

To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

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

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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

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2SC458 (LG), 2SC2310

Silicon NPN Epitaxial

RENESAS

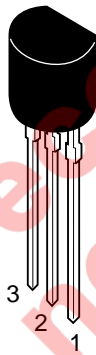
ADE-208-1044A (Z)
2nd. Edition
Mar. 2001

Application

- Low frequency low noise amplifier

Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

2SC458 (LG), 2SC2310

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	2SC458 (LG)	2SC2310	Unit
Collector to base voltage	V _{CBO}	30	55	V
Collector to emitter voltage	V _{CEO}	30	50	V
Emitter to base voltage	V _{EBO}	5	5	V
Collector current	I _C	100	100	mA
Emitter current	I _E	-100	-100	mA
Collector power dissipation	P _C	200	200	mW
Junction temperature	T _j	150	150	°C
Storage temperature	T _{stg}	-55 to +150	-55 to +150	°C

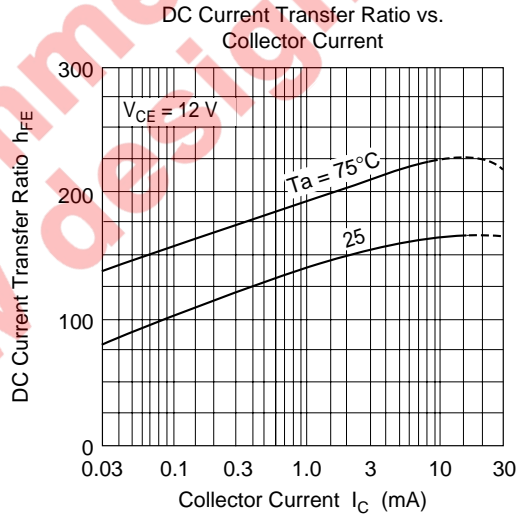
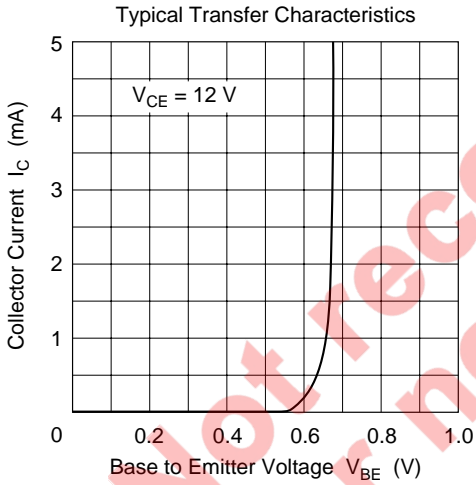
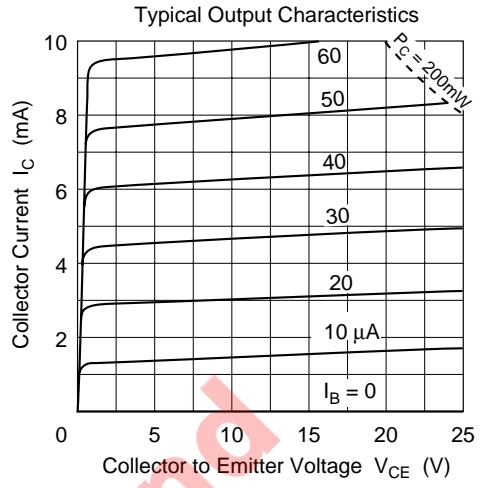
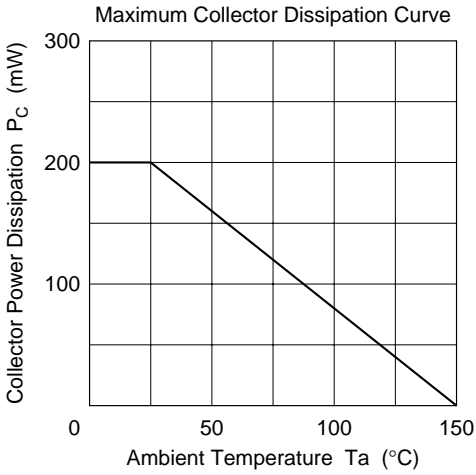
Not recommended
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Electrical Characteristics (Ta = 25°C)

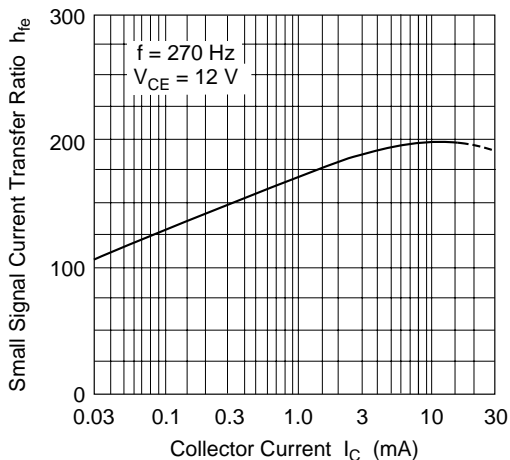
Item	Symbol	2SC458 (LG)			2SC2310			Unit	Test conditions
		Min	Typ	Max	Min	Typ	Max		
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	55	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	30	—	—	50	—	—	V	$I_C = 1 \text{ mA}, R_{BE} =$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	5	—	—	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	I_{CBO}	—	—	0.5	—	—	0.5	μA	$V_{CB} = 18 \text{ V}, I_E = 0$
Emitter cutoff current	I_{EBO}	—	—	0.5	—	—	0.5	μA	$V_{EB} = 2 \text{ V}, I_C = 0$
DC current transfer ratio	h_{FE}^{*1}	100	—	500	100	—	320		$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	0.2	—	—	0.2	V	$I_C = 10 \text{ mA}, I_B = 1 \text{ mA}$
Base to emitter voltage	V_{BE}	—	0.67	0.75	—	0.67	0.75	V	$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Gain bandwidth product	f_T	—	230	—	—	230	—	MHz	$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Collector output capacitance	Cob	—	1.8	3.5	—	1.8	3.5	pF	$V_{CB} = 10 \text{ V}, I_E = 0,$ $f = 1 \text{ MHz}$
Noise figure	NF	—	3	5	—	3	5	dB	$V_{CE} = 6 \text{ V}, I_C = 0.1 \text{ mA},$ $f = 120 \text{ Hz}, R_g = 500 \Omega$
Small signal input impedance	h_{ie}	—	16.5	—	—	16.5	—	k Ω	$V_{CE} = 5 \text{ V}, I_C = 0.1 \text{ mA},$ $f = 270 \text{ Hz}$
Small signal voltage feedback ratio	h_{re}	—	70	—	—	70	—	$\times 10^{-6}$	
Small signal current transfer ratio	h_{fe}	—	130	—	—	130	—		
Small signal output admittance	h_{oe}	—	11.0	—	—	11.0	—	μS	

Note: 1. The 2SC458 (LG) and 2SC2310 are grouped by h_{FE} as follows.

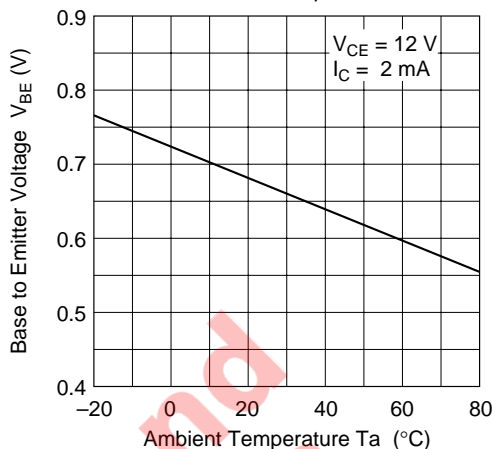
	B	C	D
2SC458 (LG)	100 to 200	160 to 320	250 to 500
2SC2310	100 to 200	160 to 320	—



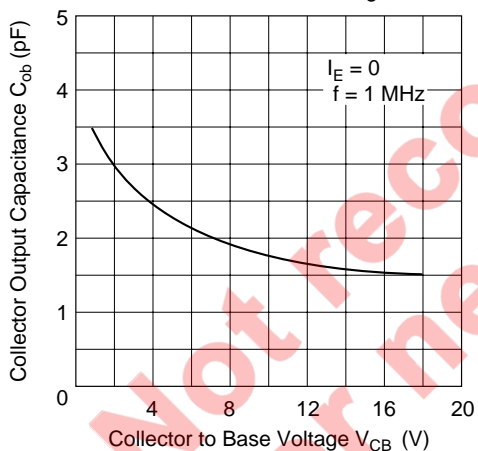
Small Signal Current Transfer Ratio vs. Collector Current



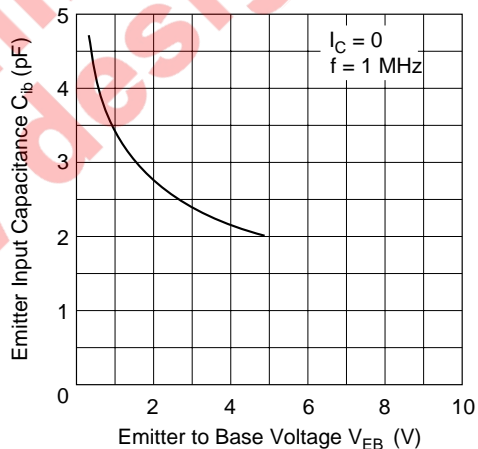
Base to Emitter Voltage vs. Ambient Temperature

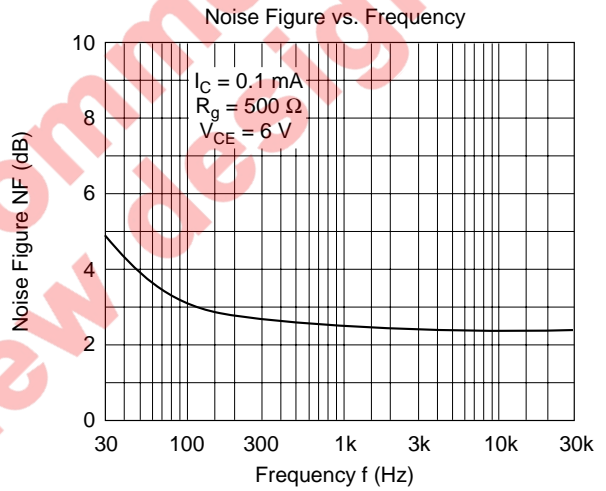
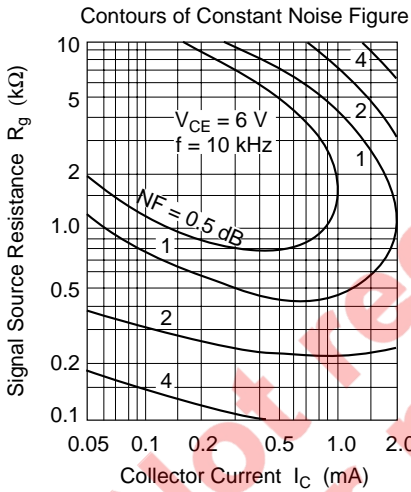
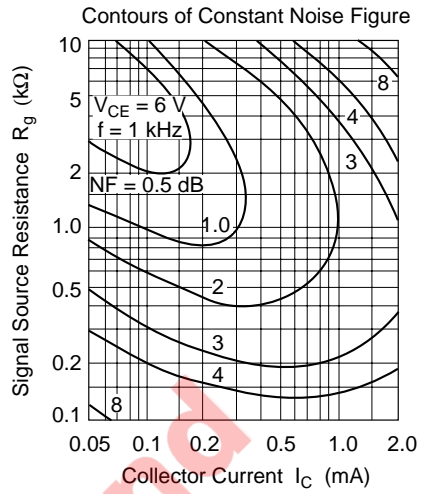
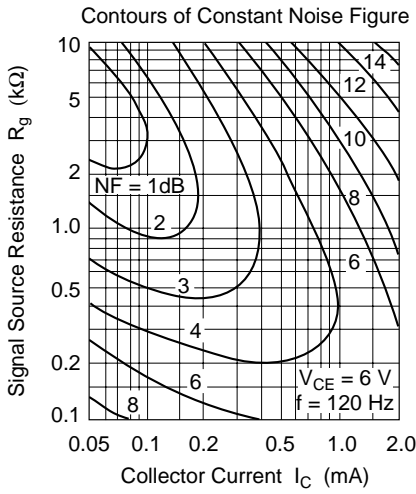


Collector Output Capacitance vs. Collector to Base Voltage

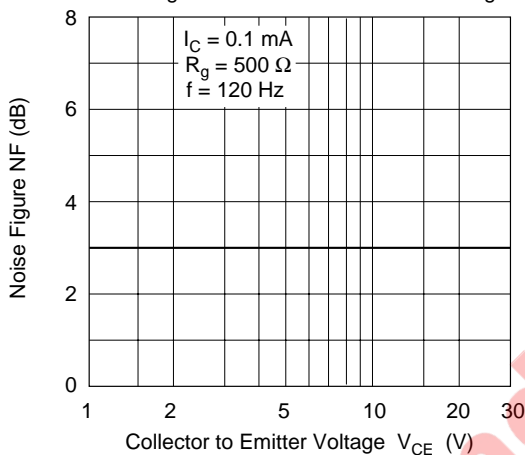


Emitter Input Capacitance vs. Emitter to Base Voltage

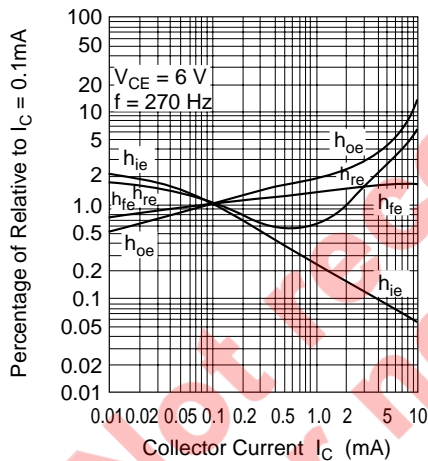




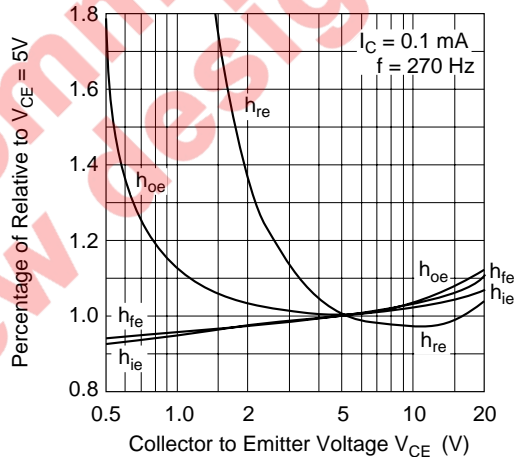
Noise Figure vs. Collector to Emitter Voltage



h Parameter vs. Collector Current



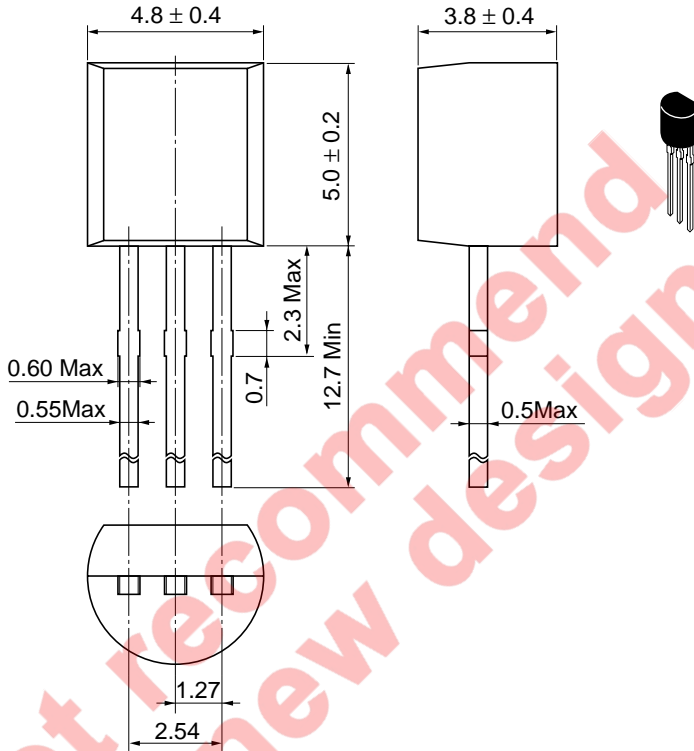
h Parameter vs. Collector to Emitter Voltage



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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