

**WBFBP-03B Plastic-Encapsulate Transistors****TSC114TNND03 TRANSISTOR****DESCRIPTION**

NPN Digital Transistor

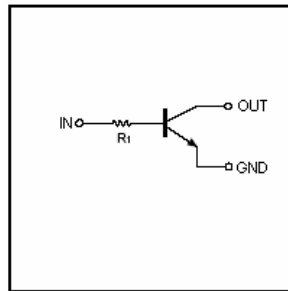
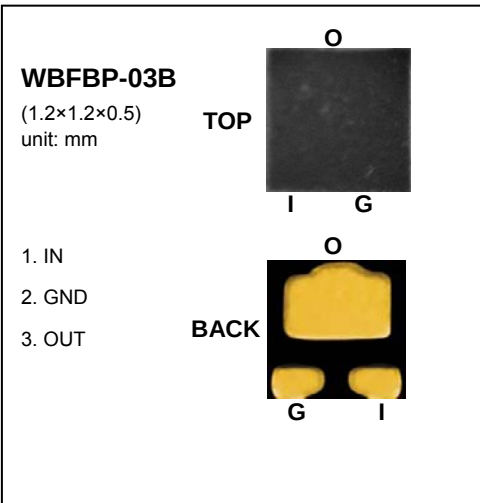
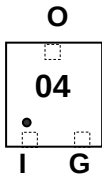
**FEATURES**

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- 3) Only the on/off conditions need to be set for operation, making device design easy.

**APPLICATION**

NPN Digital Transistor

For portable equipment:(i.e. Mobile phone,MP3, MD,CD-ROM, DVD-ROM, Note book PC, etc.)

**MARKING: 04****equivalent circuit****Absolute maximum ratings (Ta=25°C)**

| Symbol    | Parameter                     | LIMITS   | Unit |
|-----------|-------------------------------|----------|------|
| $V_{CBO}$ | Collector-Base Voltage        | 50       | V    |
| $V_{CEO}$ | Collector-Emitter Voltage     | 50       | V    |
| $V_{EBO}$ | Emitter-Base Voltage          | 5        | V    |
| $I_C$     | Collector Current -Continuous | 100      | mA   |
| $P_C$     | Collector Dissipation         | 150      | mW   |
| $T_j$     | Junction temperature          | 150      | °C   |
| $T_{stg}$ | Storage Temperature           | -55~+150 | °C   |

**ELECTRICAL CHARACTERISTICS (Tamb=25°C unless otherwise specified)**

| Parameter                            | Symbol        | Test conditions                  | MIN | TYP | MAX | UNIT       |
|--------------------------------------|---------------|----------------------------------|-----|-----|-----|------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C=50\mu A, I_E=0$             | 50  |     |     | V          |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C=1mA, I_B=0$                 | 50  |     |     | V          |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=50\mu A, I_C=0$             | 5   |     |     | V          |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=50V, I_E=0$              |     |     | 0.5 | $\mu A$    |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=4V, I_C=0$               |     |     | 0.5 | $\mu A$    |
| DC current gain                      | $h_{FE}$      | $V_{CE}=5V, I_C=1mA$             | 100 | 300 | 600 |            |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=10mA, I_B=1mA$              |     |     | 0.3 | V          |
| Transition frequency                 | $f_T$         | $V_{CE}=10V, I_E=-5mA, f=100MHz$ |     | 250 |     | MHz        |
| Input resistor                       | R1            |                                  | 7   | 10  | 13  | k $\Omega$ |

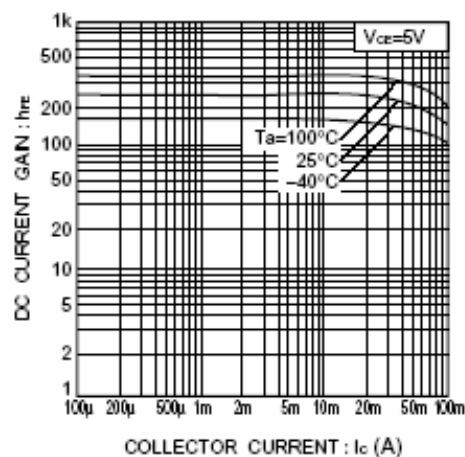


Fig.1 DC current gain vs. collector current

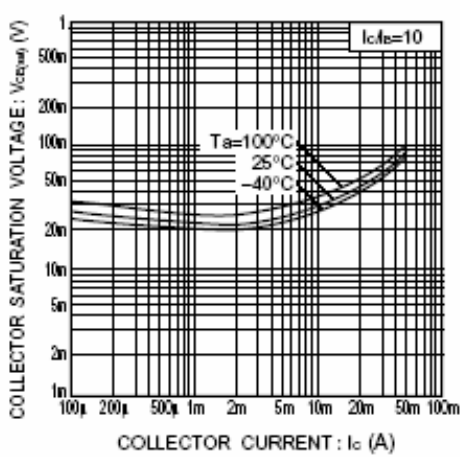


Fig.2 Collector-emitter saturation voltage vs. collector current