

# DMG56306

Silicon NPN epitaxial planar type (Tr1)

Silicon PNP epitaxial planar type (Tr2)

For digital circuits

## ■ Features

- High forward current transfer ratio  $h_{FE}$  with excellent linearity
- 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

DRC2143T + DRA2143T (Collector-base connection)

## ■ Packaging

Embossed type (Thermo-compression sealing): 3000 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	$P_T$	150	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)	$I_{EBO}$	$V_{EB} = 6\ \text{V}$ , $I_C = 0$			0.01	mA
Forward current transfer ratio	$h_{FE}$	$V_{CE} = 10\ \text{V}$ , $I_C = 5\ \text{mA}$	160		460	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 10\ \text{mA}$ , $I_B = 0.5\ \text{mA}$			0.25	V
Input voltage (ON)	$V_{I(on)}$	$V_{CE} = 0.2\ \text{V}$ , $I_C = 5\ \text{mA}$	1.0			V
Input voltage (OFF)	$V_{I(off)}$	$V_{CE} = 5\ \text{V}$ , $I_C = 100\ \mu\text{A}$			0.4	V
Input resistance	$R_1$		-30%	4.7	+30%	k $\Omega$

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

## ■ Package

### • Code

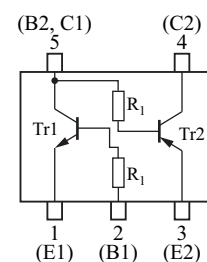
SMini5-F3-B

### • Pin Name

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

## ■ Marking Symbol: L6

## ■ Internal Connection



Resistance value	Tr1	$R_1$	4.7	k $\Omega$
	Tr2	$R_1$	4.7	k $\Omega$

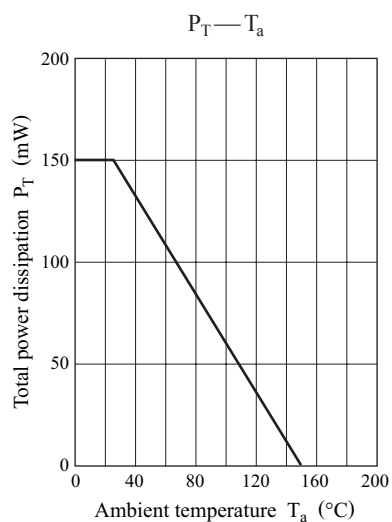
■ Electrical Characteristics (Continued)  $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

• Tr2

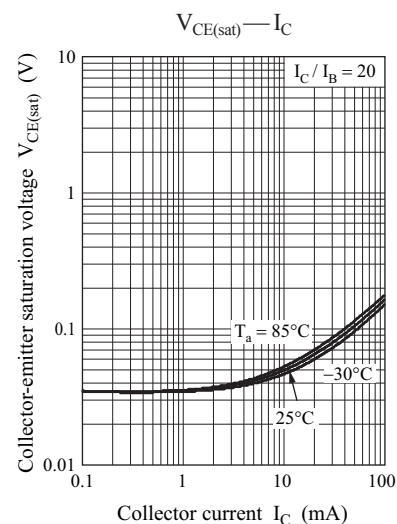
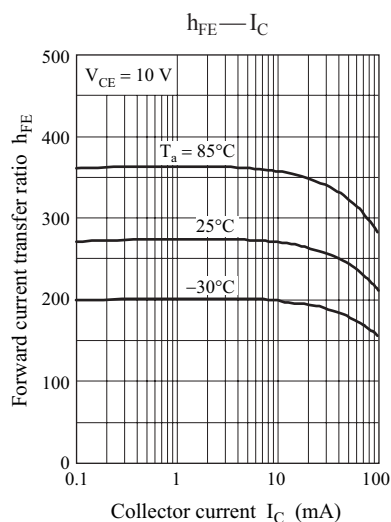
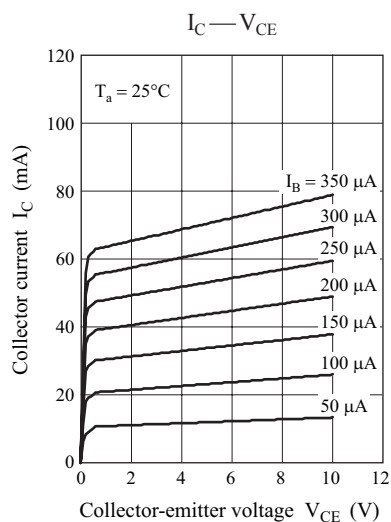
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	$V_{\text{CBO}}$	$I_{\text{C}} = -10 \mu\text{A}, I_{\text{E}} = 0$	-50			V
Collector-emitter voltage (Base open)	$V_{\text{CEO}}$	$I_{\text{C}} = -2 \text{ mA}, I_{\text{B}} = 0$	-50			V
Collector-base cutoff current (Emitter open)	$I_{\text{CBO}}$	$V_{\text{CB}} = -50 \text{ V}, I_{\text{E}} = 0$			-0.1	$\mu\text{A}$
Collector-emitter cutoff current (Base open)	$I_{\text{CEO}}$	$V_{\text{CE}} = -50 \text{ V}, I_{\text{B}} = 0$			-0.5	$\mu\text{A}$
Emitter-base cutoff current (Collector open)	$I_{\text{EBO}}$	$V_{\text{EB}} = -6 \text{ V}, I_{\text{C}} = 0$			-0.01	mA
Forward current transfer ratio	$h_{\text{FE}}$	$V_{\text{CE}} = -10 \text{ V}, I_{\text{C}} = -5 \text{ mA}$	160		460	—
Collector-emitter saturation voltage	$V_{\text{CE(sat)}}$	$I_{\text{C}} = -10 \text{ mA}, I_{\text{B}} = -0.5 \text{ mA}$			-0.25	V
Input voltage (ON)	$V_{\text{I(on)}}$	$V_{\text{CE}} = -0.2 \text{ V}, I_{\text{C}} = -5 \text{ mA}$	-1.0			V
Input voltage (OFF)	$V_{\text{I(off)}}$	$V_{\text{CE}} = -5 \text{ V}, I_{\text{C}} = -100 \mu\text{A}$			-0.4	V
Input resistance	$R_{\text{I}}$		-30%	4.7	+30%	$\text{k}\Omega$

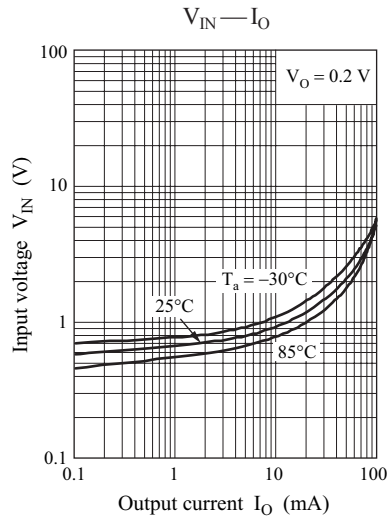
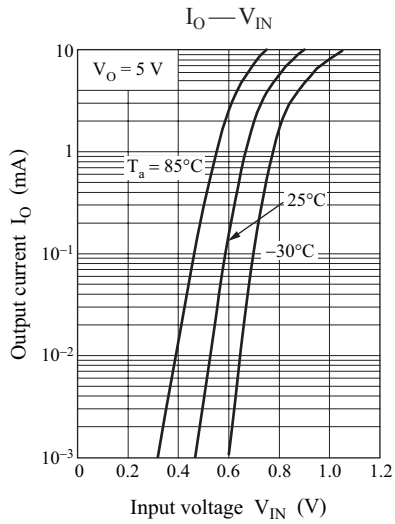
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

Common characteristics chart

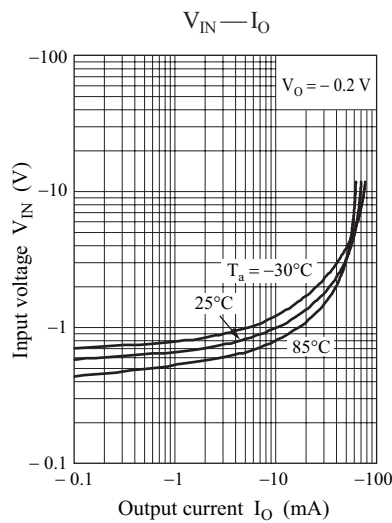
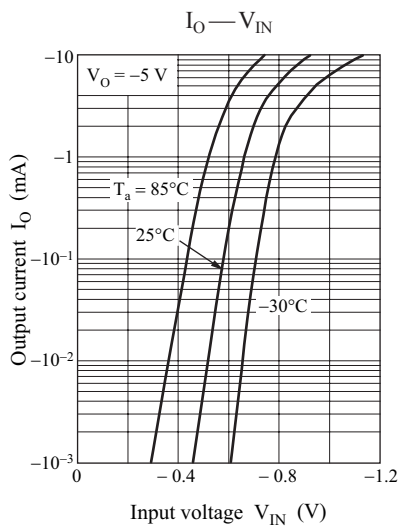
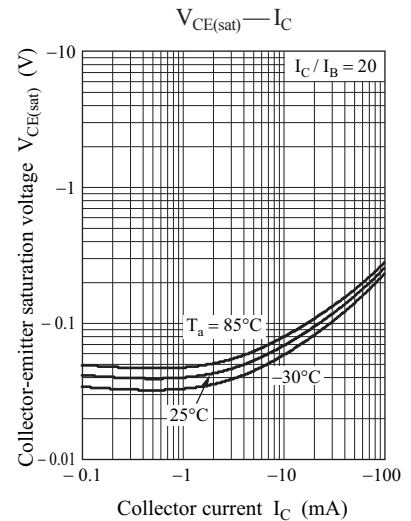
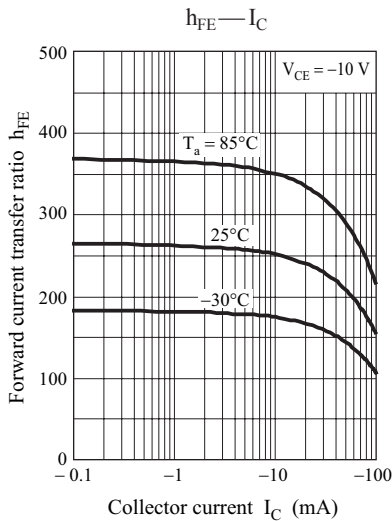
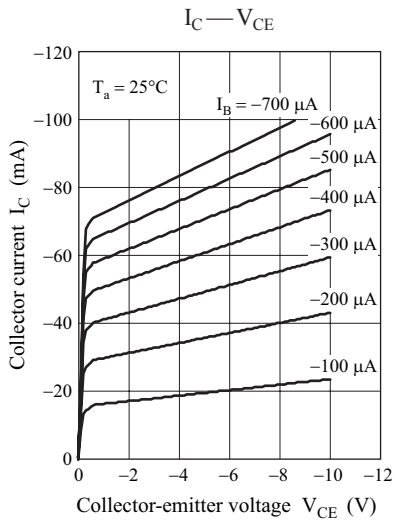


Characteristics charts of Tr1



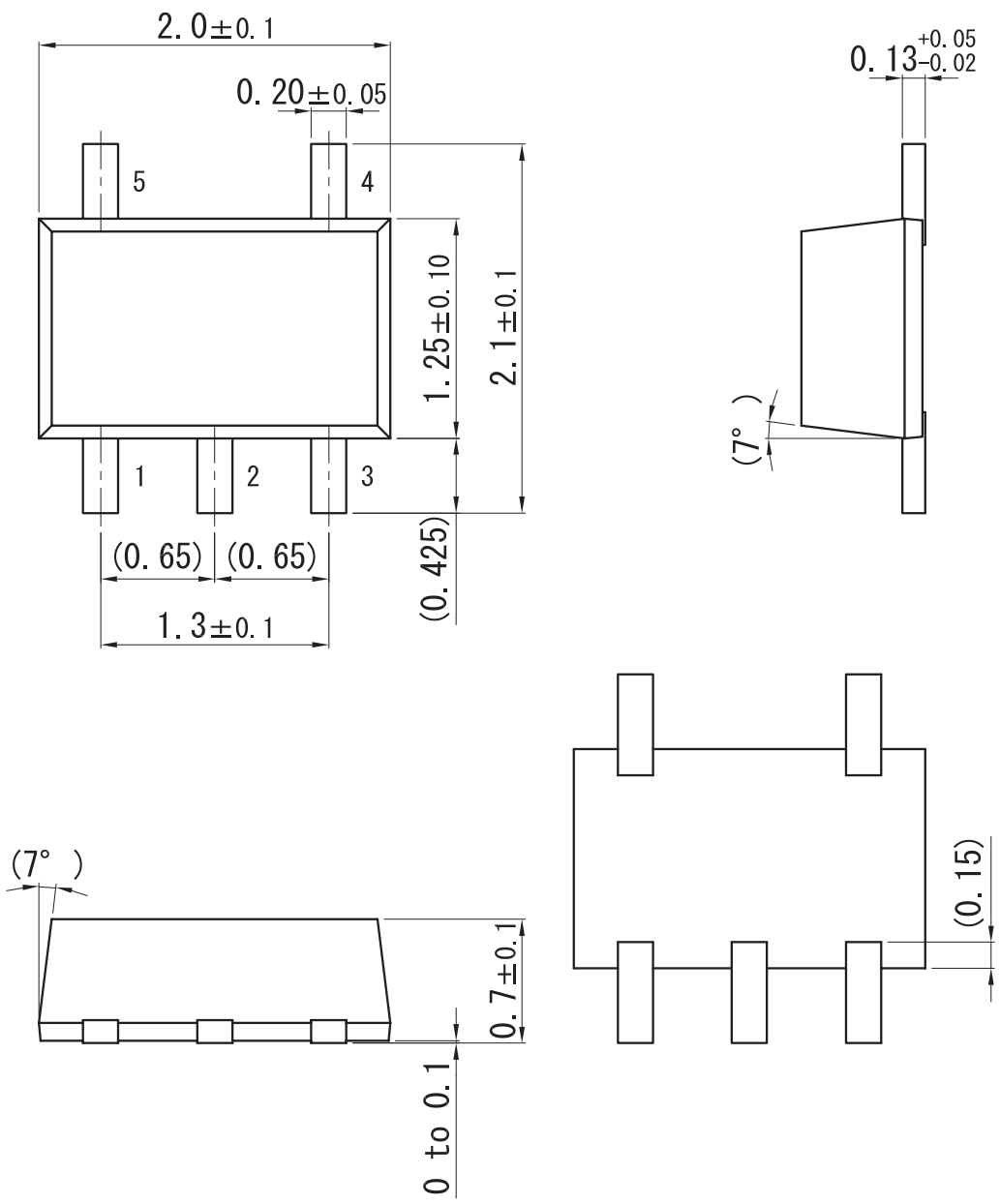


Characteristics charts of Tr2

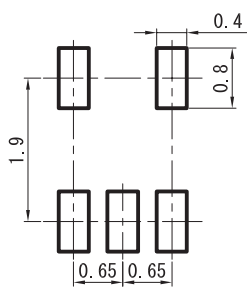


SMini5-F3-B

Unit: mm



Land Pattern (Reference) (Unit: mm)



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