2SB859

Silicon PNP Triple Diffused

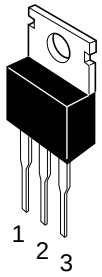
HITACHI

Application

Low frequency power amplifier complementary pair with 2SD1135

Outline

TO-220AB



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

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rating	Unit
Collector to base voltage	V_{CBO}	–100	V
Collector to emitter voltage	V_{CEO}	–80	V
Emitter to base voltage	V_{EBO}	–5	V
Collector current	I_C	–4	A
Collector peak current	$I_{C(peak)}$	–8	A
Collector power dissipation	P_C*[1]	40	W
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–45 to +150	°C

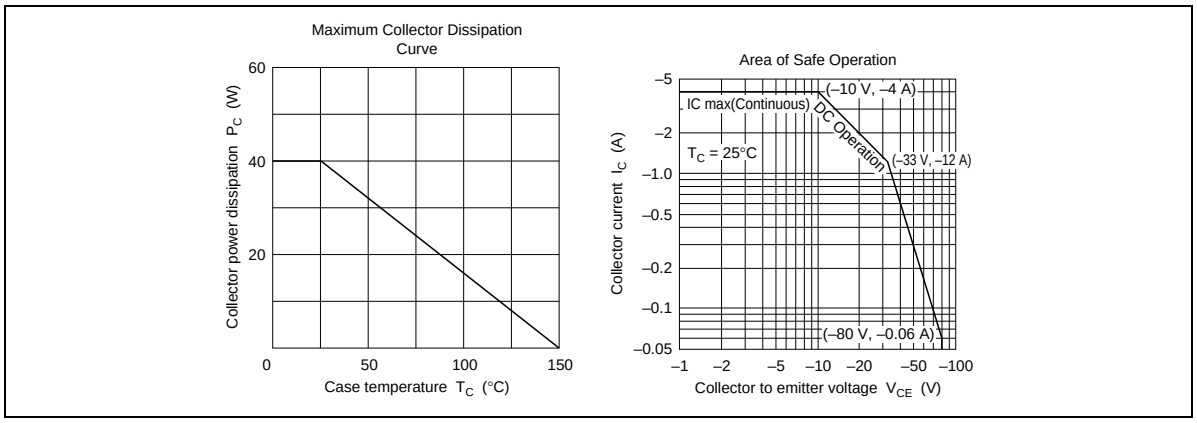
Note: 1. Value at T_C = 25°C

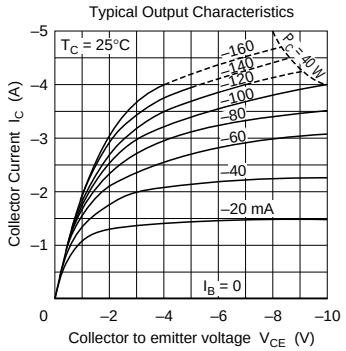
Electrical Characteristics (Ta = 25°C)

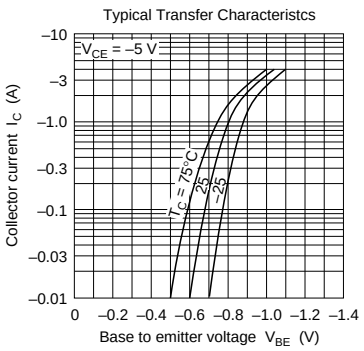
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	–80	—	—	V	I_C = –50 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	–5	—	—	V	I_E = –10 μA, I_C = 0
Collector cutoff current	I_{CBO}	—	—	–0.1	mA	V_{CB} = –80 V, I_E = 0
DC current transfer ratio	h_{FE1}*[1]	60	—	200		V_{CE} = –5 V, I_C = –1 A*[2]
	h_{FE2}	35	—	—		V_{CE} = –5 V, I_C = –0.1 A*[2]
Base to emitter voltage	V_{BE}	—	—	–1.5	V	V_{CE} = –5 V, I_C = –1 A*[2]
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	–2	V	I_C = –2 A, I_B = –0.2 A*[2]
Gain bandwidth product	f_T	—	20	—	MHz	V_{CE} = –5 V, I_C = –0.5 A*[2]
Collector output capacitance	Cob	—	75	—	pF	V_{CB} = –20 V, I_E = 0, f = 1 MHz

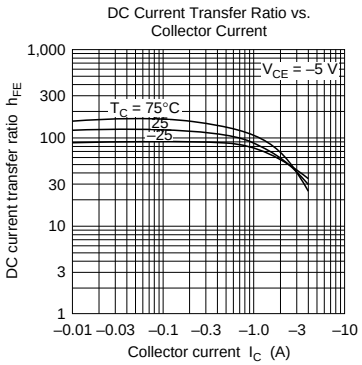
Notes: 1. The 2SB859 is grouped by h_{FE1} as follows.
2. Pulse test

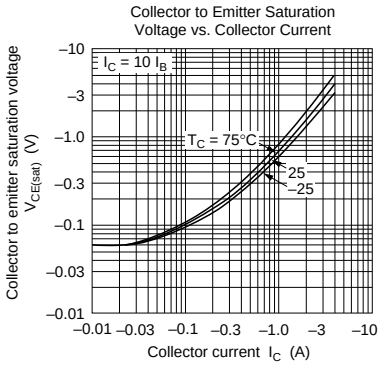
B	C
60 to 120	100 to 200




Typical Output Characteristics
T_C = 25°C
–160
–140
–120
–100
–80
–60
–40
–20 mA
I_B = 0
P_C = 40 W
Collector Current I_C (A)
Collector to emitter voltage V_{CE} (V)
–5
–4
–3
–2
–1
0
–2
–4
–6
–8
–10


Typical Transfer Characteristcs
V_{CE} = –5 V
T_C = 75°C
25
–25
Collector current I_C (A)
Base to emitter voltage V_{BE} (V)
–10
–3
–1.0
–0.3
–0.1
–0.03
–0.01
0
–0.2
–0.4
–0.6
–0.8
–1.0
–1.2
–1.4


DC Current Transfer Ratio vs.
Collector Current
V_{CE} = –5 V
T_C = 75°C
25
–25
DC current transfer ratio h_{FE}
Collector current I_C (A)
1,000
300
100
30
10
3
1
–0.01
–0.03
–0.1
–0.3
–1.0
–3
–10


Collector to Emitter Saturation
Voltage vs. Collector Current
I_C = 10 I_B
T_C = 75°C
25
–25
Collector to emitter saturation voltage $V_{CE(sat)}$ (V)
Collector current I_C (A)
–10
–3
–1.0
–0.3
–0.1
–0.03
–0.01
–0.01
–0.03
–0.1
–0.3
–1.0
–3
–10

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