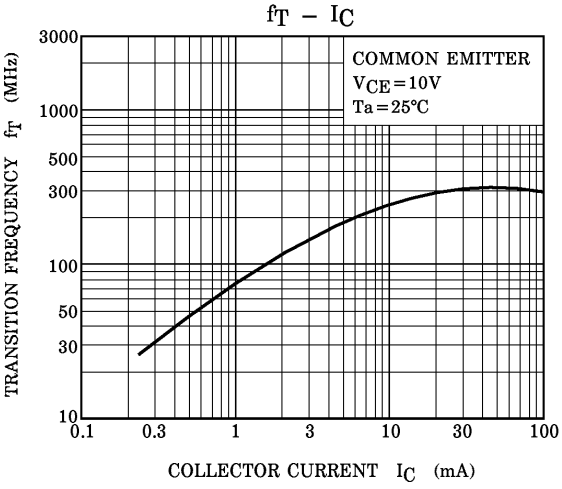

$V_{CE\,(sat)} - I_C$

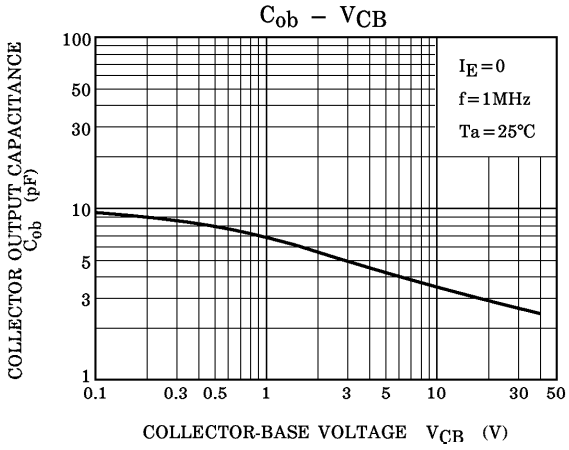


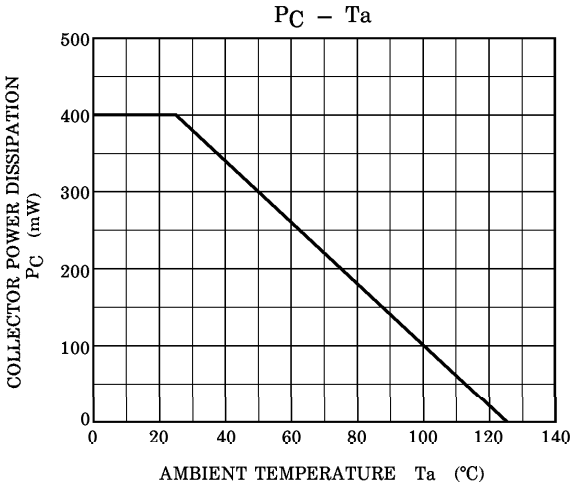

$V_{BE\,(sat)} - I_C$




$f_T - I_C$




$C_{ob}$ – $V_{CB}$
COLLECTOR OUTPUT CAPACITANCE $C_{ob}$ (pF)
100
50
30
10
5
3
1
0.1
0.3
0.5
1
3
5
10
30
50
$I_E = 0$
f = 1MHz
Ta = 25°C
COLLECTOR-BASE VOLTAGE $V_{CB}$ (V)


$P_C$ – Ta
COLLECTOR POWER DISSIPATION $P_C$ (mW)
500
400
300
200
100
0
0
20
40
60
80
100
120
140
AMBIENT TEMPERATURE Ta (°C)

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