



Transistor

●Electrical characteristics (Ta=25°C)

| Parameter                            | Symbol        | Min. | Typ. | Max. | Unit    | Conditions                        |
|--------------------------------------|---------------|------|------|------|---------|-----------------------------------|
| Collector-base breakdown voltage     | $BV_{CEO}$    | 30   | -    | -    | V       | $I_C=100\mu A$                    |
| Collector-emitter breakdown voltage  | $BV_{CBO}$    | 30   | -    | -    | V       | $I_C=1mA$                         |
| Emitter-base breakdown voltage       | $BV_{EBO}$    | 6    | -    | -    | V       | $I_E=100\mu A$                    |
| Collector cut-off current            | $I_{CBO}$     | -    | -    | 1.0  | $\mu A$ | $V_{CB}=20V$                      |
| Emitter cut-off current              | $I_{EBO}$     | -    | -    | 1.0  | $\mu A$ | $V_{EB}=4V$                       |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | -    | 200  | 400  | mV      | $I_C=1.0A, I_B=0.1A$              |
| DC current gain                      | $h_{FE}$      | 120  | -    | 390  | -       | $V_{CE}=2V, I_C=100mA$            |
| Transition frequency                 | $f_T$         | -    | 250  | -    | MHz     | $V_{CE}=10V, I_E=-100mA, f=10MHz$ |
| Collector output capacitance         | $C_{ob}$      | -    | 15   | -    | pF      | $V_{CB}=10V, I_E=0, f=1MHz$       |
| Turn-on time                         | $T_{on}$      | -    | 25   | -    | ns      | $I_C=2A$<br>$I_{B1}=200mA$        |
| Storage time                         | $T_{stg}$     | -    | 100  | -    | ns      | $I_{B2}=-200mA$                   |
| Fall time                            | $T_f$         | -    | 20   | -    | ns      | $V_{CC}=-25V$                     |

● $h_{FE}$  RANK

| Q       | R       |
|---------|---------|
| 120-270 | 180-390 |

●Electrical characteristic curves

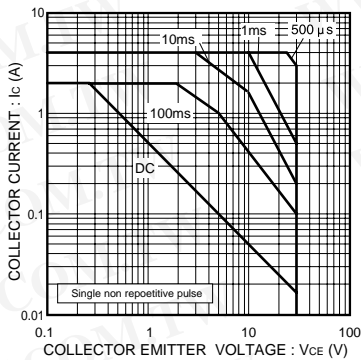


Fig.1 Safe operating area

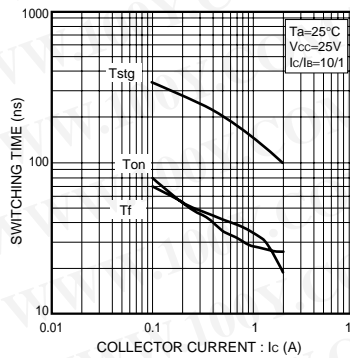


Fig.2 Switching Time

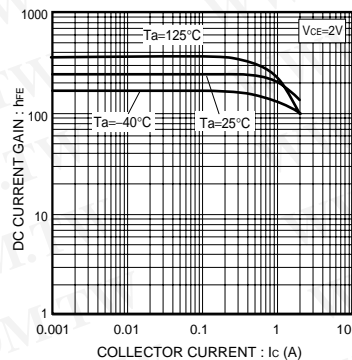


Fig.3 DC current gain vs. collector current

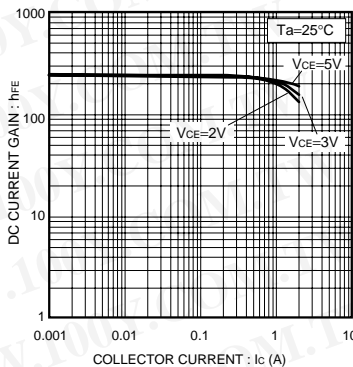


Fig.4 DC current gain vs. collector current

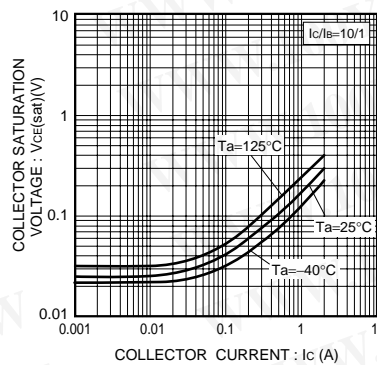


Fig.5 Collector-emitter saturation voltage vs. collector current

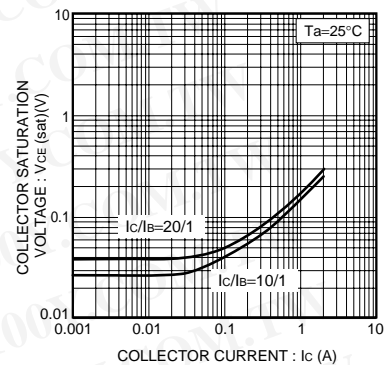


Fig.6 Collector-emitter saturation voltage vs. collector current

Transistor

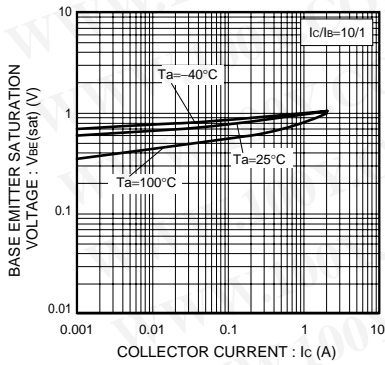


Fig.7 Base-emitter saturation voltage vs. collector current

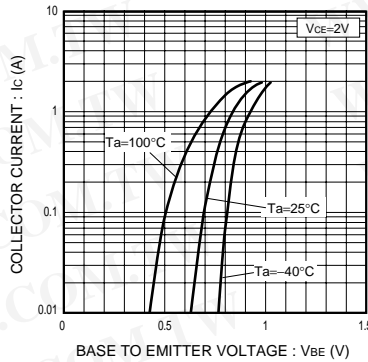


Fig.8 Ground emitter propagation characteristics

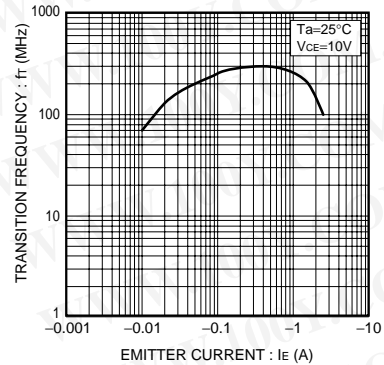


Fig.9 Transition frequency

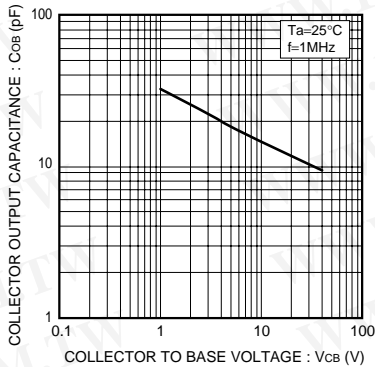
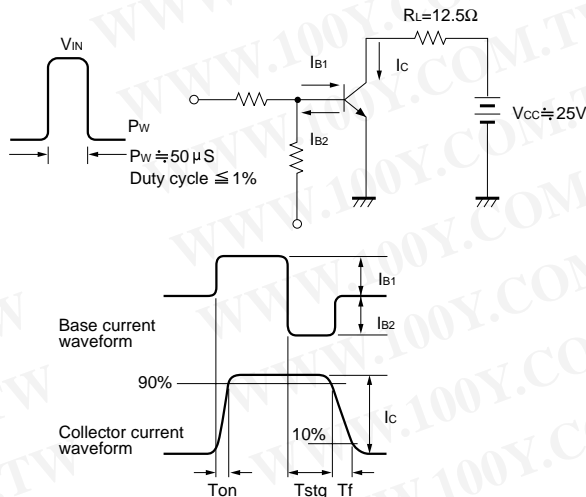


Fig.10 Collector output capacitance

●Switching characteristics measurement circuits



## Appendix

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