To all our customers

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The semiconductor operations of Mitsubishi Electric and Hitachi were transferred to Renesas Technology Corporation on April 1st 2003. These operations include microcomputer, logic, analog and discrete devices, and memory chips other than DRAMs (flash memory, SRAMs etc.) Accordingly, although Hitachi, Hitachi, Ltd., Hitachi Semiconductors, and other Hitachi brand names are mentioned in the document, these names have in fact all been changed to Renesas Technology Corp. Thank you for your understanding. Except for our corporate trademark, logo and corporate statement, no changes whatsoever have been made to the contents of the document, and these changes do not constitute any alteration to the contents of the document itself.

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

Cautions

Keep safety first in your circuit designs!

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   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

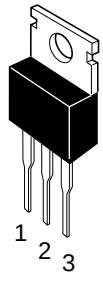
ADE-208-905 (Z)
1st. Edition
September 2000

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 2SD1133	Ratings 2SD1134	Unit
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	Tj	150	150	°C
Storage temperature	Tstg	–45 to +150	–45 to +150	°C

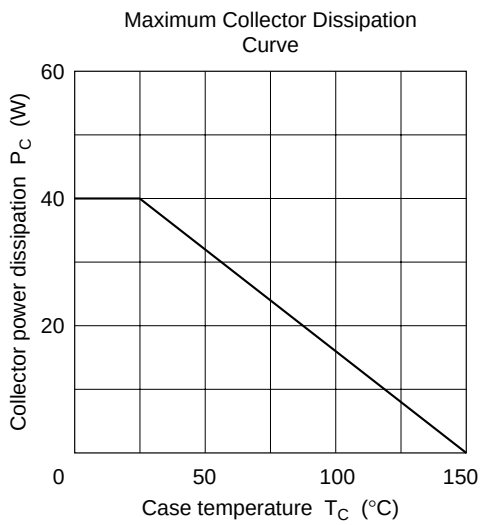
Note: 1. Value at T_C = 25°C.

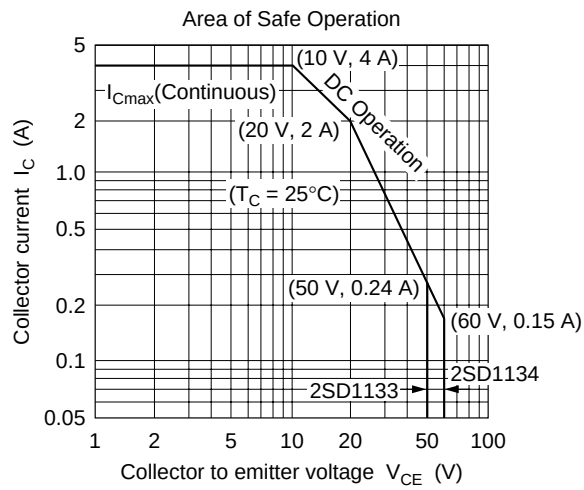
Electrical Characteristics (Ta = 25°C)

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

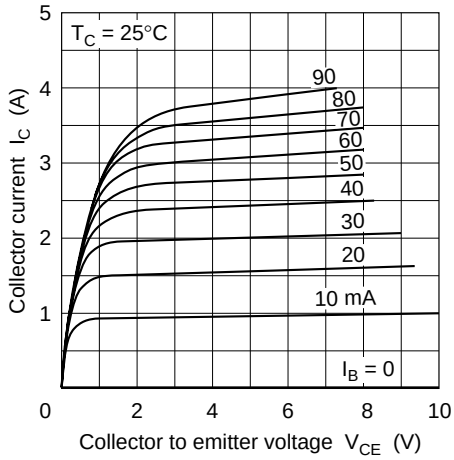
Notes: 1. The 2SD1133 and 2SD1134 are grouped by h_{FE1} as follows.
2. Pulse test.

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

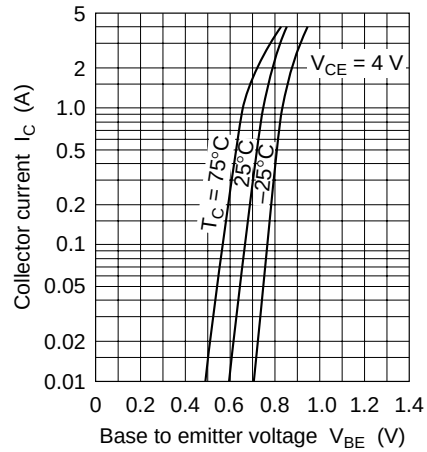




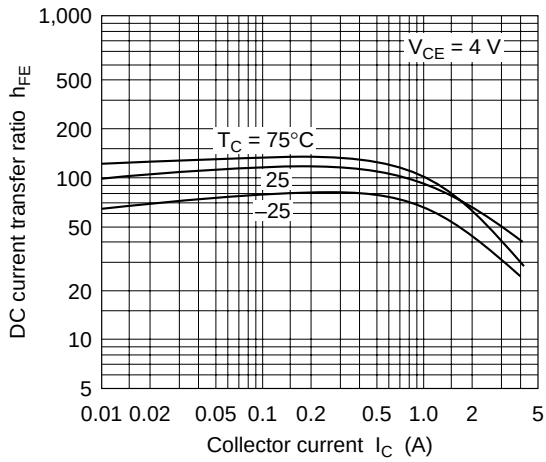
Typical Output Characteristics



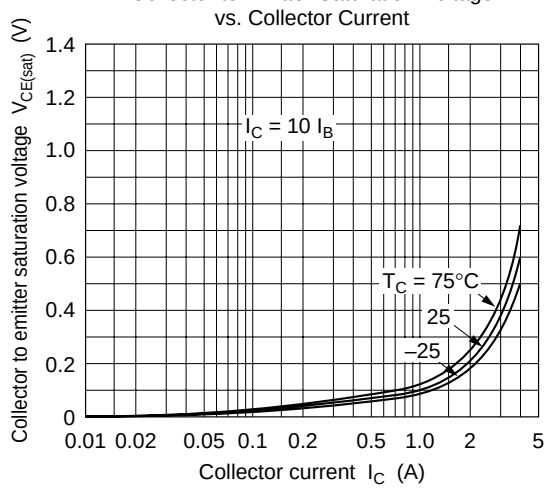
Typical Transfer Characteristics



DC Current Transfer Ratio
vs. Collector Current



Collector to Emitter Saturation Voltage
vs. Collector Current



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