

# DMG963H5

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

For digital circuits  
 DMG563H5 in SSMini5 type package

■ Features

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

■ Basic Part Number

DRC2144E + DRA2114Y (Collector-base connection)

■ Packaging

Embossed type (Thermo-compression sealing): 8000 pcs / reel (standard)

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

| Parameter |                                       | Symbol    | Rating      | Unit             |
|-----------|---------------------------------------|-----------|-------------|------------------|
| Tr1       | Collector-base voltage (Emitter open) | $V_{CBO}$ | 50          | V                |
|           | Collector-emitter voltage (Base open) | $V_{CEO}$ | 50          | V                |
|           | Collector current                     | $I_C$     | 100         | mA               |
| Tr2       | Collector-base voltage (Emitter open) | $V_{CBO}$ | -50         | V                |
|           | Collector-emitter voltage (Base open) | $V_{CEO}$ | -50         | V                |
|           | Collector current                     | $I_C$     | -100        | mA               |
| Overall   | Total power dissipation               | $P_T$     | 125         | mW               |
|           | Junction temperature                  | $T_j$     | 150         | $^\circ\text{C}$ |
|           | 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)        | $V_{CBO}$     | $I_C = 10 \mu\text{A}, I_E = 0$              | 50   |     |      | V             |
| Collector-emitter voltage (Base open)        | $V_{CEO}$     | $I_C = 2 \text{mA}, I_B = 0$                 | 50   |     |      | V             |
| Collector-base cutoff current (Emitter open) | $I_{CBO}$     | $V_{CB} = 50 \text{V}, I_E = 0$              |      |     | 0.1  | $\mu\text{A}$ |
| Collector-emitter cutoff current (Base open) | $I_{CEO}$     | $V_{CE} = 50 \text{V}, I_B = 0$              |      |     | 0.5  | $\mu\text{A}$ |
| Emitter-base cutoff current (Collector open) | $I_{EBO}$     | $V_{EB} = 6 \text{V}, I_C = 0$               |      |     | 0.1  | mA            |
| Forward current transfer ratio               | $h_{FE}$      | $V_{CE} = 10 \text{V}, I_C = 5 \text{mA}$    | 80   |     |      | —             |
| Collector-emitter saturation voltage         | $V_{CE(sat)}$ | $I_C = 10 \text{mA}, I_B = 0.5 \text{mA}$    |      |     | 0.25 | V             |
| Input voltage (ON)                           | $V_{I(on)}$   | $V_{CE} = 0.2 \text{V}, I_C = 5 \text{mA}$   | 3.6  |     |      | V             |
| Input voltage (OFF)                          | $V_{I(off)}$  | $V_{CE} = 5 \text{V}, I_C = 100 \mu\text{A}$ |      |     | 0.8  | V             |
| Input resistance                             | $R_1$         |  | -30% | 47  | +30% | k $\Omega$    |
| 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.

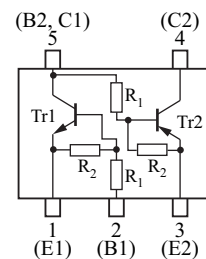
■ Package

- Code  
SSMini5-F4-B
- Pin Name
 

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

■ Marking Symbol: U0

■ Internal Connection



| Resistance value | Tr1 | $R_1$ | 47 | k $\Omega$ |
|------------------|-----|-------|----|------------|
|                  |     | $R_2$ | 47 |            |
|                  | Tr2 | $R_1$ | 10 | k $\Omega$ |
|                  |     | $R_2$ | 47 |            |

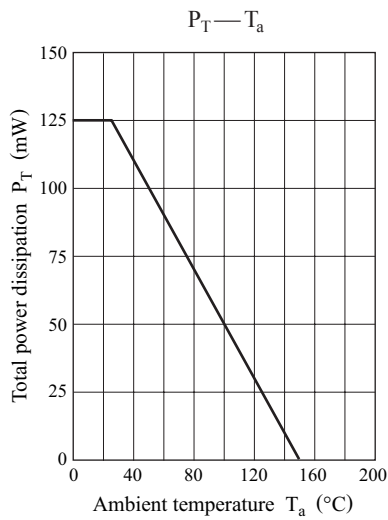
■ Electrical Characteristics (Continued)  $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

• Tr2

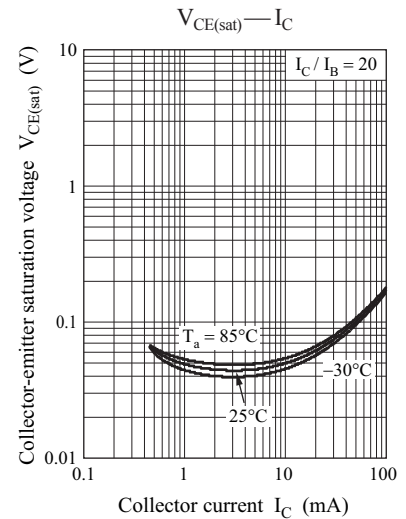
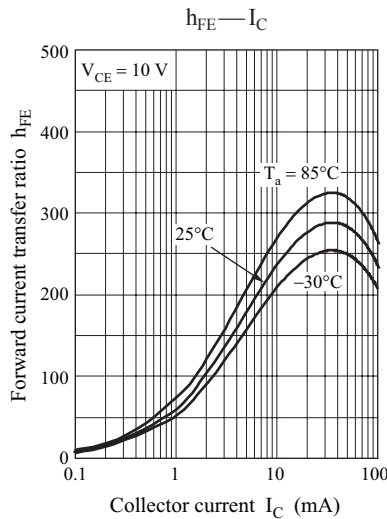
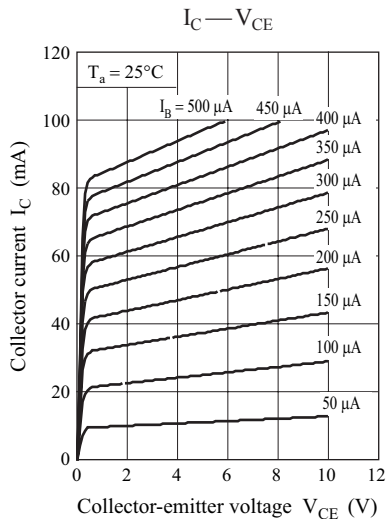
| Parameter                                    | Symbol        | Conditions                                      | Min  | Typ  | Max   | Unit             |
|--|---------------|---|------|------|-------|------------------|
| Collector-base voltage (Emitter open)        | $V_{CBO}$     | $I_C = -10 \mu\text{A}, I_E = 0$                | -50  |      |       | V                |
| Collector-emitter voltage (Base open)        | $V_{CEO}$     | $I_C = -2 \text{ mA}, I_B = 0$                  | -50  |      |       | V                |
| Collector-base cutoff current (Emitter open) | $I_{CBO}$     | $V_{CB} = -50 \text{ V}, I_E = 0$               |      |      | -0.1  | $\mu\text{A}$    |
| Collector-emitter cutoff current (Base open) | $I_{CEO}$     | $V_{CE} = -50 \text{ V}, I_B = 0$               |      |      | -0.5  | $\mu\text{A}$    |
| Emitter-base cutoff current (Collector open) | $I_{EBO}$     | $V_{EB} = -6 \text{ V}, I_C = 0$                |      |      | -0.2  | mA               |
| Forward current transfer ratio               | $h_{FE}$      | $V_{CE} = -10 \text{ V}, I_C = -5 \text{ mA}$   | 80   |      |       | —                |
| Collector-emitter saturation voltage         | $V_{CE(sat)}$ | $I_C = -10 \text{ mA}, I_B = -0.5 \text{ mA}$   |      |      | -0.25 | V                |
| Input voltage (ON)                           | $V_{I(on)}$   | $V_{CE} = -0.2 \text{ V}, I_C = -5 \text{ mA}$  | -1.7 |      |       | V                |
| Input voltage (OFF)                          | $V_{I(off)}$  | $V_{CE} = -5 \text{ V}, I_C = -100 \mu\text{A}$ |      |      | -0.5  | V                |
| Input resistance                             | $R_1$         |   | -30% | 10   | +30%  | $\text{k}\Omega$ |
| Resistance ratio                             | $R_1 / R_2$   |   | 0.17 | 0.21 | 0.25  | —                |

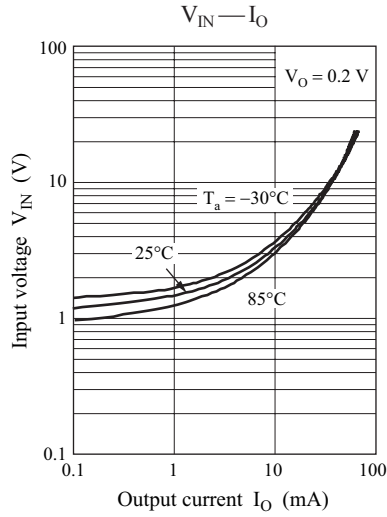
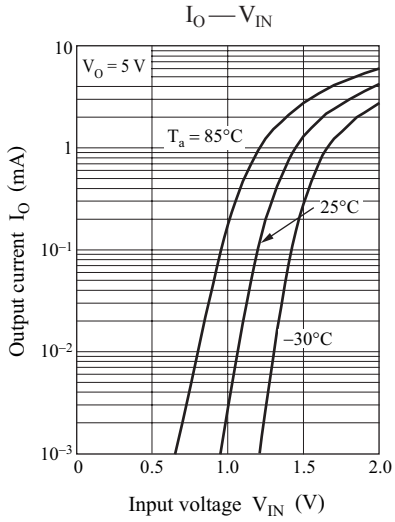
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

Common characteristics chart

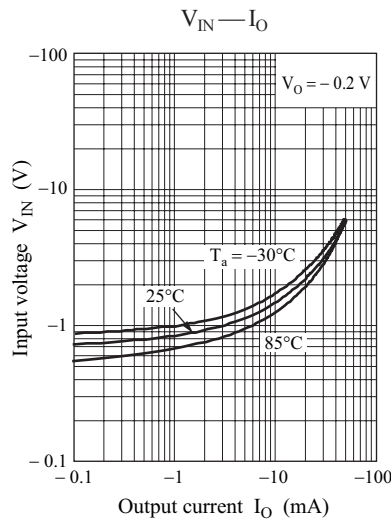
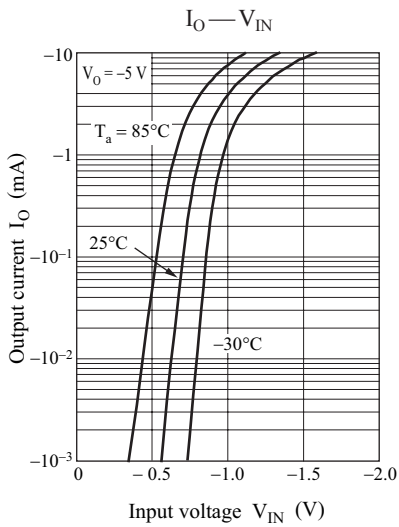
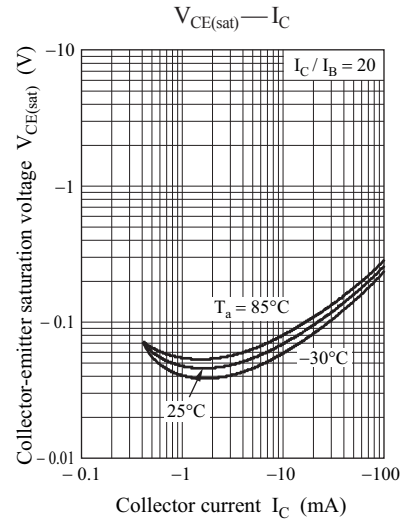
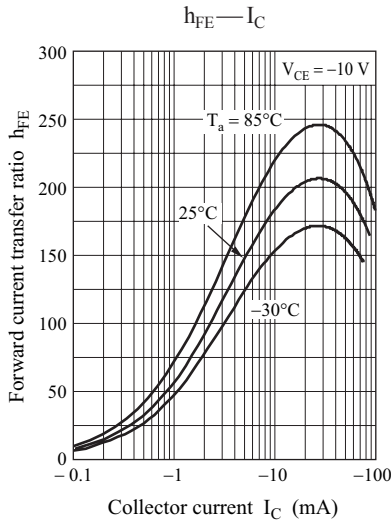
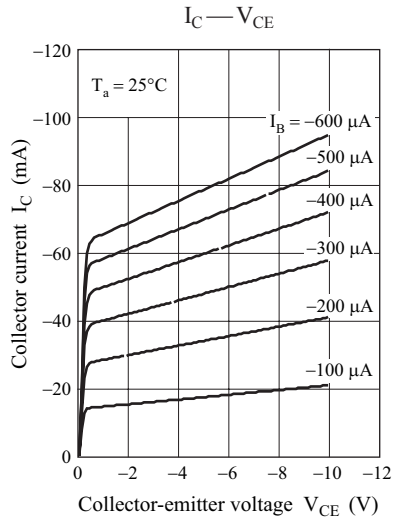


Characteristics charts of Tr1



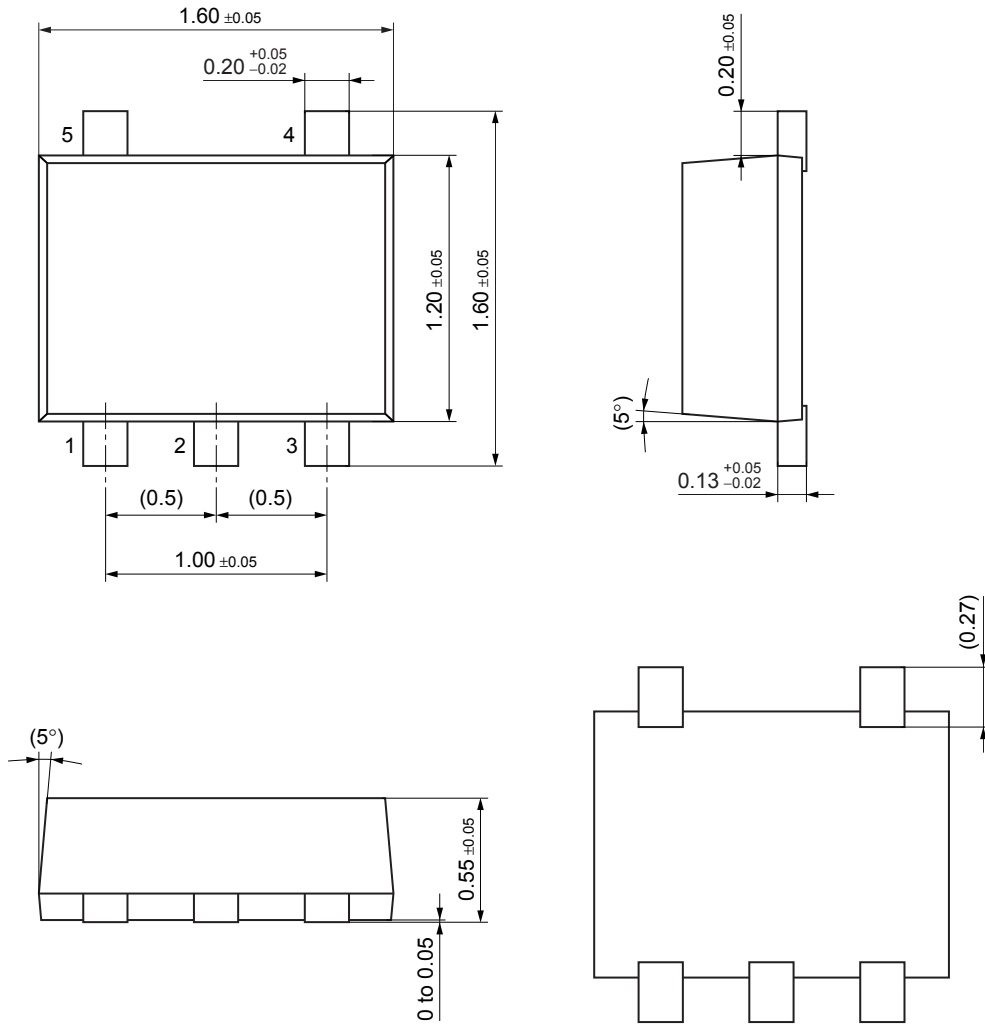


Characteristics charts of Tr2



SSMini5-F4-B

Unit: mm



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