

# DMC904F0

Silicon NPN epitaxial planar type

For high frequency amplification

■ Features

- High forward current transfer ratio  $h_{FE}$  with excellent linearity
- High transition frequency  $f_T$
- Halogen-free / RoHS compliant  
(EU RoHS / UL-94 V-0 / MSL: Level 1 compliant)

■ Marking Symbol: D3

■ Basic Part Number

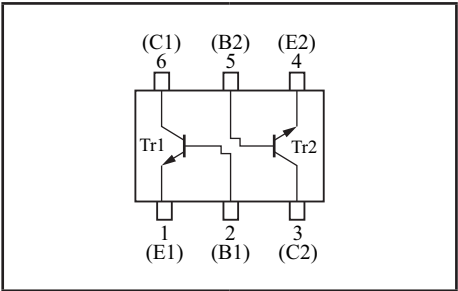
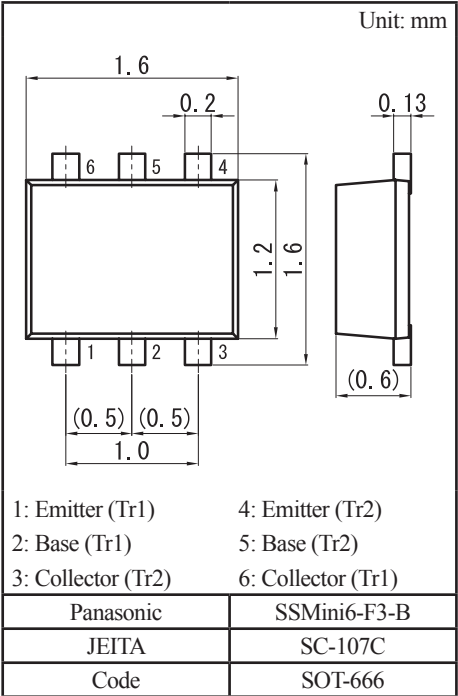
DSC2G02 + DSC2001 (Individual)

■ Packaging

DMC904F00R Embossed type (Thermo-compression sealing): 8 000 pcs / reel (standard)

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

| Parameter |                                       | Symbol    | Rating      | Unit               |
|-----------|---------------------------------------|-----------|-------------|--------------------|
| Tr1       | Collector-base voltage (Emitter open) | $V_{CBO}$ | 30          | V                  |
|           | Collector-emitter voltage (Base open) | $V_{CEO}$ | 20          | V                  |
|           | Emitter-base voltage (Collector open) | $V_{EBO}$ | 3           | V                  |
|           | Collector current                     | $I_C$     | 15          | mA                 |
| 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               | $P_T$     | 125         | 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)            | $V_{CBO}$ | $I_C = 10\ \mu\text{A}$ , $I_E = 0$                                    | 30  |      |     | V    |
| Emitter-base voltage (Collector open)            | $V_{EBO}$ | $I_E = 10\ \mu\text{A}$ , $I_C = 0$                                    | 3   |      |     | V    |
| Base-emitter voltage                             | $V_{BE}$  | $V_{CE} = 6\ \text{V}$ , $I_C = 1\ \text{mA}$                          |     | 0.72 |     | V    |
| Forward current transfer ratio                   | $h_{FE}$  | $V_{CE} = 6\ \text{V}$ , $I_C = 1\ \text{mA}$                          | 65  |      | 260 | —    |
| Transition frequency                             | $f_T$     | $V_{CE} = 6\ \text{V}$ , $I_C = 1\ \text{mA}$                          | 450 | 650  |     | MHz  |
| Reverse transfer capacitance<br>(Common emitter) | $C_{re}$  | $V_{CE} = 6\ \text{V}$ , $I_C = 1\ \text{mA}$ , $f = 10.7\ \text{MHz}$ |     | 0.6  |     | pF   |
| Power gain                                       | PG        | $V_{CE} = 6\ \text{V}$ , $I_C = 1\ \text{mA}$ , $f = 100\ \text{MHz}$  |     | 24   |     | dB   |
| Noise figure                                     | NF        | $V_{CE} = 6\ \text{V}$ , $I_C = 1\ \text{mA}$ , $f = 100\ \text{MHz}$  |     | 3.3  |     | dB   |

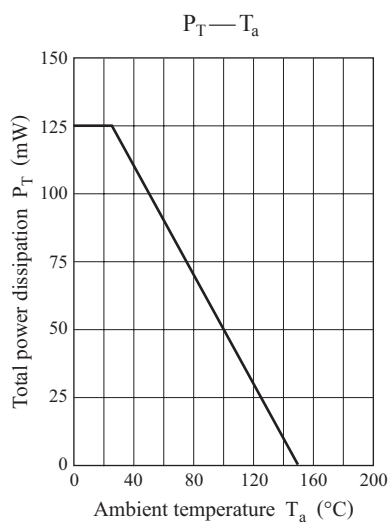
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

• Tr2

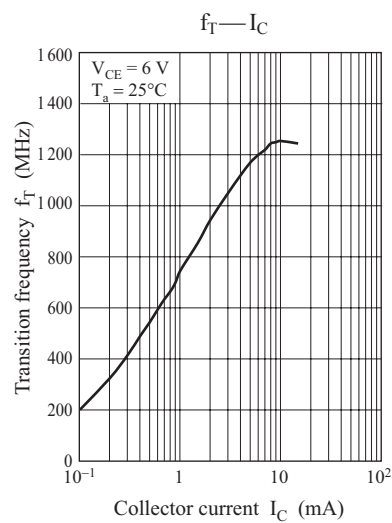
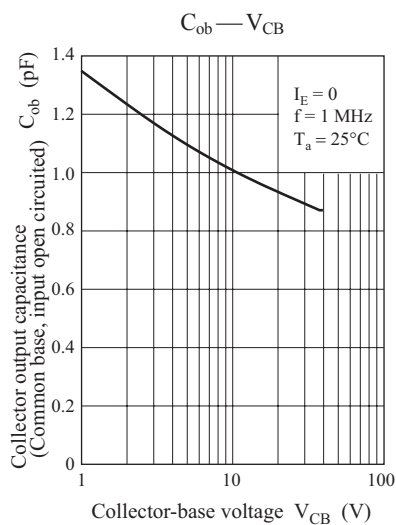
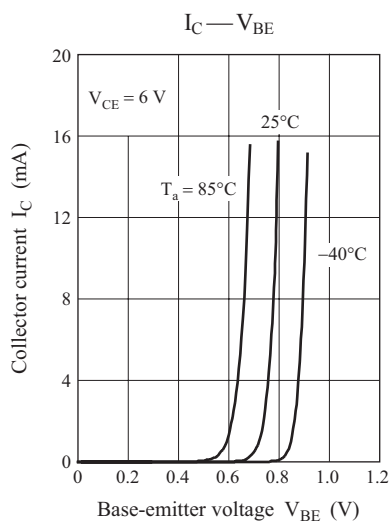
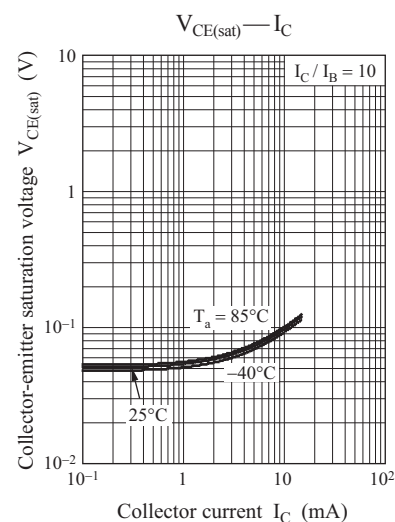
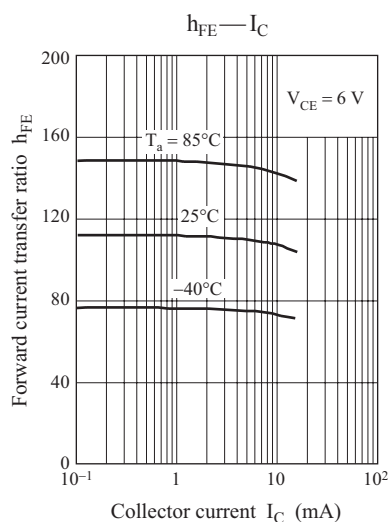
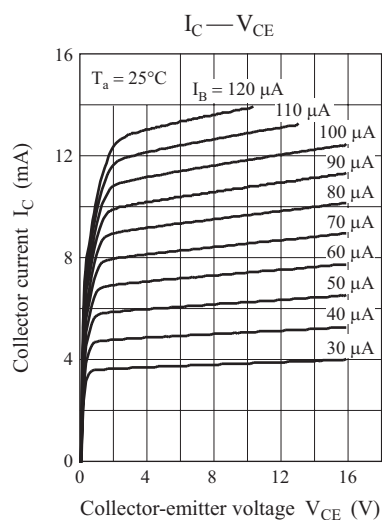
| Parameter                                                           | Symbol        | Conditions                                                | Min | Typ  | Max | Unit          |
|---------------------------------------------------------------------|---------------|-----------------------------------------------------------|-----|------|-----|---------------|
| 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 | —             |
| 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) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

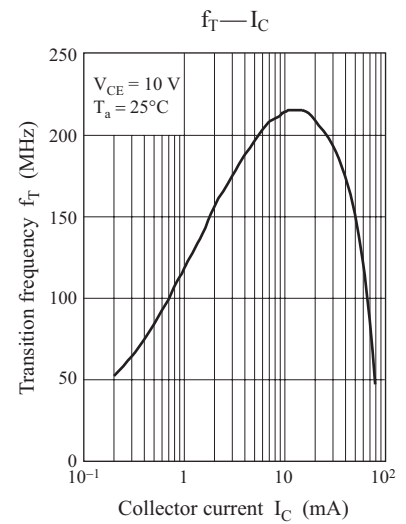
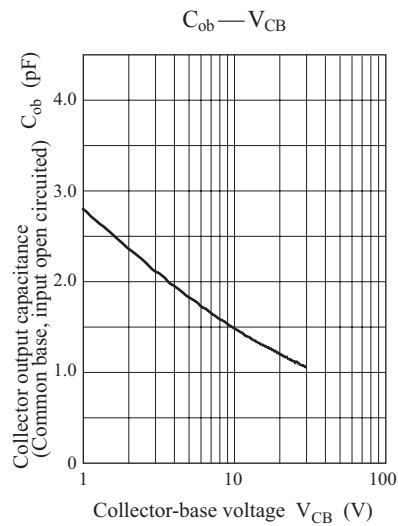
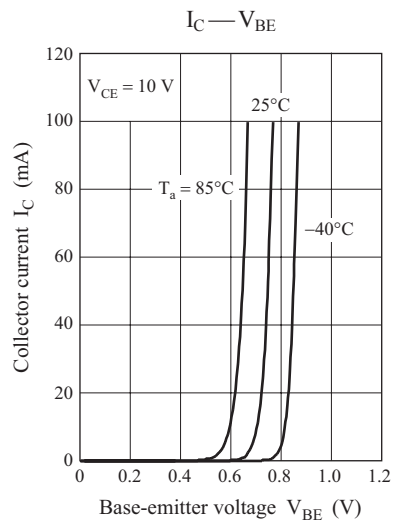
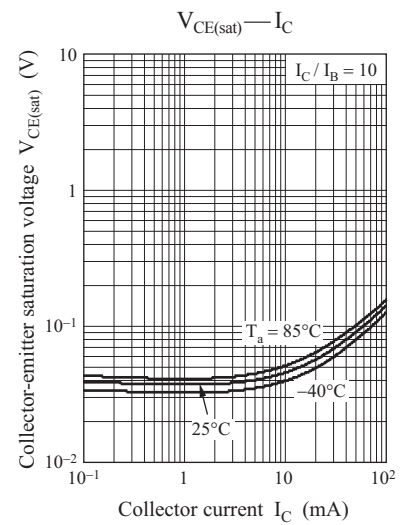
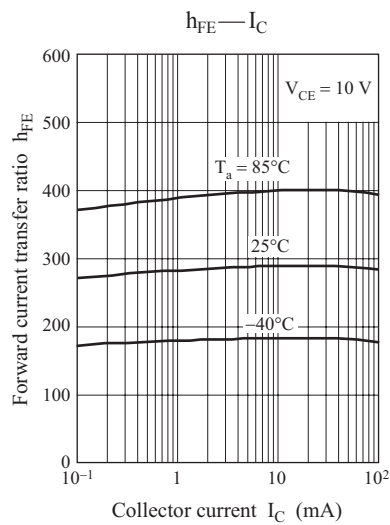
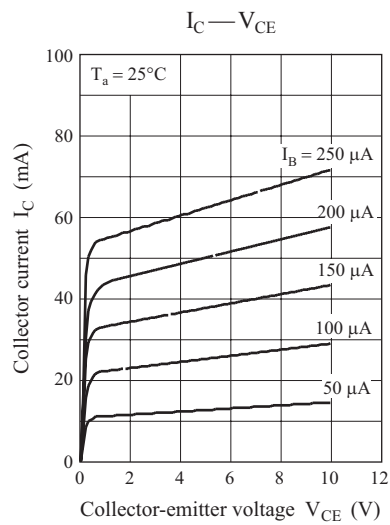
Common characteristics chart



Characteristics charts of Tr1

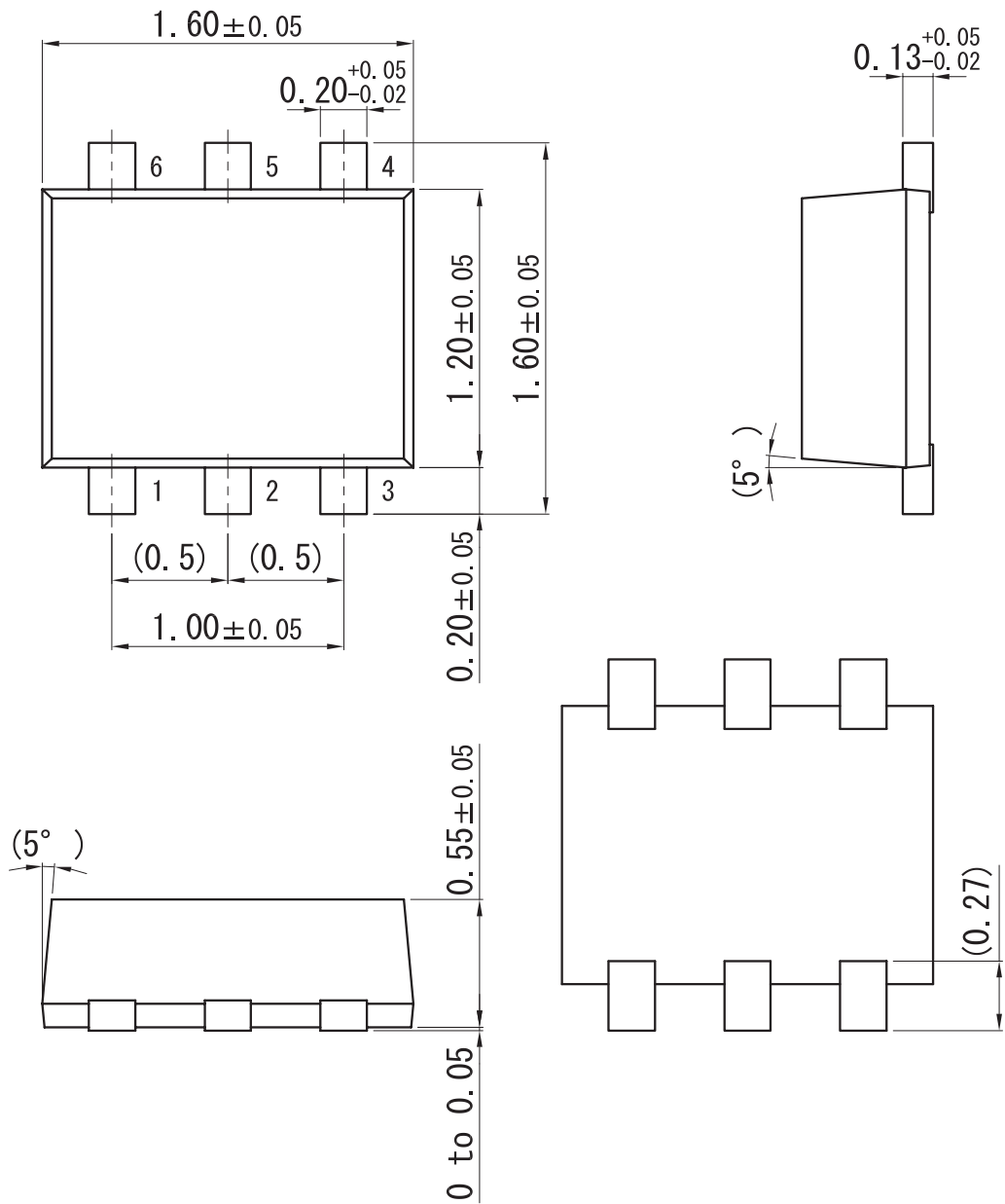


## Characteristics charts of Tr2

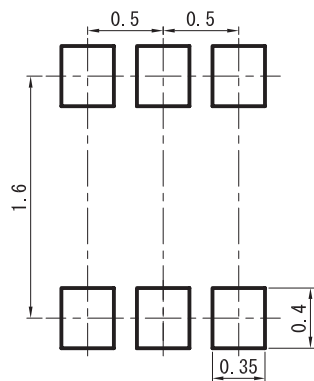


SSMini6-F3-B

Unit: mm



■ Land Pattern (Reference) (Unit: mm)



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