TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

# 2SC3437

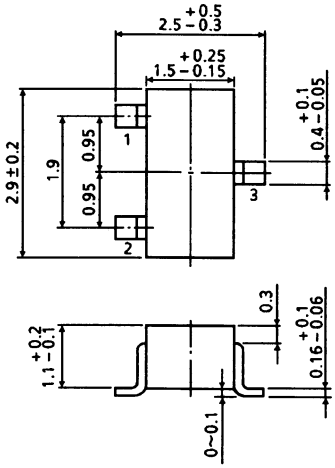
Ultra High Speed Switching Applications
Computer, Counter Applications

- High transition frequency: $f_T$ = 400 MHz (typ.)
- Low saturation voltage: $V_{CE\ (sat)}$ = 0.3 V (max)
- High speed switching time: $t_{stg}$ = 15 ns (typ.)

## Maximum Ratings (Ta = 25°C)

| Characteristics | Symbol | Rating | Unit |
|---|---|---|---|
| Collector-base voltage | $V_{CBO}$ | 40 | V |
| Collector-emitter voltage | $V_{CEO}$ | 15 | V |
| Emitter-base voltage | $V_{EBO}$ | 5 | V |
| Collector current | $I_C$ | 200 | mA |
| Base current | $I_B$ | 40 | mA |
| Collector power dissipation | $P_C$ | 150 | mW |
| Junction temperature | $T_j$ | 125 | °C |
| Storage temperature range | $T_{stg}$ | −55~125 | °C |

Unit: mm



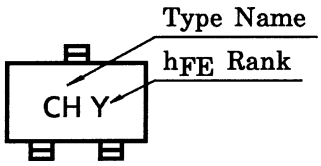

1. BASE
2. EMITTER
3. COLLECTOR

S-MINI

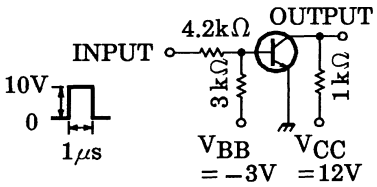
| | |
|---|---|
| JEDEC | TO-236MOD |
| JEITA | SC-59 |
| TOSHIBA | 2-3F1A |

Weight: 0.012 g (typ.)

## Marking

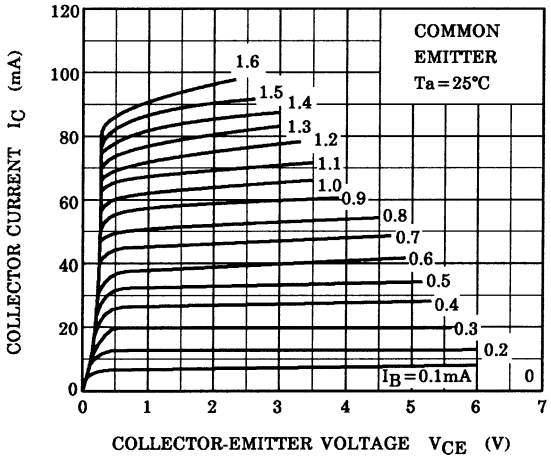


## Electrical Characteristics (Ta = 25°C)

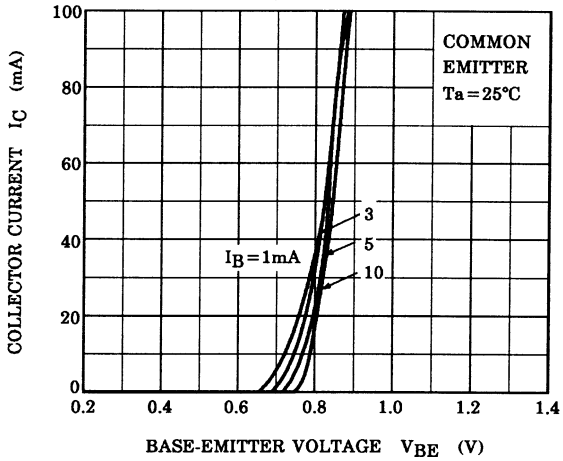
| Characteristics | | Symbol | Test Condition | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|---|
| Collector cut-off current | | $I_{CBO}$ | $V_{CB}$ = 40 V, $I_E$ = 0 | — | — | 0.1 | μA |
| Emitter cut-off current | | $I_{EBO}$ | $V_{EB}$ = 5 V, $I_C$ = 0 | — | — | 0.1 | μA |
| DC current gain | | $h_{FE\ (1)}$ (Note) | $V_{CE}$ = 1 V, $I_C$ = 10 mA | 40 | — | 240 | |
| | | $h_{FE\ (2)}$ | $V_{CE}$ = 1 V, $I_C$ = 100 mA | 20 | — | — | |
| Collector-emitter saturation voltage | | $V_{CE\ (sat)}$ | $I_C$ = 20 mA, $I_B$ = 1 mA | — | — | 0.3 | V |
| Base-emitter saturation voltage | | $V_{BE\ (sat)}$ | $I_C$ = 20 mA, $I_B$ = 1 mA | — | — | 1.0 | V |
| Transition frequency | | $f_T$ | $V_{CE}$ = 10 V, $I_C$ = 10 mA | 200 | 400 | — | MHz |
| Collector output capacitance | | $C_{ob}$ | $V_{CB}$ = 10 V, $I_E$ = 0, f = 1 MHz | — | 4 | 6 | pF |
| Switching time | Turn-on time | $t_{on}$ |  Duty cycle ≦ 2% | — | 70 | — | ns |
| | Storage time | $t_{stg}$ | | — | 15 | — | |
| | Fall time | $t_f$ | | — | 30 | — | |

Note: $h_{FE\ (1)}$ classification R: 40~80, O: 70~140, Y: 120~240

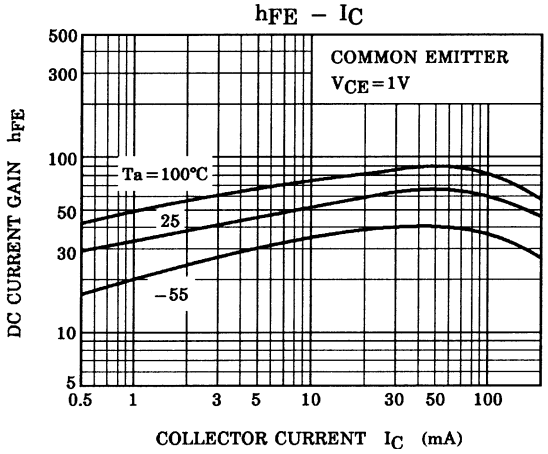
$I_C - V_{CE}$



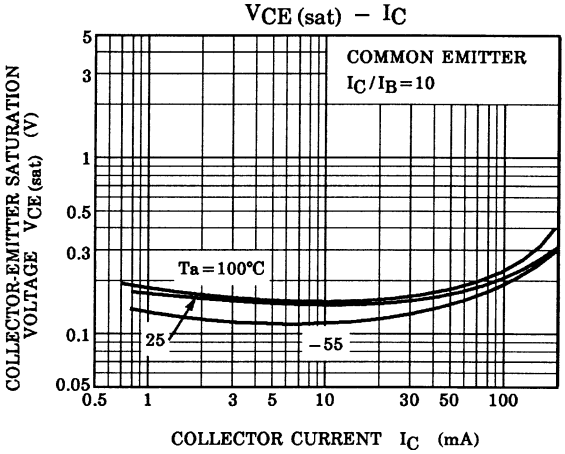

$I_C - V_{BE}$



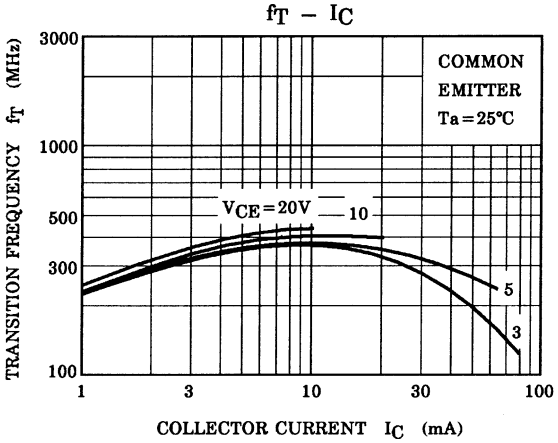

$h_{FE} - I_C$



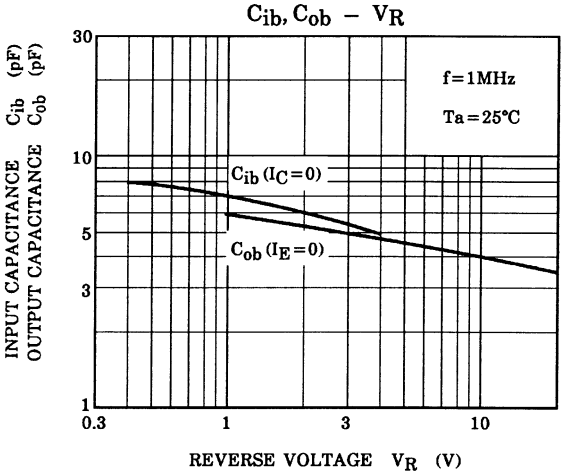

$V_{CE\,(sat)} - I_C$

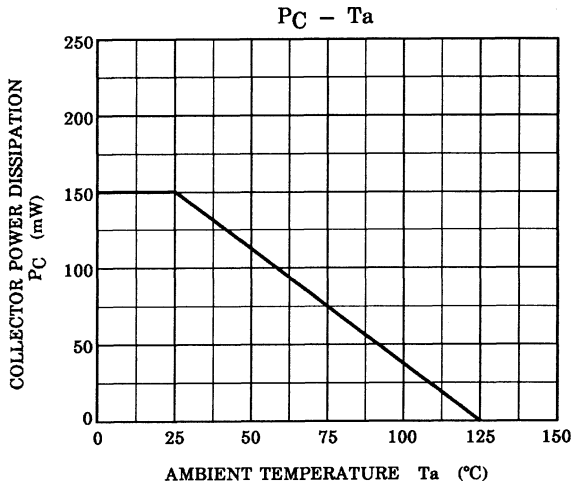



$f_T - I_C$




$C_{ib}, C_{ob} - V_R$




$P_C$ – Ta
COLLECTOR POWER DISSIPATION $P_C$ (mW)
250
200
150
100
50
0
0
25
50
75
100
125
150
AMBIENT TEMPERATURE Ta (°C)

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