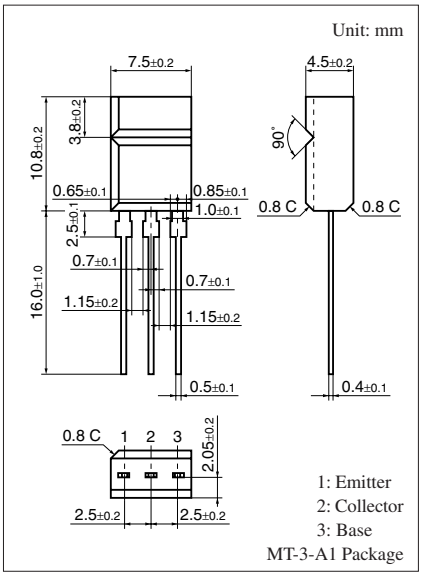
2SB1416

Silicon PNP epitaxial planar type

For low-frequency power amplification
Complementary to 2SD2136



■ Features

- High forward current transfer ratio h_{FE} which has satisfactory linearity
- Low collector-emitter saturation voltage $V_{CE(sat)}$
- Allowing automatic insertion with radial taping

■ Absolute Maximum Ratings $T_a = 25°C$

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	−60	V
Collector-emitter voltage (Base open)	V_{CEO}	−60	V
Emitter-base voltage (Collector open)	V_{EBO}	−5	V
Collector current	I_C	−3	A
Peak collector current	I_{CP}	−5	A
Collector power dissipation	P_C	1.5	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

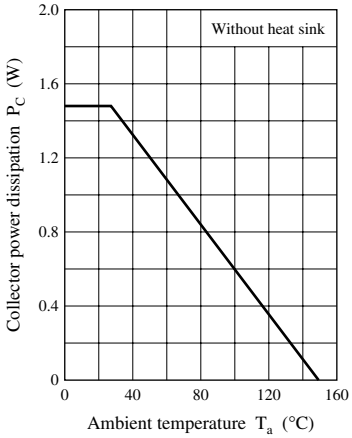
■ Electrical Characteristics $T_a = 25°C \pm 3°C$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	V_{CEO}	I_C = −30 mA, I_B = 0	−60			V
Base-emitter voltage	V_{BE}	V_{CE} = −4 V, I_C = −3 A			−1.8	V
Collector-emitter cutoff current (E-B short)	I_{CES}	V_{CE} = −60 V, V_{BE} = 0			−200	μA
Collector-emitter cutoff current (Base open)	I_{CEO}	V_{CE} = −30 V, I_B = 0			−300	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	V_{EB} = −5 V, I_C = 0			−1	mA
Forward current transfer ratio	h_{FE1} *	V_{CE} = −4 V, I_C = −1 A	40		250	—
	h_{FE2}	V_{CE} = −4 V, I_C = −3 A	10			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = −3 A, I_B = − 0.375A			−1.2	V
Transition frequency	f_T	V_{CB} = −5 V, I_E = 0.1 A, f = 200 MHz		270		MHz
Turn-on time	t_{on}	I_C = −1 A, I_{B1} = − 0.1 A, I_{B2} = 0.1 A		0.5		μs
Storage time	t_{stg}			1.2		μs
Fall time	t_f			0.3		μs

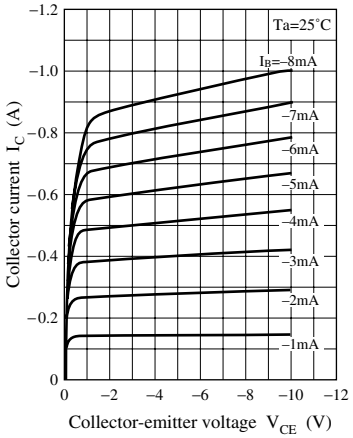
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. *: Rank classification

Rank	P	Q	R
h_{FE1}	40 to 90	70 to 150	120 to 250

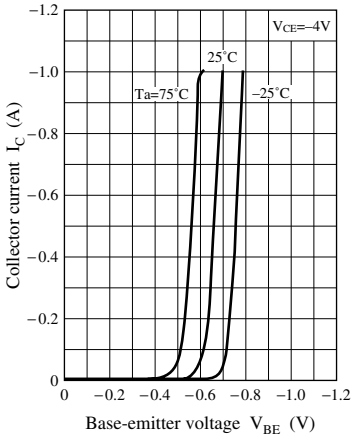
P_C — T_a



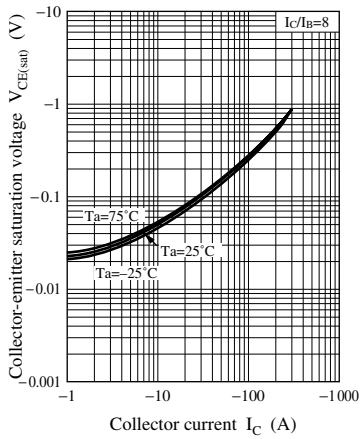
I_C — V_{CE}



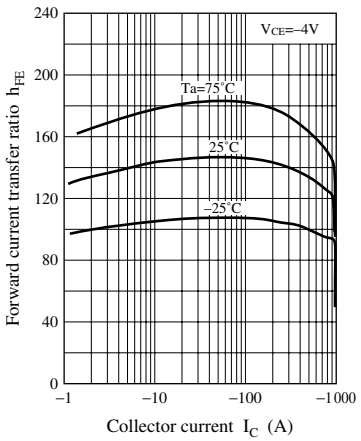
I_C — V_{BE}



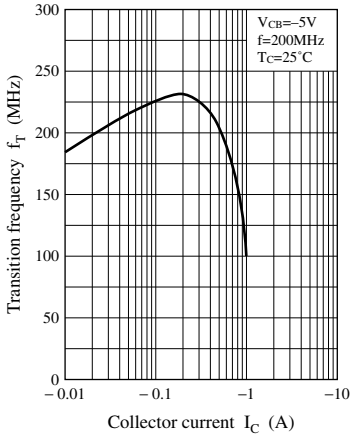
$V_{CE(sat)}$ — I_C



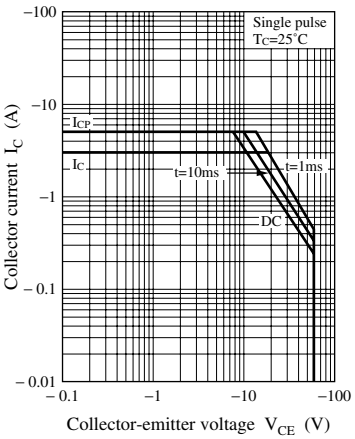
h_{FE} — I_C



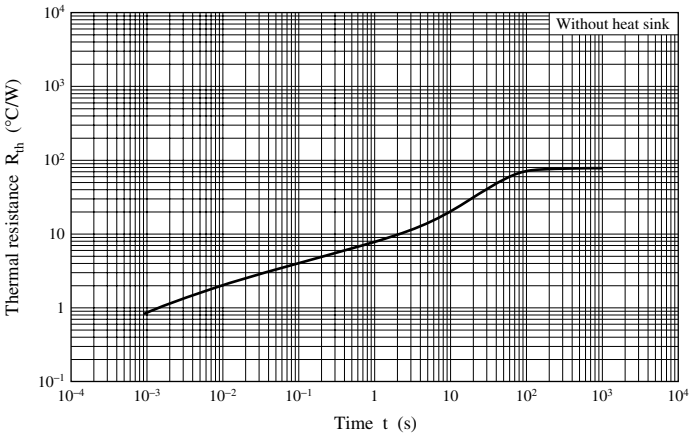
f_T — I_E



Safe operation area



R_{th} — t



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