



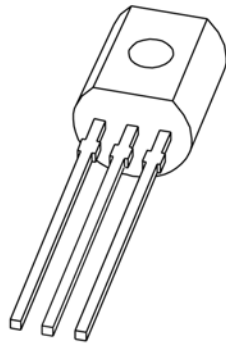
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KWUN TONG, KOWLOON, HONG KONG.

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# DATA SHEET



## **BC559** PNP general purpose transistor

Product specification  
Supersedes data of 1999 May 28

2004 Nov 05

Philips  
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# PHILIPS



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Product specification

**PNP general purpose transistor**

**BC559**

**FEATURES**

- Low current (max. 100 mA)
- Low voltage (max. 30 V).

**APPLICATIONS**

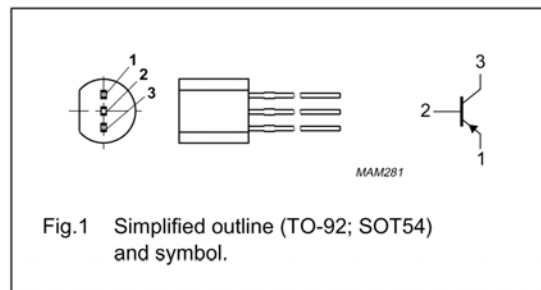
- General purpose switching and amplification.

**DESCRIPTION**

PNP transistor in a TO-92 (SOT54) plastic package.  
NPN complement: BC549.

**PINNING**

PIN	DESCRIPTION
1	emitter
2	base
3	collector



**ORDERING INFORMATION**

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BC559C	SC-43A	plastic single-ended leaded (through hole) package; 3 leads	SOT54

**LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter	–	–30	V
$V_{CEO}$	collector-emitter voltage	open base	–	–30	V
$V_{EBO}$	emitter-base voltage	open collector	–	–5	V
$I_C$	collector current (DC)		–	–100	mA
$I_{CM}$	peak collector current		–	–200	mA
$I_{BM}$	peak base current		–	–200	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$	–	500	mW
$T_{stg}$	storage temperature		–65	+150	$^\circ\text{C}$
$T_j$	junction temperature		–	150	$^\circ\text{C}$
$T_{amb}$	ambient temperature		–65	+150	$^\circ\text{C}$



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### BC559

#### THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient	note 1	250	K/W

#### Note

1. Transistor mounted on an FR4 printed-circuit board.

#### CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector-base cut-off current	$V_{CB} = -30\text{ V}; I_E = 0\text{ A}$	-	-1	-15	nA
		$V_{CB} = -30\text{ V}; I_E = 0\text{ A}; T_j = 150\text{ }^{\circ}\text{C}$	-	-	-4	$\mu\text{A}$
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = -5\text{ V}; I_C = 0\text{ A}$	-	-	-100	nA
$h_{FE}$	DC current gain; BC559C	$V_{CE} = -5\text{ V}; I_C = -2\text{ mA}$ ; see Fig.2	420	-	800	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -10\text{ mA}; I_B = -0.5\text{ mA}$	-	-60	-300	mV
		$I_C = -100\text{ mA}; I_B = -5\text{ mA}$	-	-180	-650	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = -10\text{ mA}; I_B = -0.5\text{ mA}$ ; note 1	-	-750	-	mV
		$I_C = -100\text{ mA}; I_B = -5\text{ mA}$ ; note 1	-	-930	-	mV
$V_{BE}$	base-emitter voltage	$V_{CE} = -5\text{ V}; I_C = -2\text{ mA}$ ; note 2	-600	-650	-750	mV
		$V_{CE} = -5\text{ V}; I_C = -10\text{ mA}$ ; note 2	-	-	-820	mV
$C_c$	collector capacitance	$V_{CB} = -10\text{ V}; I_E = I_e = 0\text{ A}; f = 1\text{ MHz}$	-	4	-	pF
$f_T$	transition frequency	$V_{CB} = -5\text{ V}; I_E = -10\text{ mA}; f = 100\text{ MHz}$	100	-	-	MHz
F	noise figure; BC559C	$V_{CE} = -5\text{ V}; I_C = -200\text{ }\mu\text{A}; R_S = 2\text{ k}\Omega$ ; $f = 30\text{ Hz to }15.7\text{ kHz}$	-	-	4	dB
		$V_{CE} = -5\text{ V}; I_C = -200\text{ }\mu\text{A}; R_S = 2\text{ k}\Omega$ ; $f = 1\text{ kHz}; B = 200\text{ Hz}$	-	-	4	dB

#### Notes

1.  $V_{BEsat}$  decreases by about  $-1.7\text{ mV/K}$  with increasing temperature.
2.  $V_{BE}$  decreases by about  $-2\text{ mV/K}$  with increasing temperature.



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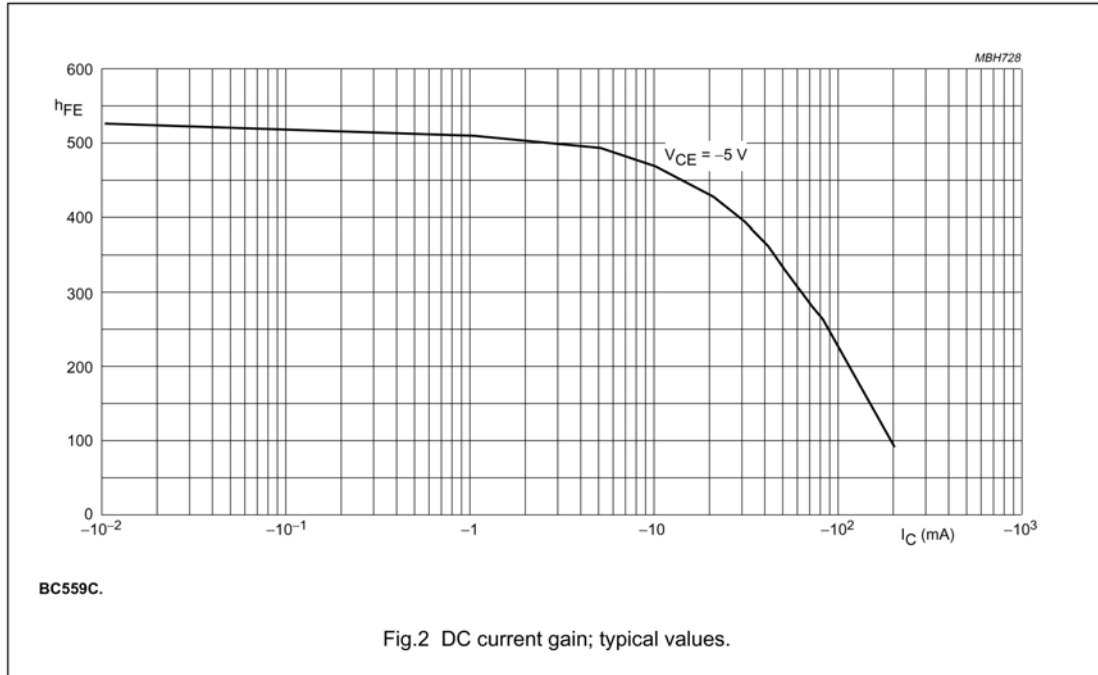
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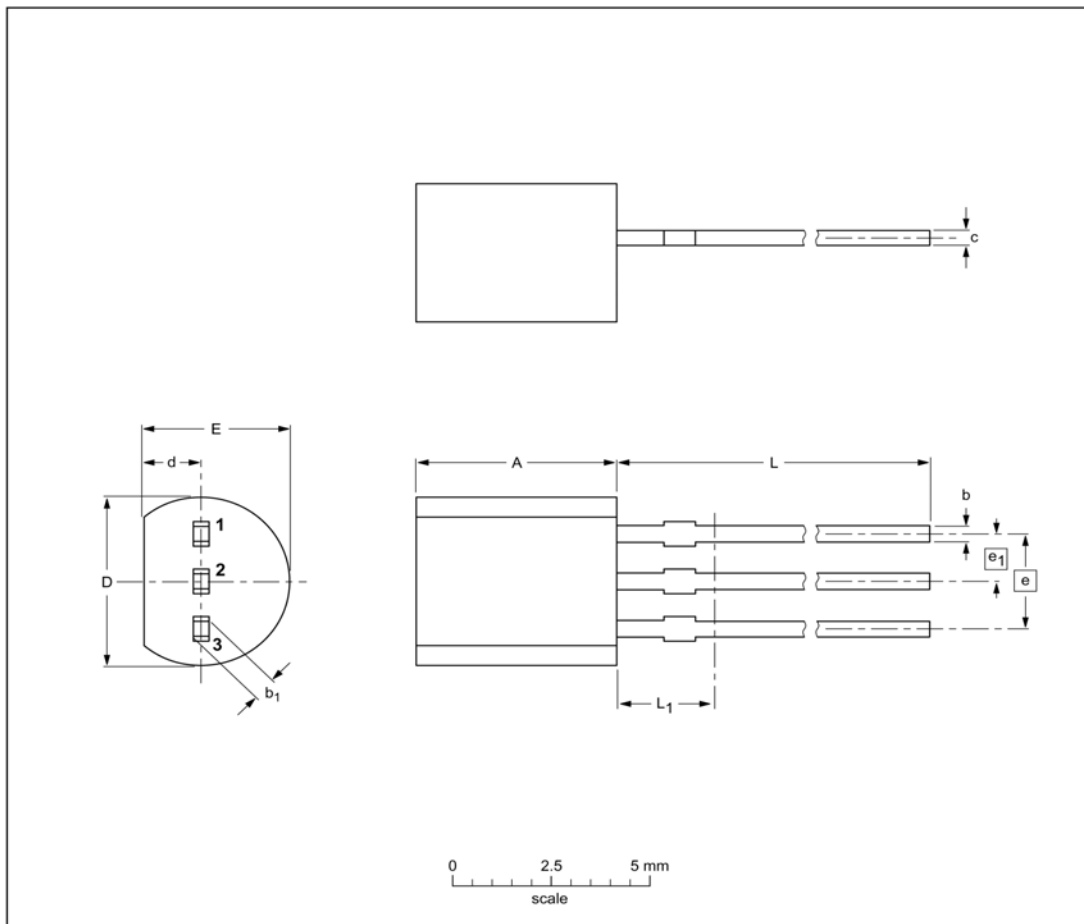
PNP general purpose transistor

BC559

**PACKAGE OUTLINE**

Plastic single-ended leaded (through hole) package; 3 leads

SOT54



**DIMENSIONS (mm are the original dimensions)**

UNIT	A	b	b <sub>1</sub>	c	D	d	E	e	e <sub>1</sub>	L	L <sub>1</sub> <sup>(1)</sup> max.
mm	5.2 5.0	0.48 0.40	0.66 0.55	0.45 0.38	4.8 4.4	1.7 1.4	4.2 3.6	2.54	1.27	14.5 12.7	2.5

**Note**

1. Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
SOT54		TO-92	SC-43A		-97-02-28 04-06-28



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#### DATA SHEET STATUS

LEVEL	DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)(3)</sup>	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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**Limiting values definition** — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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