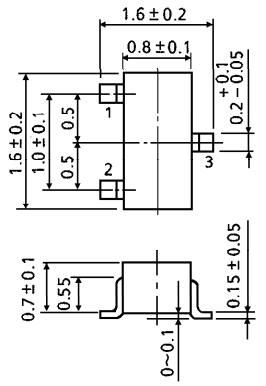
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE

# 2SC5376

AUDIO FREQUENCY GENERAL PURPOSE AMPLIFIER APPLICATIONS

FOR MUTING AND SWITCHING APPLICATIONS

Unit in mm




1. BASE
2. EMITTER
3. COLLECTOR

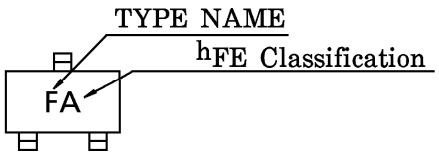
| | |
|---|---|
| SSM | |
| JEDEC | — |
| EIAJ | — |
| TOSHIBA | 2-2H1A |

- Low Collector Saturation Voltage : $V_{CE\ (sat)}$ (1) = 15mV (Typ.)
  @ $I_C$ = 10mA / $I_B$ = 0.5mA
- High Collector Current : $I_C$ = 400mA (Max.)

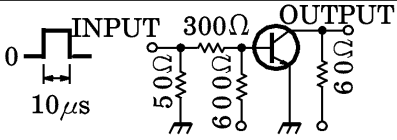
MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 15 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 12 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 5 | V |
| Collector Current | $I_C$ | 400 | mA |
| Base Current | $I_B$ | 50 | mA |
| Collector Power Dissipation | $P_C$ | 100 | mW |
| Junction Temperature | $T_j$ | 125 | °C |
| Storage Temperature Range | $T_{stg}$ | −55~125 | °C |

MARKING

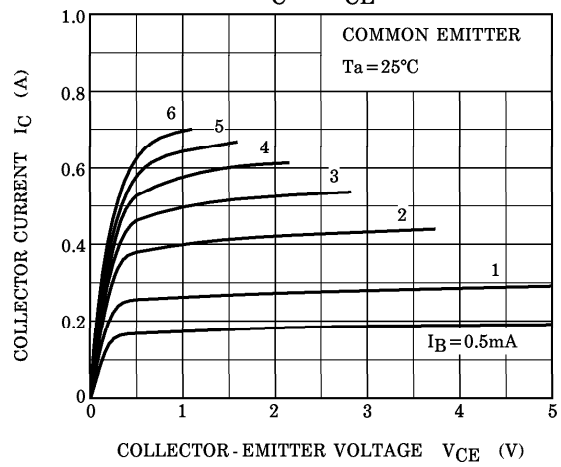


ELECTRICAL CHARACTERISTICS (Ta = 25°C)

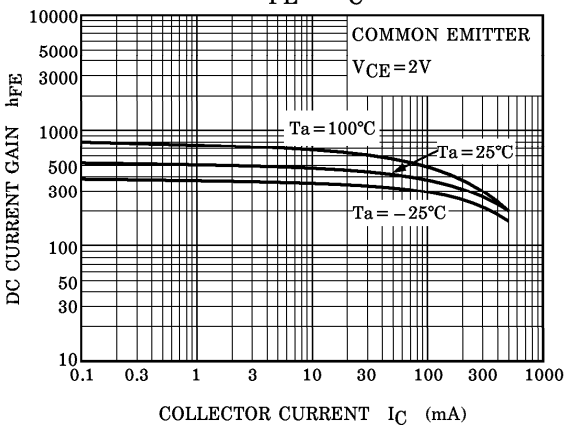
| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| Collector Cut-off Current | | $I_{CBO}$ | $V_{CB}$ = 15V, $I_E$ = 0 | — | — | 0.1 | μA |
| Emitter Cut-off Current | | $I_{EBO}$ | $V_{EB}$ = 5V, $I_C$ = 0 | — | — | 0.1 | μA |
| DC Current Gain | | $h_{FE}$ (Note) | $V_{CE}$ = 2V, $I_C$ = 10mA | 300 | — | 1000 | |
| Collector-Emitter Sturation Voltage | | $V_{CE\ (sat)}$ (1) | $I_C$ = 10mA, $I_B$ = 0.5mA | — | 15 | 30 | mV |
| | | $V_{CE\ (sat)}$ (2) | $I_C$ = 200mA, $I_B$ = 10mA | — | 110 | 250 | |
| Base-Emitter Voltage | | $V_{BE\ (sat)}$ | $I_C$ = 200mA, $I_B$ = 10mA | — | 0.87 | 1.2 | V |
| Transition Frequency | | $f_T$ | $V_{CE}$ = 2V, $I_C$ = 10mA | 80 | 130 | — | MHz |
| Collector Output Capacitance | | $C_{ob}$ | $V_{CB}$ = 10V, $I_E$ = 0, f = 1MHz | — | 4.2 | — | pF |
| Collector-Emitter On Resistance | | $R_{on}$ | $I_B$ = 1mA, $V_{in}$ = 1$V_{rms}$, f = 1kHz | — | 0.9 | — | Ω |
| Switching Time | Turn-on Time | $t_{on}$ |  | — | 85 | — | ns |
| | Storage Time | $t_{stg}$ | | — | 170 | — | |
| | Fall Time | $t_f$ | DUTY CYCLE ≦ 2%, $I_{B1} = -I_{B2}$ = 5mA, $V_{BB}$ = −3V, $V_{CC}$ = 6V | — | 40 | — | |

(Note) $h_{FE}$ Classification A : 300~600, B : 500~1000

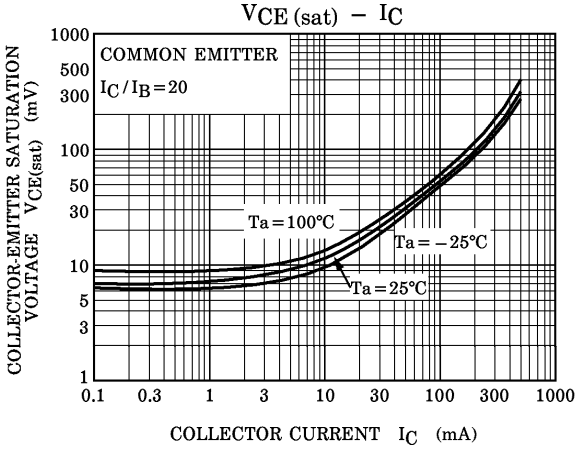
$I_C - V_{CE}$



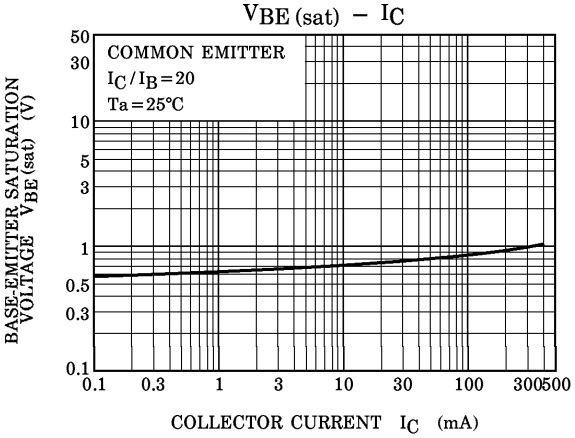

$h_{FE} - I_C$



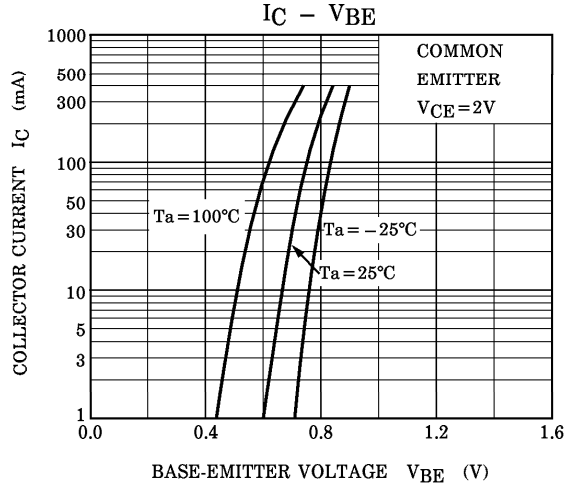

$V_{CE\,(sat)} - I_C$



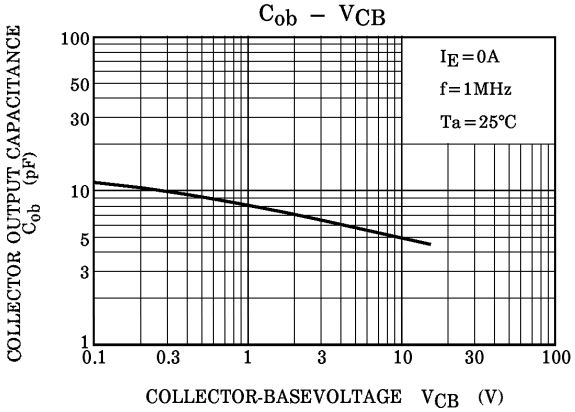

$V_{BE\,(sat)} - I_C$

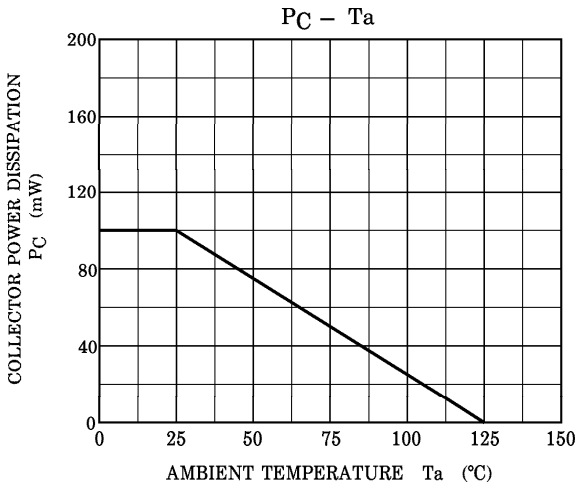



$I_C - V_{BE}$




$C_{ob} - V_{CB}$




$P_C$ – Ta
COLLECTOR POWER DISSIPATION $P_C$ (mW)
200
160
120
80
40
0
0
25
50
75
100
125
150
AMBIENT TEMPERATURE Ta (°C)

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