



2SC2309

Silicon NPN Epitaxial

REJ03G0696-0200
(Previous ADE-208-1061)
Rev.2.00
Aug.10.2005

Application

Low frequency amplifier

Outline

RENESAS Package code: PRSS0003DA-A
(Package name: 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}	50	V
Emitter to base voltage	V_{EBO}	5	V
Collector current	I_C	100	mA
Collector power dissipation	P_C	200	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C



Electrical Characteristics

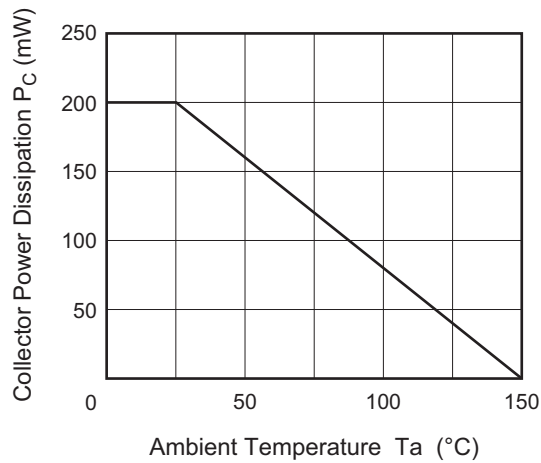
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	55	—	—	V	$I_C = 10\ \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	50	—	—	V	$I_C = 1\ mA, R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	V	$I_E = 10\ \mu A, I_C = 0$
Collector cutoff current	I_{CBO}	—	—	0.5	μA	$V_{CB} = 18\ V, I_E = 0$
Emitter cutoff current	I_{EBO}	—	—	0.5	μA	$V_{EB} = 2\ V, I_C = 0$
DC current transfer ratio	h_{FE}	250	—	500		$V_{CE} = 12\ V, I_C = 2\ mA$
Base to emitter voltage	V_{BE}	—	—	0.75	V	$V_{CE} = 12\ V, I_C = 2\ mA$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	0.2	V	$I_C = 10\ mA, I_B = 1\ mA$
Gain bandwidth product	f_T	—	230	—	MHz	$V_{CE} = 12\ V, I_C = 2\ mA$
Collector output capacitance	C_{ob}	—	1.8	3.5	pF	$V_{CB} = 10\ V, I_E = 0, f = 1\ MHz$

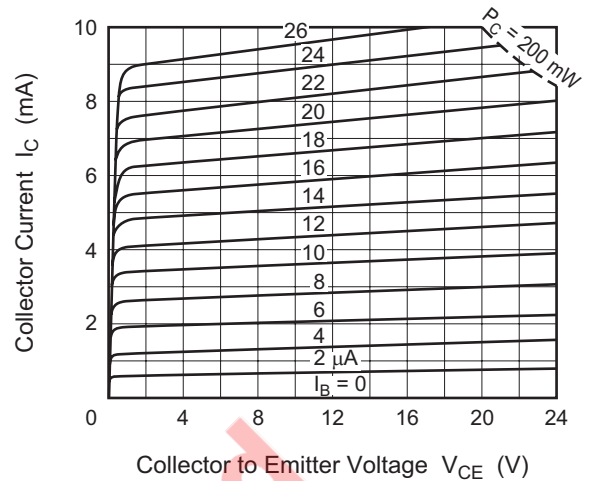
Not recommend
for new design

Main Characteristics

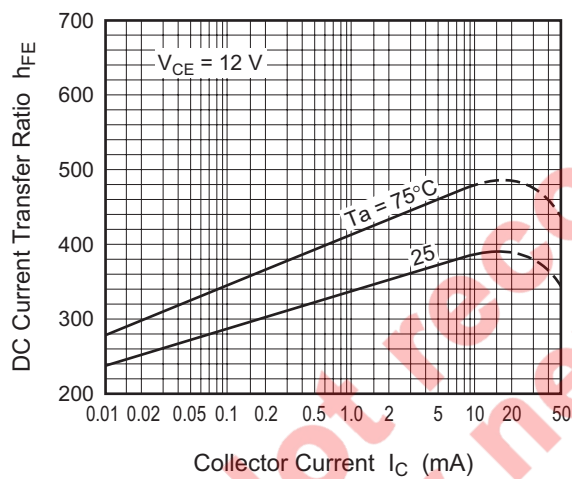
Maximum Collector Dissipation Curve



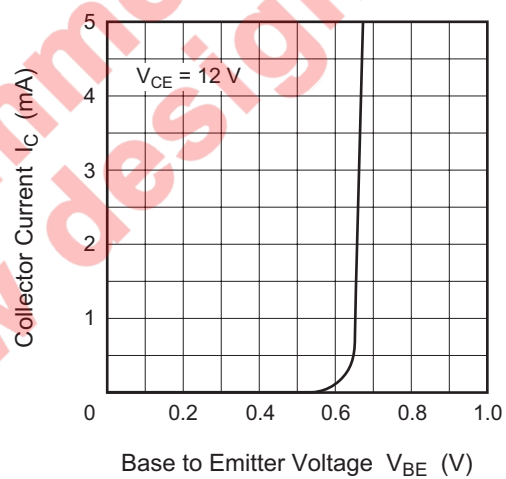
Typical Output Characteristics



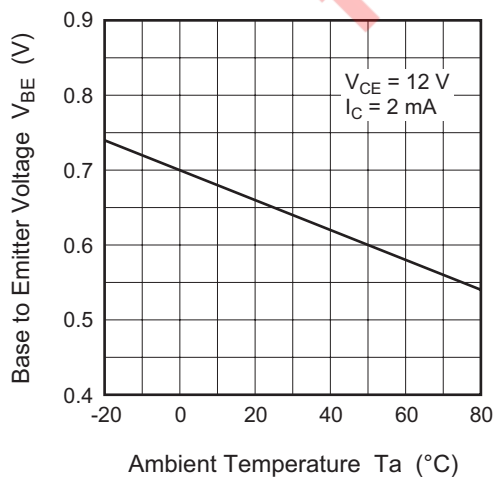
DC Current Transfer Ratio vs. Collector Current



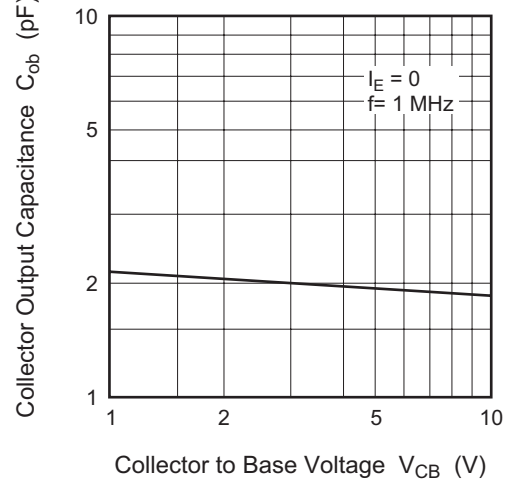
Typical Transfer Characteristics

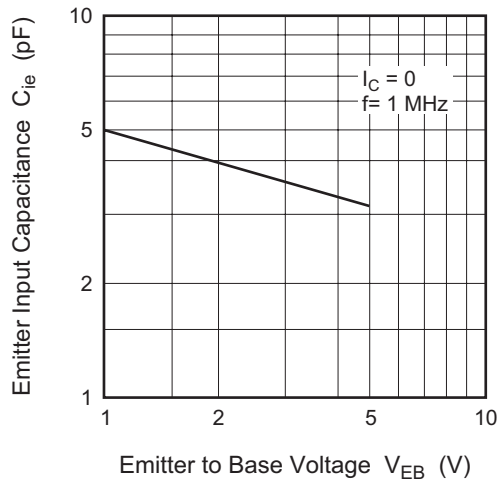


Base to Emitter Voltage vs. Ambient Temperature

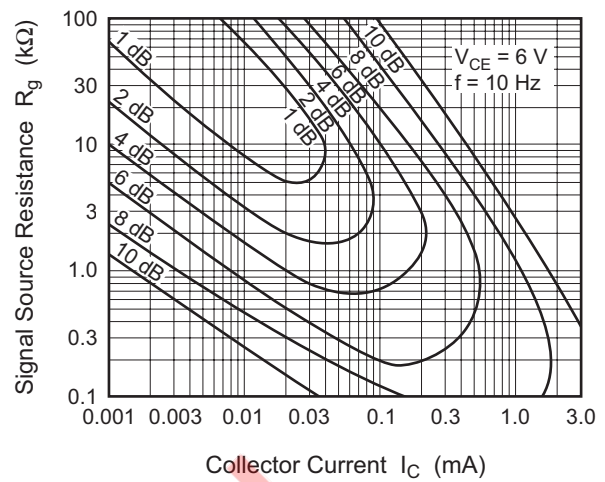


Collector Output Capacitance vs. Collector to Base Voltage

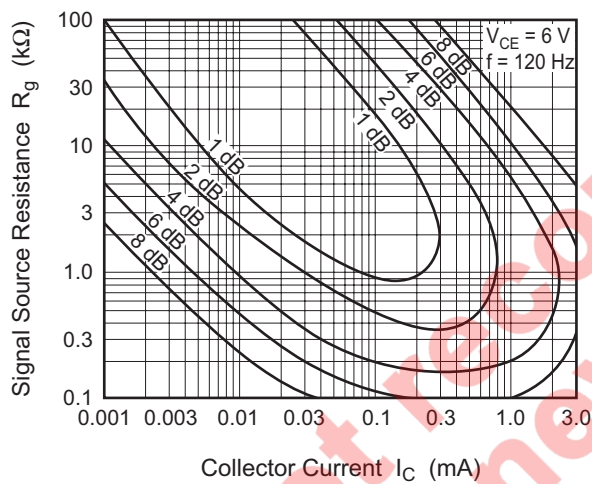


Emitter Input Capacitance vs.
Emitter to Base Voltage

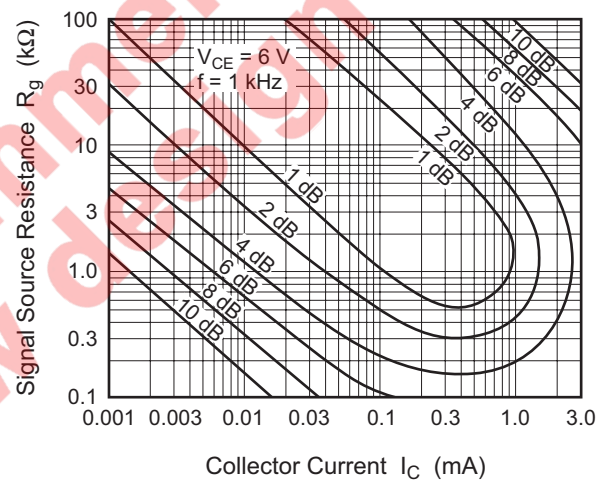
Contours of Constant Noise Figure



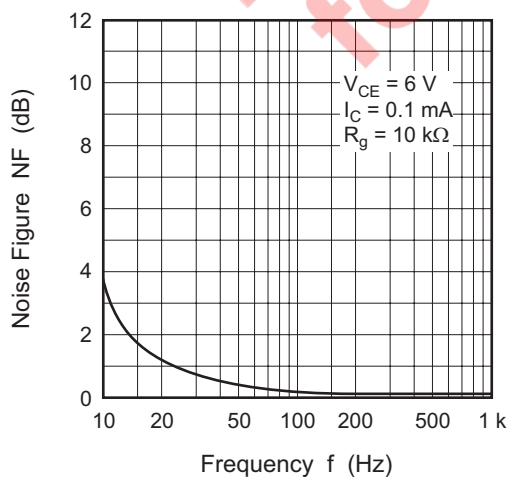
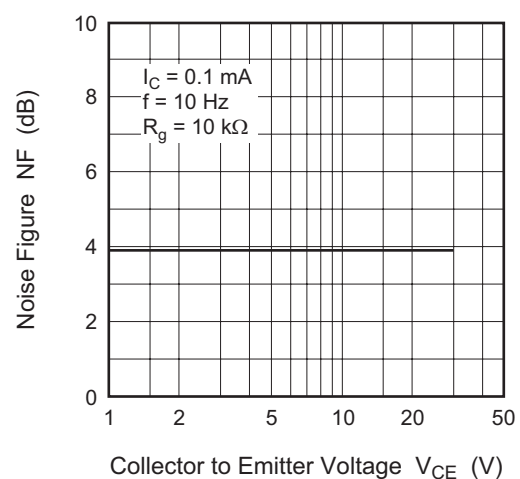
Contours of Constant Noise Figure

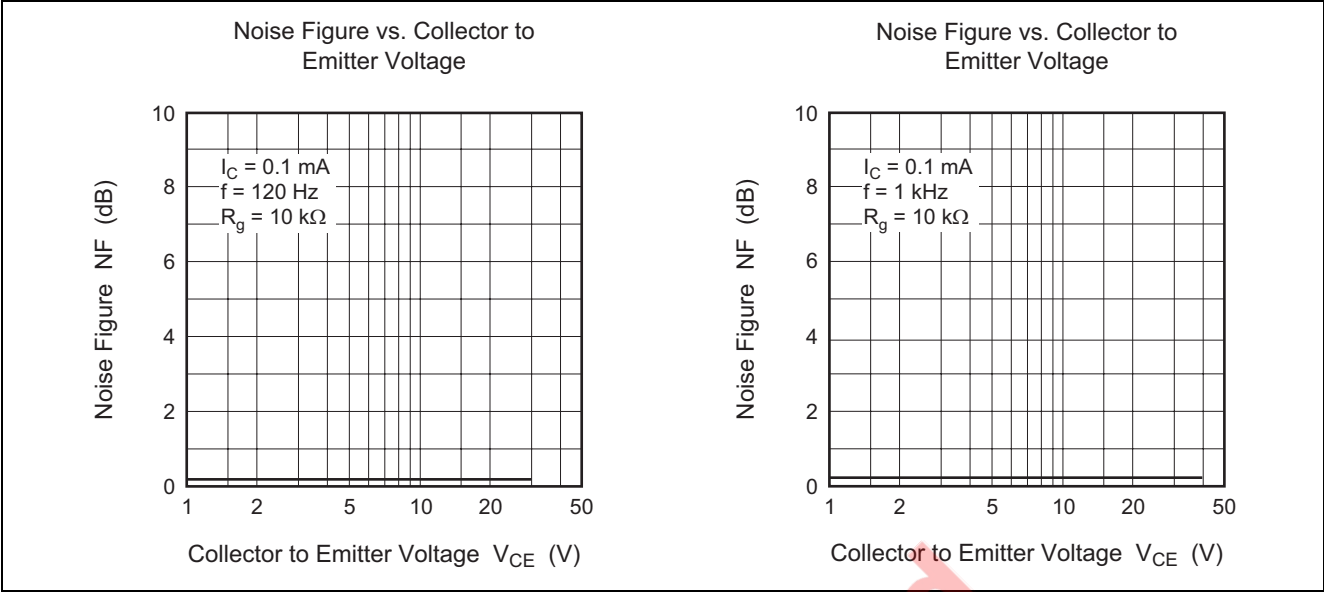


Contours of Constant Noise Figure

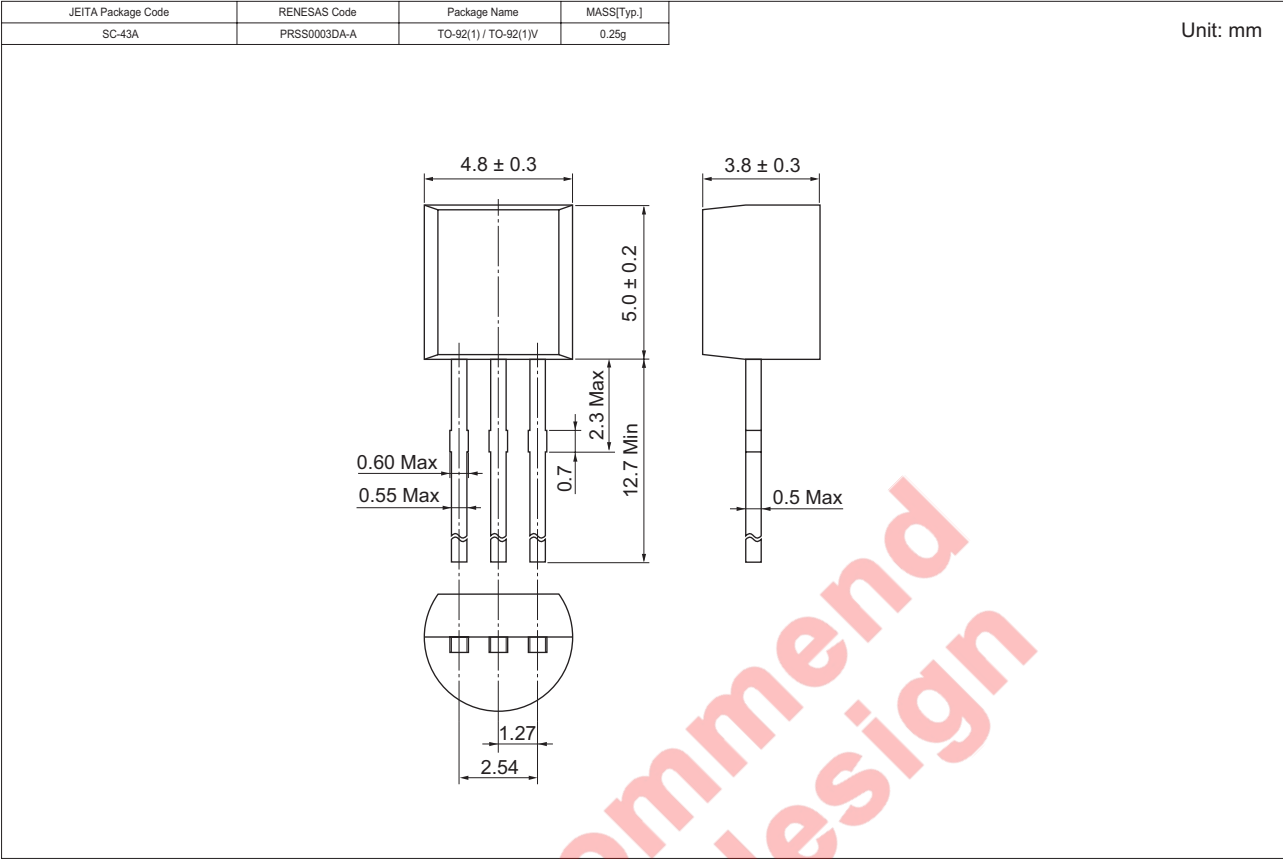


Noise Figure vs. Frequency

Noise Figure vs. Collector to
Emitter Voltage



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SC2309DTZ-E	2500	Hold Box, Radial Taping

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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