To our customers,

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April 1st, 2010
Renesas Electronics Corporation

EOL product

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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EOL product

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

EOL Product

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	Tj	150	°C
Storage temperature	Tstg	–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 µA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	–90	—	—	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}	—	—	–0.1	µA	V_{CB} = –70 V, I_E = 0
Emitter cutoff current	I_{EBO}	—	—	–0.1	µA	V_{EB} = –2 V, I_C = 0
DC current trnsfer ratio	h_{FE}*[1]	250	—	800		V_{CE} = –12 V, I_C = –2 mA*[2]
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	–0.05	–0.15	V	I_C = –10 mA, I_B = –1 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 V, I_C = –10 mA
Collector output capacitance	Cob	—	3.2	—	pF	V_{CB} = –10 V, I_E = 0, f = 1 MHz
Noise figure	NF	—	0.15	1.5	dB	V_{CE} = –6 V, I_C = –0.1 mA, R_g = 10 kΩ, f = 1 kHz
		—	0.2	2.0	dB	V_{CE} = –6 V, I_C = –0.1 mA, R_g = 10 kΩ, f = 10 Hz
Noise voltage referred to input	e_n	—	0.7	—	nV/√Hz	V_{CB} = –6 V, I_C = –10 mA, Rg = 0, f = 1 kHz

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

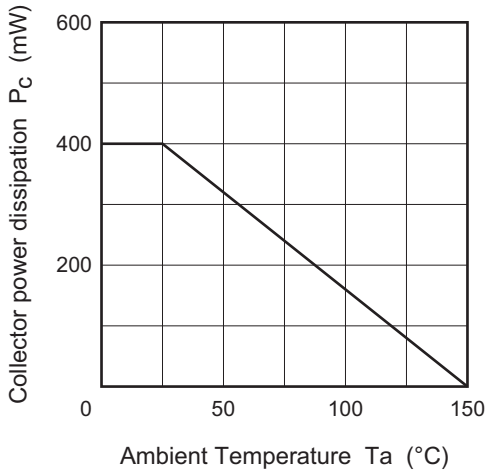
2. Pulse test

D	E
250 to 500	400 to 800

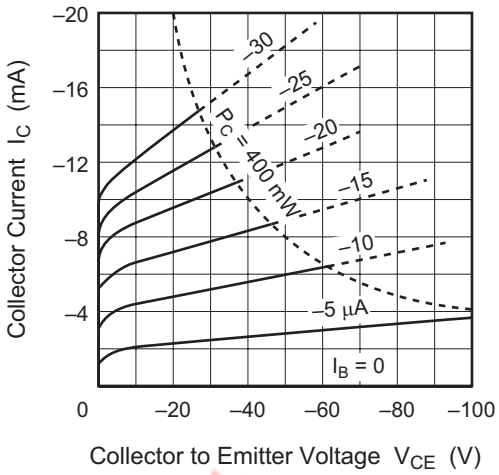
EOL Product

Main Characteristics

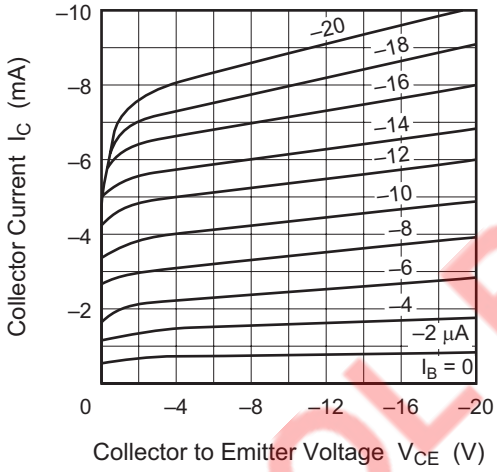
Maximum Collector Dissipation Curve



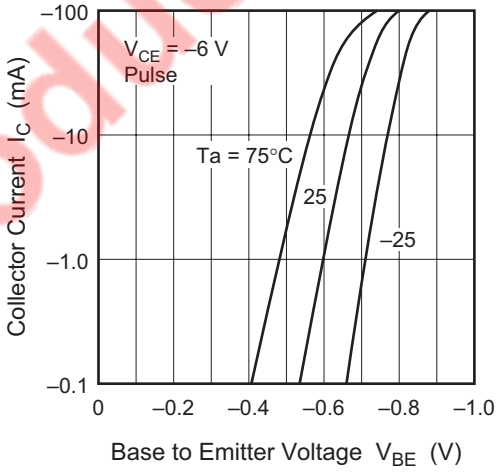
Typical Output Characteristics (1)



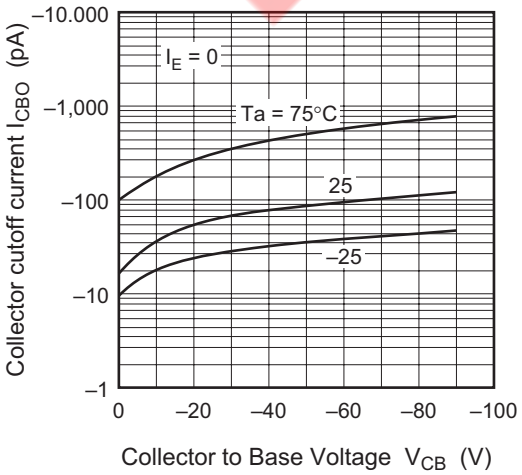
Typical Output Characteristics (2)



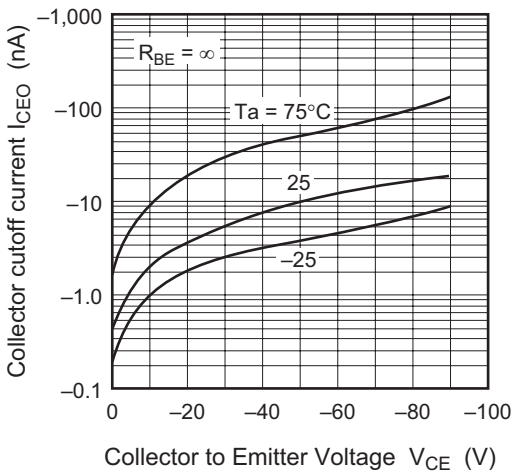
Typical Transfer Characteristics



Collector Cutoff Current vs. Collector to Base Voltage



Collector Cutoff Current vs. Collector to Emitter Voltage



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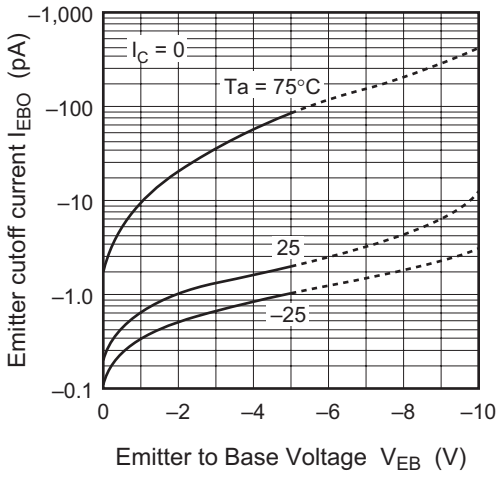
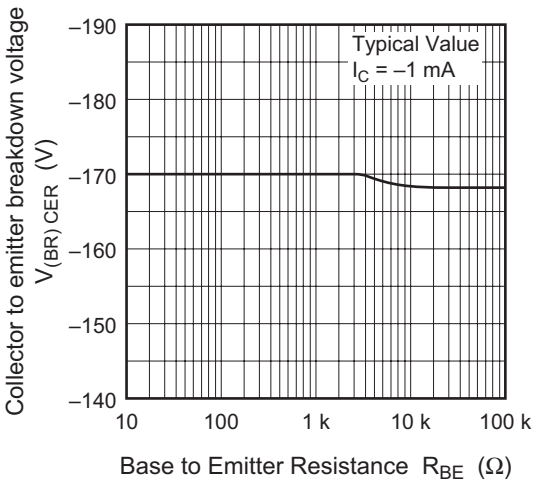
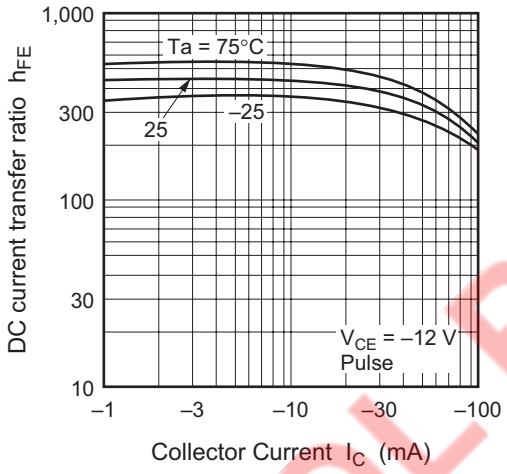
Emitter Cutoff Current vs.
Emitter to Base Voltage



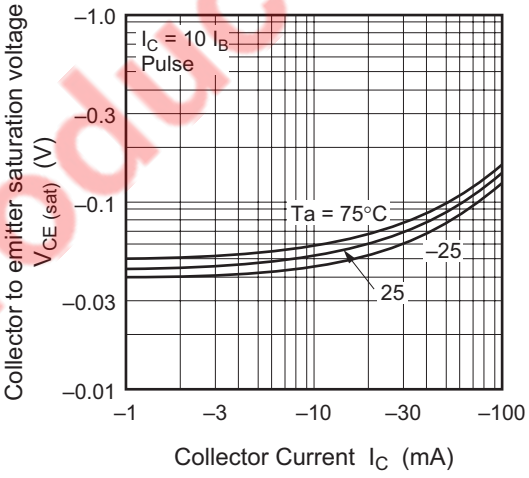
Collector to Emitter Breakdown Voltage vs.
Base to Emitter Resistance



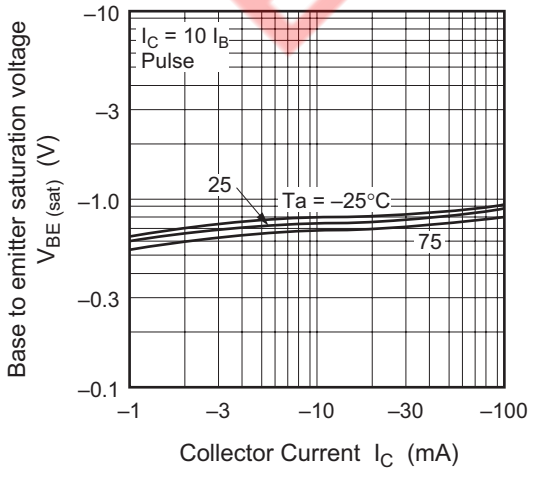
DC Current Transfer Ratio vs.
Collector Current



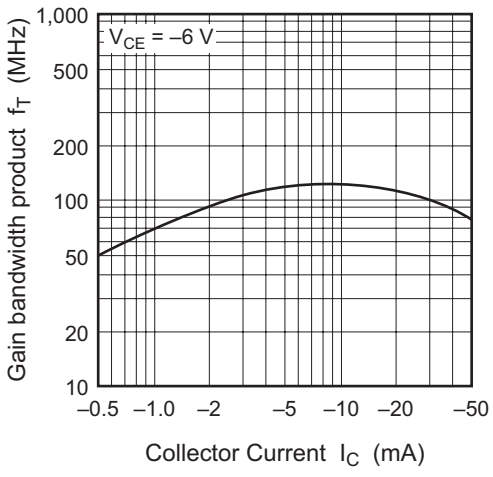
Collector to Emitter Saturation Voltage vs.
Collector Current



Base to Emitter Saturation Voltage vs.
Collector Current



Gain Bandwidth Product vs.
Collector Current



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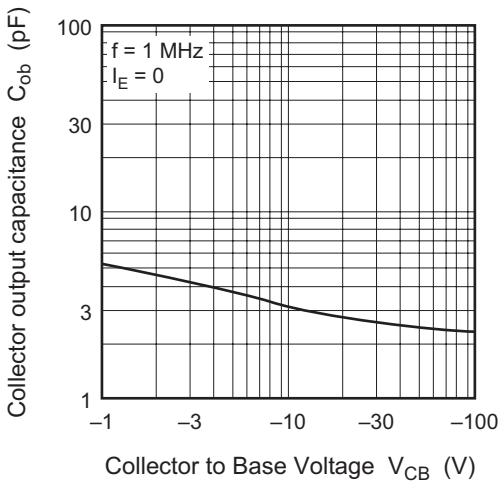
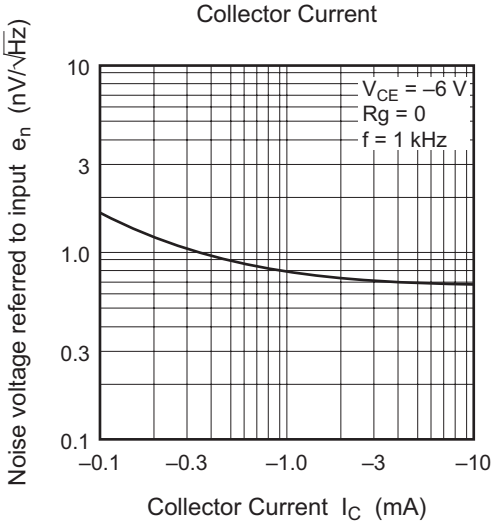
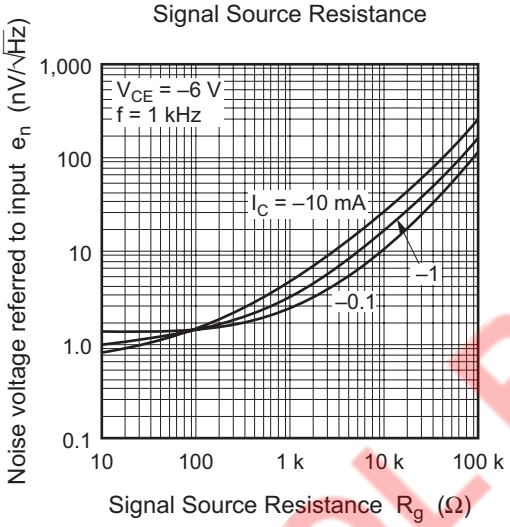
Collector Output Capacitance vs. Collector to Base Voltage



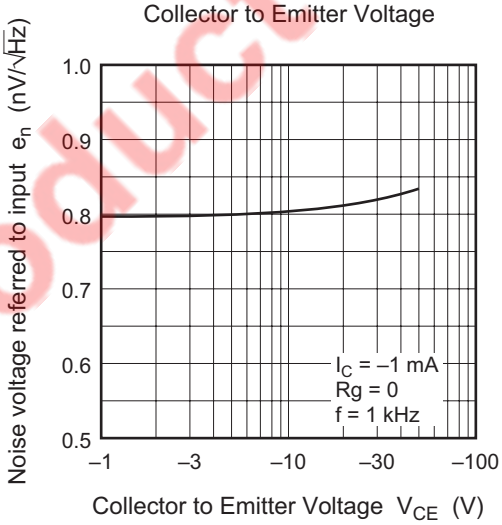
Noise Voltage referred to Input vs. Collector Current



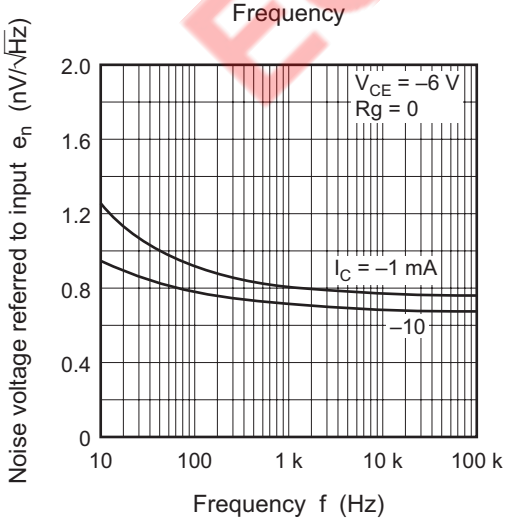
Noise Voltage referred to Input vs. Signal Source Resistance



Noise Voltage referred to Input vs. Collector to Emitter Voltage



Noise Voltage referred to Input vs. Frequency

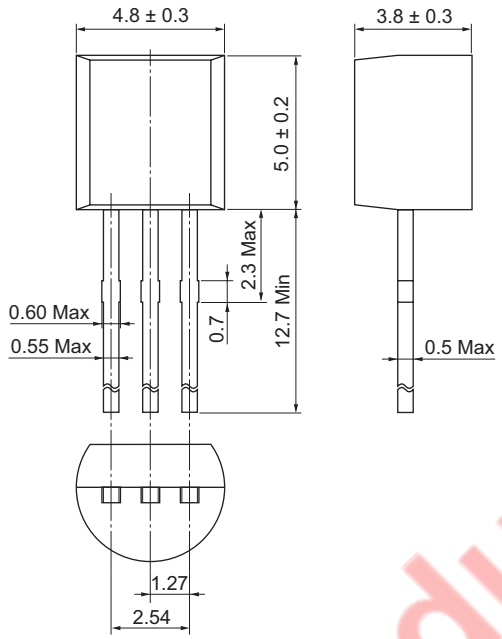


EOL Product

Package Dimensions

JEITA Package Code	RENESAS Code	Package Name	MASS[Typ.]
SC-43A	PRSS0003DA-A	TO-92(1) / TO-92(1)V	0.25g

Unit: mm



EOL Product

Ordering Information

Part Name	Quantity	Shipping Container
2SA1190DTZ-E 2SA1190ETZ-E	2500	Hold Box, Radial Taping

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Colophon .3.0