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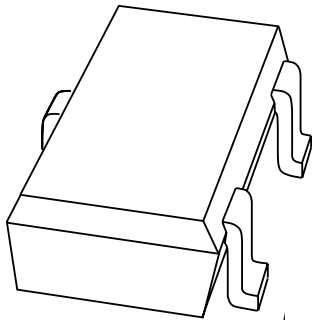
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Kind regards,

Team Nexperia

# DATA SHEET



## **BF820W** NPN high-voltage transistor

Product data sheet  
Supersedes data of 1997 Sep 03

2003 Sep 09

# NPN high-voltage transistor

# BF820W

### FEATURES

- Low current (max. 50 mA)
- High voltage (max. 300 V).

### APPLICATIONS

- Telephony and professional communication equipment.

### DESCRIPTION

NPN high-voltage transistor in a SOT323 plastic package.

### MARKING

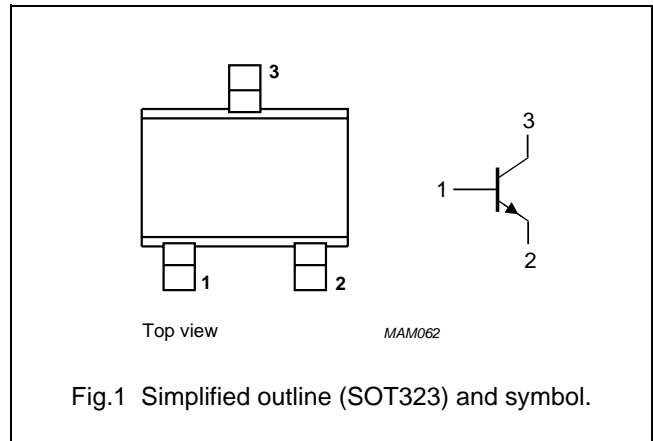
TYPE NUMBER	MARKING CODE <sup>(1)</sup>
BF820W	1V*

### Notes

- \* = p : made in Hong Kong.  
 \* = t : made in Malaysia.  
 \* = W : made in China.

### PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter	–	300	V
$V_{CEO}$	collector-emitter voltage	open base	–	300	V
$I_{CM}$	peak collector current		–	100	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$	–	200	mW
$h_{FE}$	DC current gain	$I_C = 25\text{ mA}; V_{CE} = 20\text{ V}$	50	–	
$C_{re}$	feedback capacitance	$I_C = i_c = 0; V_{CB} = 30\text{ V}; f = 1\text{ MHz}$	–	1.6	pF
$f_T$	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$	60	–	MHz

## NPN high-voltage transistor

BF820W

**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	–	300	V
$V_{CEO}$	collector-emitter voltage	open base	–	300	V
$V_{EBO}$	emitter-base voltage	open collector	–	5	V
$I_C$	collector current (DC)		–	50	mA
$I_{CM}$	peak collector current		–	100	mA
$I_{BM}$	peak base current		–	50	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$ ; note 1	–	200	mW
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–	150	°C
$T_{amb}$	operating ambient temperature		–65	+150	°C

**Note**

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

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	625	K/W

**Note**

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

**CHARACTERISTICS** $T_j = 25\text{ °C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0$ ; $V_{CB} = 200\text{ V}$	–	10	nA
		$I_E = 0$ ; $V_{CB} = 200\text{ V}$ ; $T_j = 150\text{ °C}$	–	10	μA
$I_{EBO}$	emitter cut-off current	$I_C = 0$ ; $V_{EB} = 5\text{ V}$	–	50	nA
$h_{FE}$	DC current gain	$I_C = 25\text{ mA}$ ; $V_{CE} = 20\text{ V}$	50	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 30\text{ mA}$ ; $I_B = 5\text{ mA}$ ; note 1	–	600	mV
$C_{re}$	feedback capacitance	$I_C = I_C = 0$ ; $V_{CB} = 30\text{ V}$ ; $f = 1\text{ MHz}$	–	1.6	pF
$f_T$	transition frequency	$I_C = 10\text{ mA}$ ; $V_{CE} = 10\text{ V}$ ; $f = 100\text{ MHz}$	60	–	MHz

**Note**

1. Pulse test:  $t_p \leq 300\text{ μs}$ ;  $\delta \leq 0.02$ .

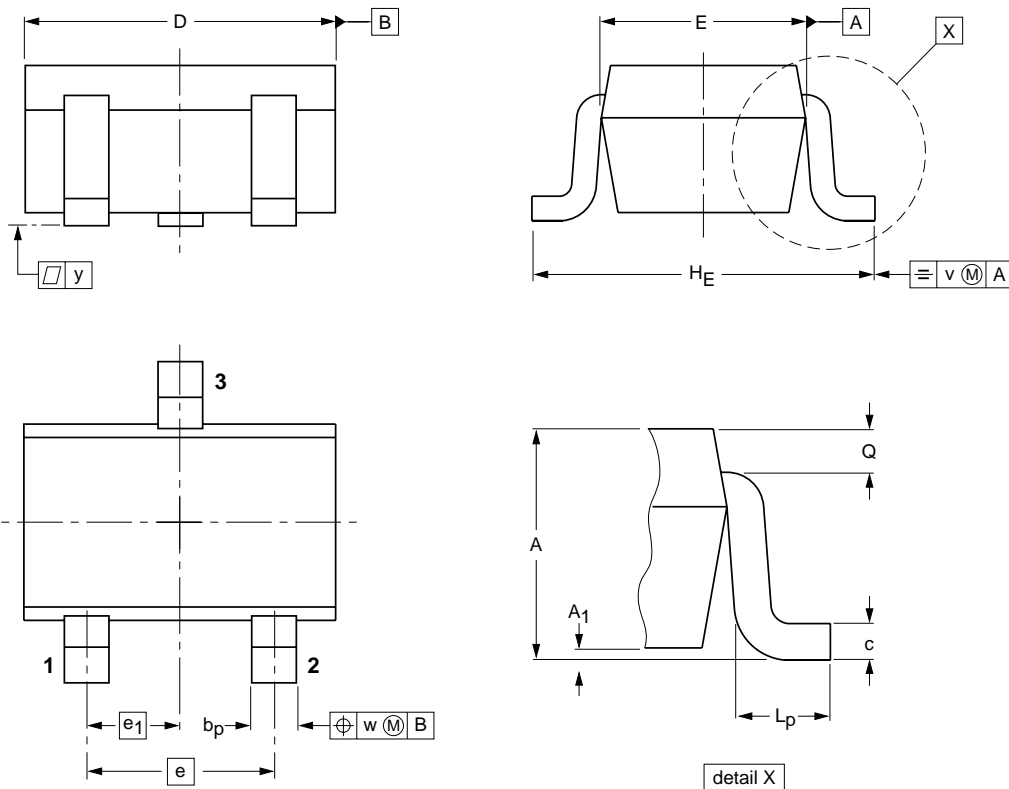
NPN high-voltage transistor

BF820W

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT323



DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub> max	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	Q	v	w
mm	1.1 0.8	0.1	0.4 0.3	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.23 0.13	0.2	0.2

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

# NPN high-voltage transistor

BF820W

## 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.

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# ***NXP Semiconductors***

## **Customer notification**

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## **Contact information**

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

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