

2SD1511G

Silicon NPN epitaxial planar type darlington

For low-frequency output amplification

■ Features

- Forward current transfer ratio h_{FE} is designed high, which is appropriate to the driver circuit of motors and printer hammer: $h_{FE} = 4000$ to 20000.
- A shunt resistor is omitted from the driver.
- Mini power type package, allowing downsizing of the equipment and automatic insertion through the tape packing and the magazine packing.

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Rating | Unit |
|---------------------------------------|-----------|-------------|------------------|
| Collector-base voltage (Emitter open) | V_{CBO} | 100 | V |
| Collector-emitter voltage (Base open) | V_{CEO} | 80 | V |
| Emitter-base voltage (Collector open) | V_{EBO} | 5 | V |
| Collector current | I_C | 1 | A |
| Peak collector current | I_{CP} | 1.5 | A |
| Collector power dissipation * | P_C | 1 | W |
| Junction temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

Note) *: Printed circuit board: Copper foil area of 1 cm² or more, and the board thickness of 1.7 mm for the collector portion

■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|--|---------------|--|------|-----|-------|------|
| Collector-base voltage (Emitter open) | V_{CBO} | $I_C = 100 \mu\text{A}$, $I_E = 0$ | 100 | | | V |
| Collector-emitter voltage (Base open) | V_{CEO} | $I_C = 1 \text{ mA}$, $I_B = 0$ | 80 | | | V |
| Emitter-base voltage (Collector open) | V_{EBO} | $I_E = 100 \mu\text{A}$, $I_C = 0$ | 5 | | | V |
| Collector-base cutoff current (Emitter open) | I_{CBO} | $V_{CB} = 25 \text{ V}$, $I_E = 0$ | | | 100 | nA |
| Emitter-base cutoff current (Collector open) | I_{EBO} | $V_{EB} = 4 \text{ V}$, $I_C = 0$ | | | 100 | nA |
| Forward current transfer ratio *1, 2 | h_{FE} | $V_{CE} = 10 \text{ V}$, $I_C = 1 \text{ A}$ | 4000 | | 40000 | — |
| Collector-emitter saturation voltage *1 | $V_{CE(sat)}$ | $I_C = 1 \text{ A}$, $I_B = 1 \text{ mA}$ | | | 1.8 | V |
| Base-emitter saturation voltage *1 | $V_{BE(sat)}$ | $I_C = 1 \text{ A}$, $I_B = 1 \text{ mA}$ | | | 2.2 | V |
| Transition frequency | f_T | $V_{CB} = 10 \text{ V}$, $I_E = -50 \text{ mA}$, $f = 200 \text{ MHz}$ | | 150 | | MHz |

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. *1: Pulse measurement

*2: Rank classification

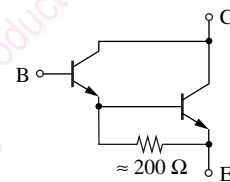
| Rank | Q | R | S |
|----------|---------------|---------------|----------------|
| h_{FE} | 4000 to 10000 | 8000 to 20000 | 16000 to 40000 |

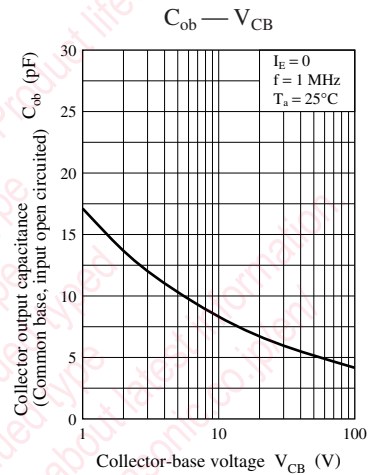
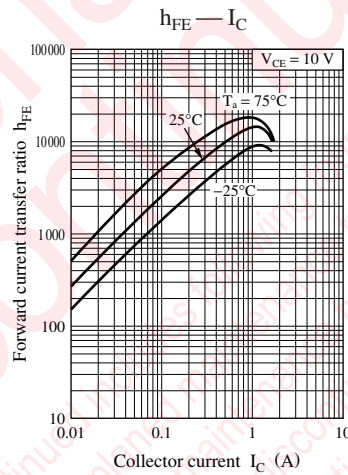
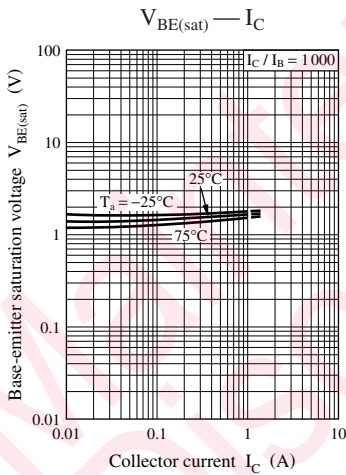
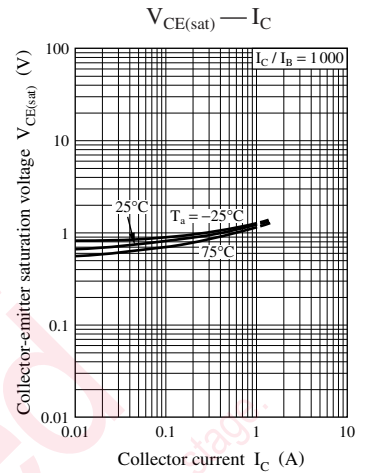
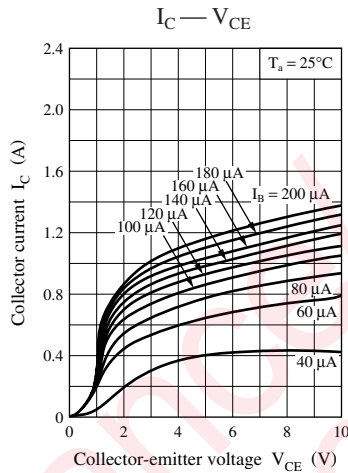
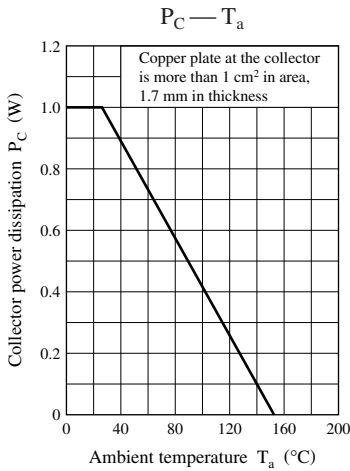
■ Package

- Code
MiniP3-F2
- Pin Name
1: Base
2: Collector
3: Emitter

■ Marking Symbol: P

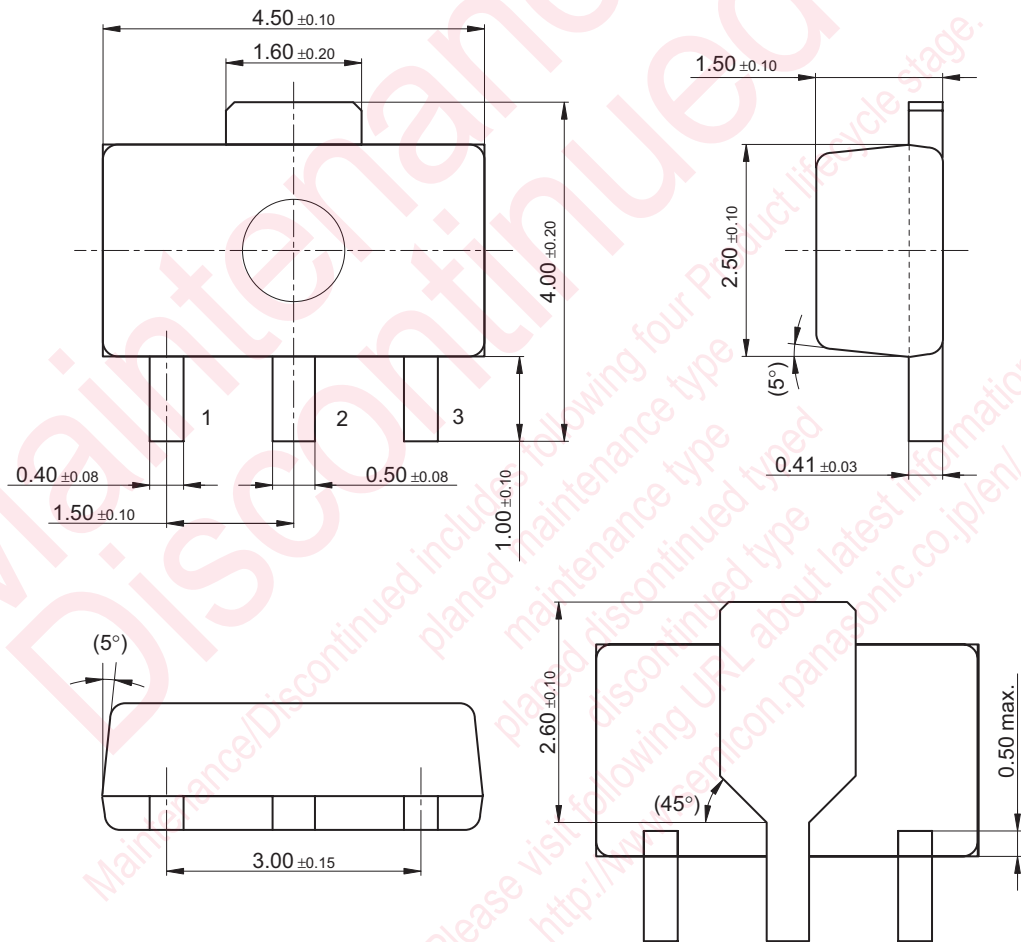
■ Internal Connection





MiniP3-F2

Unit: mm



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