DMG20402

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

For general amplification

■ Features

- High forward current transfer ratio h_{FE} with excellent linearity
- Low collector-emitter saturation voltage $V_{CE(sat)}$
- Halogen-free / RoHS compliant
  (EU RoHS / UL-94 V-0 / MSL: Level 1 compliant)

■ Marking Symbol: B7

■ Basic Part Number

DSC2002 + DSA2002 (Individual)

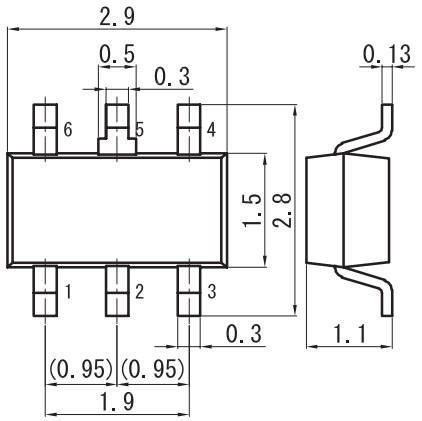
■ Packaging

DMG204020R Embossed type (Thermo-compression sealing): 3 000 pcs / reel (standard)

■ Absolute Maximum Ratings $T_a = 25°C$

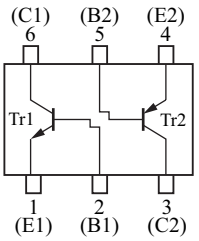
Parameter		Symbol	Rating	Unit
Tr1	Collector-base voltage (Emitter open)	V_{CBO}	60	V
	Collector-emitter voltage (Base open)	V_{CEO}	50	V
	Emitter-base voltage (Collector open)	V_{EBO}	5	V
	Collector current	I_C	500	mA
	Peak collector current	I_{CP}	1	A
Tr2	Collector-base voltage (Emitter open)	V_{CBO}	–60	V
	Collector-emitter voltage (Base open)	V_{CEO}	–50	V
	Emitter-base voltage (Collector open)	V_{EBO}	–5	V
	Collector current	I_C	–500	mA
	Peak collector current	I_{CP}	–1	A
Overall	Total power dissipation	P_T	300	mW
	Junction temperature	T_j	150	°C
	Operating ambient temperature	T_{opr}	–40 to +85	°C
	Storage temperature	T_{stg}	–55 to +150	°C

Unit: mm



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

Panasonic	Mini6-G4-B
JEITA	SC-74
Code	SOT-457



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

• Tr1

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	V_{CBO}	I_C = 10 µA, I_E = 0	60			V
Collector-emitter voltage (Base open)	V_{CEO}	I_C = 2 mA, I_B = 0	50			V
Emitter-base voltage (Collector open)	V_{EBO}	I_E = 10 µA, I_C = 0	5			V
Collector-base cutoff current (Emitter open)	I_{CBO}	V_{CB} = 20 V, I_E = 0			0.1	µA
Forward current transfer ratio *1	h_{FE1}	V_{CE} = 10 V, I_C = 150 mA	120		340	—
	h_{FE2}	V_{CE} = 10 V, I_C = 500 mA	40			
Collector-emitter saturation voltage *1	$V_{CE(sat)}$	I_C = 300 mA, I_B = 30 mA		0.1	0.6	V
Transition frequency	f_T	V_{CE} = 10 V, I_C = 50 mA		160		MHz
Collector output capacitance (Common base, input open circuited)	C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz		4.8	15	pF

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. *1: Pulse measurement

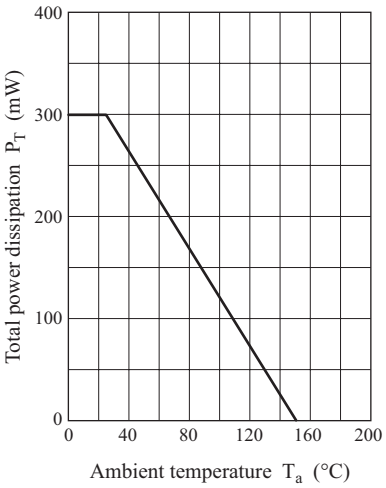
• Tr2

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	V_{CBO}	I_C = –10 µA, I_E = 0	–60			V
Collector-emitter voltage (Base open)	V_{CEO}	I_C = –2 mA, I_B = 0	–50			V
Emitter-base voltage (Collector open)	V_{EBO}	I_E = –10 µA, I_C = 0	–5			V
Collector-base cutoff current (Emitter open)	I_{CBO}	V_{CB} = –20 V, I_E = 0			– 0.1	µA
Forward current transfer ratio *1	h_{FE1}	V_{CE} = –10 V, I_C = –150 mA	120		340	—
	h_{FE1}	V_{CE} = –10 V, I_C = –500 mA	40			
Collector-emitter saturation voltage *1	$V_{CE(sat)}$	I_C = –300 mA, I_B = –30 mA		– 0.2	– 0.6	V
Base-emitter saturation voltage *1	$V_{BE(sat)}$	I_C = –300 mA, I_B = –30 mA		– 0.9	–1.5	V
Transition frequency	f_T	V_{CE} = –10 V, I_C = –50 mA		130		MHz
Collector output capacitance (Common base, input open circuited)	C_{ob}	V_{CB} = –10 V, I_E = 0, f = 1 MHz		7.3	15	pF

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. *1: Pulse measurement

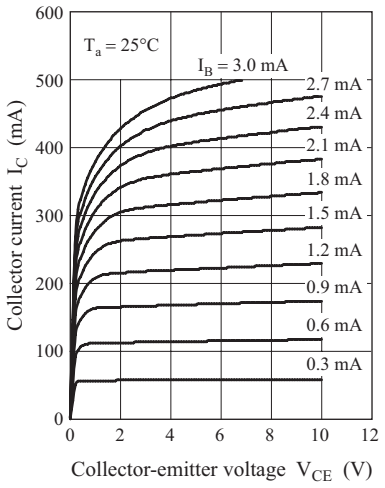
Common characteristics chart

P_T — T_a

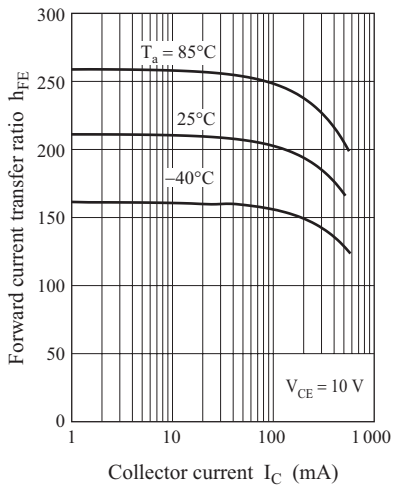


Characteristics charts of Tr1

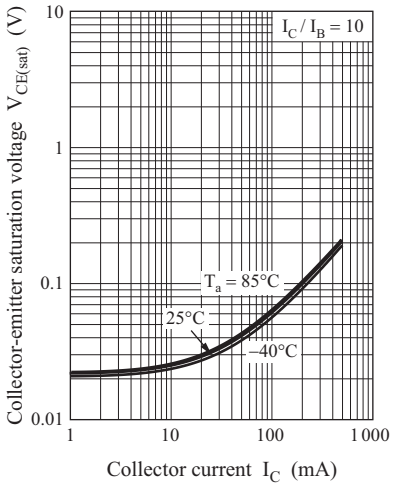
I_C — V_{CE}



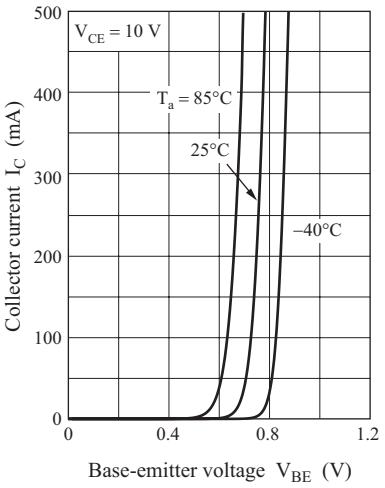
h_{FE} — I_C



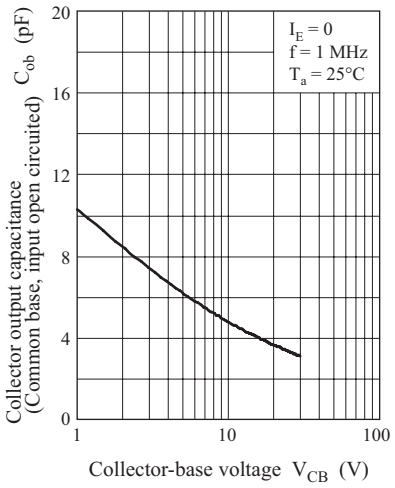
$V_{CE(sat)}$ — I_C



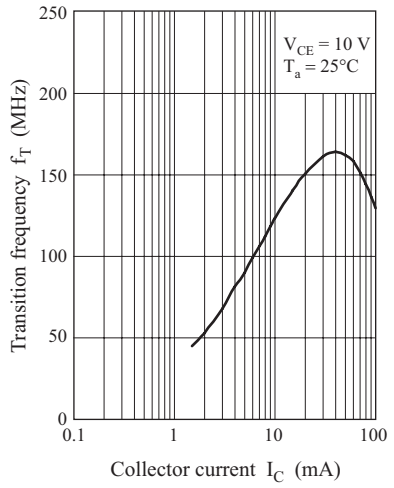
I_C — V_{BE}



C_{ob} — V_{CB}

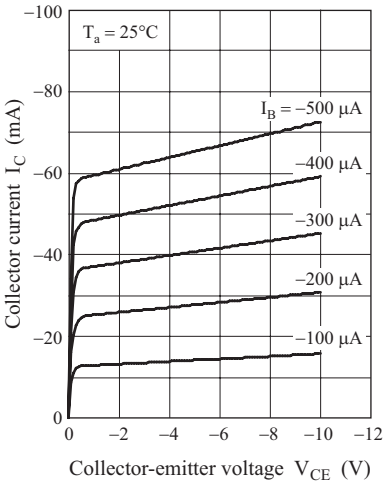


f_T — I_C

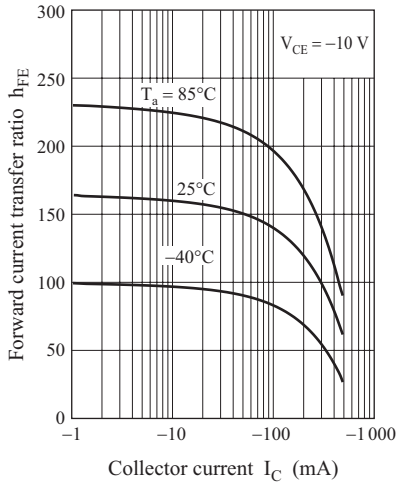


Characteristics charts of Tr2

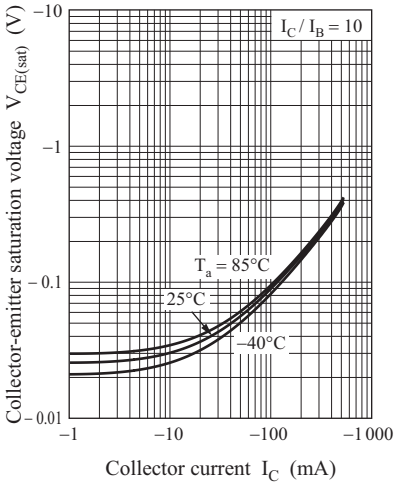
I_C — V_{CE}



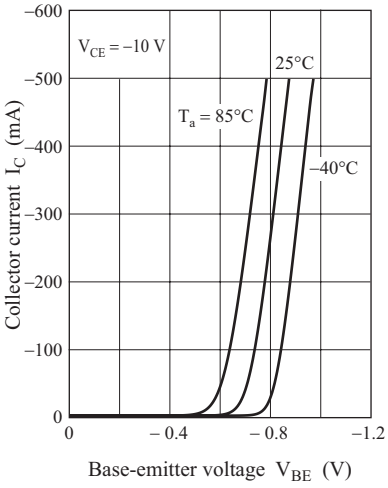
h_{FE} — I_C



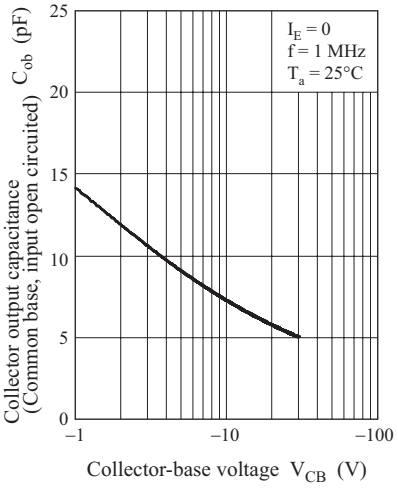
$V_{CE(sat)}$ — I_C



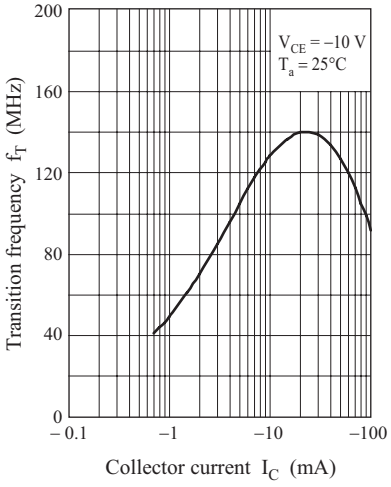
I_C — V_{BE}



C_{ob} — V_{CB}

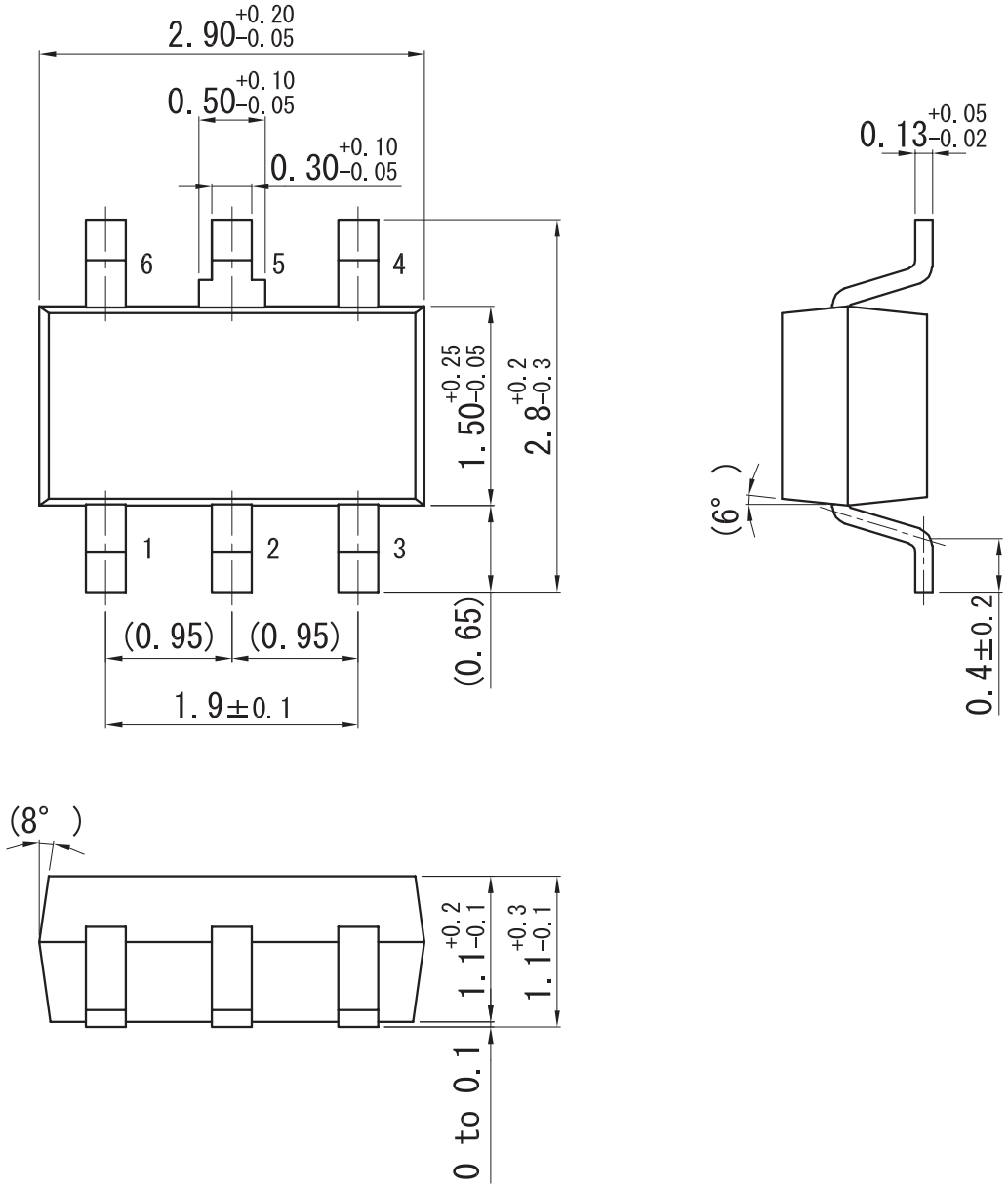


f_T — I_C

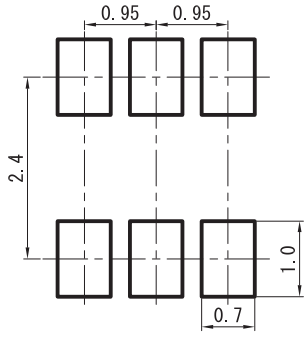


Mini6-G4-B

Unit: mm



■ Land Pattern (Reference) (Unit: mm)



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