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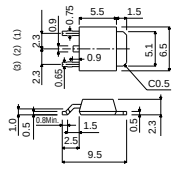
# High speed switching transistor (60V, 5A)

# 2SC5103

## ●Features

1) Low $V_{CE(sat)}$ (Typ. 0.15V at $I_C$ / $I_B$ = 3 / 0.15A)
2) High speed switching (tf : Typ. 0.1 μs at $I_C$ = 3A)
3) Wide SOA. (safe operating area)
4) Complements the 2SA1952.

## ●External dimensions (Units : mm)




ROHM : CPT3
EIAJ : SC-63

(1) Base(Gate)
(2) Collector(Drain)
(3) Emitter(Source)

## ●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|---|---|---|---|
| Collector-base voltage | $V_{CBO}$ | 100 | V |
| Collector-emitter voltage | $V_{CEO}$ | 60 | V |
| Emitter-base voltage | $V_{EBO}$ | 5 | V |
| Collector current | $I_C$ | 5 | A(DC) |
| | | 10 | A(Pulse) * |
| Collector power dissipation | $P_C$ | 1 | W |
| | | 10 | W(Tc=25°C) |
| Junction temperature | Tj | 150 | °C |
| Storage temperature | Tstg | −55~+150 | °C |

*Single pulse Pw=100ms

## ●Packaging specifications and $h_{FE}$

| Type | 2SC5103 |
|---|---|
| Package | CPT3 |
| $h_{FE}$ | PQ |
| Code | TL |
| Basic ordering unit (pieces) | 2500 |

## ●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| Collector-base breakdown voltage | $BV_{CBO}$ | 100 | − | − | V | $I_C$ = 50μA |
| Collector-emitter breakdown voltage | $BV_{CEO}$ | 60 | − | − | V | $I_C$ = 1mA |
| Emitter-base breakdown voltage | $BV_{EBO}$ | 5 | − | − | V | $I_E$ = 50μA |
| Collector cutoff current | $I_{CBO}$ | − | − | 10 | μA | $V_{CB}$ = 100V |
| Emitter cutoff current | $I_{EBO}$ | − | − | 10 | μA | $V_{EB}$ = 5V |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | − | 0.15 | 0.3 | V | $I_C$/$I_B$ = 3A/0.15A * |
| | | − | − | 0.5 | V | $I_C$/$I_B$ = 4A/0.2A * |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | − | − | 1.2 | V | $I_C$/$I_B$ = 3A/0.15A * |
| | | − | − | 1.5 | V | $I_C$/$I_B$ = 4A/0.2A * |
| DC current transfer ratio | $h_{FE}$ | 82 | − | 270 | − | $V_{CE}$/$I_C$ = 2V/1A |
| Transition frequency | $f_T$ | − | 120 | − | MHz | $V_{CB}$ = 10V , $I_E$ = 0.5A , f = 30MHz |
| Output capacitance | Cob | − | 80 | − | pF | $V_{CE}$ = 10V , $I_E$ = 0A , f = 1MHz * |
| Turn-on time | ton | − | − | 0.3 | μs | $I_C$ = 3A , $R_L$ = 10Ω |
| Storage time | tstg | − | − | 1.5 | μs | $I_{B1}$ = −$I_{B2}$ = 0.15A |
| Fall time | tf | − | 0.1 | 0.3 | μs | $V_{CC}$ ≒ 30V |

* Measured using pulse current.



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