

# DMC20501

## Silicon NPN epitaxial planar type

For general amplification

### ■ Features

- High forward current transfer ratio  $h_{FE}$  with excellent linearity
- Low collector-emitter saturation voltage  $V_{CE(sat)}$
- Halogen-free / RoHS compliant  
(EU RoHS / UL-94 V-0 / MSL: Level 1 compliant)

### ■ Marking Symbol: B0

### ■ Basic Part Number

Dual DSC2001 (Individual)

### ■ Packaging

DMC205010R Embossed type (Thermo-compression sealing): 3 000 pcs / reel (standard)

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

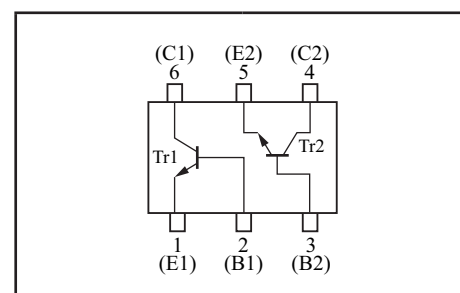
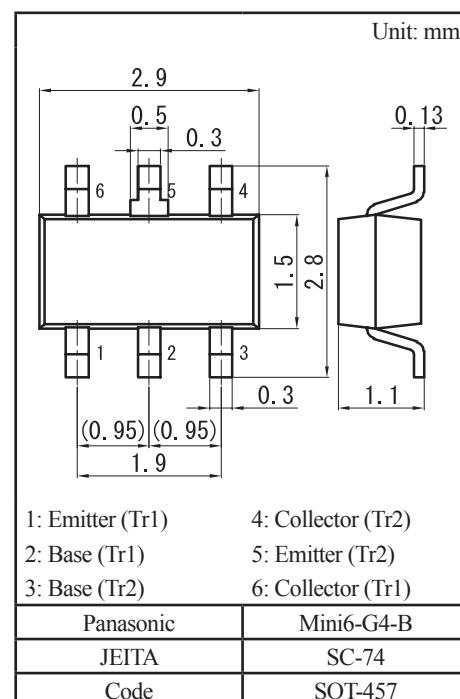
| Parameter  |                                       | Symbol    | Rating      | Unit             |
|------------|---------------------------------------|-----------|-------------|------------------|
| Tr1<br>Tr2 | Collector-base voltage (Emitter open) | $V_{CBO}$ | 60          | V                |
|            | Collector-emitter voltage (Base open) | $V_{CEO}$ | 50          | V                |
|            | Emitter-base voltage (Collector open) | $V_{EBO}$ | 7           | V                |
|            | Collector current                     | $I_C$     | 100         | mA               |
|            | Peak collector current                | $I_{CP}$  | 200         | mA               |
| Overall    | Total power dissipation               | $P_T$     | 300         | mW               |
|            | Junction temperature                  | $T_j$     | 150         | $^\circ\text{C}$ |
|            | Operating ambient temperature         | $T_{opr}$ | -40 to +85  | $^\circ\text{C}$ |
|            | Storage temperature                   | $T_{stg}$ | -55 to +150 | $^\circ\text{C}$ |

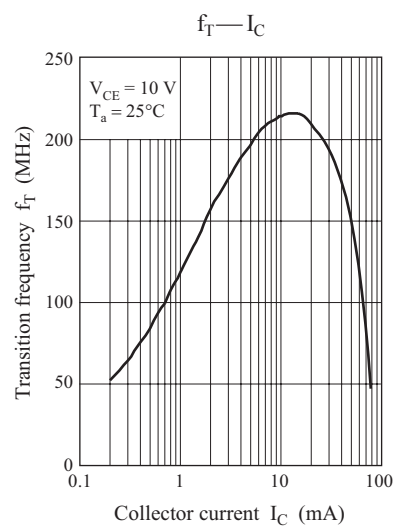
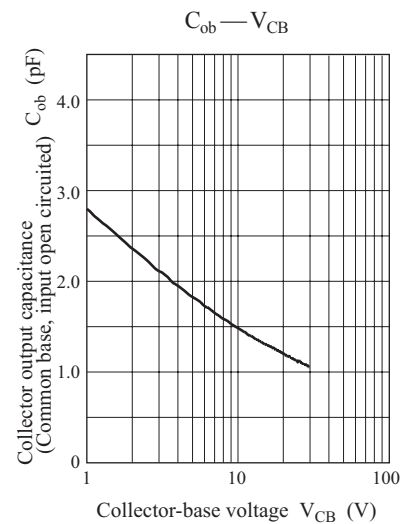
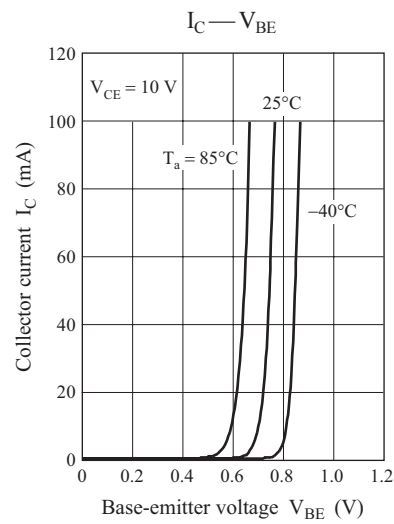
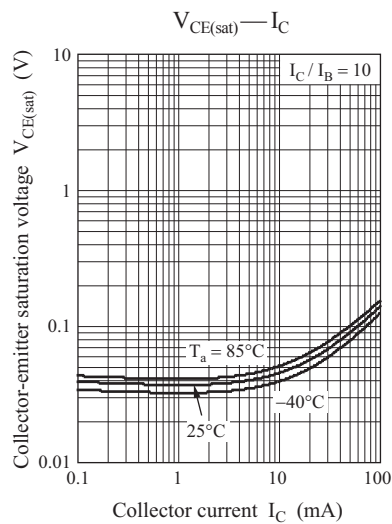
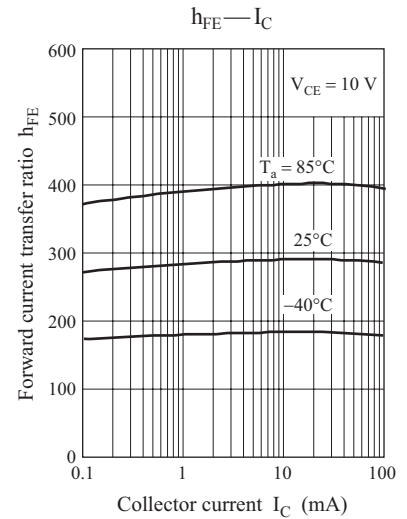
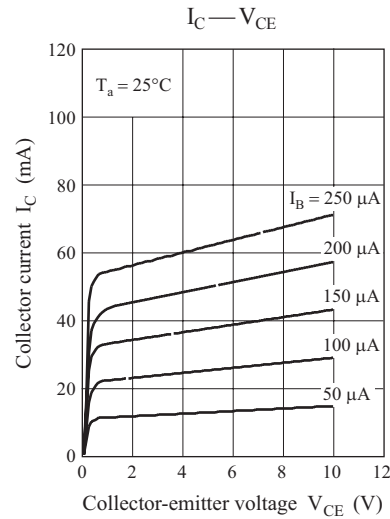
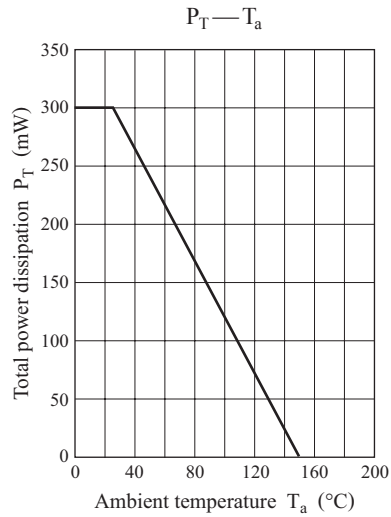
### ■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

| Parameter                                                           | Symbol                    | Conditions                                                | Min  | Typ  | Max | Unit          |
|---------------------------------------------------------------------|---------------------------|-----------------------------------------------------------|------|------|-----|---------------|
| Collector-base voltage (Emitter open)                               | $V_{CBO}$                 | $I_C = 10 \mu\text{A}$ , $I_E = 0$                        | 60   |      |     | V             |
| Collector-emitter voltage (Base open)                               | $V_{CEO}$                 | $I_C = 2 \text{ mA}$ , $I_B = 0$                          | 50   |      |     | V             |
| Emitter-base voltage (Collector open)                               | $V_{EBO}$                 | $I_E = 10 \mu\text{A}$ , $I_C = 0$                        | 7    |      |     | V             |
| Collector-base cutoff current (Emitter open)                        | $I_{CBO}$                 | $V_{CB} = 20 \text{ V}$ , $I_E = 0$                       |      |      | 0.1 | $\mu\text{A}$ |
| Collector-emitter cutoff current (Base open)                        | $I_{CEO}$                 | $V_{CE} = 10 \text{ V}$ , $I_B = 0$                       |      |      | 100 | $\mu\text{A}$ |
| Forward current transfer ratio                                      | $h_{FE}$                  | $V_{CE} = 10 \text{ V}$ , $I_C = 2 \text{ mA}$            | 210  |      | 460 | —             |
| $h_{FE}$ ratio *1                                                   | $h_{FE}$<br>(Small/Large) | $V_{CE} = 10 \text{ V}$ , $I_C = 2 \text{ mA}$            | 0.50 | 0.99 |     | —             |
| Collector-emitter saturation voltage                                | $V_{CE(sat)}$             | $I_C = 100 \text{ mA}$ , $I_B = 10 \text{ mA}$            |      | 0.13 | 0.3 | V             |
| Transition frequency                                                | $f_T$                     | $V_{CE} = 10 \text{ V}$ , $I_C = 2 \text{ mA}$            |      | 150  |     | MHz           |
| Collector output capacitance<br>(Common base, input open circuited) | $C_{ob}$                  | $V_{CB} = 10 \text{ V}$ , $I_E = 0$ , $f = 1 \text{ MHz}$ |      | 1.5  |     | pF            |

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

2. \*1: Ratio between 2 elements







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