

# 2SB1699

## Silicon PNP epitaxial planar type

For power amplification

### ■ Features

- Low collector-emitter saturation voltage  $V_{CE(sat)}$
- Mini Power type package, allowing downsizing of the equipment and automatic insertion through the tape packing and the magazine packing.

### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

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)	$V_{EBO}$	-6	V
Collector current	$I_C$	-2	A
Peak collector current	$I_{CP}$	-4	A
Collector power dissipation *	$P_C$	1	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

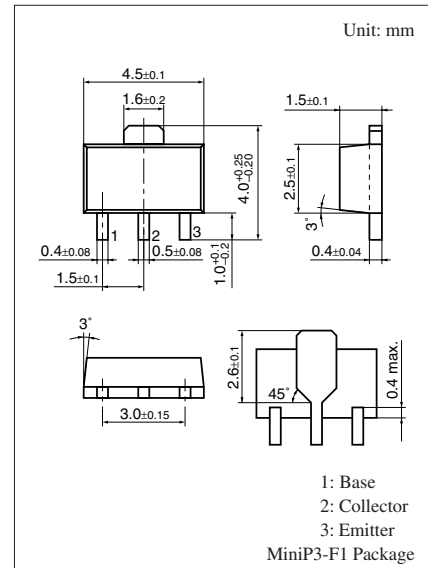
Note) \*: Print circuit board: Copper foil area of 1 cm<sup>2</sup> or more, and the board thickness of 1.7 mm for the collector portion

### ■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

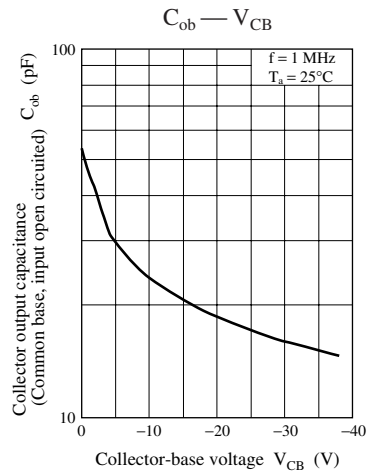
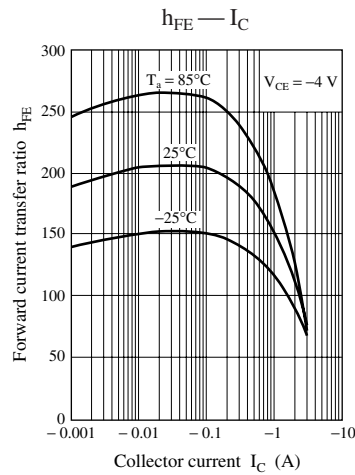
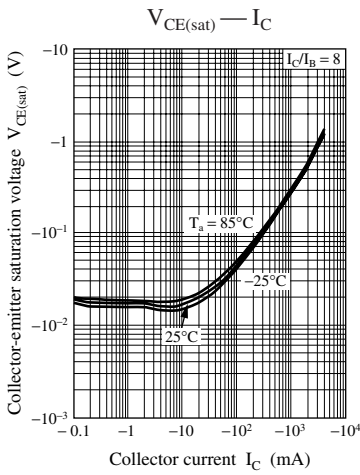
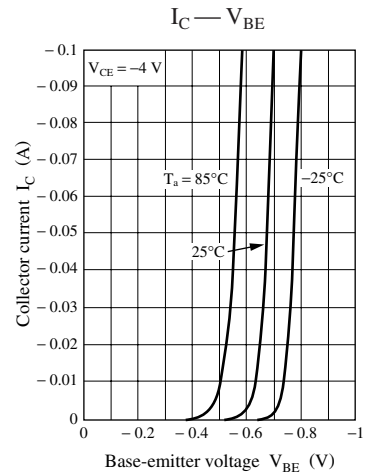
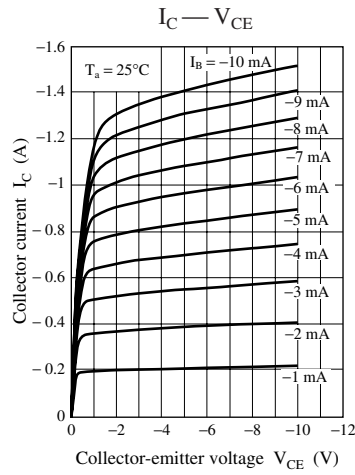
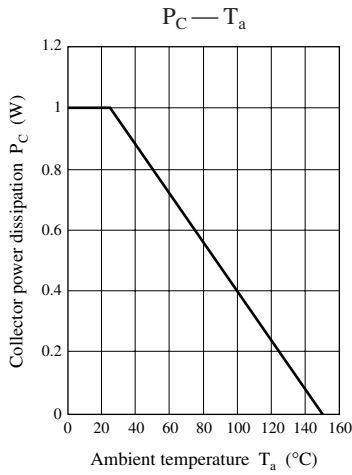
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	$V_{CEO}$	$I_C = -1 \text{ mA}, I_B = 0$	-60			V
Collector-base cutoff current (Emitter open)	$I_{CBO}$	$V_{CB} = -60 \text{ V}, I_E = 0$			-100	$\mu\text{A}$
Collector-emitter cut-off current (Base open)	$I_{CEO}$	$V_{CE} = -60 \text{ V}, I_B = 0$			-100	$\mu\text{A}$
Forward current transfer ratio *	$h_{FE1}$	$V_{CE} = -4 \text{ V}, I_C = -1 \text{ A}$	80		250	—
	$h_{FE2}$	$V_{CE} = -4 \text{ V}, I_C = -0.2 \text{ A}$	60			
	$h_{FE3}$	$V_{CE} = -4 \text{ V}, I_C = -2 \text{ A}$	30			
Collector-emitter saturation voltage *	$V_{CE(sat)}$	$I_C = -2 \text{ A}, I_B = -250 \text{ mA}$			-0.5	V
Turn-on time	$t_{on}$	$I_C = -1 \text{ A}, I_{B1} = 0.1 \text{ A}$ $I_{B2} = -0.1 \text{ A}, V_{CC} = -50 \text{ V}$		0.2		$\mu\text{s}$
Storage time	$t_{stg}$			0.4		$\mu\text{s}$
Fall time	$t_f$			0.1		$\mu\text{s}$
Transition frequency	$f_T$	$V_{CB} = -10 \text{ V}, I_E = 50 \text{ mA}, f = 200 \text{ MHz}$		180		MHz

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. \*: Pulse measurement



Marking Symbol: 3A



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