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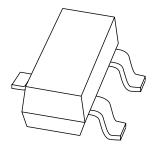
If you have any questions related to the data sheet, please contact our nearest sales office via e-mail or telephone (details via **salesaddresses@nexperia.com**). Thank you for your cooperation and understanding,

Kind regards,

Team Nexperia

DISCRETE SEMICONDUCTORS

DATA SHEET



BC849; BC850 NPN general purpose transistors

Product data sheet Supersedes data of 1999 Apr 08 2004 Jan 16



NPN general purpose transistors

BC849; BC850

FEATURES

• Low current (max. 100 mA)

• Low voltage (max. 45 V).

APPLICATIONS

• General purpose switching and amplification.

DESCRIPTION

NPN transistor in a SOT23 plastic package. PNP complements: BC859 and BC860.

MARKING

TYPE NUMBER	MARKING CODE ⁽¹⁾	TYPE NUMBER	MARKING CODE ⁽¹⁾	
BC849B	2B*	BC850B	2F*	
BC849C	2C*	BC850C	2G*	

Note

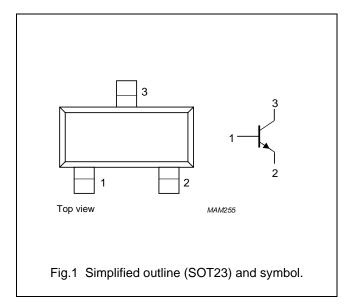
1. * = p: Made in Hong Kong.

* = t : Made in Malaysia.

* = W : Made in China.

PINNING

PIN	DESCRIPTION	
1	base	
2	emitter	
3	collector	



ORDERING INFORMATION

TYPE	PACKAGE			
NUMBER	NAME	DESCRIPTION	VERSION	
BC849B	_	plastic surface mounted package; 3 leads	SOT23	
BC849C	1			
BC850B]			
BC850C	1			

NPN general purpose transistors

BC849; BC850

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			
	BC849		_	30	V
	BC850		_	50	V
V _{CEO}	collector-emitter voltage	open base			
	BC849		_	30	V
	BC850		_	45	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} ≤ 25 °C; note 1	_	250	mW
T _{stg}	storage temperature		-65	+150	°C
Tj	junction temperature		_	150	°C
T _{amb}	operating ambient temperature		-65	+150	°C

Note

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th(j-a)}	thermal resistance from junction to ambient	note 1	500	K/W

Note

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

^{1.} Transistor mounted on an FR4 printed-circuit board.

NPN general purpose transistors

BC849; BC850

CHARACTERISTICS

 $T_j = 25$ °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I _{CBO}	collector cut-off current	I _E = 0; V _{CB} = 30 V	_	_	15	nA
		I _E = 0; V _{CB} = 30 V; T _j = 150 °C	_	_	5	μΑ
I _{EBO}	emitter cut-off current	I _C = 0; V _{EB} = 5 V	_	_	100	nA
h _{FE}	DC current gain BC849B; BC850B	$I_C = 10 \mu A$; $V_{CE} = 5 V$; see Figs 2 and 3	_	240	_	
	BC849C; BC850C		_	450	_	
	DC current gain	$I_C = 2 \text{ mA}; V_{CE} = 5 \text{ V};$				
	BC849B; BC850B	see Figs 2 and 3	200	290	450	
	BC849C; BC850C		420	520	800	
V _{CEsat}	collector-emitter saturation	$I_C = 10 \text{ mA}; I_B = 0.5 \text{ mA}$	_	90	250	mV
voltage	voltage	$I_C = 100 \text{ mA}; I_B = 5 \text{ mA}$	_	200	600	mV
V _{BEsat}	base-emitter saturation voltage	$I_C = 10 \text{ mA}$; $I_B = 0.5 \text{ mA}$; note 1	_	700	_	mV
		$I_C = 100 \text{ mA}$; $I_B = 5 \text{ mA}$; note 1	_	900	_	mV
V_{BE}	base-emitter voltage	$I_C = 2 \text{ mA}; V_{CE} = 5 \text{ V}; \text{ note } 2$	580	660	700	mV
		$I_C = 10 \text{ mA}; V_{CE} = 5 \text{ V}; \text{ note } 2$	_	_	770	mV
C _c	collector capacitance	$I_E = i_e = 0$; $V_{CB} = 10 \text{ V}$; $f = 1 \text{ MHz}$	_	2.5	_	pF
Ce	emitter capacitance	$I_C = I_c = 0$; $V_{EB} = 500 \text{ mV}$; $f = 1 \text{ MHz}$	_	11	_	pF
f _T	transition frequency	$I_C = 10 \text{ mA}; V_{CE} = 5 \text{ V}; f = 100 \text{ MHz}$	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

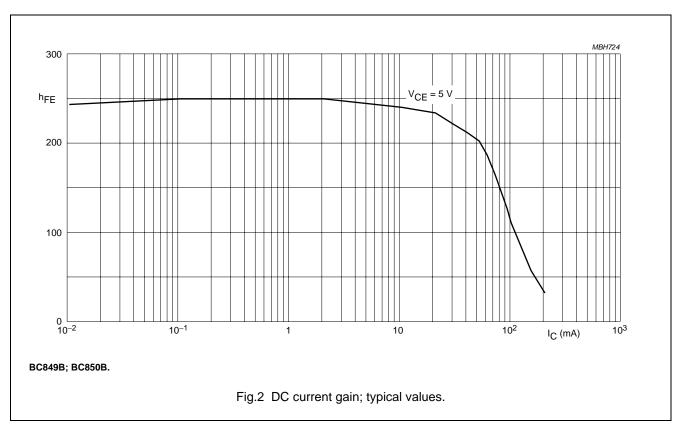
Notes

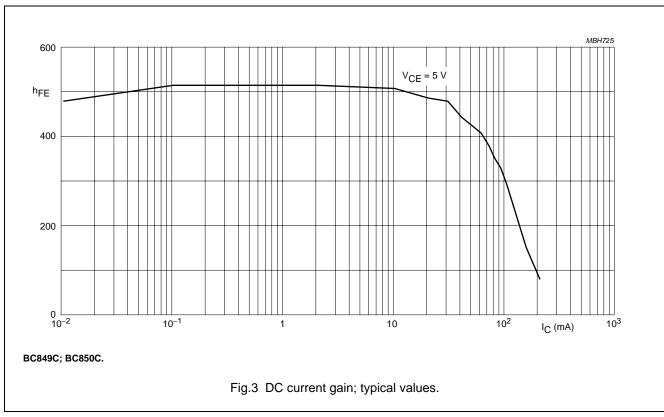
- 1. V_{BEsat} decreases by about 1.7 mV/K with increasing temperature.
- 2. V_{BE} decreases by about 2 mV/K with increasing temperature.

2004 Jan 16

NPN general purpose transistors

BC849; BC850

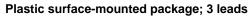




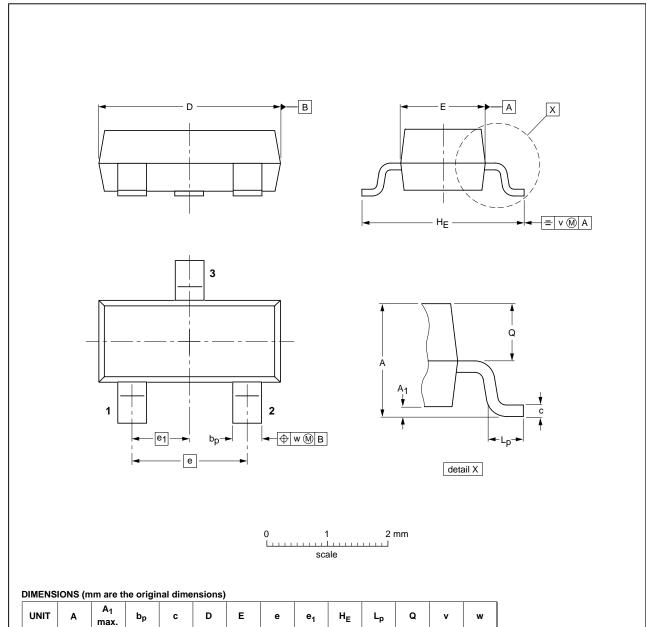
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PACKAGE OUTLINE



SOT23



OUTLINE	REFERENCES			EUROPEAN	ICCUE DATE	
VERSION	IEC	JEDEC	JEITA		PROJECTION	ISSUE DATE
SOT23		TO-236AB				-04-11-04- 06-03-16

0.45

0.1

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0.9

NPN general purpose transistors

BC849; BC850

DATA SHEET STATUS

DOCUMENT STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	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

This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content, except for package outline drawings which were updated to the latest version.

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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Printed in The Netherlands R75/06/pp8 Date of release: 2004 Jan 16 Document order number: 9397 750 12396

