

To all our customers

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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

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Keep safety first in your circuit designs!

1. Renesas Technology Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage.

Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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2SB1409(L)/(S)

Silicon PNP Epitaxial

RENESAS

ADE-208-877 (Z)

1st. Edition

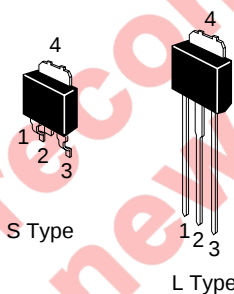
September 2000

Application

Low frequency power amplifier complementary Pair with 2SD2123(L)/(S)

Outline

DPAK



- 1. Base
- 2. Collector
- 3. Emitter
- 4. Collector

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	−180	V
Collector to emitter voltage	V_{CEO}	−160	V
Emitter to base voltage	V_{EBO}	−5	V
Collector current	I_C	−1.5	A
Collector peak current	$I_{C(peak)}$	−3	A
Collector power dissipation	P_C^{*1}	18	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

Note: 1. Value at $T_C = 25^{\circ}C$.

Electrical Characteristics (Ta = 25°C)

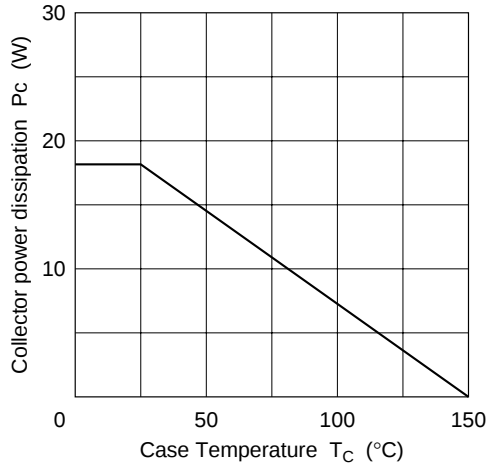
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	−180	—	—	V	$I_C = -1\text{ mA}$, $I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	−160	—	—	V	$I_C = -10\text{ mA}$, $R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	−5	—	—	V	$I_E = -1\text{ mA}$, $I_C = 0$
Collector cutoff current	I_{CBO}	—	—	−10	μA	$V_{CB} = -160\text{ V}$, $I_E = 0$
DC current transfer ratio	h_{FE1}^{*1}	60	—	200		$V_{CE} = -5\text{ V}$, $I_C = -150\text{ mA}^{*2}$
	h_{FE2}	30	—	—		$V_{CE} = -5\text{ V}$, $I_C = -500\text{ mA}^{*2}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	−1	V	$I_C = -500\text{ mA}$, $I_B = -50\text{ mA}$
Base to emitter voltage	V_{BE}	—	—	−1.5	V	$V_{CE} = -5\text{ V}$, $I_C = -150\text{ mA}$
Gain bandwidth product	f_T	—	240	—	MHz	$V_{CE} = -5\text{ V}$, $I_C = -150\text{ mA}$
Collector output capacitance	C_{ob}	—	25	—	pF	$V_{CB} = -10\text{ A}$, $I_E = 0$, $f = 1\text{ MHz}$

Notes: 1. The 2SB1409(L)/(S) is grouped by h_{FE1} as follows.

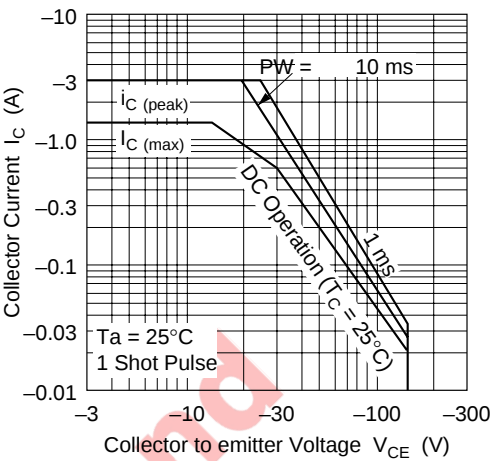
B	C
60 to 120	100 to 200

2. Pulse test.

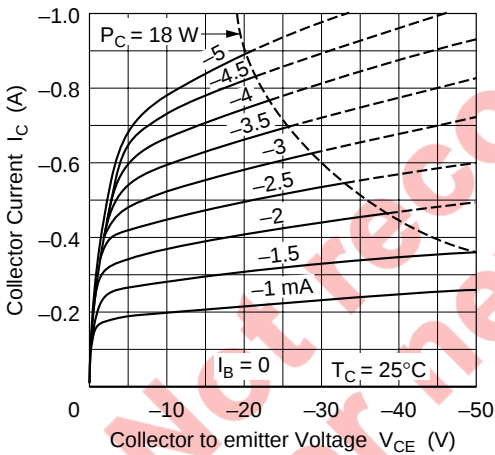
Maximum Collector Dissipation Curve



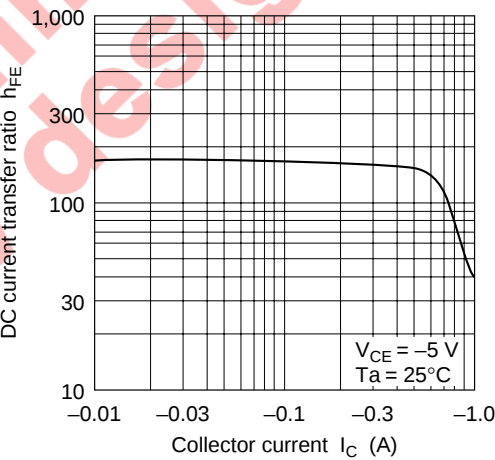
Area of Safe Operation

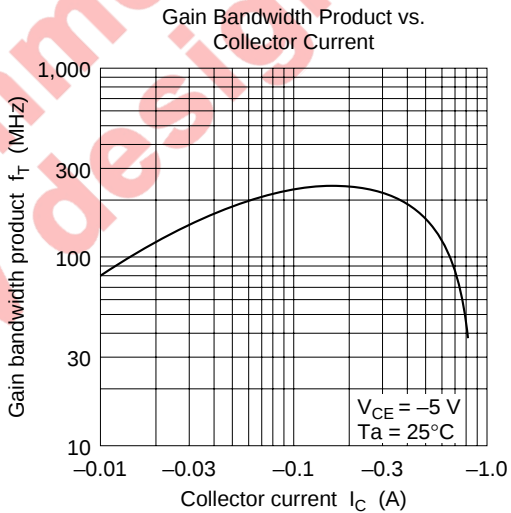
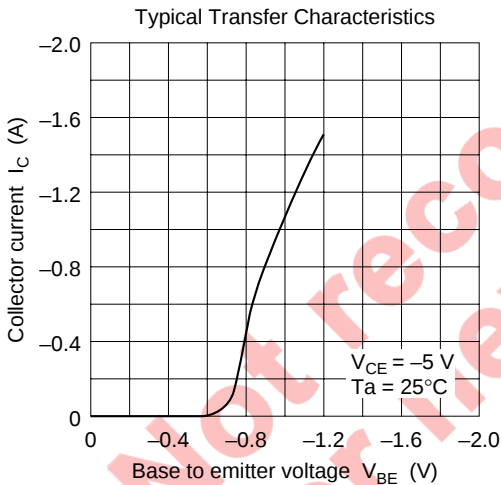
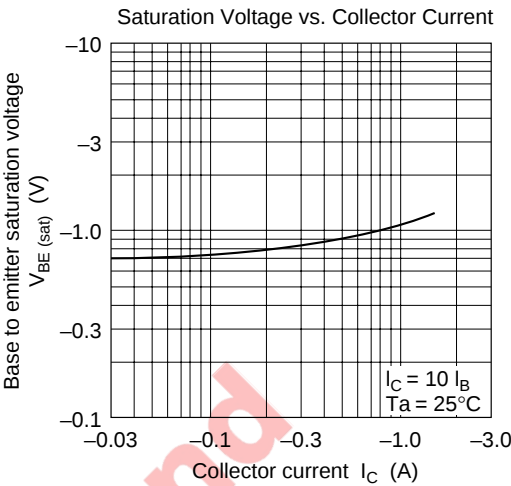
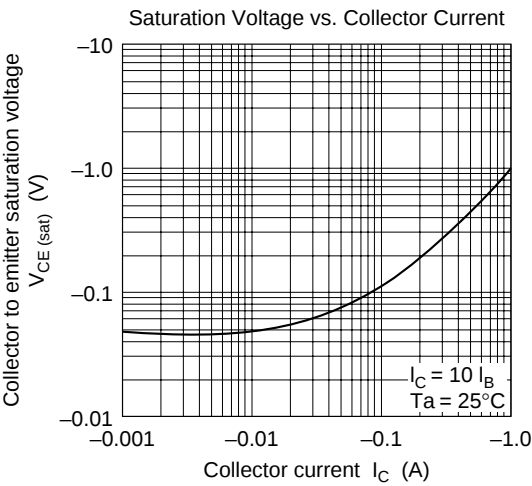


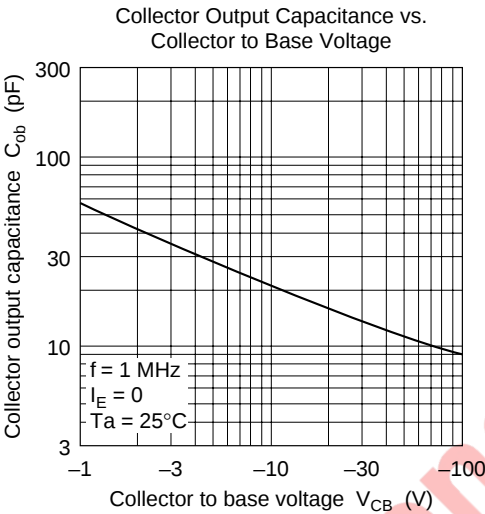
Typical Output Characteristics



DC Current Transfer Ratio vs. Collector Current







Not recommended
for new design

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