

## 2SC5851

Silicon NPN Epitaxial

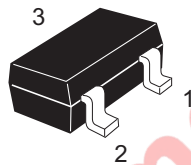
REJ03G0761-0100  
 (Previous ADE-208-1480)  
 Rev.1.00  
 Aug.10.2005

### Features

High frequency amplifier

### Outline

RENESAS Package code: PTSP0003ZA-A  
 (Package name: CMPAK<sup>®</sup>)



- 1. Emitter
- 2. Base
- 3. Collector

\*CMPAK is a trademark of Renesas Technology Corp.

### Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{CBO}$	30	V
Collector to emitter voltage	$V_{CEO}$	30	V
Emitter to base voltage	$V_{EBO}$	5	V
Collector current	$I_C$	100	mA
Collector power dissipation	$P_C^*$	150	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 to +125	°C

\*Value on the glass epoxy board (10 mm x 10 mm x 0.7 mm)

## Electrical Characteristics

(Ta = 25°C)

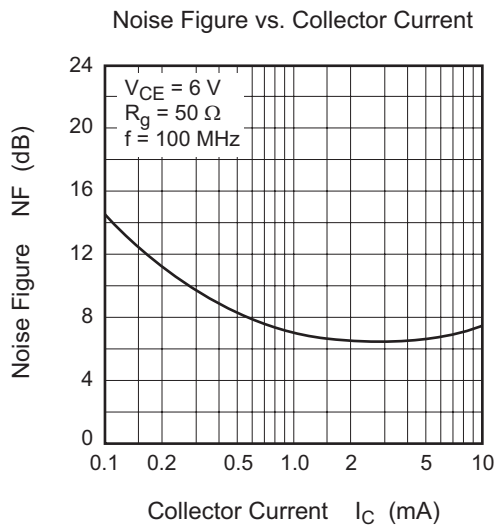
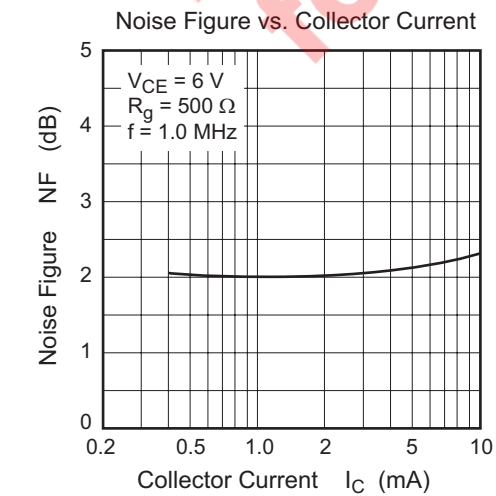
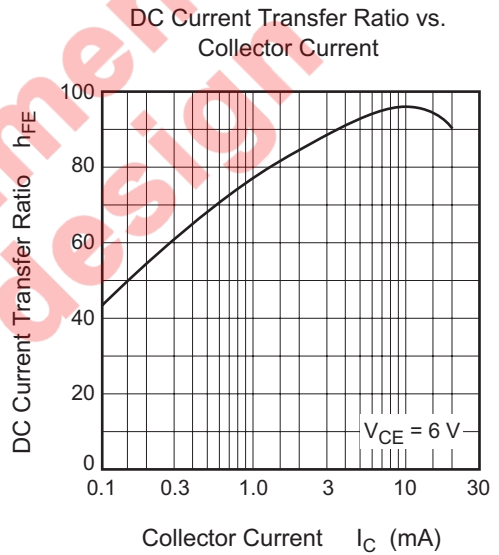
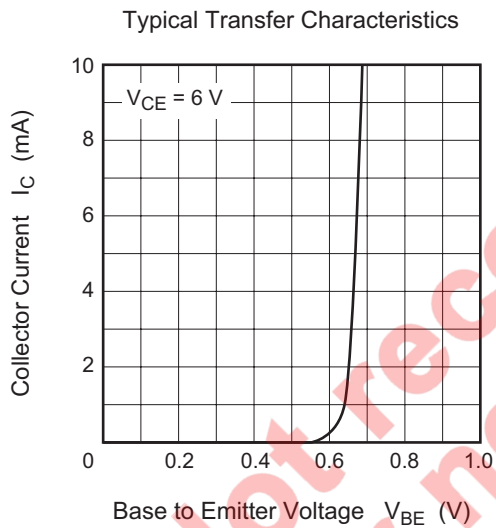
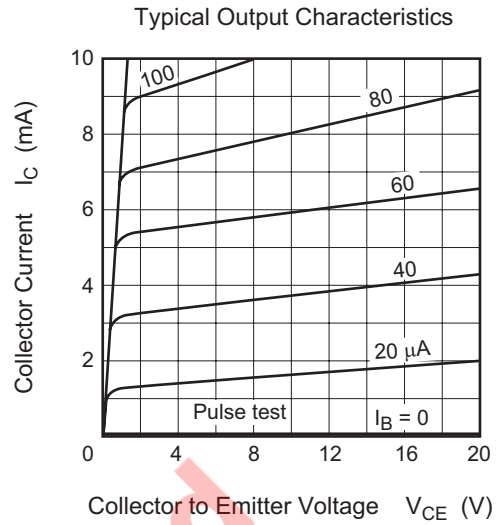
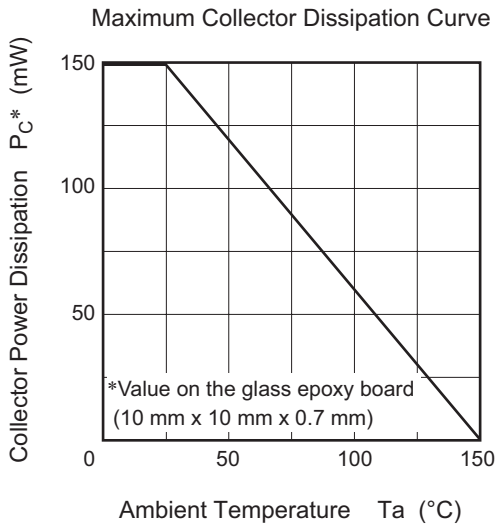
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	30	—	—	V	$I_C = 1 \text{ mA}, R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	$I_{CBO}$	—	—	0.5	$\mu A$	$V_{CB} = 20 \text{ V}, I_E = 0$
Emitter cutoff current	$I_{EBO}$	—	—	0.5	$\mu A$	$V_{EB} = 2 \text{ V}, I_C = 0$
DC current transfer ratio	$h_{FE}^{*1}$	35	—	200		$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	1.1	V	$I_C = 10 \text{ mA}, I_B = 1 \text{ mA}$
Base to emitter voltage	$V_{BE}$	—	—	0.75	V	$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Gain bandwidth product	$f_T$	—	230	—	MHz	$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Collector output capacitance	$C_{ob}$	—	1.6	—	pF	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$
Noise figure	NF	—	5.5	—	dB	$V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}, f = 100 \text{ MHz}, R_g = 100 \Omega$

Notes: 1. The 2SC5851 is grouped by  $h_{FE}$  as follows.

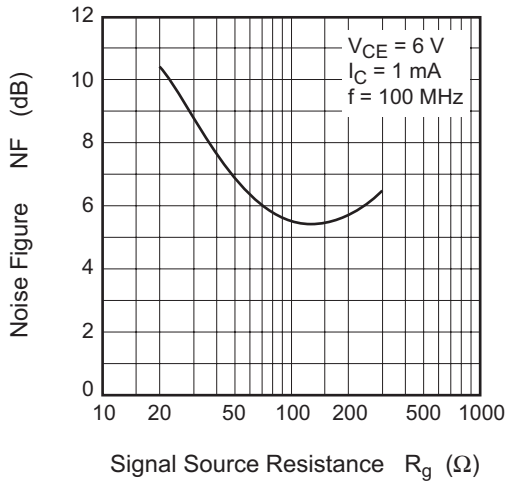
Grade	A	B	C
Mark	FA	FB	FC
$h_{FE}$	35 to 75	60 to 120	100 to 200

Not recommend  
for new design

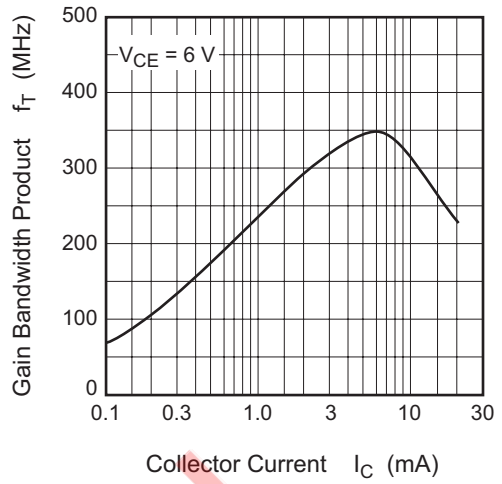
Main Characteristics



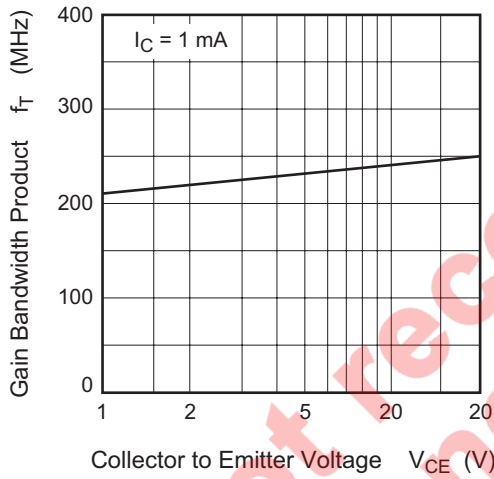
Noise Figure vs. Signal Source Resistance



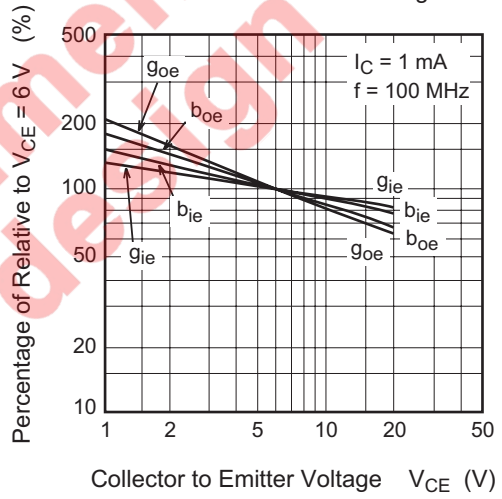
Gain Bandwidth Product vs. Collector Current



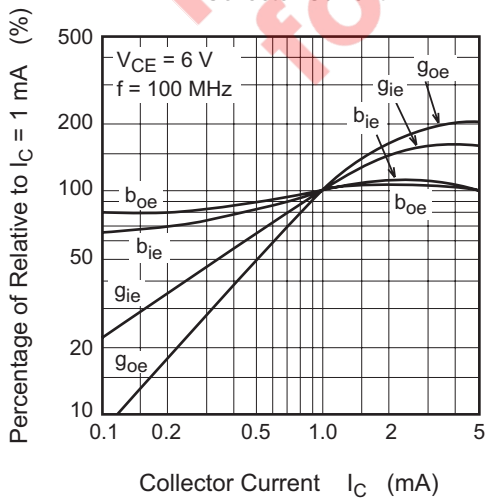
Gain Bandwidth Product vs. Collector to Emitter Voltage



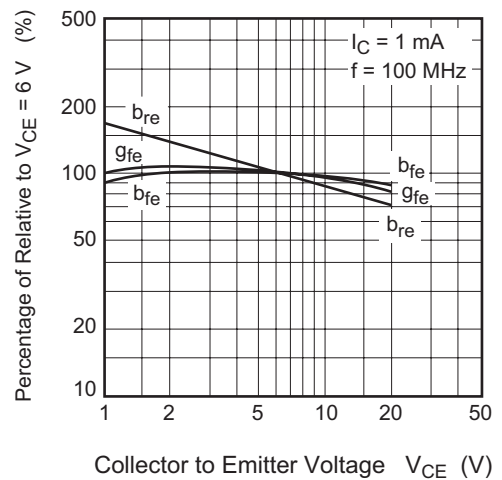
Input/Output Admittance vs. Collector to Emitter Voltage

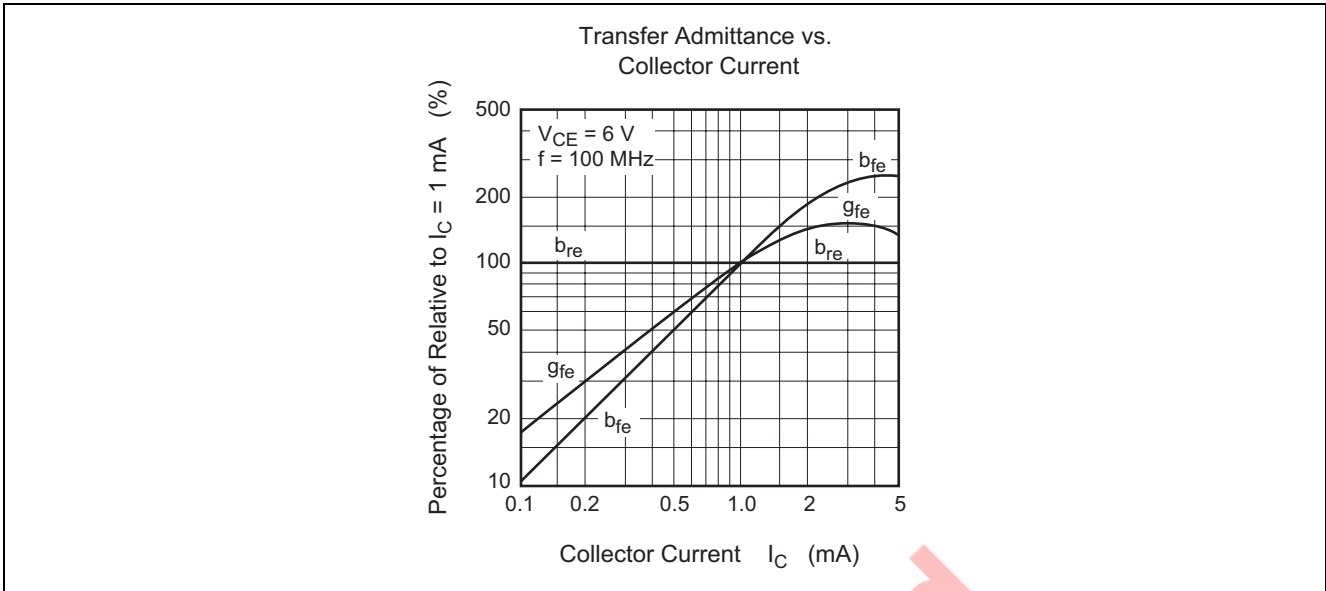


Input/Output Admittance vs. Collector Current



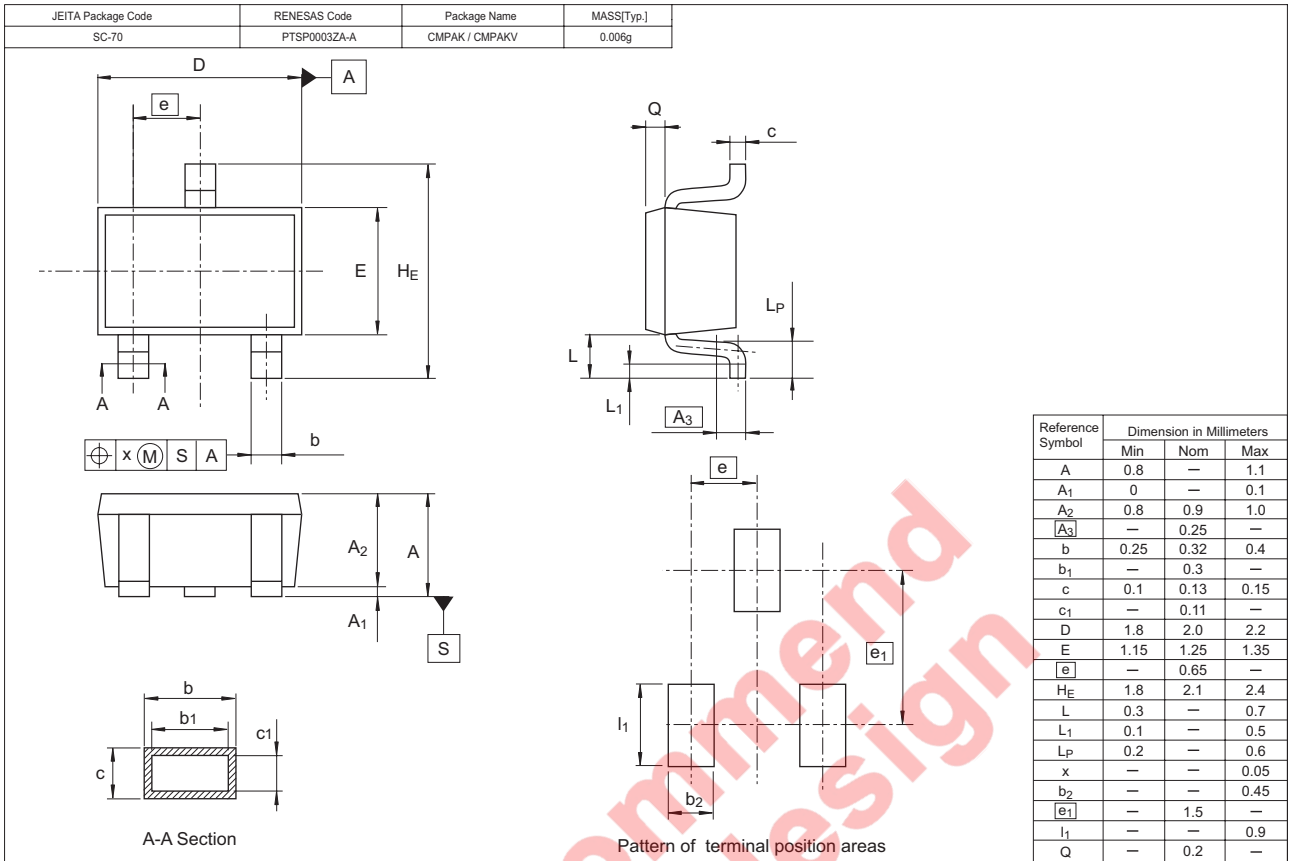
Transfer Admittance vs. Collector to Emitter Voltage





Not recommended  
for new design

### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
2SC5851FATL-E	3000	φ 178 mm Reel, 8 mm Emboss Taping
2SC5851FBTL-E		
2SC5851FCTL-E		

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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