

# DMG204B1

Silicon NPN epitaxial planar type (Tr1)  
Silicon PNP epitaxial planar type (Tr2)

For low frequency 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: C5

■ Basic Part Number

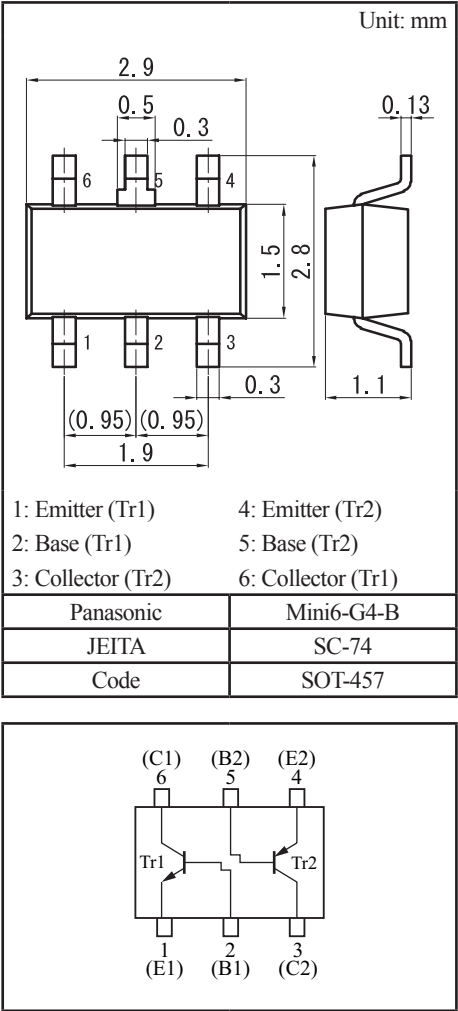
DSC2501 + DSA2001 (Individual)

■ Packaging

DMG204B10R Embossed type (Thermo-compression sealing): 3 000 pcs / reel (standard)

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

| Parameter |                                       | Symbol    | Rating      | Unit               |
|-----------|---------------------------------------|-----------|-------------|--------------------|
| Tr1       | Collector-base voltage (Emitter open) | $V_{CBO}$ | 25          | V                  |
|           | Collector-emitter voltage (Base open) | $V_{CEO}$ | 20          | V                  |
|           | Emitter-base voltage (Collector open) | $V_{EBO}$ | 12          | V                  |
|           | Collector current                     | $I_C$     | 0.5         | A                  |
|           | Peak collector current                | $I_{CP}$  | 1           | A                  |
| 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  $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

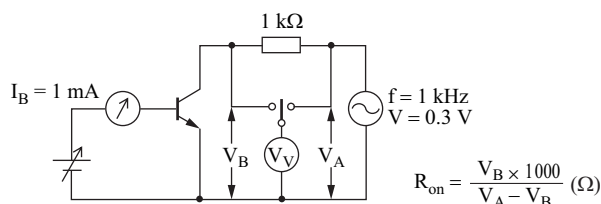
• Tr1

| Parameter                                                           | Symbol               | Conditions                                                          | Min | Typ  | Max  | Unit     |
|---------------------------------------------------------------------|----------------------|---------------------------------------------------------------------|-----|------|------|----------|
| Collector-base voltage (Emitter open)                               | $V_{\text{CBO}}$     | $I_{\text{C}} = 10 \mu\text{A}, I_{\text{E}} = 0$                   | 25  |      |      | V        |
| Collector-emitter voltage (Base open)                               | $V_{\text{CEO}}$     | $I_{\text{C}} = 1 \text{ mA}, I_{\text{B}} = 0$                     | 20  |      |      | V        |
| Emitter-base voltage (Collector open)                               | $V_{\text{EBO}}$     | $I_{\text{E}} = 10 \mu\text{A}, I_{\text{C}} = 0$                   | 12  |      |      | V        |
| Collector-base cutoff current (Emitter open)                        | $I_{\text{CBO}}$     | $V_{\text{CB}} = 25 \text{ V}, I_{\text{E}} = 0$                    |     |      | 100  | nA       |
| Forward current transfer ratio                                      | $h_{\text{FE}}$      | $V_{\text{CE}} = 2 \text{ V}, I_{\text{C}} = 0.5 \text{ A}$         | 200 |      | 800  | —        |
| Collector-emitter saturation voltage <sup>*1</sup>                  | $V_{\text{CE(sat)}}$ | $I_{\text{C}} = 0.5 \text{ A}, I_{\text{B}} = 20 \text{ mA}$        |     | 0.18 | 0.40 | V        |
| Base-emitter saturation voltage <sup>*1</sup>                       | $V_{\text{BE(sat)}}$ | $I_{\text{C}} = 0.5 \text{ A}, I_{\text{B}} = 50 \text{ mA}$        |     |      | 1.2  | V        |
| Transition frequency                                                | $f_{\text{T}}$       | $V_{\text{CE}} = 10 \text{ V}, I_{\text{C}} = 50 \text{ mA}$        |     | 150  |      | MHz      |
| Collector output capacitance<br>(Common base, input open circuited) | $C_{\text{ob}}$      | $V_{\text{CB}} = 10 \text{ V}, I_{\text{E}} = 0, f = 1 \text{ MHz}$ |     | 6    |      | pF       |
| ON resistance <sup>*2</sup>                                         | $R_{\text{on}}$      |                                                                     |     | 1.0  |      | $\Omega$ |

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

2. \*1: Pulse measurement

\*2: Ron measurement circuit

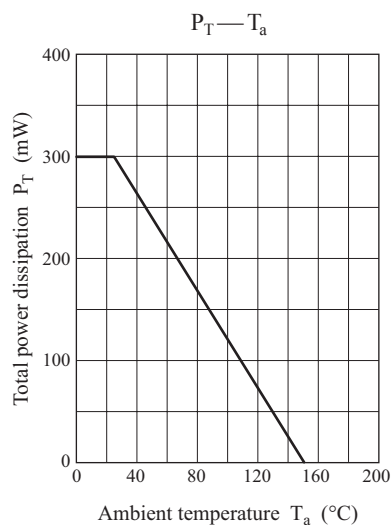


• Tr2

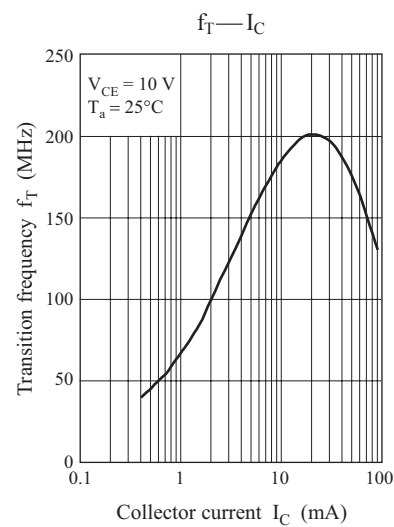
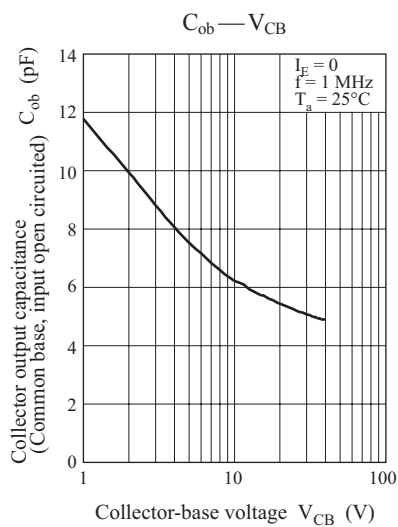
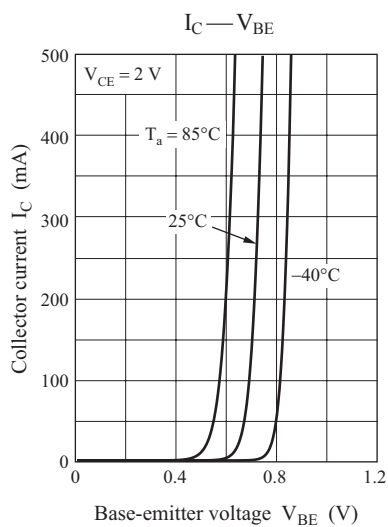
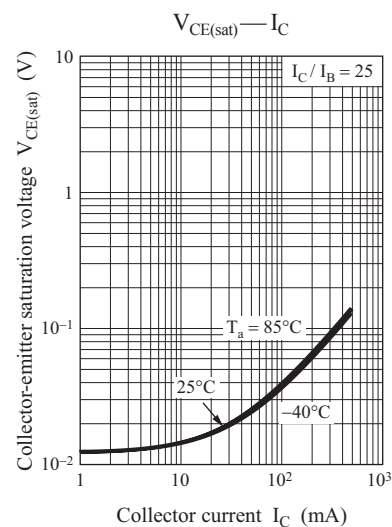
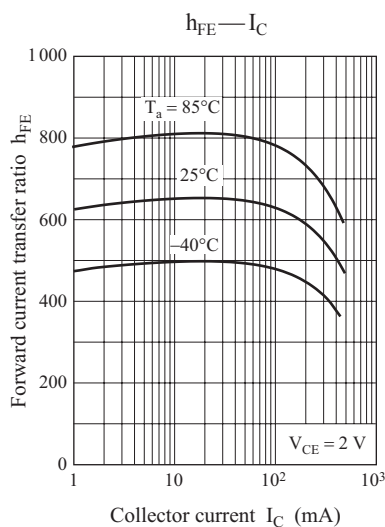
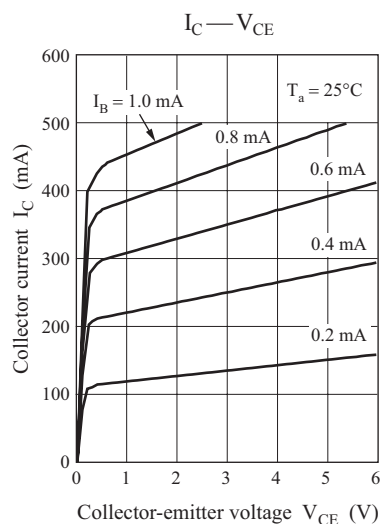
| Parameter                                                           | Symbol               | Conditions                                                           | Min | Typ  | Max  | Unit          |
|---------------------------------------------------------------------|----------------------|----------------------------------------------------------------------|-----|------|------|---------------|
| Collector-base voltage (Emitter open)                               | $V_{\text{CBO}}$     | $I_{\text{C}} = -10 \mu\text{A}, I_{\text{E}} = 0$                   | -60 |      |      | V             |
| Collector-emitter voltage (Base open)                               | $V_{\text{CEO}}$     | $I_{\text{C}} = -2 \text{ mA}, I_{\text{B}} = 0$                     | -50 |      |      | V             |
| Emitter-base voltage (Collector open)                               | $V_{\text{EBO}}$     | $I_{\text{E}} = -10 \mu\text{A}, I_{\text{C}} = 0$                   | -7  |      |      | V             |
| Collector-base cutoff current (Emitter open)                        | $I_{\text{CBO}}$     | $V_{\text{CB}} = -20 \text{ V}, I_{\text{E}} = 0$                    |     |      | -0.1 | $\mu\text{A}$ |
| Collector-emitter cutoff current (Base open)                        | $I_{\text{CEO}}$     | $V_{\text{CE}} = -10 \text{ V}, I_{\text{B}} = 0$                    |     |      | -100 | $\mu\text{A}$ |
| Forward current transfer ratio                                      | $h_{\text{FE}}$      | $V_{\text{CE}} = -10 \text{ V}, I_{\text{C}} = -2 \text{ mA}$        | 210 |      | 460  | —             |
| Collector-emitter saturation voltage                                | $V_{\text{CE(sat)}}$ | $I_{\text{C}} = -100 \text{ mA}, I_{\text{B}} = -10 \text{ mA}$      |     | -0.2 | -0.5 | V             |
| Transition frequency                                                | $f_{\text{T}}$       | $V_{\text{CE}} = -10 \text{ V}, I_{\text{C}} = -2 \text{ mA}$        |     | 150  |      | MHz           |
| Collector output capacitance (Common base,<br>input open circuited) | $C_{\text{ob}}$      | $V_{\text{CB}} = -10 \text{ V}, I_{\text{E}} = 0, f = 1 \text{ MHz}$ |     | 2    |      | pF            |

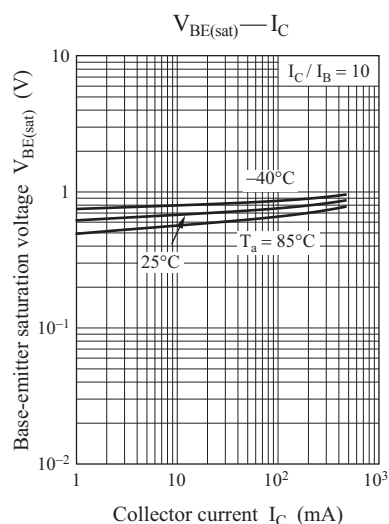
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

Common characteristics chart

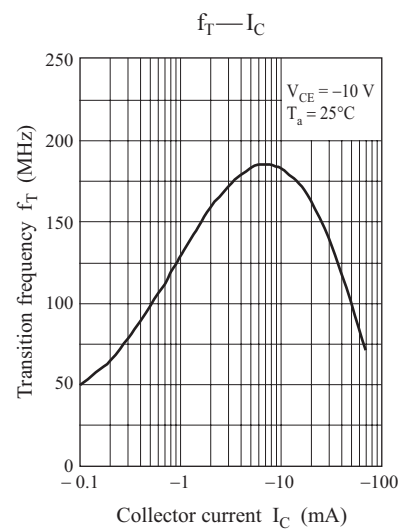
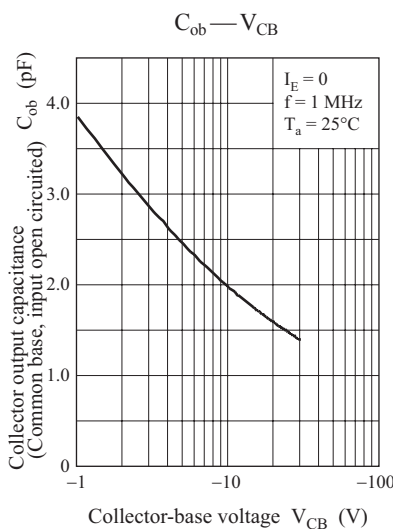
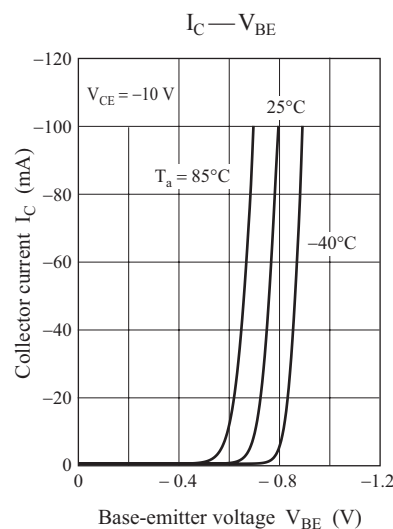
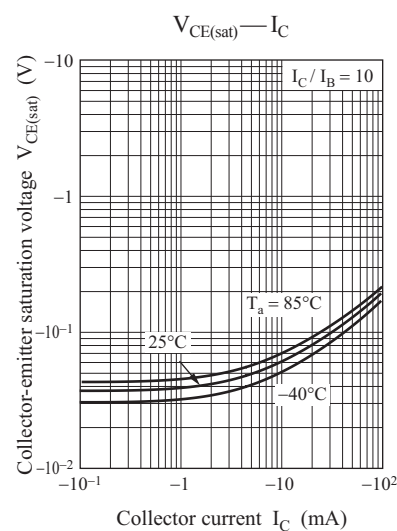
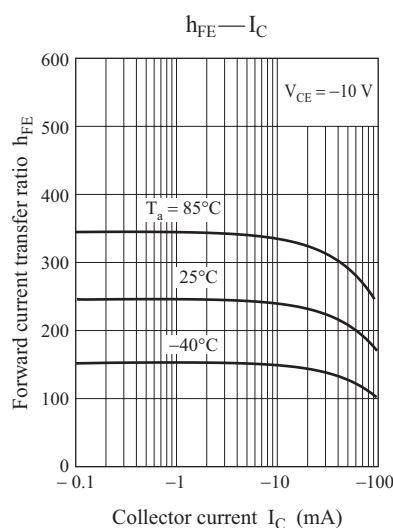
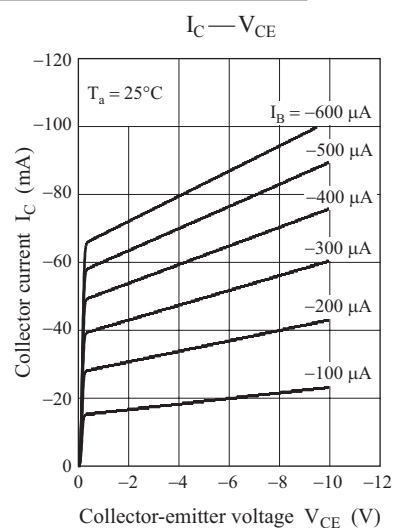


Characteristics charts of Tr1





### Characteristics charts of Tr2





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