# Bias Resistor Transistor

## PNP Silicon Surface Mount Transistor with Monolithic Bias Resistor Network

**LDTA125TLT1G**

**SOT–23**

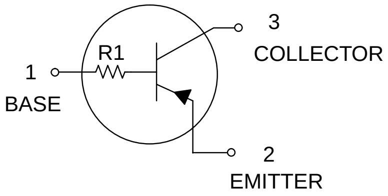
- **Applications**

Inverter, Interface, Driver

- **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 positive 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 the device design easy.

- We declare that the material of product compliance with RoHS requirements.



- **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 | $I_C$ | –100 | mA |
| Collector power dissipation | $P_C$ | 200 | mW |
| Junction temperature | Tj | 150 | °C |
| Storage temperature | Tstg | –55 to +150 | °C |

### DEVICE MARKING AND RESISTOR VALUES

| Device | Marking | R1 (K) | R2 (K) | Shipping |
|---|---|---|---|---|
| LDTA125TLT1G | O9 | 200 | – | 3000/Tape & Reel |
| LDTA125TLT3G | O9 | 200 | – | 10000/Tape & Reel |

- **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 | $I_E$= –50µA |
| Collector cutoff current | $I_{CBO}$ | – | – | –0.5 | µA | $V_{CB}$= –50V |
| Emitter cutoff current | $I_{EBO}$ | – | – | –0.5 | µA | $V_{EB}$= –4V |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | – | – | –0.3 | V | $I_C$= –0.5mA , $I_B$= –0.05mA |
| DC current transfer ratio | $h_{FE}$ | 100 | 250 | 600 | – | $I_C$= –1mA , $V_{CE}$= –5V |
| Input resistance | $R_1$ | 140 | 200 | 260 | kΩ | – |
| Transition frequency | $f_T$ * | – | 250 | – | MHz | $V_{CE}$= –10V , $I_E$=5mA , f=100MHz |

* Characteristics of built-in transistor

## ●Electrical characteristic curves

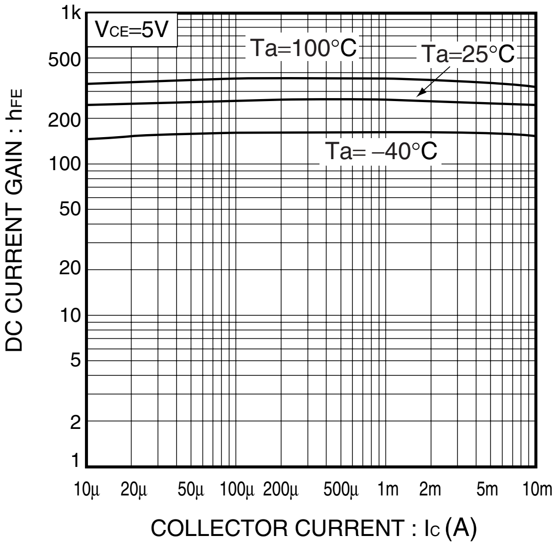


Fig.1 DC current gain vs. Collector current

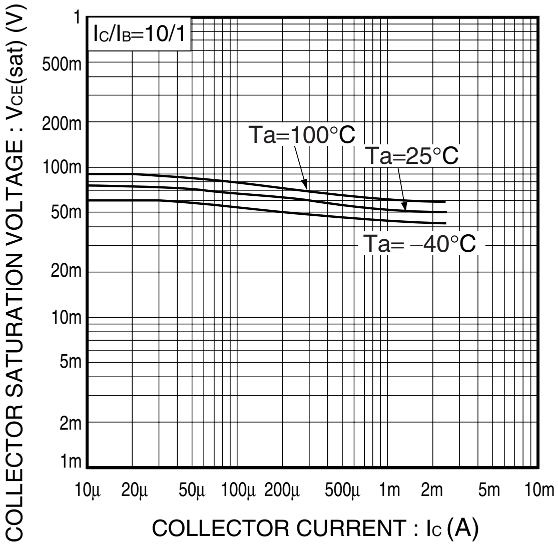
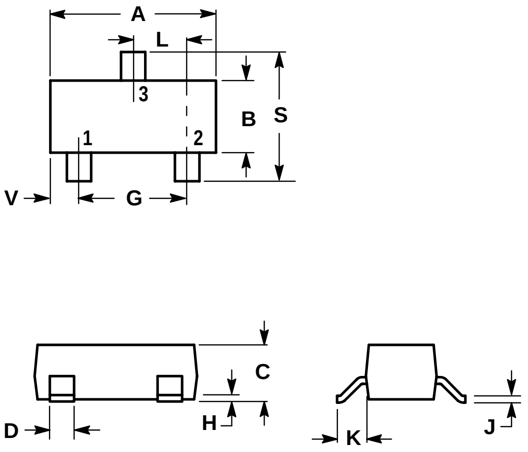


Fig.2 Collector-Emitter saturation voltage vs. Collector current

## SOT−23



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.

| DIM | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 0.1102 | 0.1197 | 2.80 | 3.04 |
| B | 0.0472 | 0.0551 | 1.20 | 1.40 |
| C | 0.0350 | 0.0440 | 0.89 | 1.11 |
| D | 0.0150 | 0.0200 | 0.37 | 0.50 |
| G | 0.0701 | 0.0807 | 1.78 | 2.04 |
| H | 0.0005 | 0.0040 | 0.013 | 0.100 |
| J | 0.0034 | 0.0070 | 0.085 | 0.177 |
| K | 0.0140 | 0.0285 | 0.35 | 0.69 |
| L | 0.0350 | 0.0401 | 0.89 | 1.02 |
| S | 0.0830 | 0.1039 | 2.10 | 2.64 |
| V | 0.0177 | 0.0236 | 0.45 | 0.60 |