

Digital transistors (built-in resistors)

DTB133HK / DTB133HS

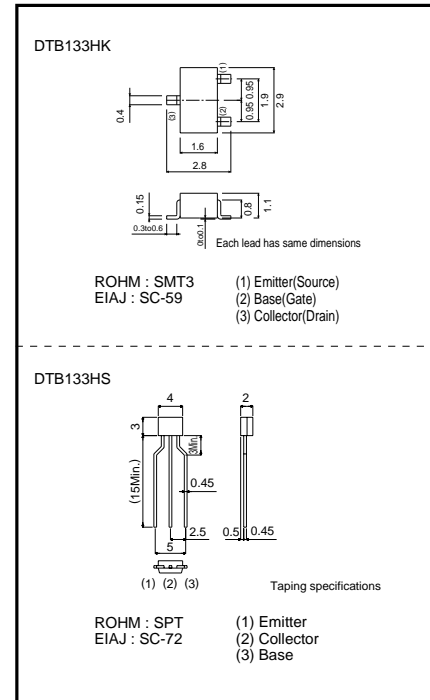
●Features

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input, and parasitic effects are almost completely eliminated.
- 3) Only the on/off conditions need to be set for operation, making device design easy.
- 4) Higher mounting densities can be achieved.

●Absolute maximum ratings (Ta = 25°C)

| Parameter | Symbol | Limits | Unit |
|----------------------|------------------|---------|------|
| Supply voltage | V _{CC} | -50 | V |
| Input voltage | V _i | -20 | V |
| | | 6 | |
| Output current | I _c | -500 | mA |
| Power dissipation | DTB133HK | 200 | mW |
| | DTB133HS | 300 | |
| Junction temperature | T _j | 150 | °C |
| Storage temperature | T _{stg} | -55~150 | °C |

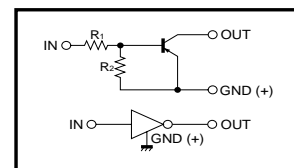
●External dimensions (Units : mm)



●Package, marking, and packaging specifications

| Part No. | DTB133HK | DTB133HS |
|------------------------------|----------|----------|
| Package | SMT3 | SPT |
| Marking | G98 | - |
| Packaging code | T146 | TP |
| Basic ordering unit (pieces) | 3000 | 5000 |

●Circuit schematic



●Electrical characteristics (Ta = 25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|----------------------|--------------------------------|------|------|------|------|--|
| Input voltage | V _{i(off)} | - | - | -0.3 | V | V _{CC} = -5V, I _o = -100μA |
| | V _{i(on)} | -2 | - | - | | V _o = -0.3V, I _o = -20mA |
| Output voltage | V _{o(on)} | - | -0.1 | -0.3 | V | I _o = -50mA, I _i = -2.5mA |
| Input current | I _i | - | - | -2.4 | mA | V _i = -5V |
| Output current | I _{o(off)} | - | - | -0.5 | μA | V _{CC} = -50V, V _i = 0V |
| DC current gain | G _i | 56 | - | - | - | I _o = -50mA, V _o = -5V |
| Input resistance | R ₁ | 2.31 | 3.3 | 4.29 | kΩ | - |
| Resistance ratio | R ₂ /R ₁ | 2.4 | 3 | 3.7 | - | - |
| Transition frequency | f _t | - | 200 | - | MHz | V _{CE} = -10V, I _E = 5mA, f = 100MHz * |

* Transition frequency of the device.