## **DMG26402**

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

For digital circuits

#### ■ Features

- $\bullet$  Low collector-emitter saturation voltage  $V_{\text{CE(sat)}}$
- Contributes to miniaturization of sets, reduction of component count.
- Eco-friendly Halogen-free package

#### ■ Basic Part Number

DRC2124E + DRA2124E (Individual)

#### Packaging

Embossed type (Thermo-compression sealing): 3000 pcs / reel (standard)

## ■ Absolute Maximum Ratings $T_a = 25$ °C

|         | Parameter                             | Symbol           | Rating      | Unit |
|---------|---------------------------------------|------------------|-------------|------|
| Tr1     | Collector-base voltage (Emitter open) | V <sub>CBO</sub> | 50          | V    |
|         | Collector-emitter voltage (Base open) | V <sub>CEO</sub> | 50          | V    |
|         | Collector current                     | $I_{C}$          | 100         | mA   |
| Tr2     | Collector-base voltage (Emitter open) | V <sub>CBO</sub> | -50         | V    |
|         | Collector-emitter voltage (Base open) | V <sub>CEO</sub> | -50         | V    |
|         | Collector current                     | $I_{C}$          | -100        | mA   |
| Overall | Total power dissipation               | $P_{T}$          | 300         | mW   |
|         | Junction temperature                  | T <sub>j</sub>   | 150         | °C   |
|         | Storage temperature                   | T <sub>stg</sub> | -55 to +150 | °C   |

#### ■ Package

Code

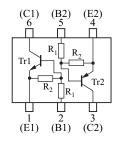
Mini6-G4-B

• Pin Name

1: Emitter (Tr1) 4: Emitter (Tr2)
2: Base (Tr1) 5: Base (Tr2)
3: Collector (Tr2) 6: Collector (Tr1)

## ■ Marking Symbol: F9

## ■ Internal Connection



|            | Tr1 | $R_1$          | 22 | kΩ  |  |  |
|------------|-----|----------------|----|-----|--|--|
| Resistance |     | $R_2$          | 22 |     |  |  |
| value      | Tr2 | $R_1$          | 22 | 1-0 |  |  |
|            |     | R <sub>2</sub> | 22 | kΩ  |  |  |

## ■ Electrical Characteristics $T_a = 25$ °C±3°C

## • Tr1

| Parameter                                    | Symbol               | Conditions                                       | Min  | Тур | Max  | Unit |
|--|----------------------|--|------|-----|------|------|
| Collector-base voltage (Emitter open)        | V <sub>CBO</sub>     | $I_C = 10 \mu A, I_E = 0$                        | 50   |     |      | V    |
| Collector-emitter voltage (Base open)        | V <sub>CEO</sub>     | $I_C = 2 \text{ mA}, I_B = 0$                    | 50   |     |      | V    |
| Collector-base cutoff current (Emitter open) | $I_{CBO}$            | $V_{CB} = 50 \text{ V}, I_{E} = 0$               |      |     | 0.1  | μΑ   |
| Collector-emitter cutoff current (Base open) | I <sub>CEO</sub>     | $V_{CE} = 50 \text{ V}, I_{B} = 0$               |      |     | 0.5  | μА   |
| Emitter-base cutoff current (Collector open) | $I_{EBO}$            | $V_{EB} = 6 \text{ V}, I_C = 0$                  |      |     | 0.2  | mA   |
| Forward current transfer ratio               | $h_{FE}$             | $V_{CE} = 10 \text{ V}, I_{C} = 5 \text{ mA}$    | 60   |     |      | _    |
| Collector-emitter saturation voltage         | V <sub>CE(sat)</sub> | $I_C = 10 \text{ mA}, I_B = 0.5 \text{ mA}$      |      |     | 0.25 | V    |
| Input voltage (ON)                           | V <sub>I(on)</sub>   | $V_{CE} = 0.2 \text{ V}, I_{C} = 5 \text{ mA}$   | 2.6  |     |      | V    |
| Input voltage (OFF)                          | V <sub>I(off)</sub>  | $V_{CE} = 5 \text{ V}, I_{C} = 100  \mu\text{A}$ |      |     | 0.8  | V    |
| Input resistance                             | $R_1$                |  | -30% | 22  | +30% | kΩ   |
| Resistance ratio                             | $R_1/R_2$            |  | 0.8  | 1.0 | 1.2  | _    |

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

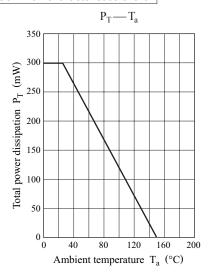
## ■ Electrical Characteristics (Continued) $T_a = 25$ °C±3°C

#### • Tr2

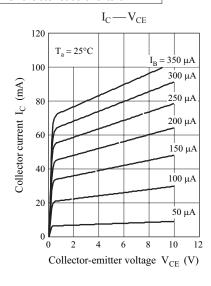
| Parameter                                    | Symbol               | Conditions   | Min  | Тур | Max   | Unit |
|--|----------------------|--|------|-----|-------|------|
| Collector-base voltage (Emitter open)        | V <sub>CBO</sub>     | $I_{\rm C} = -10 \mu{\rm A}, I_{\rm E} = 0$        | -50  |     |       | V    |
| Collector-emitter voltage (Base open)        | V <sub>CEO</sub>     | $I_C = -2 \text{ mA}, I_B = 0$                     | -50  |     |       | V    |
| Collector-base cutoff current (Emitter open) | $I_{CBO}$            | $V_{\rm CB} = -50 \text{ V}, I_{\rm E} = 0$        |      |     | -0.1  | μΑ   |
| Collector-emitter cutoff current (Base open) | I <sub>CEO</sub>     | $V_{CE} = -50 \text{ V}, I_{B} = 0$                |      |     | -0.5  | μΑ   |
| Emitter-base cutoff current (Collector open) | I <sub>EBO</sub>     | $V_{EB} = -6 \text{ V}, I_C = 0$                   |      |     | -0.2  | mA   |
| Forward current transfer ratio               | $h_{FE}$             | $V_{CE} = -10 \text{ V}, I_{C} = -5 \text{ mA}$    | 60   |     |       | _    |
| Collector-emitter saturation voltage         | V <sub>CE(sat)</sub> | $I_C = -10 \text{ mA}, I_B = -0.5 \text{ mA}$      |      |     | -0.25 | V    |
| Input voltage (ON)                           | V <sub>I(on)</sub>   | $V_{CE} = -0.2 \text{ V}, I_{C} = -5 \text{ mA}$   | -2.6 |     |       | V    |
| Input voltage (OFF)                          | V <sub>I(off)</sub>  | $V_{CE} = -5 \text{ V}, I_{C} = -100  \mu\text{A}$ |      |     | -0.8  | V    |
| Input resistance                             | $R_1$                |  | -30% | 22  | +30%  | kΩ   |
| Resistance ratio                             | $R_1/R_2$            |  | 0.8  | 1.0 | 1.2   | _    |

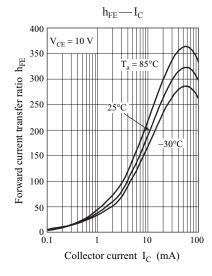
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

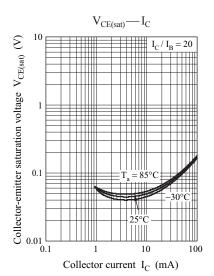
## Common characteristics chart



## Characteristics charts of Tr1

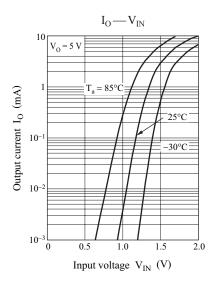


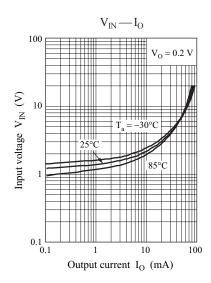




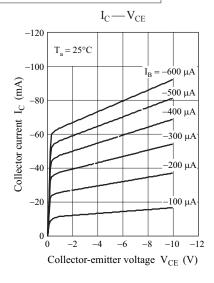
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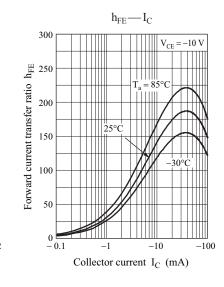
Panasonic DMG26402

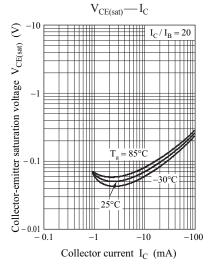


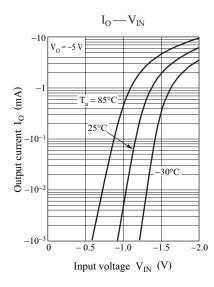


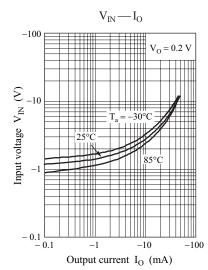
## Characteristics charts of Tr2





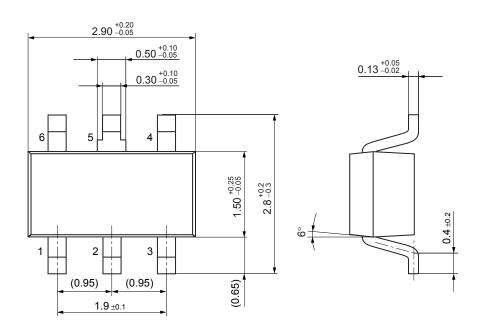


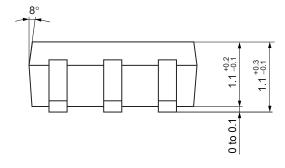




Unit: mm

Mini6-G4-B





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