

# 2SC458, 2SC2308

Silicon NPN Epitaxial

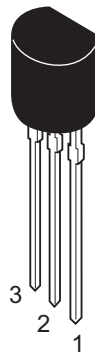
REJ03G0681-0200  
 (Previous ADE-208-1043)  
 Rev.2.00  
 Aug.10.2005

## Application

- Low frequency amplifier
- Complementary pair with 2SA1029 and 2SA1030

## 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	2SC458	2SC2308	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

## Electrical Characteristics

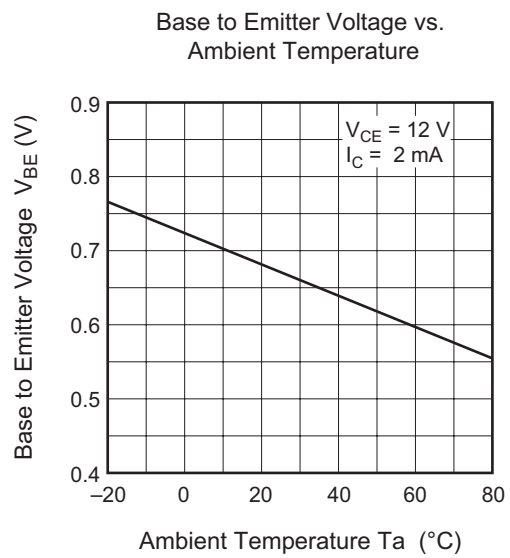
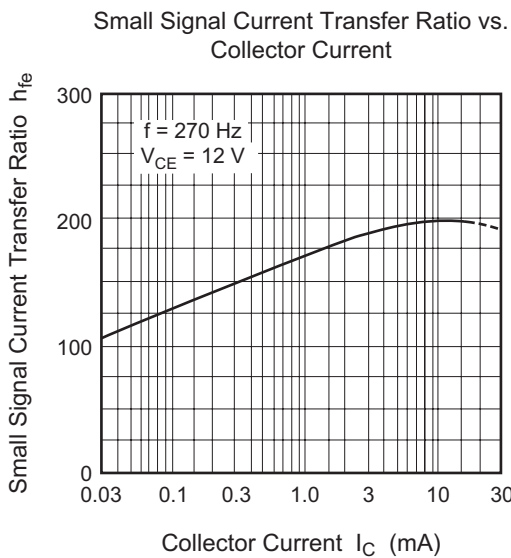
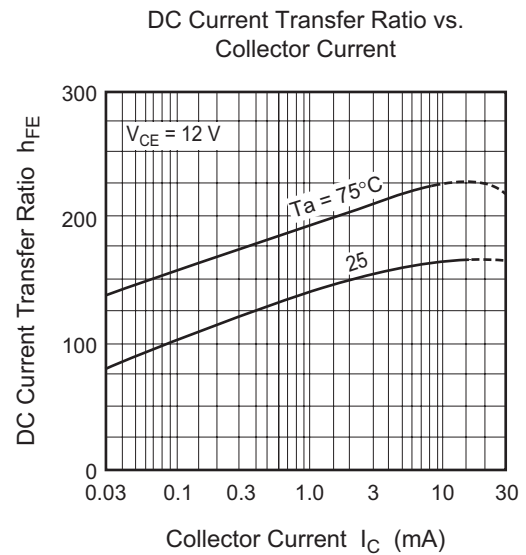
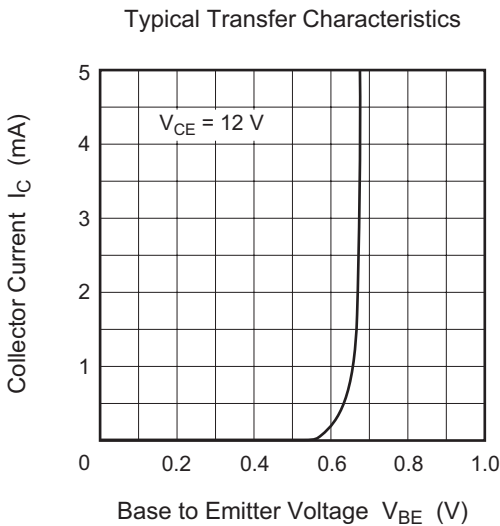
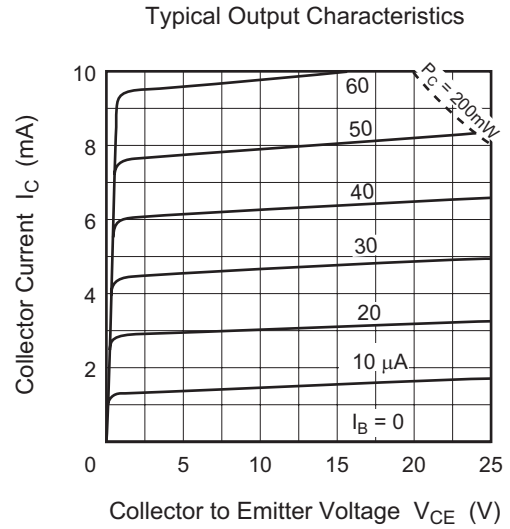
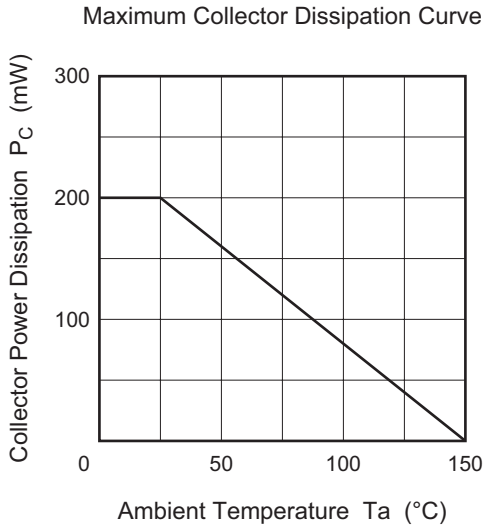
(Ta = 25°C)

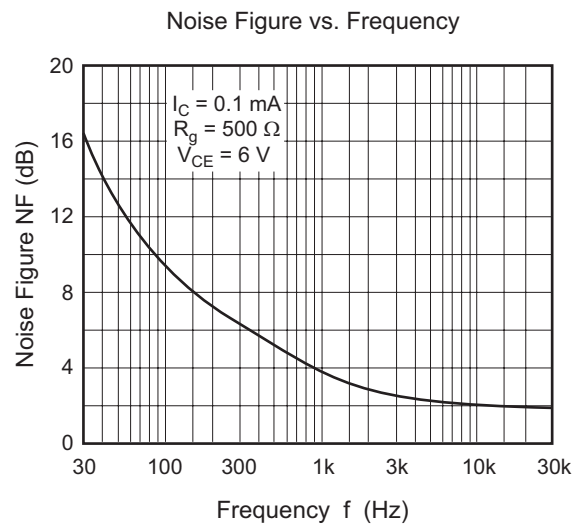
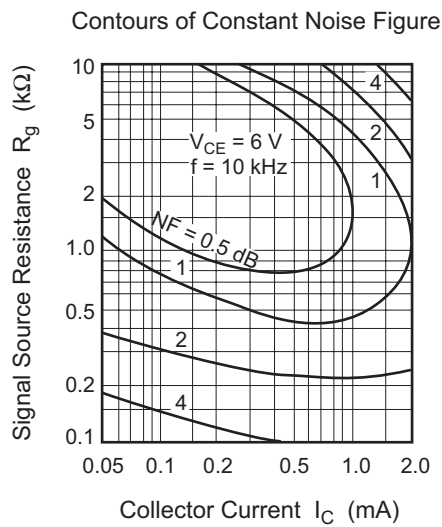
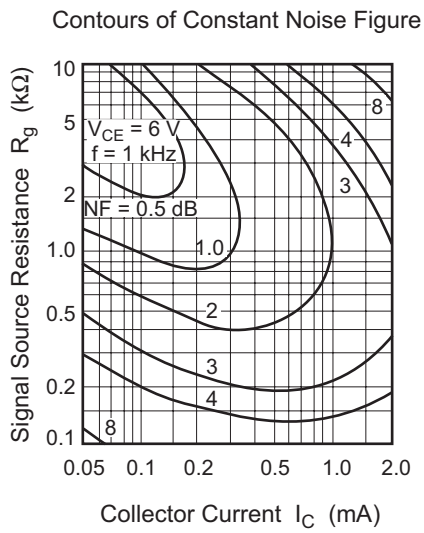
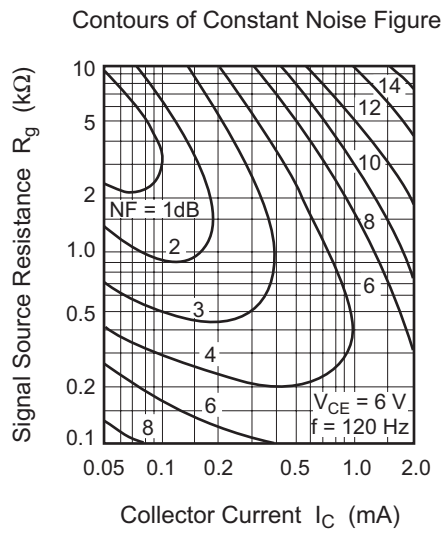
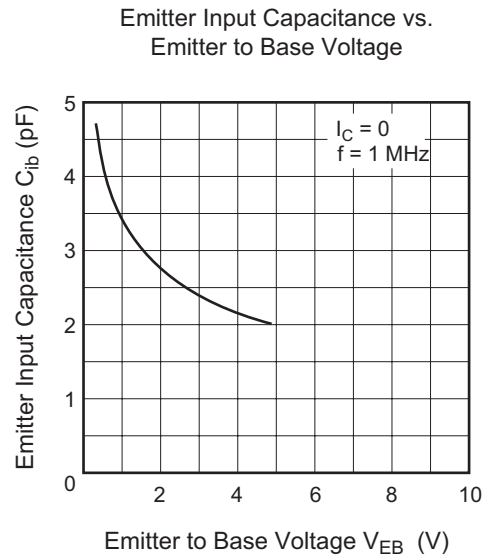
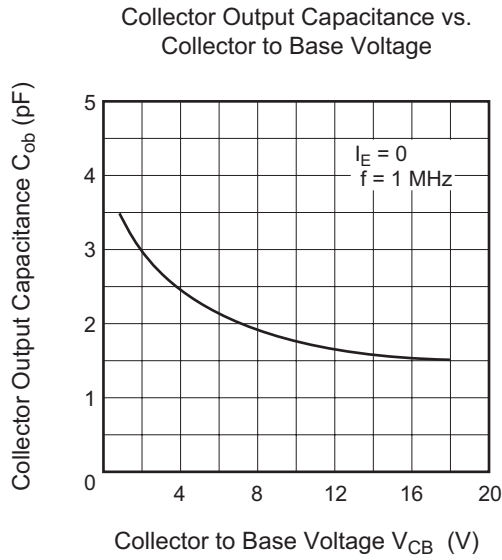
Item	Symbol	2SC458			2SC2308			Unit	Test conditions
		Min	Typ	Max	Min	Typ	Max		
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	55	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	30	—	—	50	—	—	V	$I_C = 1 \text{ mA}, R_{BE} = \infty$
Emitter to base breakdown 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	160	—	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	$C_{ob}$	—	1.8	3.5	—	1.8	3.5	pF	$V_{CB} = 10 \text{ V}, I_E = 0,$ $f = 1 \text{ MHz}$
Noise figure	NF	—	4	10	—	4	10	dB	$V_{CE} = 6 \text{ V}, I_C = 0.1 \text{ mA},$ $f = 1 \text{ kHz}, R_g = 500 \Omega$
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 is grouped by  $h_{FE}$  as follows.

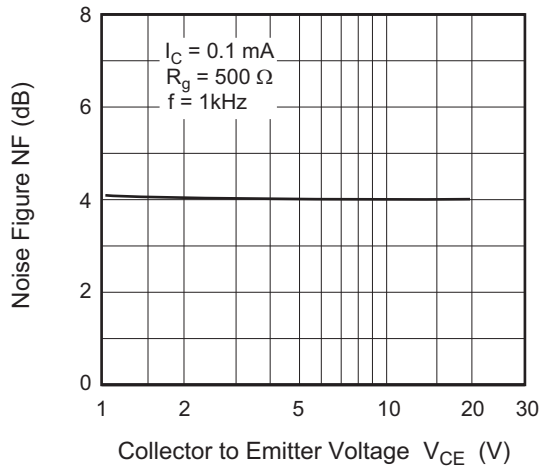
	B	C	D
2SC458	100 to 200	160 to 320	250 to 500

### Main Characteristics

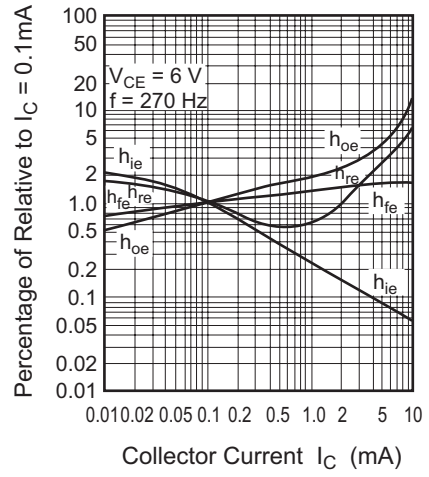




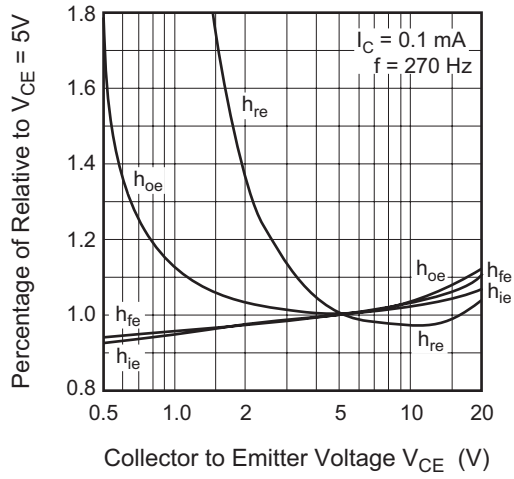
Noise Figure vs. Collector to Emitter Voltage



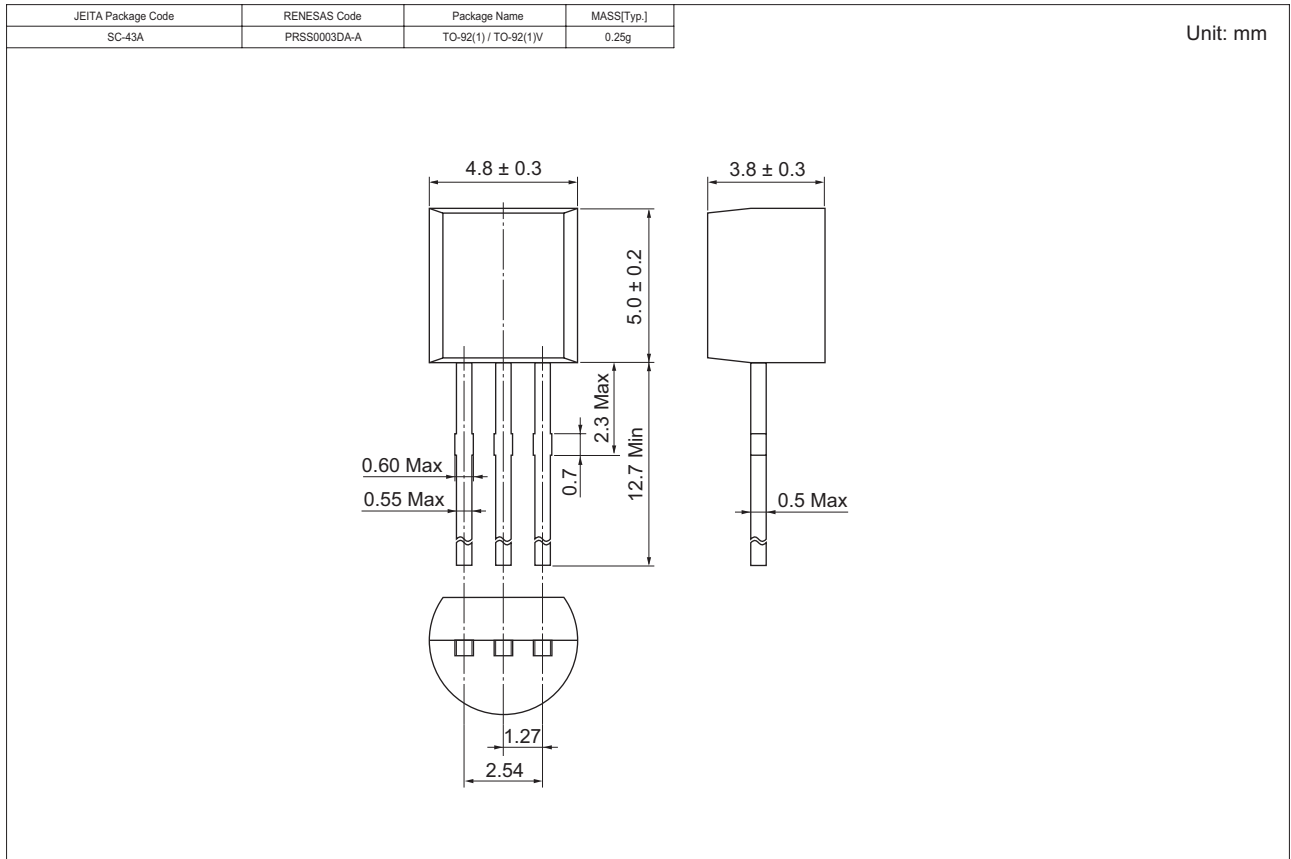
h Parameter vs. Collector Current



h Parameter vs. Collector to Emitter Voltage



### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
2SC458BTZ	2500	Hold Box, Radial Taping
2SC458CTZ		
2SC458DTZ		
2SC2308CTZ		

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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