

# 2SA1190

Silicon PNP Epitaxial

REJ03G0640-0200  
(Previous ADE-208-1012)  
Rev.2.00  
Aug.10.2005

## Application

- Low frequency low noise amplifier
- Complementary pair with 2SC2855 and 2SC2856

## 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	Rating	Unit
Collector to base voltage	$V_{CBO}$	-90	V
Collector to emitter voltage	$V_{CEO}$	-90	V
Emitter to base voltage	$V_{EBO}$	-5	V
Collector current	$I_C$	-100	mA
Emitter current	$I_E$	100	mA
Collector power dissipation	$P_C$	400	mW
Junction temperature	$T_J$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

## Electrical Characteristics

(Ta = 25°C)

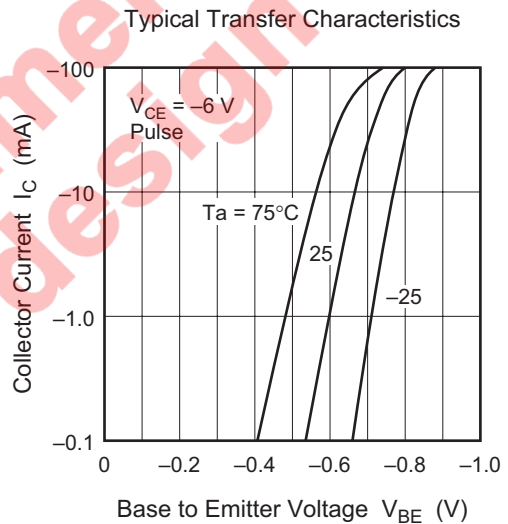
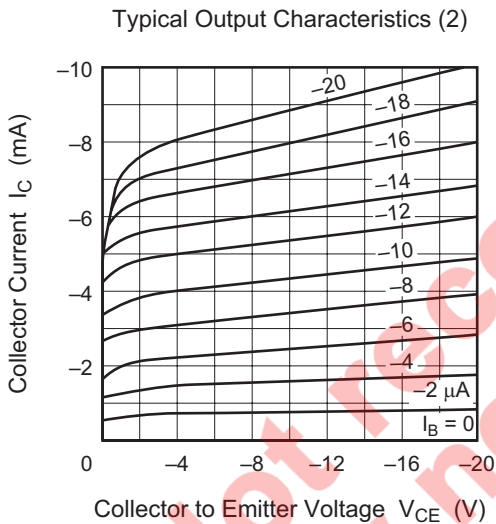
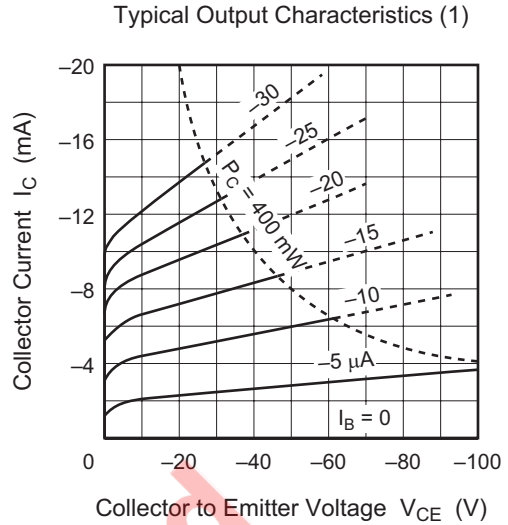
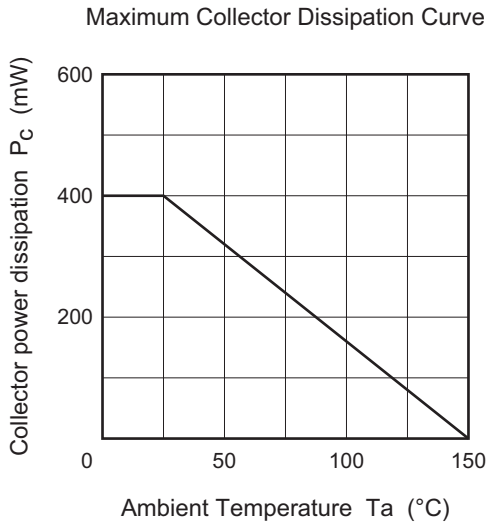
Item	Symbol	2SA1190			Unit	Test conditions
		Min	Typ	Max		
Collector to base breakdown voltage	$V_{(BR)CBO}$	-90	—	—	V	$I_C = -10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	-90	—	—	V	$I_C = -1 \text{ mA}, R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	-5	—	—	V	$I_E = -10 \mu A, I_C = 0$
Collector cutoff current	$I_{CBO}$	—	—	-0.1	$\mu A$	$V_{CB} = -70 \text{ V}, I_E = 0$
Emitter cutoff current	$I_{EBO}$	—	—	-0.1	$\mu A$	$V_{EB} = -2 \text{ V}, I_C = 0$
DC current transfer ratio	$h_{FE}^{*1}$	250	—	800		$V_{CE} = -12 \text{ V}, I_C = -2 \text{ mA}^{*2}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	-0.05	-0.15	V	$I_C = -10 \text{ mA}, I_B = -1 \text{ mA}^{*2}$
Base to emitter saturation voltage	$V_{BE(sat)}$	—	-0.7	-1.0	V	
Gain bandwidth product	$f_T$	—	130	—	MHz	$V_{CE} = -6 \text{ V}, I_C = -10 \text{ mA}$
Collector output capacitance	$C_{ob}$	—	3.2	—	pF	$V_{CB} = -10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$
Noise figure	NF	—	0.15	1.5	dB	$V_{CE} = -6 \text{ V}, I_C = -0.1 \text{ mA}, R_g = 10 \text{ k}\Omega, f = 1 \text{ kHz}$
		—	0.2	2.0	dB	$V_{CE} = -6 \text{ V}, I_C = -0.1 \text{ mA}, R_g = 10 \text{ k}\Omega, f = 10 \text{ Hz}$
Noise voltage referred to input	$e_n$	—	0.7	—	$nV/\sqrt{\text{Hz}}$	$V_{CB} = -6 \text{ V}, I_C = -10 \text{ mA}, R_g = 0, f = 1 \text{ kHz}$

Notes: 1. The 2SA1190 and 2SA1191 are grouped by  $h_{FE}$  as follows.

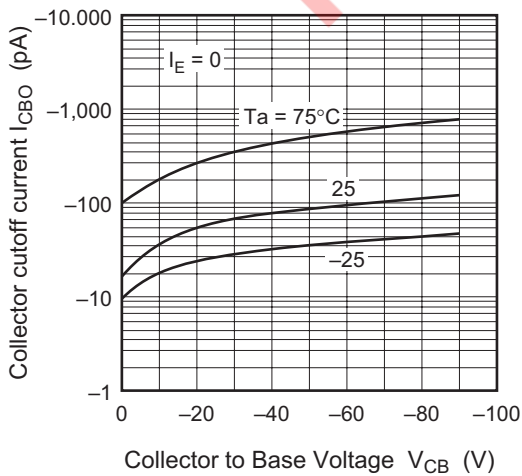
2. Pulse test

D	E
250 to 500	400 to 800

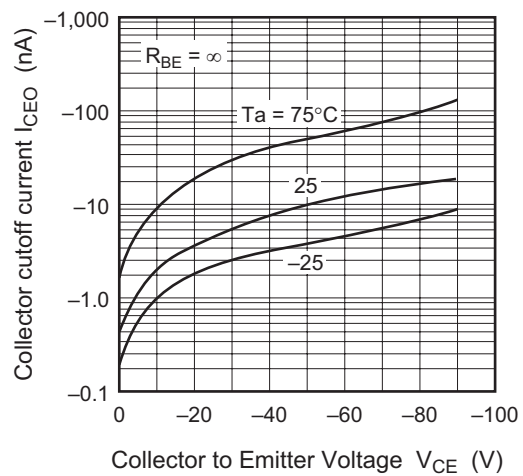
Main Characteristics



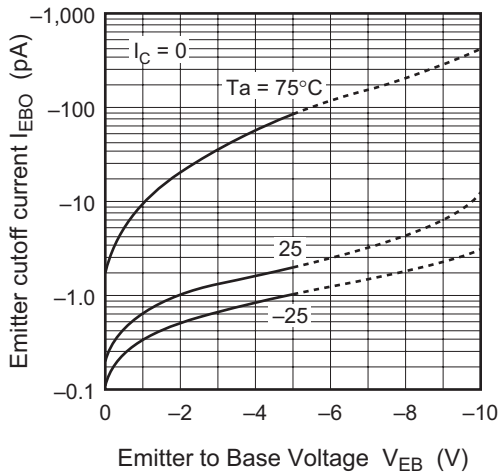
Collector Cutoff Current vs. Collector to Base Voltage



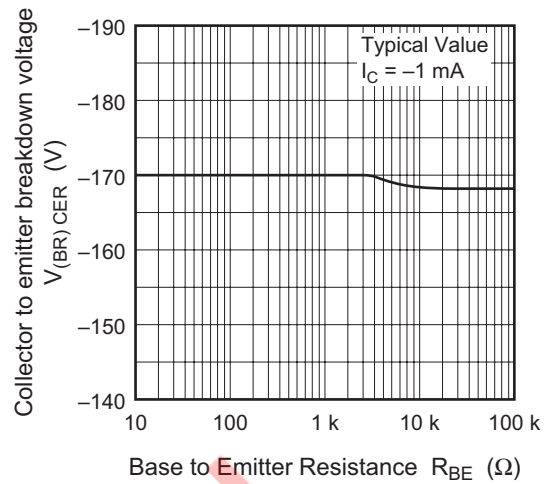
Collector Cutoff Current vs. Collector to Emitter Voltage



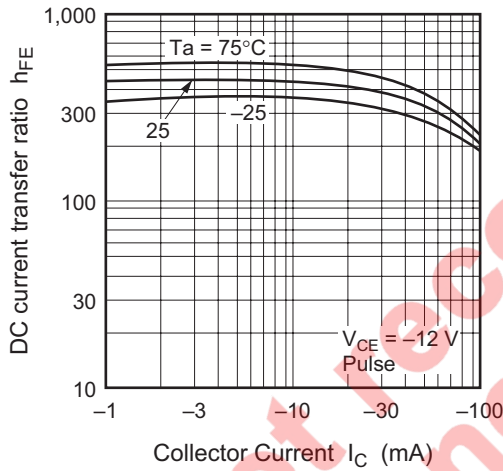
Emitter Cutoff Current vs. Emitter to Base Voltage



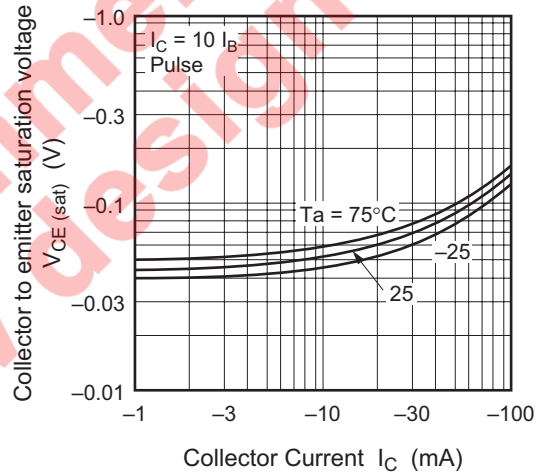
Collector to Emitter Breakdown Voltage vs. Base to Emitter Resistance



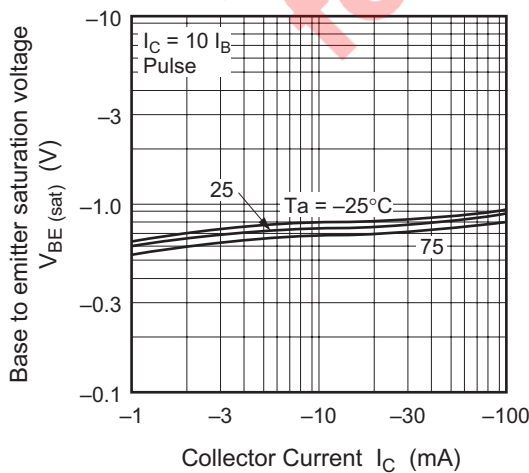
DC Current Transfer Ratio vs. Collector Current



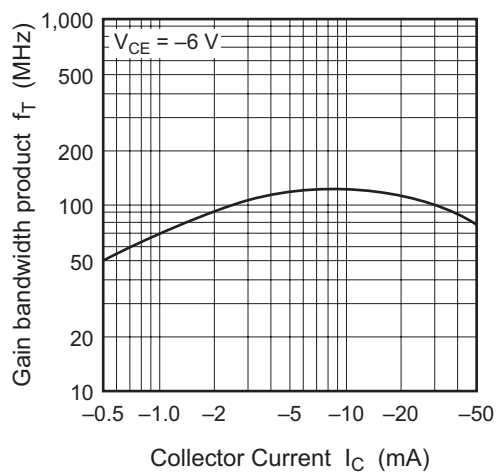
Collector to Emitter Saturation Voltage vs. Collector Current

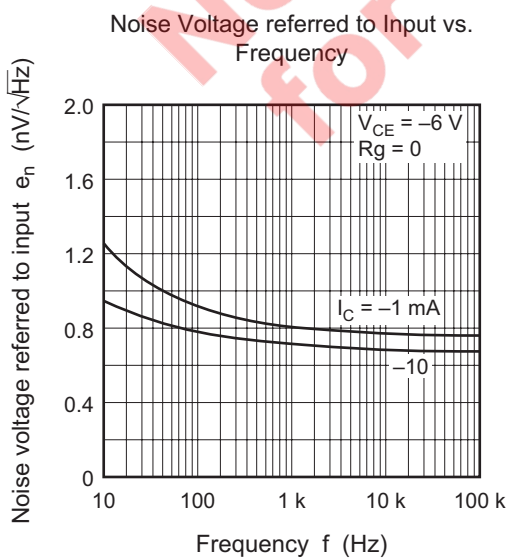
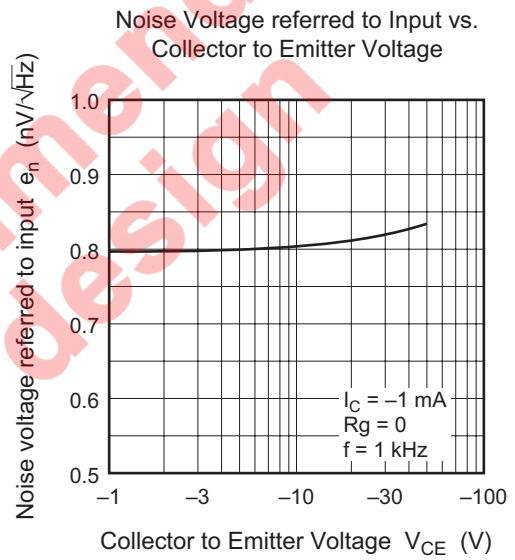
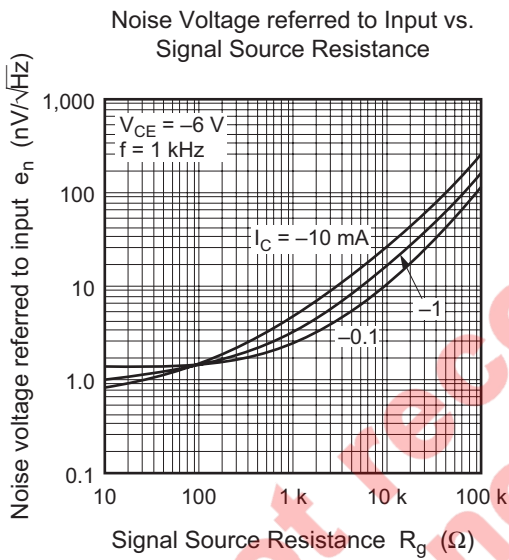
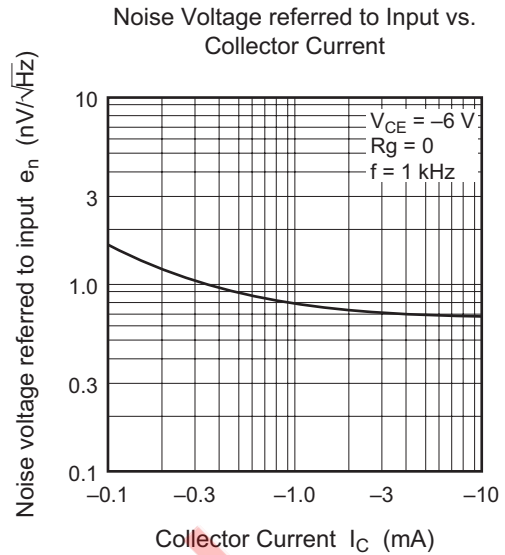
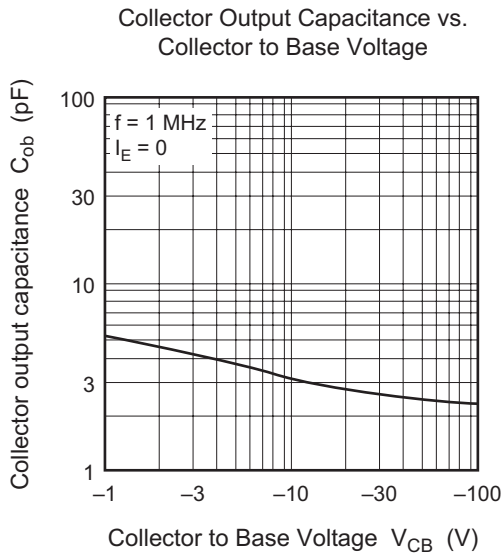


Base to Emitter Saturation Voltage vs. Collector Current

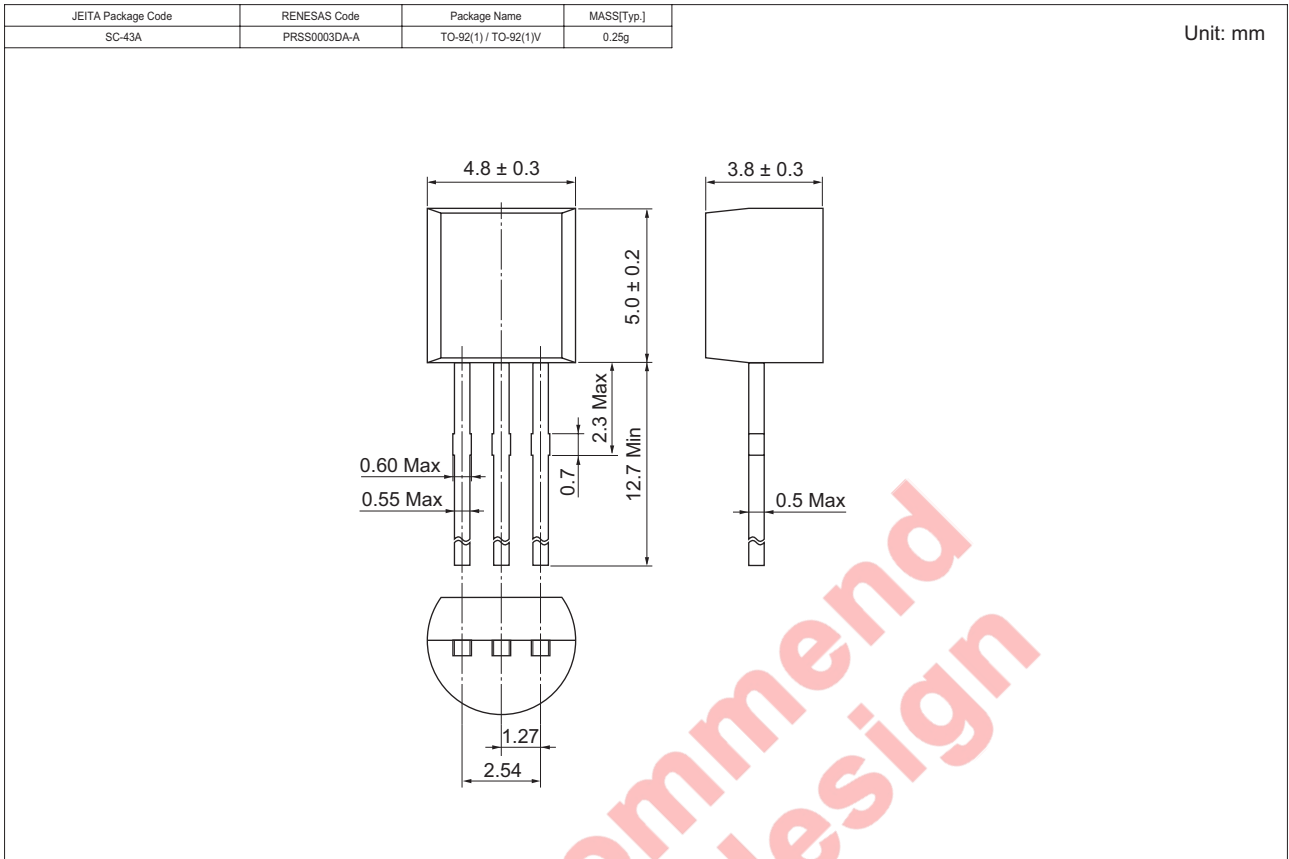


Gain Bandwidth Product vs. Collector Current





### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
2SA1190DTZ-E 2SA1190ETZ-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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