

DMG9640M

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

For digital circuits
DMG5640M in SSMini6 type package

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

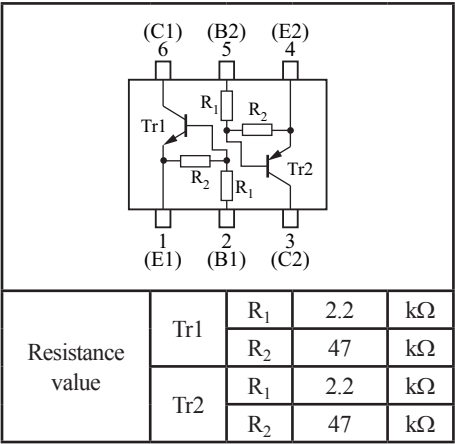
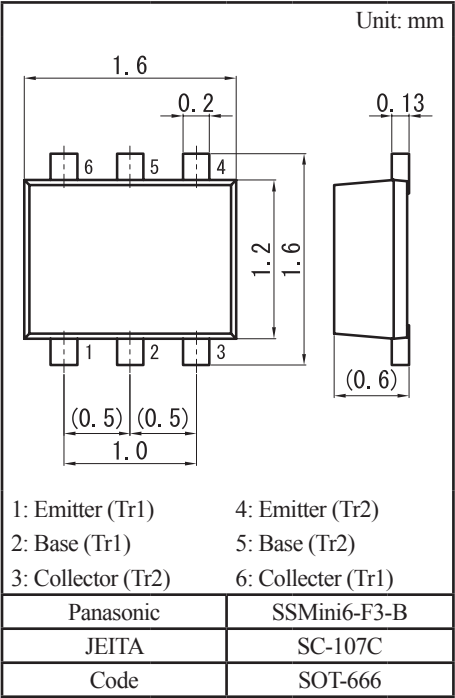
■ Marking Symbol: S5

■ Basic Part Number
DRC2123J + DRA2123J (Individual)

■ Packaging
DMG9640M0R 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}	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	$^{\circ}\text{C}$
	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}	$I_{\text{C}} = 10 \mu\text{A}, I_{\text{E}} = 0$	50			V
Collector-emitter voltage (Base open)	V_{CEO}	$I_{\text{C}} = 2 \text{ mA}, I_{\text{B}} = 0$	50			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{\text{CB}} = 50 \text{ V}, I_{\text{E}} = 0$			0.1	μA
Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{\text{CE}} = 50 \text{ V}, I_{\text{B}} = 0$			0.5	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	$V_{\text{EB}} = 6 \text{ V}, I_{\text{C}} = 0$			0.2	mA
Forward current transfer ratio	h_{FE}	$V_{\text{CE}} = 10 \text{ V}, I_{\text{C}} = 5 \text{ mA}$	80			—
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)	$V_{\text{I(on)}}$	$V_{\text{CE}} = 0.2 \text{ V}, I_{\text{C}} = 5 \text{ mA}$	1.2			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_{I}		-30%	2.2	+30%	$\text{k}\Omega$
Resistance ratio	$R_{\text{I}} / R_{\text{2}}$		0.037	0.047	0.057	—

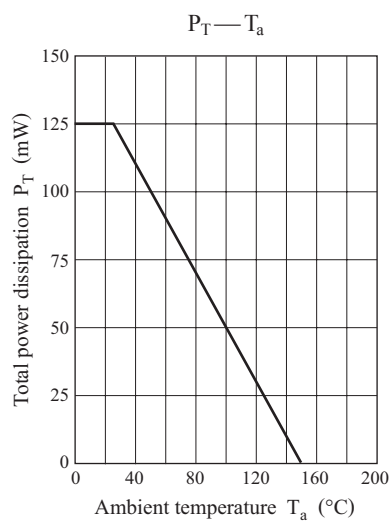
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

• Tr2

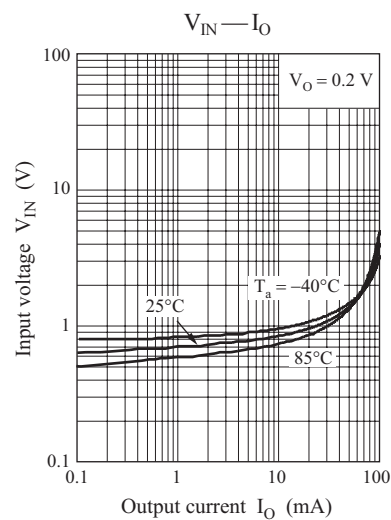
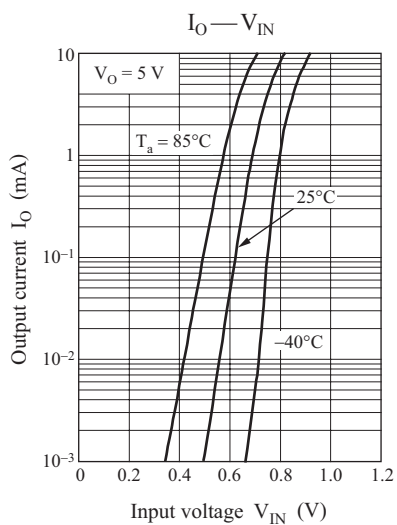
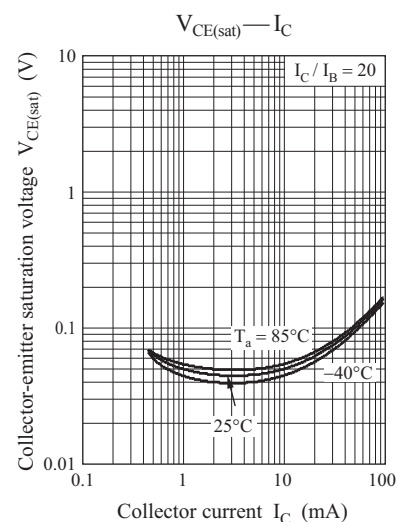
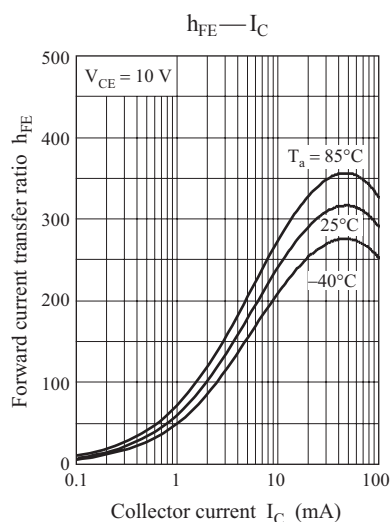
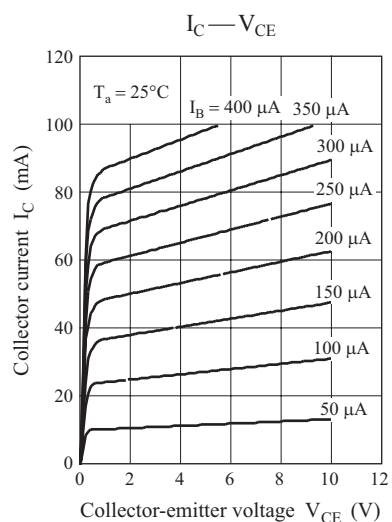
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	V_{CBO}	$I_{\text{C}} = -10 \mu\text{A}, I_{\text{E}} = 0$	-50			V
Collector-emitter voltage (Base open)	V_{CEO}	$I_{\text{C}} = -2 \text{ mA}, I_{\text{B}} = 0$	-50			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{\text{CB}} = -50 \text{ V}, I_{\text{E}} = 0$			-0.1	μA
Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{\text{CE}} = -50 \text{ V}, I_{\text{B}} = 0$			-0.5	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	$V_{\text{EB}} = -6 \text{ V}, I_{\text{C}} = 0$			-0.2	mA
Forward current transfer ratio	h_{FE}	$V_{\text{CE}} = -10 \text{ V}, I_{\text{C}} = -5 \text{ mA}$	80			—
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)	$V_{\text{I(on)}}$	$V_{\text{CE}} = -0.2 \text{ V}, I_{\text{C}} = -5 \text{ mA}$	-1.2			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_{I}		-30%	2.2	+30%	$\text{k}\Omega$
Resistance ratio	$R_{\text{I}} / R_{\text{2}}$		0.037	0.047	0.057	—

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

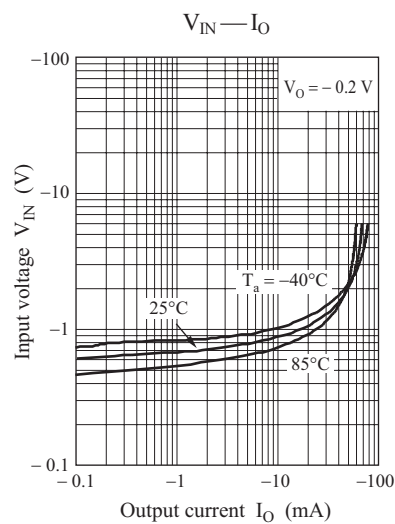
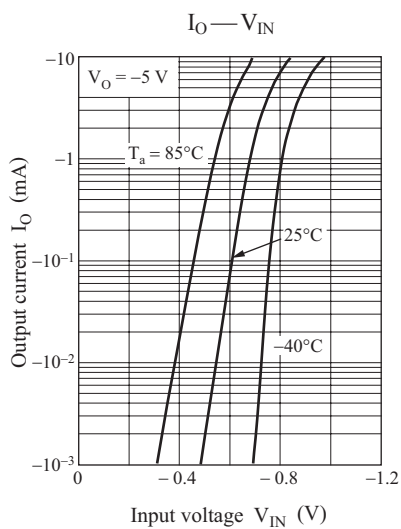
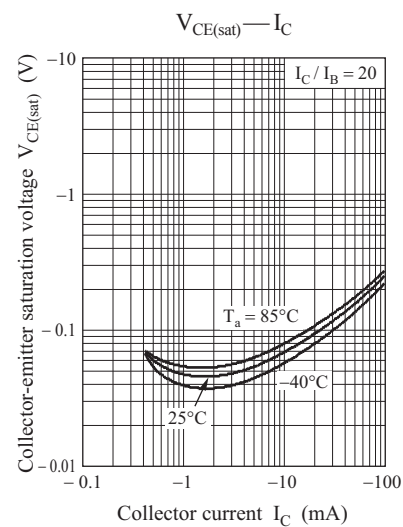
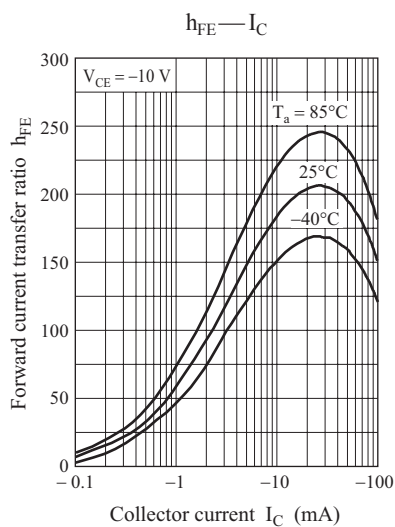
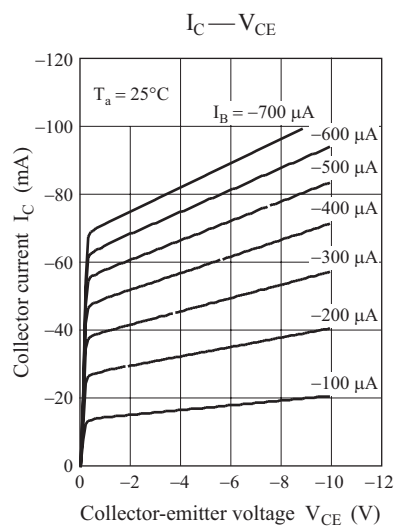
Common characteristics chart



Characteristics charts of Tr1

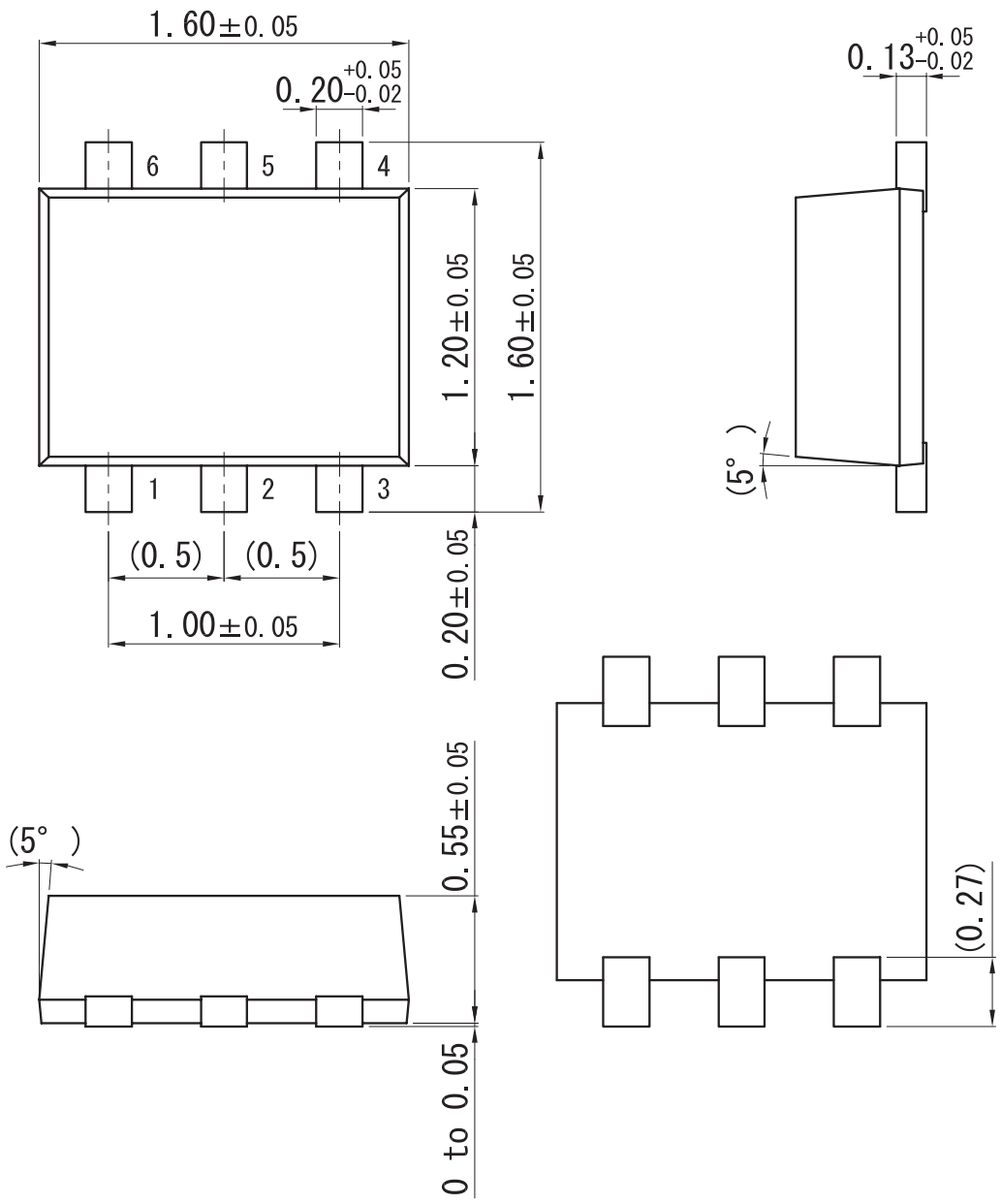


Characteristics charts of Tr2

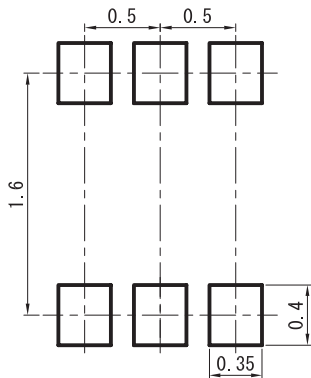


SSMini6-F3-B

Unit: mm



■ Land Pattern (Reference) (Unit: mm)



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