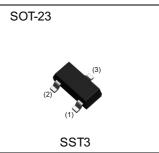


Parameter	Value
V <sub>CES</sub>	50V
Ι <sub>C</sub>	500mA

### Outline

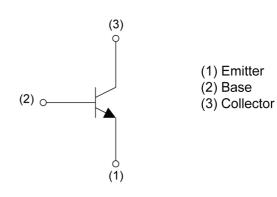


### Features

1)High gain and low saturation voltage.

2)Complements the BCX17.

## Inner circuit



## Application

AUDIO FREQUENCY SMALL SIGNAL AMPLIFIER

## Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
BCX19	SOT-23 (SST3)	2924	T116	180	8	3000	GU1

## • Absolute maximum ratings ( $T_a = 25^{\circ}C$ )

Parameter	Symbol	Values	Unit
	V <sub>CES</sub>	50	V
Collector-emitter voltage	V <sub>CEO</sub>	45	V
Emitter-base voltage	V <sub>EBO</sub>	5	V
Collector ourrent	Ι <sub>C</sub>	500	mA
Collector current	I <sub>CP</sub>	1	А
	P <sub>D</sub> <sup>*1</sup>	200	mW
Power dissipation	P <sub>D</sub> *2	350	mW
	P <sub>D</sub> *3	425	mW
Junction temperature	T <sub>j</sub>	150	°C
Range of storage temperature	T <sub>stg</sub>	-65 to +150	°C

## • Electrical characteristics ( $T_a = 25^{\circ}C$ )

Deremeter	Oursela el	Conditions	Values			L lucit
Parameter	Symbol Conditions		Min.	Тур.	Max.	Unit
Collector-emitter breakdown	BV <sub>CES</sub>	Ι <sub>C</sub> = 50μΑ	50	-	-	V
voltage	BV <sub>CEO</sub>	I <sub>C</sub> = 10mA	45	-	-	V
Emitter-base breakdown voltage	BV <sub>EBO</sub>	Ι <sub>Ε</sub> = 50μΑ	5	-	-	V
		V <sub>CB</sub> = 20V	-	-	100	nA
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> = 20V, T <sub>a</sub> = 150° <b>C</b>	-	-	5	μA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> = 5V	-	-	10	μA
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA	-	-	620	mV
Base-emitter turn on voltage	V <sub>BE(on)</sub>	V <sub>CE</sub> = 1V, I <sub>C</sub> = 500mA	-	-	1.2	V
	h <sub>FE</sub> 1	V <sub>CE</sub> = 1V, I <sub>C</sub> = 100mA	100	-	600	
DC current gain	h <sub>FE</sub> 2	V <sub>CE</sub> = 1V, I <sub>C</sub> = 300mA	70	-	-	-
	h <sub>FE</sub> 3	V <sub>CE</sub> = 1V, I <sub>C</sub> = 500mA	40	-	-	
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> = 5V, I <sub>E</sub> = -20mA, f = 100MHz	-	250	-	MHz

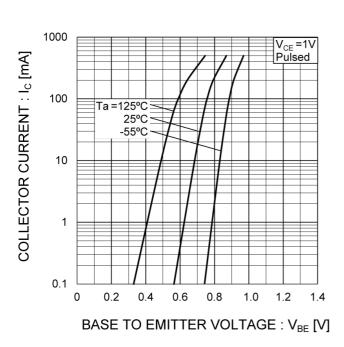
\*1 Each terminal mounted on a reference land.

\*2 Mounted on a ceramic board(7.0×5.0×0.6mm).

\*3 Mounted on a ceramic board(15×15×0.6mm).

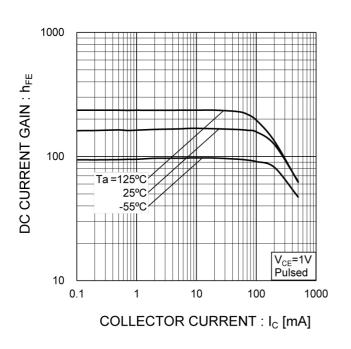


## • Electrical characteristic curves ( $T_a = 25^{\circ}C$ )

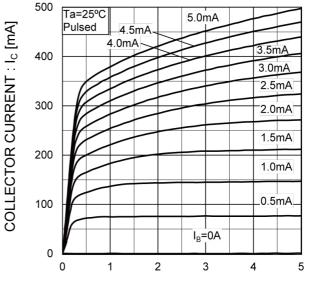


#### Fig.1 Ground Emitter Propagation Characteristics

Fig.3 DC Current Gain vs. Collector Current (I)

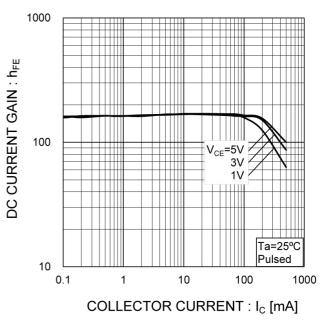


## Fig.2 Grounded Emitter Output Characteristics

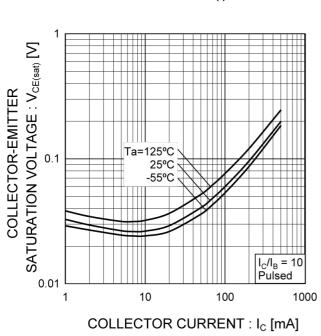


COLLECTOR TO EMITTER VOLTAGE :  $V_{CE}$  [V]

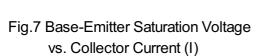
Fig.4 DC Current Gain vs. Collector Current (II)



## • Electrical characteristic curves ( $T_a = 25^{\circ}C$ )



# Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current(I)



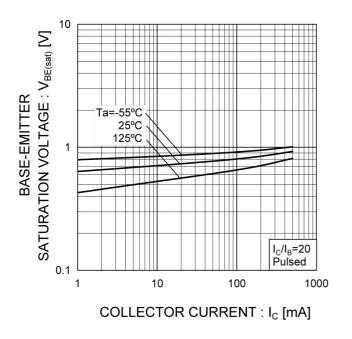


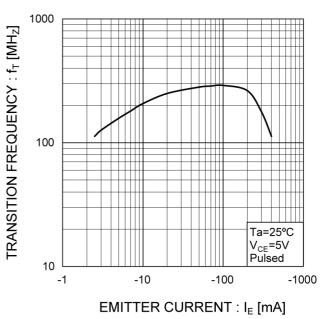
Fig.8 Gain Bandwith Product vs. Emitter Current

10

100

COLLECTOR CURRENT : Ic [mA]

1000



# Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current(II)

I<sub>C</sub>/I<sub>B</sub>=50 =20

=10

1

SATURATION VOLTAGE : V<sub>CE(sat)</sub> [V]

0.1

0.01

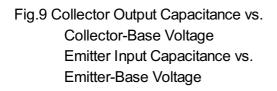
1

COLLECTOR-EMITTER

Ta=25°C

Pulsed

## • Electrical characteristic curves ( $T_a = 25^{\circ}C$ )



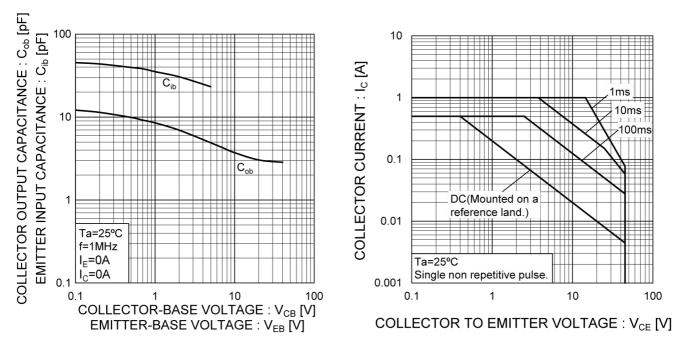
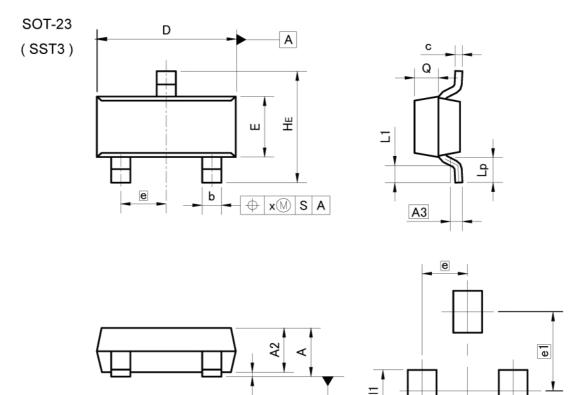


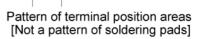
Fig.10 Safe Operating Area



### Dimensions



A



b2

MIN	MAX		
0.00		MIN	MAX
0.90	1.20	0.035	0.047
0.00	0.10	0.000	0.004
0.85	1.15	0.033	0.045
0.2	25	0.0	10
0.35	0.50	0.014	0.020
0.09	0.25	0.004	0.010
2.70	3.10	0.106	0.122
1.20	1.50	0.047	0.059
0.9	95	0.037	
2.20	2.60	0.087	0.102
0.20	-	0.008	_
0.30	2 <del></del> 2	0.012	-
0.40	0.60	0.016	0.024
-	0.10	-	0.004
	0.85 0.35 0.09 2.70 1.20 0.30 0.20 0.30	0.85 1.15   0.25 0.35 0.50   0.09 0.25 2.70 3.10   1.20 1.50 0.95 2.20 2.60   0.20 - 0.30 - 0.40 0.60	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

S

DIM	MILIMETERS		INCHES	
DIW	MIN MAX		MIN	MAX
b2	-	0.60	-	0.024
e1	1.70		0.0	67
1		0.90	-	0.035

Dimension in mm/inches



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1. Our Products are designed and manufactured for application in ordinary electronic equipments (such as AV equipment, OA equipment, telecommunication equipment, home electronic appliances, amusement equipment, etc.). If you intend to use our Products in devices requiring extremely high reliability (such as medical equipment <sup>(Note 1)</sup>, transport equipment, traffic equipment, aircraft/spacecraft, nuclear power controllers, fuel controllers, car equipment including car accessories, safety devices, etc.) and whose malfunction or failure may cause loss of human life, bodily injury or serious damage to property ("Specific Applications"), please consult with the ROHM sales representative in advance. Unless otherwise agreed in writing by ROHM in advance, ROHM shall not be in any way responsible or liable for any damages, expenses or losses incurred by you or third parties arising from the use of any ROHM's Products for Specific Applications.

(Note1) Medical Equipment Classification of the Specific Applications
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JÁPAN	USA	EU	CHINA	
CLASSⅢ	CLASSⅢ	CLASS II b	CLASSII	
CLASSⅣ	CLASSII	CLASSⅢ	CLASSI	

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  - [b] Installation of redundant circuits to reduce the impact of single or multiple circuit failure
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  - [a] Use of our Products in any types of liquid, including water, oils, chemicals, and organic solvents
  - [b] Use of our Products outdoors or in places where the Products are exposed to direct sunlight or dust
  - [c] Use of our Products in places where the Products are exposed to sea wind or corrosive gases, including Cl<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, SO<sub>2</sub>, and NO<sub>2</sub>
  - [d] Use of our Products in places where the Products are exposed to static electricity or electromagnetic waves
  - [e] Use of our Products in proximity to heat-producing components, plastic cords, or other flammable items
  - [f] Sealing or coating our Products with resin or other coating materials
  - [g] Use of our Products without cleaning residue of flux (even if you use no-clean type fluxes, cleaning residue of flux is recommended); or Washing our Products by using water or water-soluble cleaning agents for cleaning residue after soldering
  - [h] Use of the Products in places subject to dew condensation
- 4. The Products are not subject to radiation-proof design.
- 5. Please verify and confirm characteristics of the final or mounted products in using the Products.
- 6. In particular, if a transient load (a large amount of load applied in a short period of time, such as pulse. is applied, confirmation of performance characteristics after on-board mounting is strongly recommended. Avoid applying power exceeding normal rated power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.
- 7. De-rate Power Dissipation depending on ambient temperature. When used in sealed area, confirm that it is the use in the range that does not exceed the maximum junction temperature.
- 8. Confirm that operation temperature is within the specified range described in the product specification.
- 9. ROHM shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in this document.

#### Precaution for Mounting / Circuit board design

- 1. When a highly active halogenous (chlorine, bromine, etc.) flux is used, the residue of flux may negatively affect product performance and reliability.
- 2. In principle, the reflow soldering method must be used on a surface-mount products, the flow soldering method must be used on a through hole mount products. If the flow soldering method is preferred on a surface-mount products, please consult with the ROHM representative in advance.

For details, please refer to ROHM Mounting specification

#### Precautions Regarding Application Examples and External Circuits

- 1. If change is made to the constant of an external circuit, please allow a sufficient margin considering variations of the characteristics of the Products and external components, including transient characteristics, as well as static characteristics.
- 2. You agree that application notes, reference designs, and associated data and information contained in this document are presented only as guidance for Products use. Therefore, in case you use such information, you are solely responsible for it and you must exercise your own independent verification and judgment in the use of such information contained in this document. ROHM shall not be in any way responsible or liable for any damages, expenses or losses incurred by you or third parties arising from the use of such information.

#### **Precaution for Electrostatic**

This Product is electrostatic sensitive product, which may be damaged due to electrostatic discharge. Please take proper caution in your manufacturing process and storage so that voltage exceeding the Products maximum rating will not be applied to Products. Please take special care under dry condition (e.g. Grounding of human body / equipment / solder iron, isolation from charged objects, setting of lonizer, friction prevention and temperature / humidity control).

#### Precaution for Storage / Transportation

- 1. Product performance and soldered connections may deteriorate if the Products are stored in the places where:
  - [a] the Products are exposed to sea winds or corrosive gases, including Cl2, H2S, NH3, SO2, and NO2
  - [b] the temperature or humidity exceeds those recommended by ROHM
  - [c] the Products are exposed to direct sunshine or condensation
  - [d] the Products are exposed to high Electrostatic
- 2. Even under ROHM recommended storage condition, solderability of products out of recommended storage time period may be degraded. It is strongly recommended to confirm solderability before using Products of which storage time is exceeding the recommended storage time period.
- 3. Store / transport cartons in the correct direction, which is indicated on a carton with a symbol. Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.
- 4. Use Products within the specified time after opening a humidity barrier bag. Baking is required before using Products of which storage time is exceeding the recommended storage time period.

#### **Precaution for Product Label**

A two-dimensional barcode printed on ROHM Products label is for ROHM's internal use only.

#### Precaution for Disposition

When disposing Products please dispose them properly using an authorized industry waste company.

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## BCX19 - Web Page

**Distribution Inventory** 

Part Number	BCX19
Package	SOT-23
Unit Quantity	3000
Minimum Package Quantity	3000
Packing Type	Taping
Constitution Materials List	inquiry
RoHS	Yes