# –500mA / –50V Digital transistors (with built-in resistors)

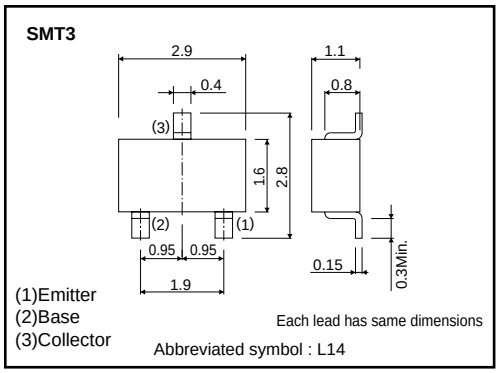
## DTB114GK

### ●Applications
Inverter, Interface, Driver

### ●Feature
1) The built-in bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input, and parasitic effects are almost completely eliminated.
2) Only the on / off conditions need to be set for operation, making the device design easy.
3) Higher mounting densities can be achieved.

### ●Structure
PNP epitaxial planar silicon transistor
(Resistor built-in type)

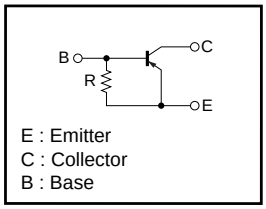
### ●External dimensions (Unit : mm)




### ●Packaging specifications

| | | |
|---|---|---|
| Part No. | Package | SMT3 |
| | Packaging type | Taping |
| | Code | T146 |
| | Basic ordering unit (pieces) | 3000 |
| DTB114GK | | ◯ |

### ●Equivalent circuit




R=10kΩ (typ.)

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

| Parameter | Symbol | Limits | Unit |
|---|---|---|---|
| Collector-base voltage | $V_{CBO}$ | –50 | V |
| Collector-emitter voltage | $V_{CEO}$ | –50 | V |
| Emitter-base voltage | $V_{EBO}$ | –5 | V |
| Collector current | $I_C$ | –500 | mA |
| Collector power dissipation | Pd * | 200 | mW |
| Junction temperature | Tj | 150 | °C |
| Storage temperature | Tstg | –55 to +150 | °C |

* Each pin mounted on the recommended land

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

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| Collector-base breakdown voltage | $BV_{CBO}$ | −50 | − | − | V | $I_C$= −50μA |
| Collector-emitter breakdown voltage | $BV_{CEO}$ | −50 | − | − | V | $I_C$= −1mA |
| Emitter-base breakdown voltage | $BV_{EBO}$ | −5 | − | − | V | $I_E$= −720μA |
| Collector cutoff current | $I_{CBO}$ | − | − | −0.5 | μA | $V_{CB}$= −50V |
| Emitter cutoff curren | $I_{EBO}$ | − | − | −580 | μA | $V_{EB}$= −4V |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | − | − | −0.3 | V | $I_C/I_B$= −50mA/−2.5mA |
| DC current transfer ratio | $h_{FE}$ | 56 | − | − | − | $I_C$= −50mA , $V_{CE}$= −5V |
| Input resistance | R | 7 | 10 | 13 | kΩ | − |
| Transition frequency | $f_T$ ∗ | − | 200 | − | MHz | $V_{CE}$= −10V , $I_E$=50mA , f=100MHz |

∗Characteristics of built-in transistor

●**Electrical characteristics curves**

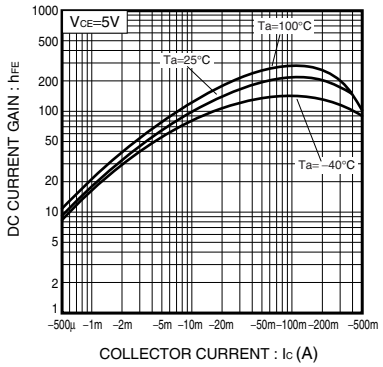



Fig.1 DC current transfer ratio vs. Collector current

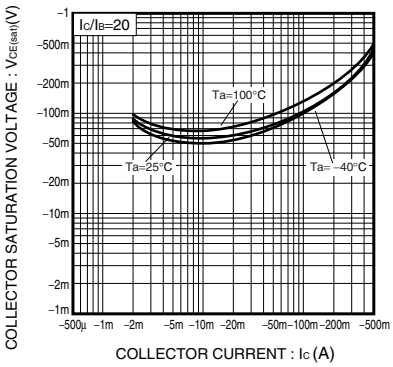



Fig.2 Collector-Emitter saturation voltage vs. Collector current

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