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# 2SC458 (LG), 2SC2310

Silicon NPN Epitaxial

# HITACHI

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## Application

- Low frequency low noise amplifier
- Complementary pair with 2SA1031 and 2SA1032

## Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

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## 2SC458 (LG), 2SC2310

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### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

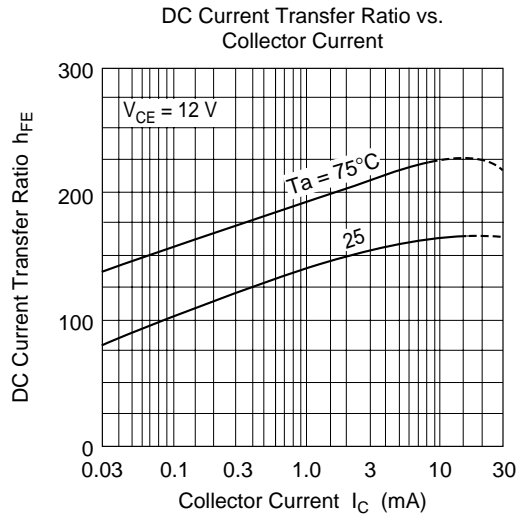
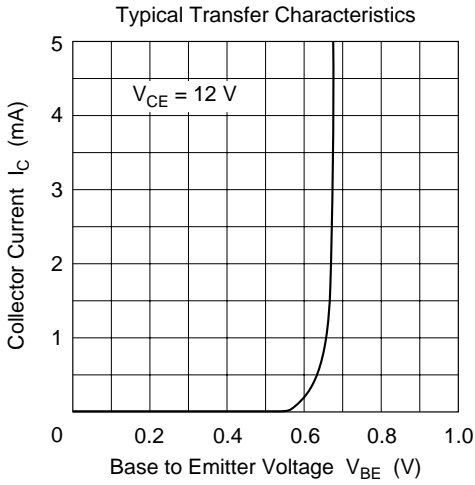
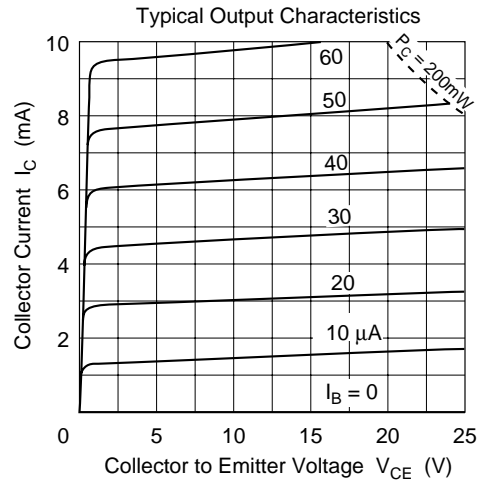
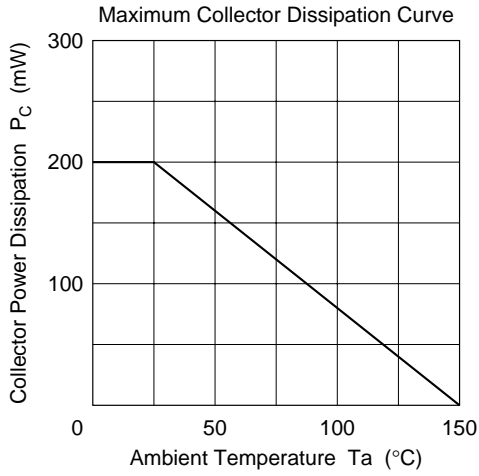
Item	Symbol	2SC458 (LG)	2SC2310	Unit
Collector to base voltage	$V_{\text{CBO}}$	30	55	V
Collector to emitter voltage	$V_{\text{CEO}}$	30	50	V
Emitter to base voltage	$V_{\text{EBO}}$	5	5	V
Collector current	$I_{\text{C}}$	100	100	mA
Emitter current	$I_{\text{E}}$	-100	-100	mA
Collector power dissipation	$P_{\text{C}}$	200	200	mW
Junction temperature	$T_{\text{j}}$	150	150	$^\circ\text{C}$
Storage temperature	$T_{\text{stg}}$	-55 to +150	-55 to +150	$^\circ\text{C}$

**Electrical Characteristics (Ta = 25°C)**

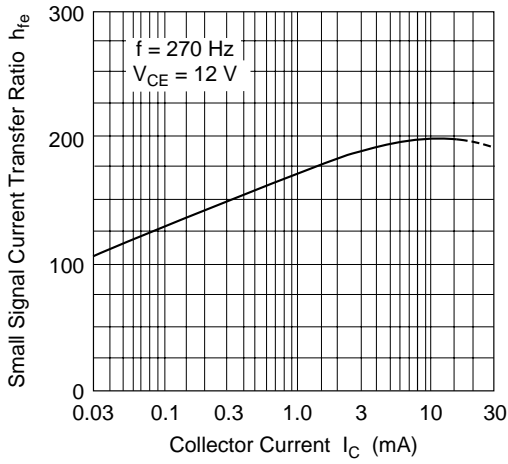
Item	Symbol	2SC458 (LG)			2SC2310			Unit	Test conditions
		Min	Typ	Max	Min	Typ	Max		
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	55	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	30	—	—	50	—	—	V	$I_C = 1 \text{ mA}, R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	5	—	—	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	$I_{CBO}$	—	—	0.5	—	—	0.5	$\mu A$	$V_{CB} = 18 \text{ V}, I_E = 0$
Emitter cutoff current	$I_{EBO}$	—	—	0.5	—	—	0.5	$\mu A$	$V_{EB} = 2 \text{ V}, I_C = 0$
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 $\Omega$	$V_{CE} = 5 \text{ V}, I_C = 0.1 \text{ mA}, f = 270 \text{ Hz}$
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	—	$\mu S$	

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

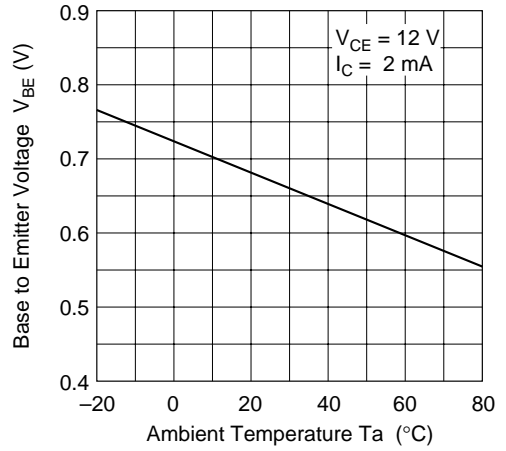
	B	C	D
2SC458 (LG)	100 to 200	160 to 320	250 to 500
2SC2310	100 to 200	160 to 320	—



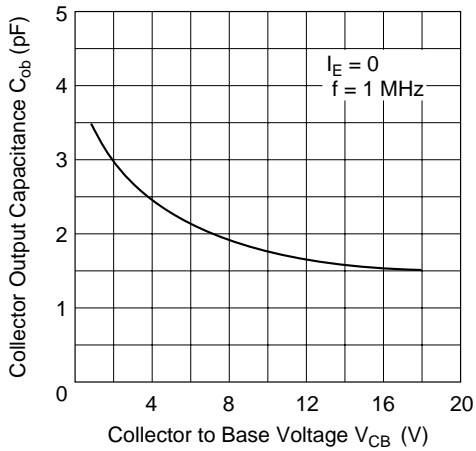
Small Signal Current Transfer Ratio vs. Collector Current



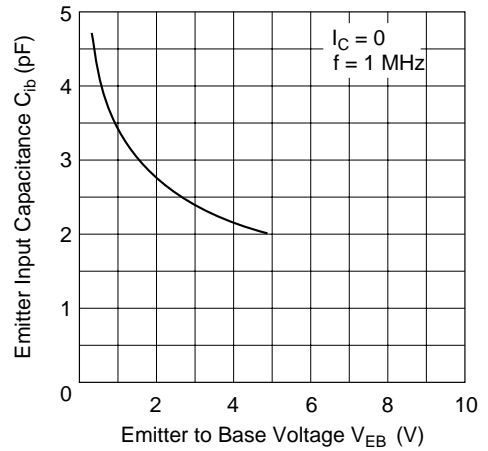
Base to Emitter Voltage vs. Ambient Temperature

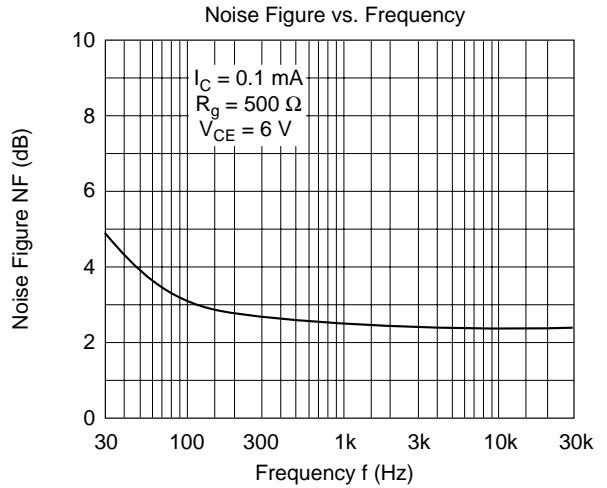
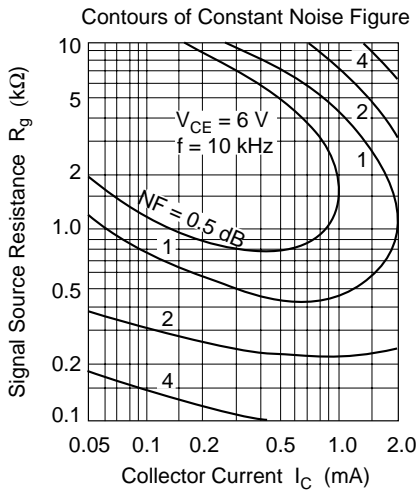
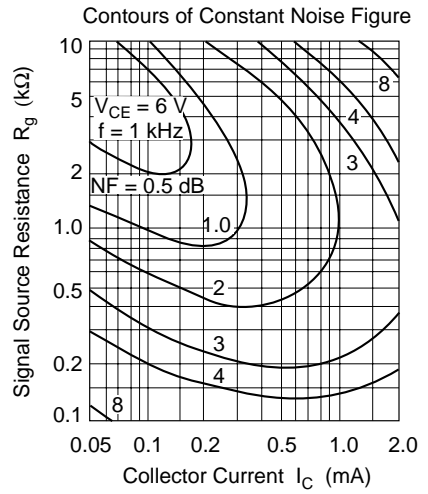
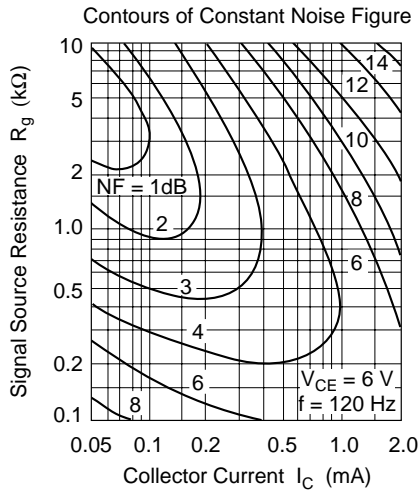


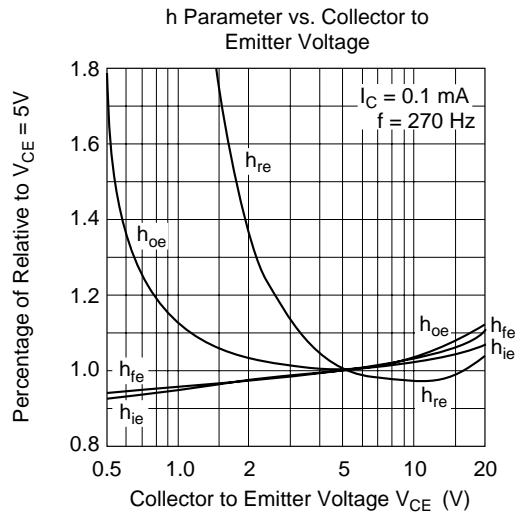
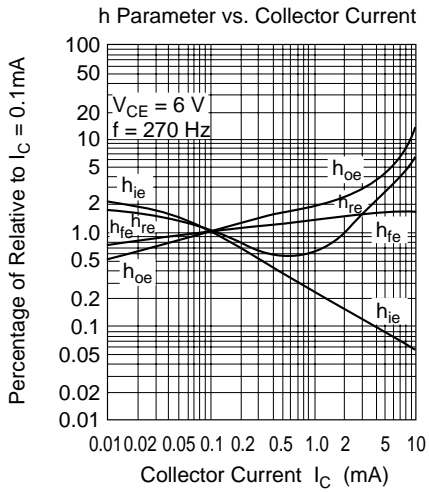
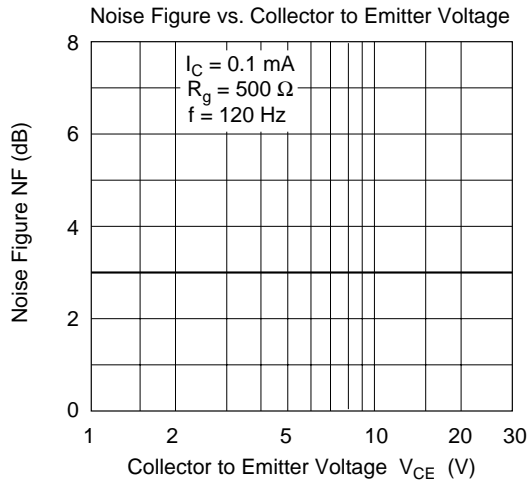
Collector Output Capacitance vs. Collector to Base Voltage

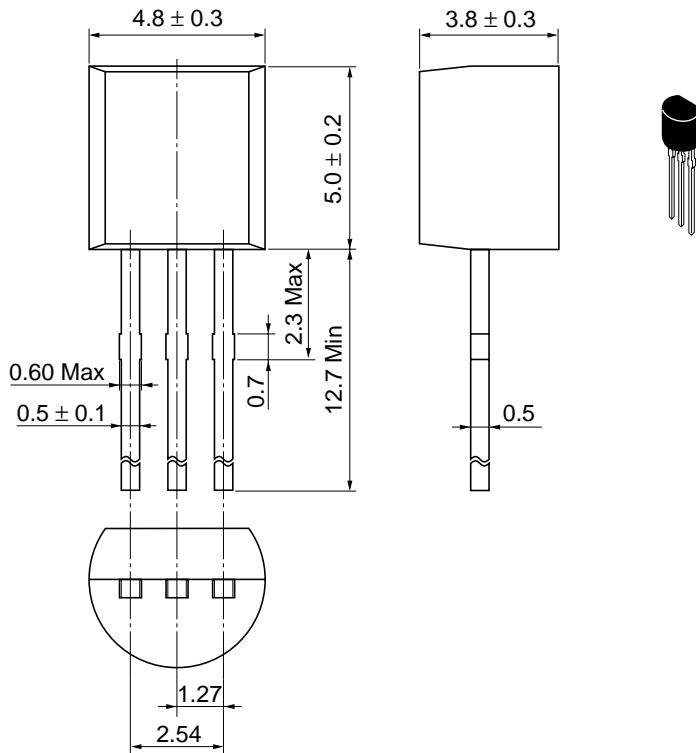


Emitter Input Capacitance vs. Emitter to Base Voltage









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



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## Hitachi, Ltd.

Semiconductor & Integrated Circuits.  
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan  
Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

URL      North America      : <http://semiconductor.hitachi.com/>  
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## For further information write to:

Hitachi Semiconductor  
(America) Inc.  
179 East Tasman Drive,  
San Jose, CA 95134  
Tel: <1> (408) 433-1990  
Fax: <1>(408) 433-0223

Hitachi Europe GmbH  
Electronic components Group  
Dornacher Straße 3  
D-85622 Feldkirchen, Munich  
Germany  
Tel: <49> (89) 9 9180-0  
Fax: <49> (89) 9 29 30 00

Hitachi Europe Ltd.  
Electronic Components Group.  
Whitebrook Park  
Lower Cookham Road  
Maidenhead  
Berkshire SL6 8YA, United Kingdom  
Tel: <44> (1628) 585000  
Fax: <44> (1628) 778322

Hitachi Asia Pte. Ltd.  
16 Collyer Quay #20-00  
Hitachi Tower  
Singapore 049318  
Tel: 535-2100  
Fax: 535-1533

Hitachi Asia Ltd.  
Taipei Branch Office  
3F, Hung Kuo Building, No.167,  
Tun-Hwa North Road, Taipei (105)  
Tel: <886> (2) 2718-3666  
Fax: <886> (2) 2718-8180

Hitachi Asia (Hong Kong) Ltd.  
Group III (Electronic Components)  
7/F., North Tower, World Finance Centre,  
Harbour City, Canton Road, Tsim Sha Tsui,  
Kowloon, Hong Kong  
Tel: <852> (2) 735 9218  
Fax: <852> (2) 730 0281  
Telex: 40815 HITEC HX

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