

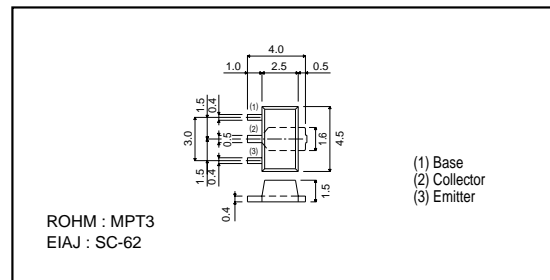
# Medium Power Transistor (Motor, Relay drive) ( $90^{+20}_{-10}$ , 2A)

## 2SD2170

### ●Features

- 1) Built-in zener diode between collector and base.
- 2) Zener diode has low dispersion.
- 3) Strong protection against reverse power surges due to "L" loads.
- 4) Darlington connection for high DC current gain.
- 5) Built-in resistor between base and emitter.
- 6) Built-in damper diode.

### ●External dimensions (Units : mm)



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

| Parameter                   | Symbol           | Limits   | Unit         |
|-----------------------------|------------------|----------|--------------|
| Collector-base voltage      | V <sub>CB0</sub> | 90       | V            |
| Collector-emitter voltage   | V <sub>CE0</sub> | 90       | V            |
| Emitter-base voltage        | V <sub>EB0</sub> | 6        | V            |
| Collector current           | I <sub>C</sub>   | 2        | A (DC)       |
|                             |                  | 3        | A (Pulse) *1 |
| Collector power dissipation | P <sub>C</sub>   | 2        | W *2         |
| Junction temperature        | T <sub>J</sub>   | 150      | °C           |
| Storage temperature         | T <sub>stg</sub> | -55~+150 | °C           |

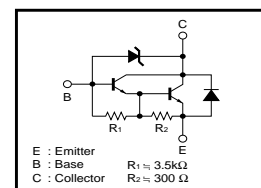
\*1 Single pulse P<sub>w</sub> = 10ms, Duty = 1 / 2

\*2 When mounted on a 40 x 40 x 0.7 mm ceramic board.

### ●Packaging specifications and h<sub>FE</sub>

|                              |         |
|------------------------------|---------|
| Type                         | 2SD2170 |
| Package                      | MPT3    |
| h <sub>FE</sub>              | 1K~10K  |
| Marking                      | DM      |
| Code                         | T100    |
| Basic ordering unit (pieces) | 1000    |

### ●Equivalent circuit



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

| Parameter                            | Symbol               | Min. | Typ. | Max.  | Unit | Conditions   |
|--------------------------------------|----------------------|------|------|-------|------|--|
| Collector-base breakdown voltage     | BV <sub>CB0</sub>    | 80   | -    | 110   | V    | I <sub>C</sub> = 50μA                                      |
| Collector-emitter breakdown voltage  | BV <sub>CE0</sub>    | 80   | -    | 110   | V    | I <sub>C</sub> = 1mA                                       |
| Collector cutoff current             | I <sub>CB0</sub>     | -    | -    | 10    | μA   | V <sub>CB</sub> = 70V                                      |
| Emitter cutoff current               | I <sub>EB0</sub>     | -    | -    | 3     | mA   | V <sub>EB</sub> = 5V                                       |
| Collector-emitter saturation voltage | V <sub>CE(sat)</sub> | -    | -    | 1.5   | V    | I <sub>C</sub> /I <sub>B</sub> = 1A/1mA *1                 |
| DC current transfer ratio            | h <sub>FE</sub>      | 1000 | -    | 10000 | -    | V <sub>CE</sub> = 2V, I <sub>C</sub> = 1A *1               |
| Transition frequency                 | f <sub>r</sub>       | -    | 80   | -     | MHz  | V <sub>CE</sub> = 5V, I <sub>E</sub> = -0.1A, f = 30MHz *2 |
| Output capacitance                   | C <sub>ob</sub>      | -    | 25   | -     | pF   | V <sub>CB</sub> = 10V, I <sub>E</sub> = 0A, f = 1MHz       |

\*1 Measured using pulse current.

\*2 Transition frequency of the device.

This datasheet has been download from:

[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

Datasheets for electronics components.