

To all our customers

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

Cautions

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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2SD1133, 2SD1134

Silicon NPN Triple Diffused

RENESAS

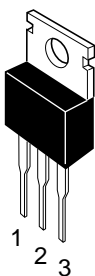
ADE-208-905 (Z)
1st. Edition
September 2000

Application

Low frequency power amplifier complementary pair with 2SB857 and 2SB858

Outline

TO-220AB



1. Base
2. Collector (Flange)
3. Emitter

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings		Unit
		2SD1133	2SD1134	
Collector to base voltage	V_{CBO}	70	70	V
Collector to emitter voltage	V_{CEO}	50	60	V
Emitter to base voltage	V_{EBO}	5	5	V
Collector current	I_C	4	4	A
Collector peak current	$I_{C(peak)}$	8	8	A
Collector power dissipation	P_C^{*1}	40	40	W
Junction temperature	T_j	150	150	°C
Storage temperature	T_{stg}	-45 to +150	-45 to +150	°C

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

2SD1133, 2SD1134

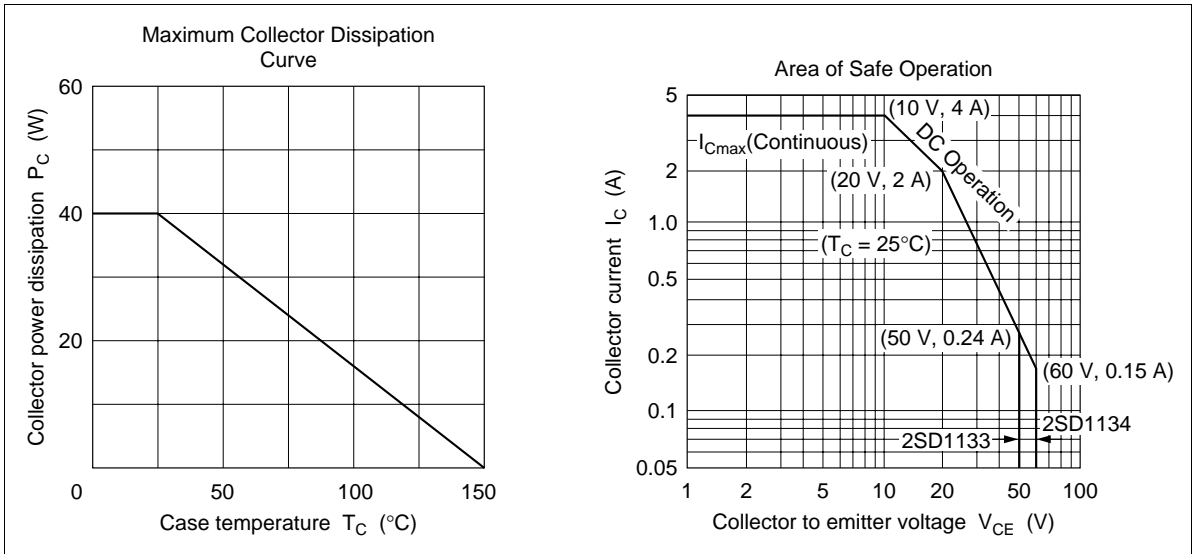
Electrical Characteristics (Ta = 25°C)

Item	Symbol	2SD1133			2SD1134			Unit	Test conditions
		Min	Typ	Max	Min	Typ	Max		
Collector to base breakdown voltage	$V_{(BR)CBO}$	70	—	—	70	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	50	—	—	60	—	—	V	$I_C = 50 \text{ mA}, R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	5	—	—	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	I_{CBO}	—	—	1	—	—	1	μA	$V_{CB} = 50 \text{ V}, I_E = 0$
DC current transfer ratio	h_{FE1}^{*1}	60	—	320	60	—	320		$V_{CE} = 4 \text{ V}, I_C = 1 \text{ A}^{*2}$
	h_{FE2}	35	—	—	35	—	—		$I_C = 0.1 \text{ A}^{*2}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	1	—	—	1	V	$I_C = 2 \text{ A}, I_B = 0.2 \text{ A}^{*2}$
Base to emitter voltage	V_{BE}	—	—	1	—	—	1	V	$V_{CE} = 4 \text{ V}, I_C = 1 \text{ A}^{*2}$
Gain bandwidth product	f_T	—	7	—	—	7	—	MHz	$V_{CE} = 4 \text{ V}, I_C = 0.5 \text{ A}^{*2}$

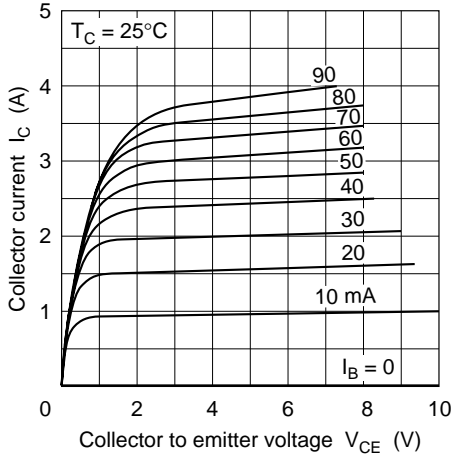
Notes: 1. The 2SD1133 and 2SD1134 are grouped by h_{FE1} as follows.

2. Pulse test.

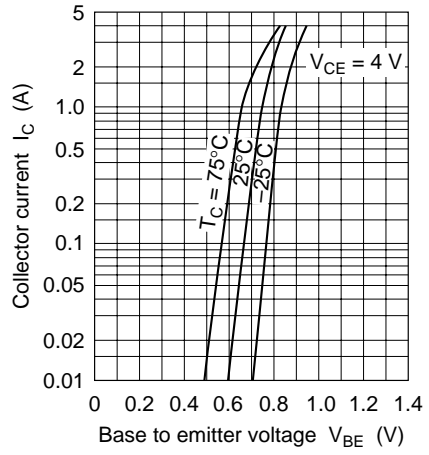
B	C	D
60 to 120	100 to 200	160 to 320



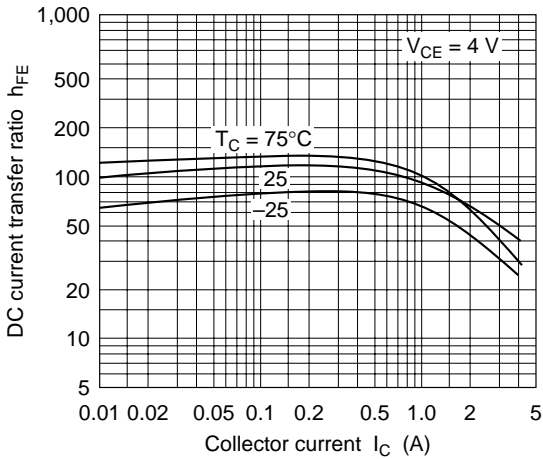
Typical Output Characteristics



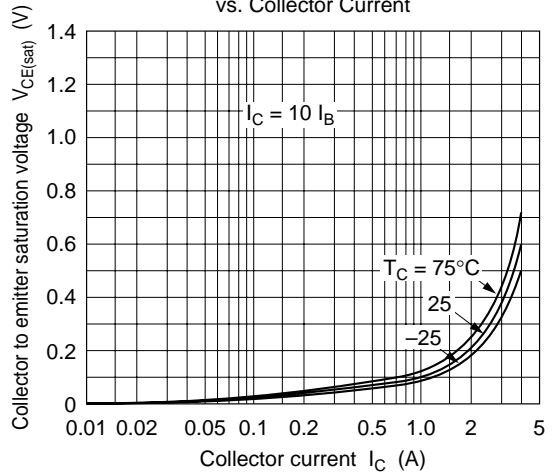
Typical Transfer Characteristics



DC Current Transfer Ratio vs. Collector Current



Collector to Emitter Saturation Voltage vs. Collector Current



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