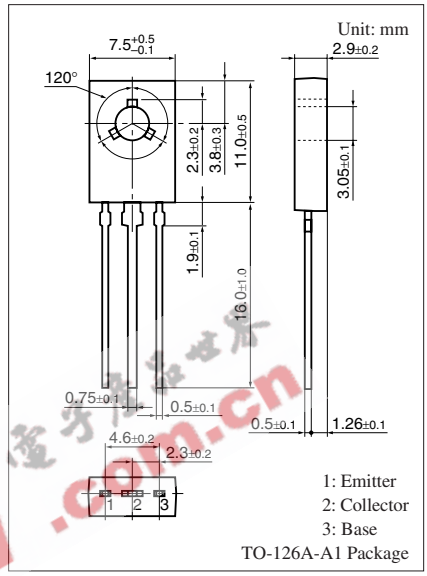
2SC2209

Silicon NPN epitaxial planar type

For low-frequency power amplification
Complementary to 2SA0963



■ Features

- Large collector power dissipation P_C
- Output of 5 W can be obtained by a complementary pair with 2SA0963

■ Absolute Maximum Ratings $T_a = 25°C$

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	50	V
Collector-emitter voltage (Base open)	V_{CEO}	40	V
Emitter-base voltage (Collector open)	V_{EBO}	5	V
Collector current	I_C	1.5	A
Peak collector current	I_{CP}	3	A
Collector power dissipation *	P_C	10	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

Note) ∗: $T_C = 25°C$

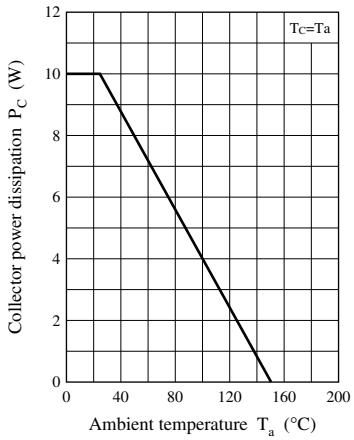
■ Electrical Characteristics $T_a = 25°C \pm 3°C$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	V_{CBO}	I_C = 1 mA, I_E = 0	50			V
Collector-emitter voltage (Base open)	V_{CEO}	I_C = 2 mA, I_B = 0	40			V
Collector-base cutoff current (Emitter open)	I_{CBO}	V_{CB} = 20 V, I_E = 0			1	µA
Collector-emitter cutoff current (Base open)	I_{CEO}	V_{CE} = 10 V, I_B = 0			100	µA
Emitter-base cutoff current (Collector open)	I_{EBO}	V_{EB} = 5 V, I_C = 0			10	µA
Forward current transfer ratio *1, 2	h_{FE}	V_{CE} = 5 V, I_C = 1 A	80		220	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 1.5 A, I_B = 0.15 A			1	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C = 2 A, I_B = 0.2 A			1.5	V
Transition frequency	f_T	V_{CB} = 5 V, I_E = − 0.5 A, f = 200 MHz		150		MHz
Collector output capacitance (Common base, input open circuited)	C_{ob}	V_{CB} = 5 V, I_E = 0, f = 1 MHz		50		pF

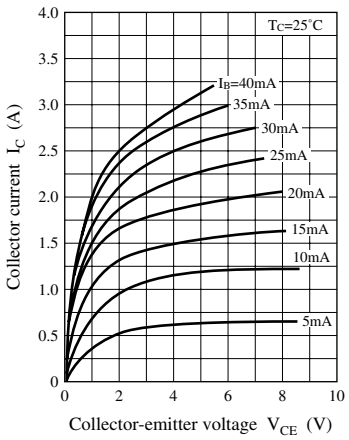
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. ∗1: Pulse measurement
∗2: Rank classification

Rank	Q	R
h_{FE}	80 to 160	120 to 220

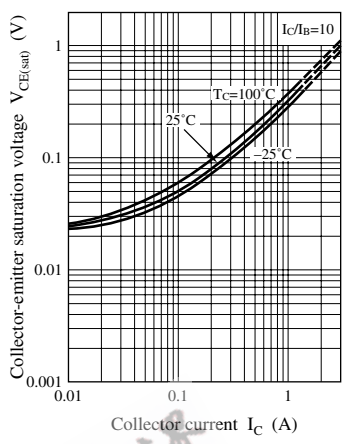
P_C — T_a



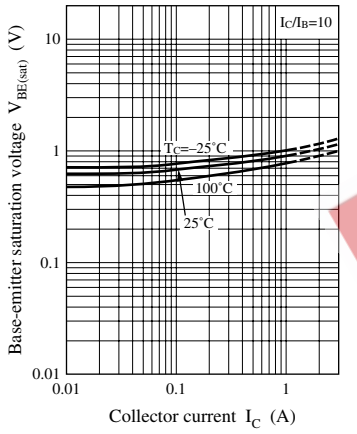
I_C — V_{CE}



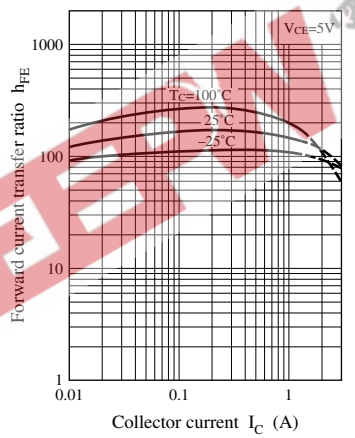
$V_{CE(sat)}$ — I_C



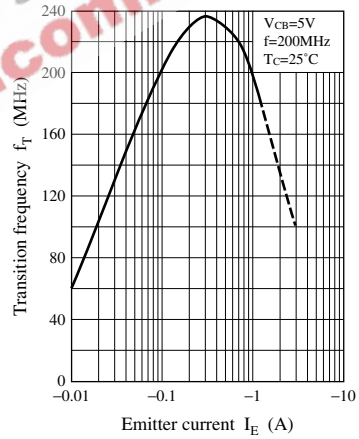
$V_{BE(sat)}$ — I_C



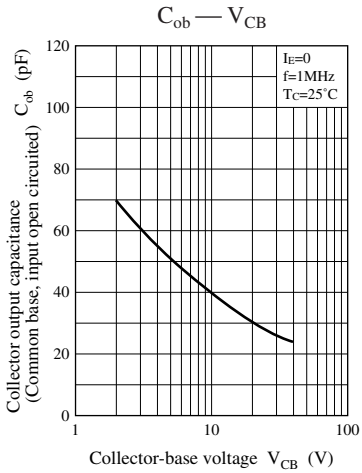
h_{FE} — I_C



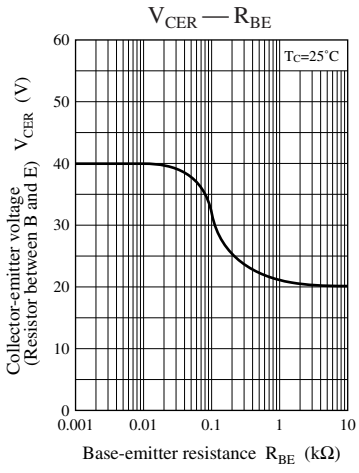
f_T — I_E



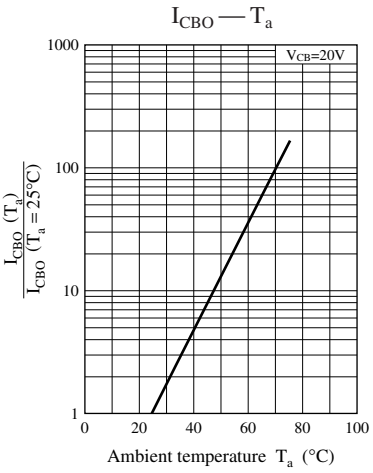
C_{ob} — V_{CB}



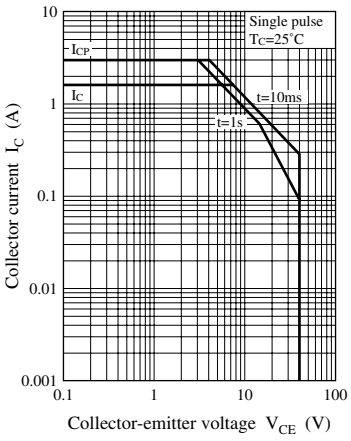
V_{CER} — R_{BE}



I_{CBO} — T_a



Safe operation area



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