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!

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2SA836

Silicon PNP Epitaxial

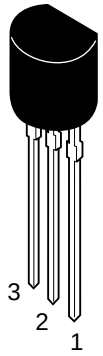
ADE-208-316 (Z)
1st. Edition
Mar. 2001

Application

Low frequency low noise amplifier

Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	–55	V
Collector to emitter voltage	V_{CEO}	–55	V
Emitter to base voltage	V_{EBO}	–5	V
Collector current	I_C	–100	mA
Emitter current	I_E	100	mA
Collector power dissipation	P_C	200	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

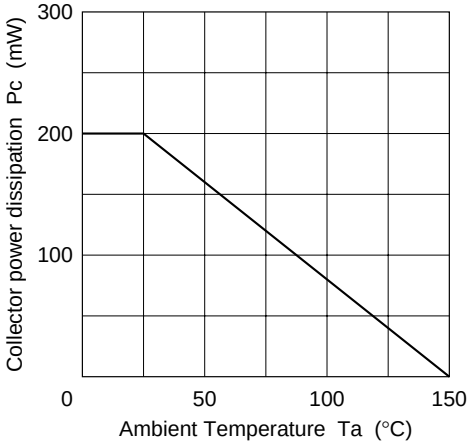
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions	
Collector to base breakdown voltage	$V_{(BR)CBO}$	–55	—	—	V	I_C = –10 µA, I_E = 0	
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	–55	—	—	V	I_C = –1 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}	—	—	–100	nA	V_{CB} = –18 V, I_E = 0	
Emitter cutoff current	I_{EBO}	—	—	–50	nA	V_{EB} = –2 V, I_C = 0	
DC current transfer ratio	h_{FE}*[1]	160	—	500		V_{CE} = –12 V, I_C = –2 mA	
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	–0.1	–0.5	V	I_C = –10 mA, I_B = –1 mA	
Base to emitter voltage	V_{BE}	—	–0.66	–0.75	V	V_{CE} = –12 V, I_C = –2 mA	
Gain bandwidth product	f_T	—	200	—	MHz	V_{CE} = –12 V, I_E = –2 mA	
Collector output capacitance	Cob	—	2.0	—	pF	V_{CB} = –10 V, I_E = 0, f = 1MHz	
Noise figuer	NF	—	1	5	dB	V_{CE} = –6 V,	f = 10 Hz
		—	0.5	1	dB	I_C = –0.1mA, R_g = 10 kΩ	f = 1 kHz

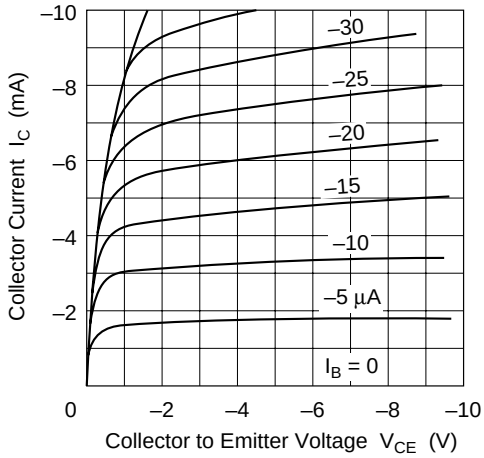
Note: 1. The 2SA836 is grouped by h_{FE} as follows.

C	D
160 to 320	250 to 500

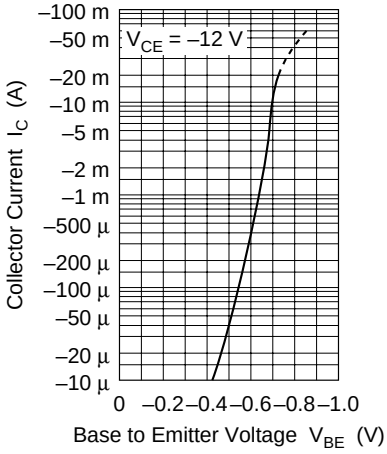
Maximum Collector Dissipation Curve



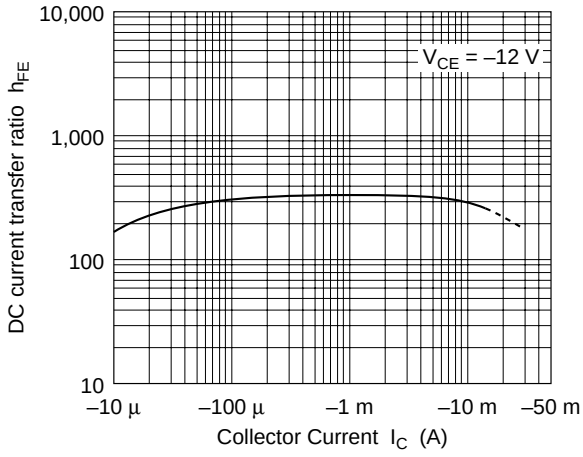
Typical Output Characteristics



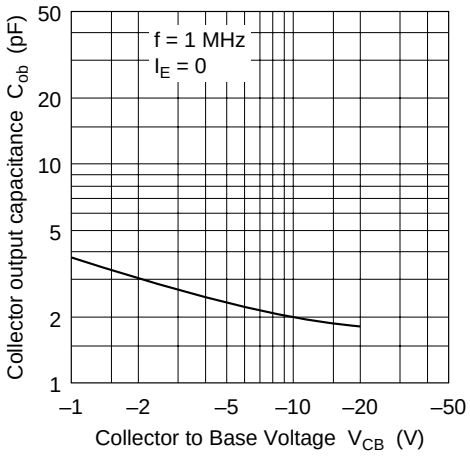
Typical Transfer Characteristics



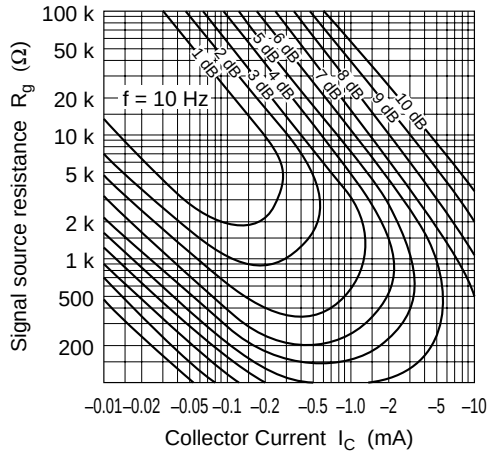
DC Current Transfer Ratio vs. Collector Current



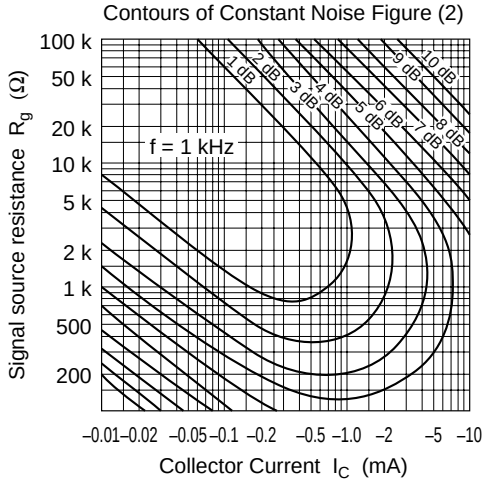
Collector Output Capacitance vs. Collector to Base Voltage



Contours of Constant Noise Figure (1)



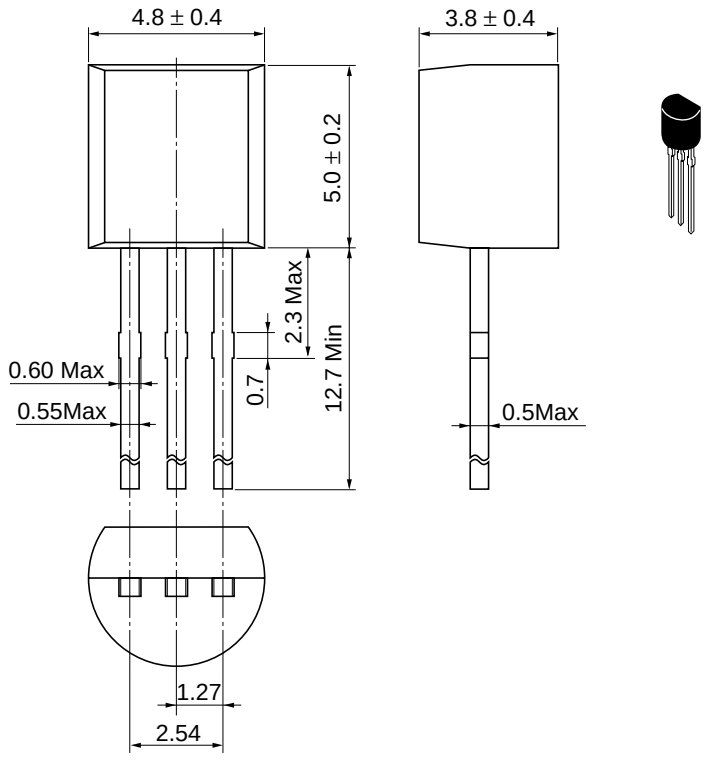
Contours of Constant Noise Figure (2)



Package Dimensions

As of January, 2001

Unit: mm



Hitachi Code	TO-92 (1)
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	0.25 g

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