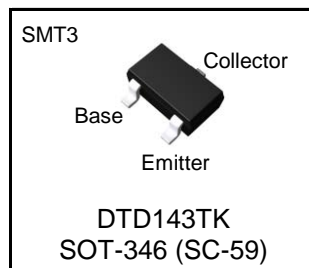


| Parameter | Value |
|-----------|---------------|
| V_{CEO} | 40V |
| I_C | 500mA |
| R | 4.7k Ω |

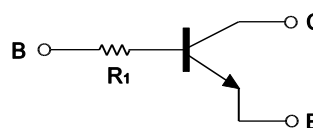
●Outline



●Features

- 1) Built-In Biasing Resistors
- 2) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see inner circuit).
- 3) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of completely eliminating parasitic effects.
- 4) Only the on/off conditions need to be set for operation, making the circuit design easy.
- 5) Complementary PNP Types :DTB143TK
- 6) Lead Free/RoHS Compliant.

●Inner circuit



●Application

Switching circuit, Inverter circuit, Interface circuit, Driver circuit

●Packaging specifications

| Part No. | Package | Package size (mm) | Taping code | Reel size (mm) | Tape width (mm) | Basic ordering unit (pcs) | Marking |
|----------|---------|-------------------|-------------|----------------|-----------------|---------------------------|---------|
| DTD143TK | SMT3 | 2928 | T146 | 180 | 8 | 3,000 | F03 |

●Absolute maximum ratings (Ta = 25°C)

| Parameter | Symbol | Values | Unit |
|------------------------------|------------|-------------|------|
| Collector-base voltage | V_{CBO} | 50 | V |
| Collector-emitter voltage | V_{CEO} | 40 | V |
| Emitter-base voltage | V_{EBO} | 5 | V |
| Collector current | I_C | 500 | mA |
| Collector Power dissipation | P_C^{*2} | 200 | mW |
| Junction temperature | T_j | 150 | °C |
| Range of storage temperature | T_{stg} | -55 to +150 | °C |

●Electrical characteristics (Ta = 25°C)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|--------------------------------------|---------------|--|------|------|------|------------|
| Collector-base breakdown voltage | BV_{CBO} | $I_C = 50\mu A$ | 50 | - | - | V |
| Collector-emitter breakdown voltage | BV_{CEO} | $I_C = 1mA$ | 40 | - | - | V |
| Emitter-base breakdown voltage | BV_{EBO} | $I_E = 50\mu A$ | 5 | - | - | V |
| Collector cut-off current | I_{CBO} | $V_{CB} = 50V$ | - | - | 0.5 | μA |
| Emitter cut-off current | I_{EBO} | $V_{EB} = 4V$ | - | - | 0.5 | μA |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C / I_B = 50mA / 2.5mA$ | - | - | 0.3 | V |
| DC current gain | h_{FE} | $V_{CE} = 5V, I_C = 50mA$ | 100 | 250 | 600 | - |
| Emitter-base resistance | R | - | 3.29 | 4.7 | 6.11 | k Ω |
| Transition frequency | f_T^{*1} | $V_{CE} = 10V, I_E = -50mA,$ $f = 100MHz$ | - | 200 | - | MHz |

*1 Characteristics of built-in transistor

*2 Each terminal mounted on a reference footprint

●Electrical characteristic curves(Ta = 25°C)

Fig.1 Grounded emitter propagation characteristics

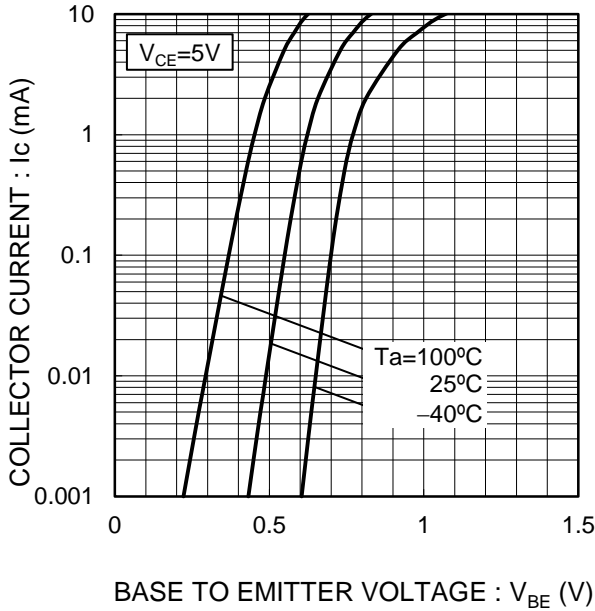


Fig.2 Grounded emitter output characteristics

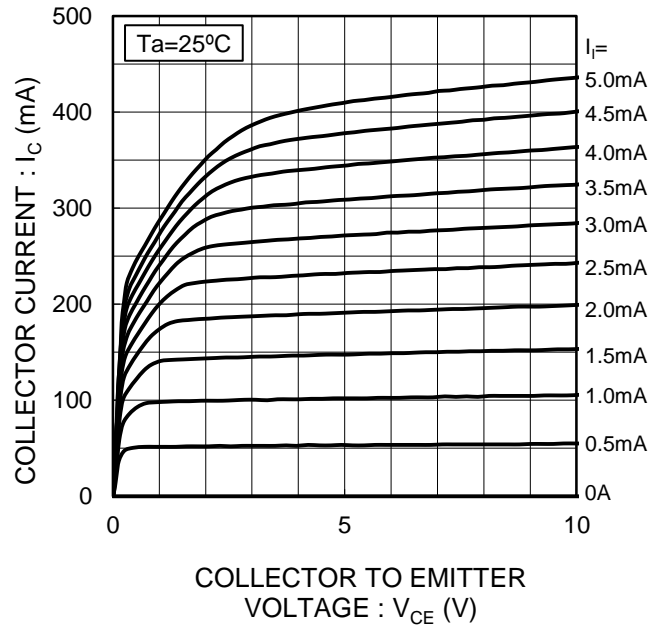


Fig.3 DC Current gain vs. Collector Current

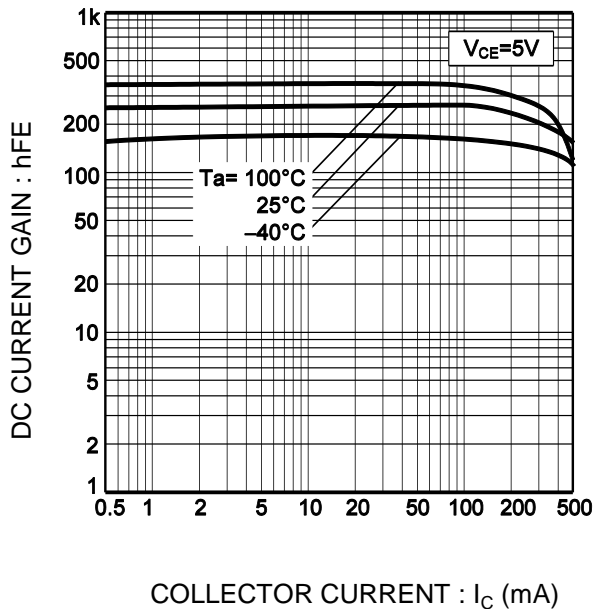
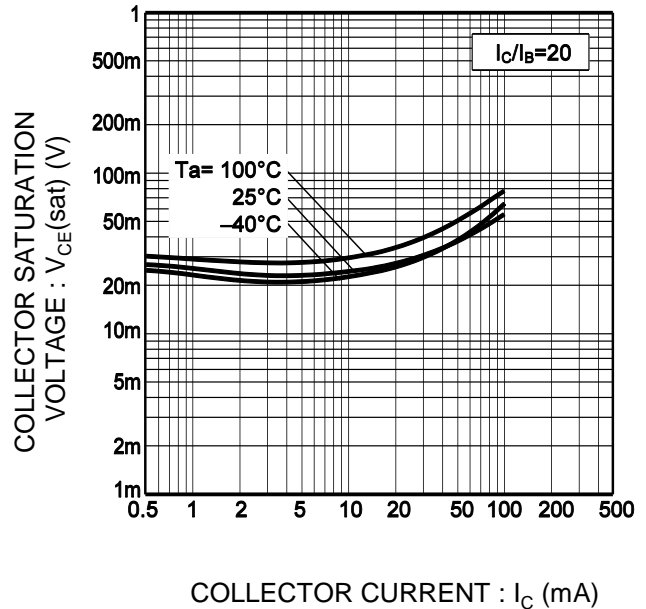
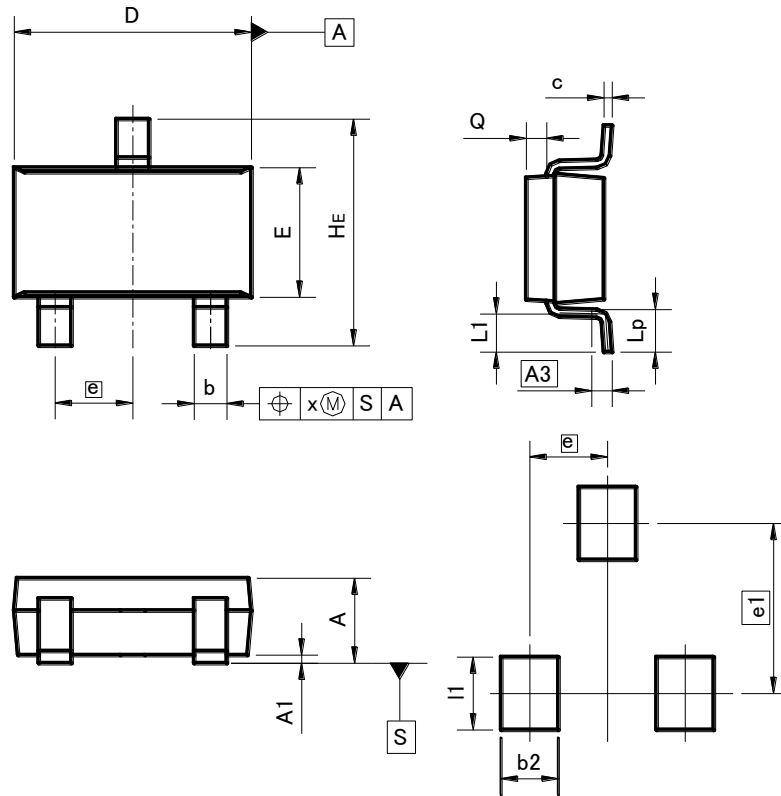


Fig.4 Collector-emitter saturation voltage vs. Collector Current



●Dimensions (Unit : mm)

SMT3



Pattern of terminal position areas

| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 1.00 | 1.30 | - | 0.051 |
| A1 | 0.00 | 0.10 | 0 | 0.004 |
| A3 | 0.25 | | 0.01 | |
| b | 0.35 | 0.50 | 0.014 | 0.02 |
| c | 0.09 | 0.25 | 0.004 | 0.01 |
| D | 2.80 | 3.00 | 0.11 | 0.118 |
| E | 1.50 | 1.80 | 0.059 | 0.071 |
| e | 0.95 | | 0.04 | |
| HE | 2.60 | 3.00 | 0.102 | 0.118 |
| L1 | 0.30 | 0.60 | 0.012 | 0.024 |
| Lp | 0.40 | 0.70 | 0.016 | 0.028 |
| Q | 0.20 | 0.30 | 0.008 | 0.012 |
| x | - | 0.10 | - | 0.004 |
| y | - | 0.10 | - | 0.004 |

| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| e1 | 2.10 | | 0.08 | |
| b2 | - | 0.60 | - | 0.024 |
| l1 | - | 0.90 | - | 0.035 |

Dimension in mm/inches

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