

# DMG204A0

Silicon NPN epitaxial planar type (Tr1)

Silicon PNP epitaxial planar type (Tr2)

For low frequency amplification

## ■ Features

- Low collector-emitter saturation voltage  $V_{CE(sat)}$
- Halogen-free / RoHS compliant  
(EU RoHS / UL-94 V-0 / MSL: Level 1 compliant)

## ■ Marking Symbol: C2

## ■ Basic Part Number

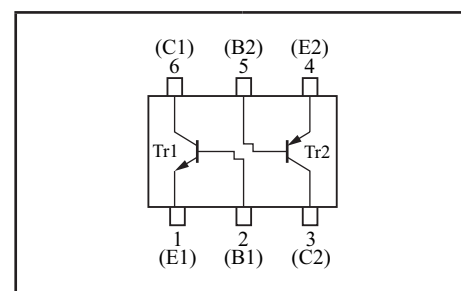
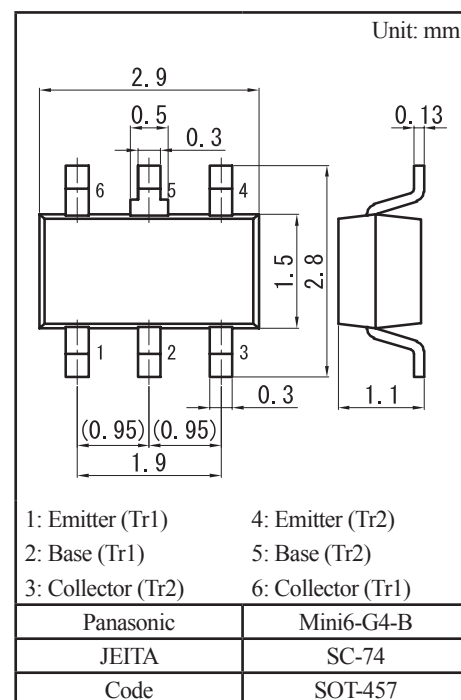
DSC2501 + DSA2401 (Individual)

## ■ Packaging

DMG204A00R 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) | $V_{CBO}$ | -15         | V                |
|         | Collector-emitter voltage (Base open) | $V_{CEO}$ | -10         | V                |
|         | Emitter-base voltage (Collector open) | $V_{EBO}$ | -7          | V                |
|         | Collector current                     | $I_C$     | -0.5        | A                |
|         | Peak collector current                | $I_{CP}$  | -1          | A                |
| 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  $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

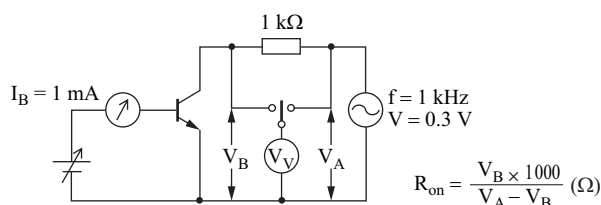
• Tr1

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



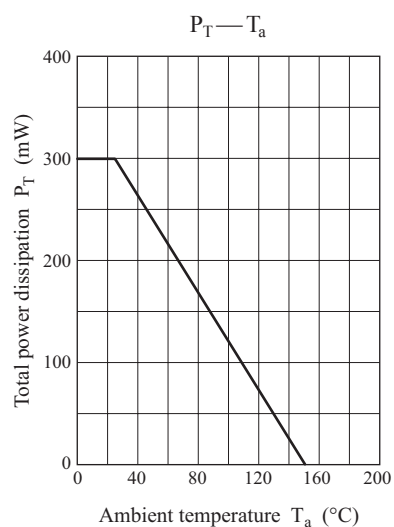
• Tr2

| Parameter                                                           | Symbol        | Conditions                                                 | Min | Typ   | Max   | Unit |
|---------------------------------------------------------------------|---------------|------------------------------------------------------------|-----|-------|-------|------|
| Collector-base voltage (Emitter open)                               | $V_{CBO}$     | $I_C = -10\ \mu\text{A}$ , $I_E = 0$                       | -15 |       |       | V    |
| Collector-emitter voltage (Base open)                               | $V_{CEO}$     | $I_C = -1\ \text{mA}$ , $I_B = 0$                          | -10 |       |       | 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)                        | $I_{CBO}$     | $V_{CB} = -10\ \text{V}$ , $I_E = 0$                       |     |       | -100  | nA   |
| Forward current transfer ratio *1                                   | $h_{FE1}$     | $V_{CE} = -2\ \text{V}$ , $I_C = -0.5\ \text{A}$           | 130 |       | 350   | —    |
|                                                                     | $h_{FE2}$     | $V_{CE} = -2\ \text{V}$ , $I_C = -1\ \text{A}$             | 60  |       |       |      |
| Collector-emitter saturation voltage *1                             | $V_{CE(sat)}$ | $I_C = -0.4\ \text{A}$ , $I_B = -8\ \text{mA}$             |     | -0.15 | -0.30 | V    |
| Base-emitter saturation voltage *1                                  | $V_{BE(sat)}$ | $I_C = -0.4\ \text{A}$ , $I_B = -8\ \text{mA}$             |     | -0.8  | -1.2  | V    |
| Transition frequency                                                | $f_T$         | $V_{CE} = -10\ \text{V}$ , $I_C = -50\ \text{mA}$          |     | 250   |       | MHz  |
| Collector output capacitance (Common base,<br>input open circuited) | $C_{ob}$      | $V_{CB} = -10\ \text{V}$ , $I_E = 0$ , $f = 1\ \text{MHz}$ |     | 18    |       | pF   |

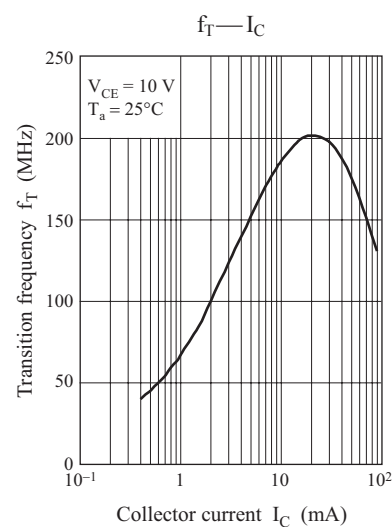
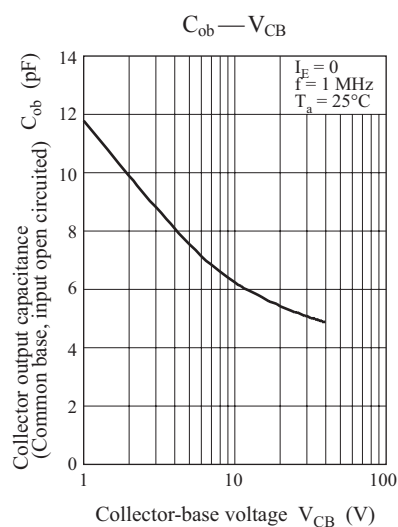
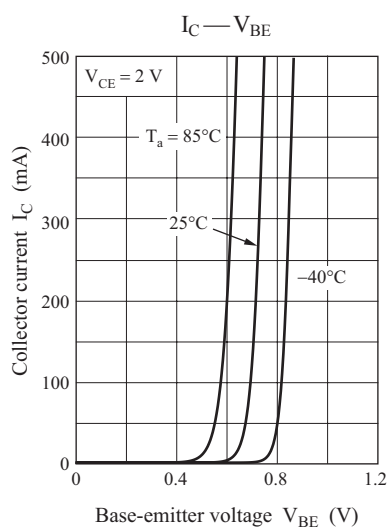
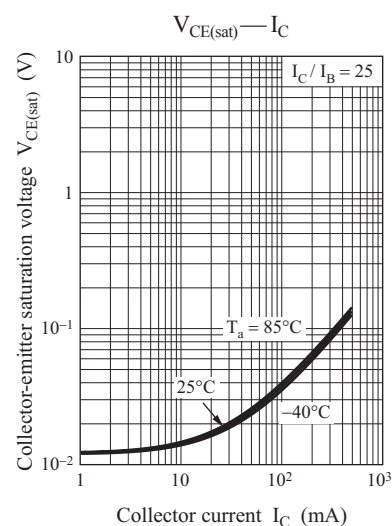
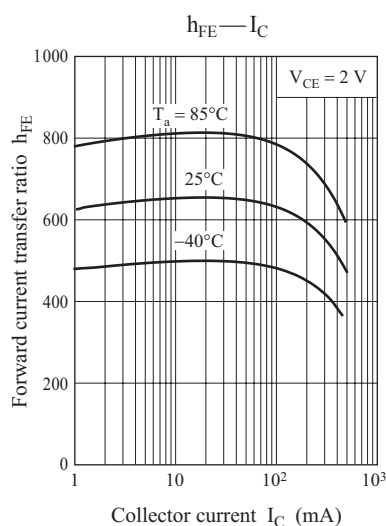
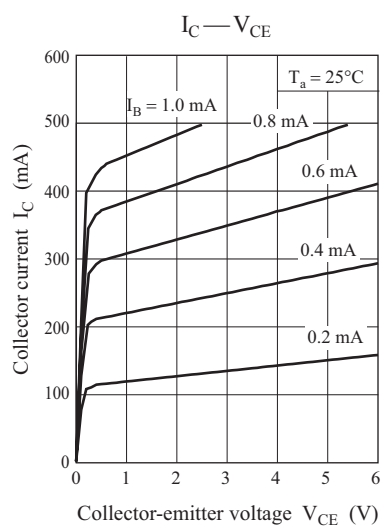
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

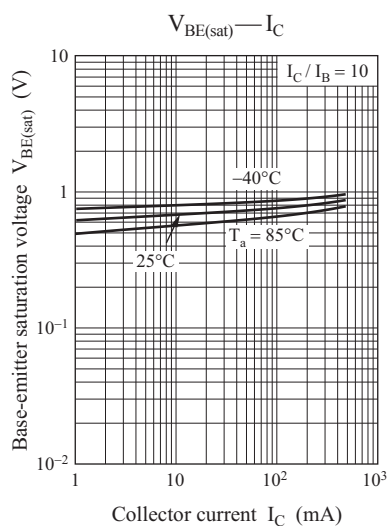
2. \*1: Pulse measurement

Common characteristics chart

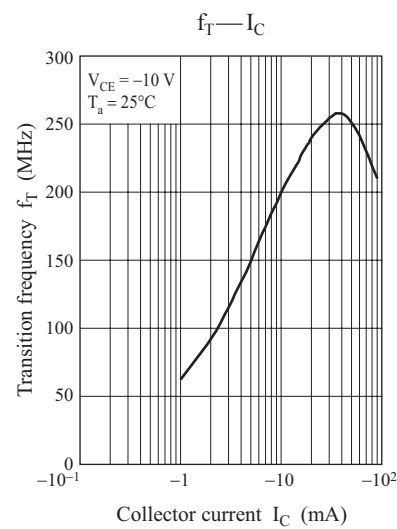
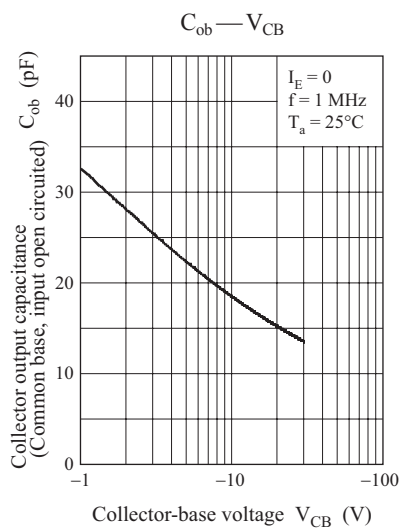
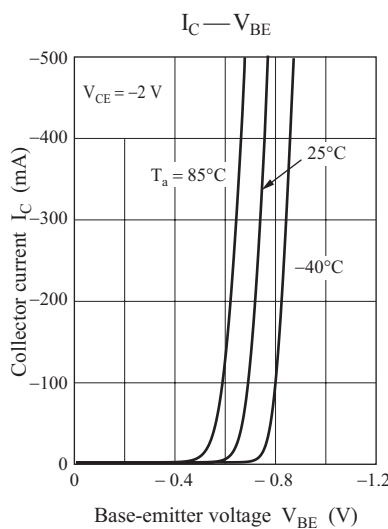
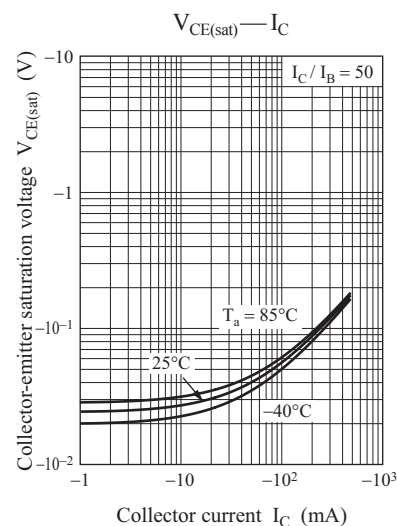
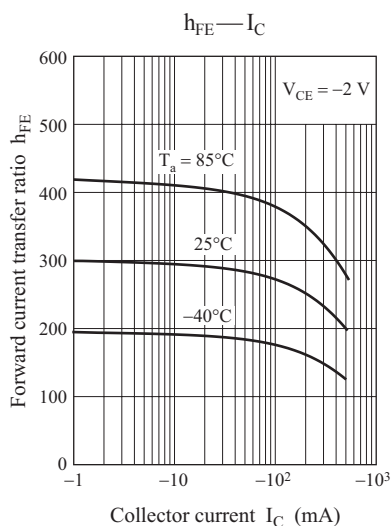
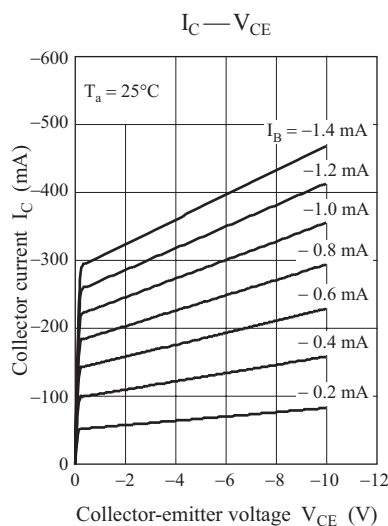


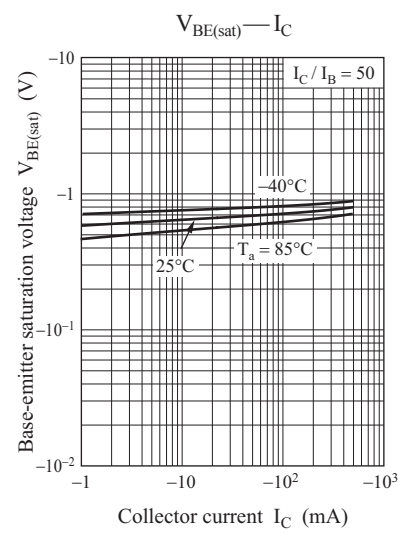
Characteristics charts of Tr1





### Characteristics charts of Tr2







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