XN07651 (XN7651)

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

For motor drive

■ Features

- Two elements incorporated into one package
- Reduction of the mounting area and assembly cost by one half

■ Basic Part Number

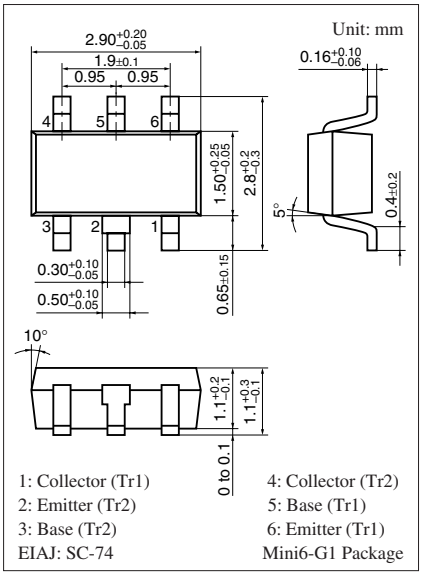
- ARN-5 + 2SB0970 (2SB970)

■ Absolute Maximum Ratings $T_a = 25°C$

Parameter		Symbol	Rating	Unit
Tr1	Collector-base voltage (Emitter open)	V_{CBO}	20	V
	Collector-emitter voltage (Base open)	V_{CEO}	15	V
	Emitter-base voltage (Collector open)	V_{EBO}	7	V
	Collector current	I_C	0.55	A
	Peak collector current	I_{CP}	1.1	A
	Collector current *1	I_C	0.7	A
Tr2	Collector-base voltage (Emitter open)	V_{CBO}	−15	V
	Collector-emitter voltage (Base open)	V_{CEO}	−10	V
	Emitter-base voltage (Collector open)	V_{EBO}	−7	V
	Collector current	I_C	− 0.55	A
	Peak collector current	I_{CP}	−1.1	A
	Collector current	I_C	− 0.7	A
Overall	Total power dissipation	P_T	350	mW
		P_T *2	750	
	Junction temperature	T_j	150	°C
	Storage temperature	T_{stg}	−55 to +150	°C

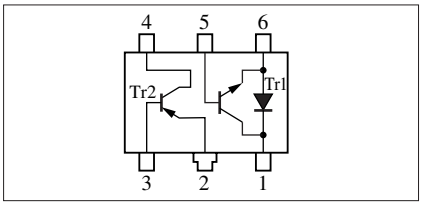
Note) *1: $T_a = −20°C \pm 2°C$

*2: An instantaneous total power dissipation (for the single pulse of 50 ms)



Marking Symbol: 9W

Internal Connection



Note) The part number in the parenthesis shows conventional part number.

■ Electrical Characteristics $T_a = 25°C \pm 3°C$

• Tr1

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	V_{CBO}	$I_C = 10\ \mu A$, $I_E = 0$	20			V
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = 1$ mA, $I_B = 0$	15			V
Emitter-base voltage (Collector open)	V_{EBO}	$I_E = 10\ \mu A$, $I_C = 0$	7			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = 15$ V, $I_E = 0$			0.1	μA
Forward current transfer ratio *1	h_{FE1}	$V_{CE} = 2$ V, $I_C = 0.5$ A	200		800	—
	h_{FE2}	$V_{CE} = 2$ V, $I_C = 1$ A	60			
Collector-emitter saturation voltage *1	$V_{CE(sat)1}$	$I_C = 0.3$ A, $I_B = 8$ mA			0.2	V
	$V_{CE(sat)2}$	$I_C = 0.7$ A, $I_B = 8$ mA			0.5	
Forward voltage *2	V_F	$I_F = 0.55$ A			1.4	V
Transition frequency	f_T	$V_{CB} = 10$ V, $I_E = -50$ mA, f = 200 MHz		200		MHz
Collector output capacitance (Common base, input open circuited)	C_{ob}	$V_{CB} = 10$ V, $I_E = 0$, f = 1 MHz		10		pF

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. ∗1: Pulse measurement
∗2: Effective for the transistor with a built-in diode

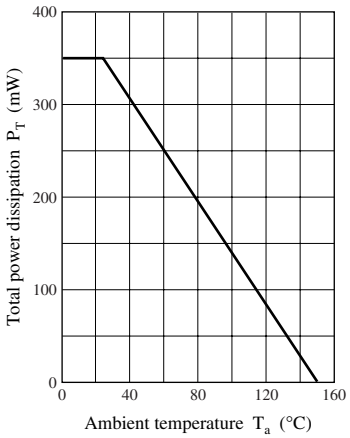
• Tr2

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	V_{CBO}	$I_C = -10\ \mu A$, $I_E = 0$	−15			V
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = -1$ mA, $I_B = 0$	−10			V
Emitter-base voltage (Collector open)	V_{EBO}	$I_E = -10\ \mu A$, $I_C = 0$	−7			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = -10$ V, $I_E = 0$			− 0.1	μA
Forward current transfer ratio *	h_{FE1}	$V_{CE} = -2$ V, $I_C = -0.5$ A	100		350	—
	h_{FE2}	$V_{CE} = -2$ V, $I_C = -1$ A	60			
Collector-emitter saturation voltage *	$V_{CE(sat)1}$	$I_C = -0.3$ A, $I_B = -8$ mA			− 0.22	V
	$V_{CE(sat)2}$	$I_C = -0.7$ A, $I_B = -8$ mA			− 0.6	
Transition frequency	f_T	$V_{CB} = -10$ V, $I_E = 50$ mA, f = 200 MHz		130		MHz
Collector output capacitance (Common base, input open circuited)	C_{ob}	$V_{CB} = -10$ V, $I_E = 0$, f = 1 MHz		22		pF

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

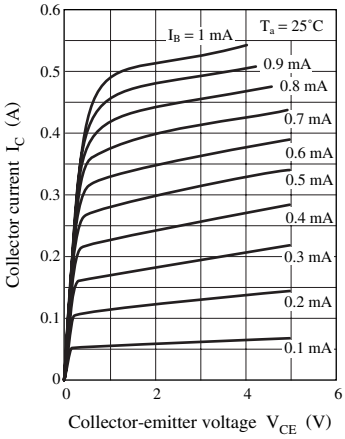
Common characteristics chart

P_T — T_a

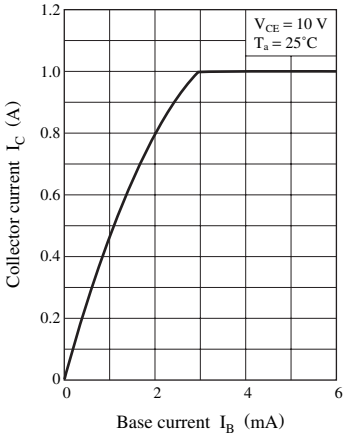


Characteristics charts of Tr1

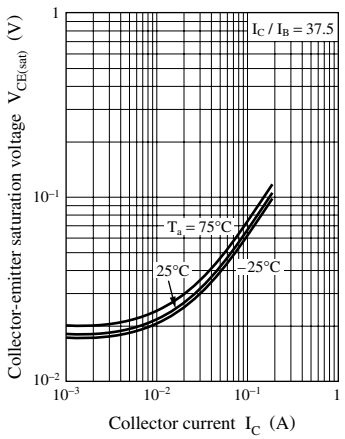
I_C — V_{CE}



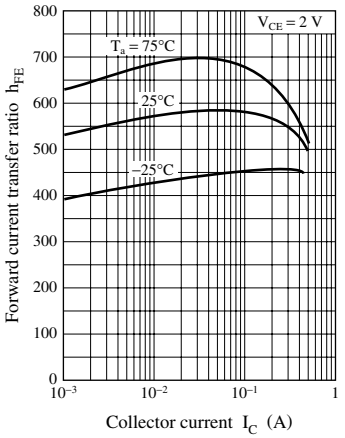
I_C — I_B



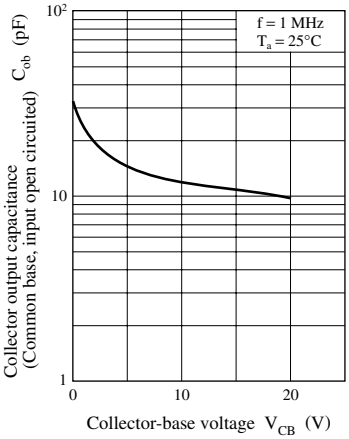
$V_{CE(sat)}$ — I_C



h_{FE} — I_C

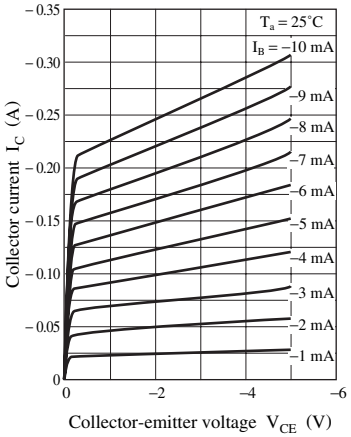


C_{ob} — V_{CB}

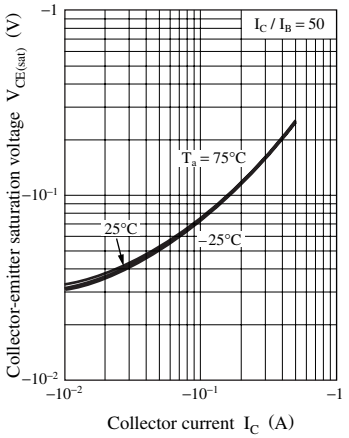


Characteristics charts of Tr2

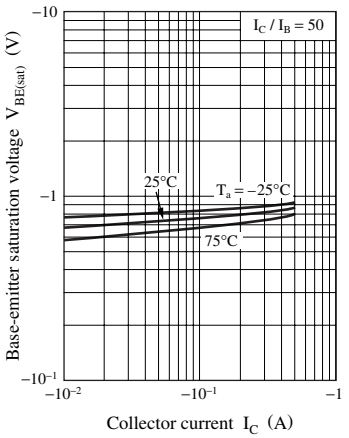
I_C — V_{CE}



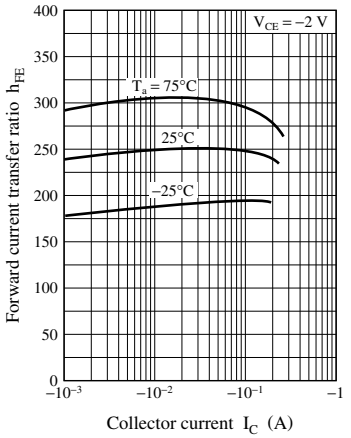
$V_{CE(sat)}$ — I_C



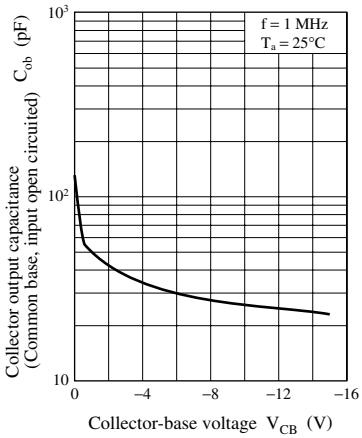
$V_{BE(sat)}$ — I_C



h_{FE} — I_C



C_{ob} — V_{CB}



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