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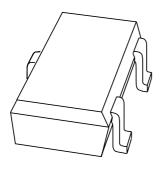
If you have any questions related to the data sheet, please contact our nearest sales office via e-mail or telephone (details via **salesaddresses@nexperia.com**). Thank you for your cooperation and understanding,

Kind regards,

Team Nexperia

## **DISCRETE SEMICONDUCTORS**

# DATA SHEET



# BC849W; BC850W NPN general purpose transistors

Product data sheet Supersedes data of 1997 Jun 20 1999 Apr 12



## **NPN** general purpose transistors

BC849W; BC850W

#### **FEATURES**

• Low current (max. 100 mA)

• Low voltage (max. 45 V).

#### **APPLICATIONS**

• Low noise stages in tape recorders, hi-fi amplifiers and other audio-frequency equipment.

#### **DESCRIPTION**

NPN transistor in a SOT323 plastic package. PNP complements: BC859W and BC860W.

#### **MARKING**

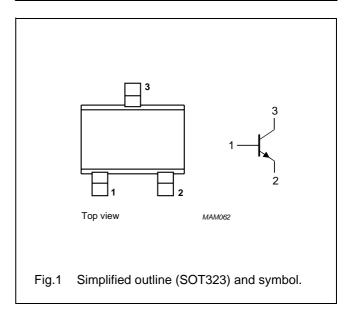
TYPE NUMBER	MARKING CODE <sup>(1)</sup>	TYPE NUMBER	MARKING CODE <sup>(1)</sup>	
BC849BW	2B*	BC850BW	2F*	
BC849CW	2C*	BC850CW	2G*	

#### Note

\* = - : Made in Hong Kong.
 \* = t : Made in Malaysia.

#### **PINNING**

PIN	DESCRIPTION	
1	base	
2	emitter	
3	collector	



#### **LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter			
	BC849W		_	30	V
	BC850W		_	50	V
V <sub>CEO</sub>	collector-emitter voltage	open base			
	BC849W		_	30	V
	BC850W		_	45	V
V <sub>EBO</sub>	emitter-base voltage	open collector	_	5	V
I <sub>C</sub>	collector current (DC)		_	100	mA
I <sub>CM</sub>	peak collector current		_	200	mA
I <sub>BM</sub>	peak base current		_	200	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C; note 1	_	200	mW
T <sub>stg</sub>	storage temperature		-65	+150	°C
T <sub>j</sub>	junction temperature		_	150	°C
T <sub>amb</sub>	operating ambient temperature		-65	+150	°C

#### Note

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

# NPN general purpose transistors

BC849W; BC850W

#### THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th j-a</sub>	thermal resistance from junction to ambient	note 1	625	K/W

#### Note

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

#### **CHARACTERISTICS**

 $T_{amb}$  = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I <sub>CBO</sub>	collector cut-off current	I <sub>E</sub> = 0; V <sub>CB</sub> = 30 V	_	_	15	nA
		I <sub>E</sub> = 0; V <sub>CB</sub> = 30 V; T <sub>j</sub> = 150 °C	_	_	5	μΑ
I <sub>EBO</sub>	emitter cut-off current	I <sub>C</sub> = 0; V <sub>EB</sub> = 5 V	_	_	100	nA
h <sub>FE</sub>	DC current gain	$I_C = 2 \text{ mA}$ ; $V_{CE} = 5 \text{ V}$ ; see Figs 2 and 3				
	BC849BW; BC850BW		200	_	450	
	BC849CW; BC850CW		420	_	800	
V <sub>CEsat</sub>	collector-emitter saturation	I <sub>C</sub> = 10 mA; I <sub>B</sub> = 0.5 mA	_	_	250	mV
	voltage	I <sub>C</sub> = 100 mA; I <sub>B</sub> = 5 mA; note 1	_	_	600	mV
V <sub>BE</sub>	base-emitter voltage	I <sub>C</sub> = 2 mA; V <sub>CE</sub> = 5 V	580	_	700	mV
		I <sub>C</sub> = 10 mA; V <sub>CE</sub> = 5 V	_	_	770	mV
C <sub>c</sub>	collector capacitance	I <sub>E</sub> = i <sub>e</sub> = 0; V <sub>CB</sub> = 10 V; f = 1 MHz	_	_	3	pF
C <sub>e</sub>	emitter capacitance	I <sub>C</sub> = i <sub>c</sub> = 0; V <sub>EB</sub> = 500 mV; f = 1 MHz	_	11	_	pF
f <sub>T</sub>	transition frequency	I <sub>C</sub> = 10 mA; V <sub>CE</sub> = 5 V; f = 100 MHz	100	_	_	MHz
F	noise figure	$I_C$ = 200 μA; $V_{CE}$ = 5 V; $R_S$ = 2 kΩ; $f$ = 10 Hz to 15.7 kHz	_	_	4	dB
		$I_C$ = 200 μA; $V_{CE}$ = 5 V; $R_S$ = 2 kΩ; $f$ = 1 kHz; $B$ = 200 Hz	_	_	4	dB

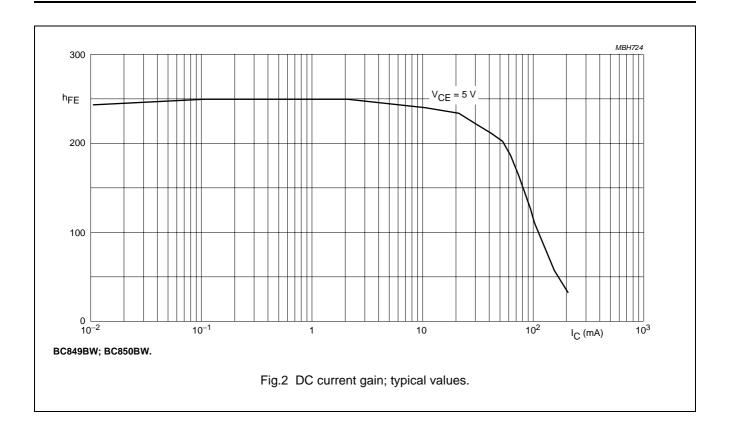
#### Note

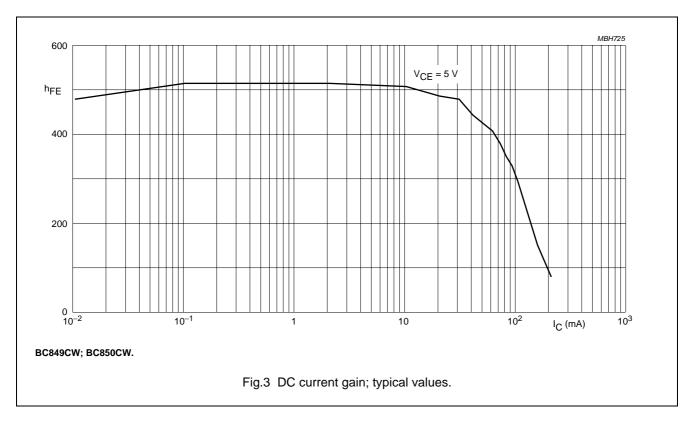
1. Pulse test:  $t_p \le 300~\mu s;~\delta \le 0.02.$ 

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# NPN general purpose transistors

BC849W; BC850W





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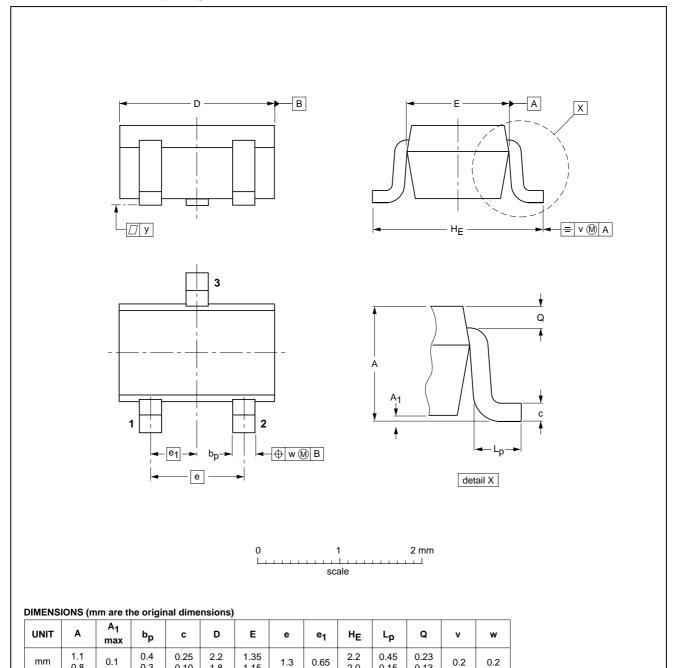
# NPN general purpose transistors

BC849W; BC850W

#### **PACKAGE OUTLINE**

Plastic surface mounted package; 3 leads

**SOT323** 



OUTLINE	REFERENCES			EUROPEAN	ISSUE DATE	
VERSION	IEC	JEDEC	EIAJ		PROJECTION	ISSUE DATE
SOT323			SC-70			97-02-28

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0.10

### **NPN** general purpose transistors

BC849W; BC850W

#### **DATA SHEET STATUS**

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

#### **Notes**

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## **NXP Semiconductors**

#### **Customer notification**

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#### **Contact information**

For additional information please visit: http://www.nxp.com

For sales offices addresses send e-mail to: salesaddresses@nxp.com

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