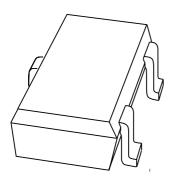
# DISCRETE SEMICONDUCTORS

# DATA SHEET



# **BF820W**NPN high-voltage transistor

Product data sheet Supersedes data of 1997 Sep 03 2003 Sep 09



**NXP Semiconductors** Product data sheet

# **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(1)
BF820W	1V*

#### **Notes**

1. \* = p: made in Hong Kong. \* = t : made in Malaysia.

\* = W : made in China.

#### **PINNING**

PIN	DESCRIPTION
1	base
2	emitter
3	collector

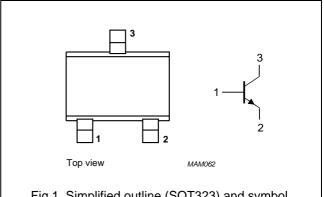


Fig.1 Simplified outline (SOT323) and symbol.

#### **QUICK REFERENCE DATA**

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter	_	300	V
$V_{CEO}$	collector-emitter voltage	open base	_	300	V
I <sub>CM</sub>	peak collector current		_	100	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	-	200	mW
h <sub>FE</sub>	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 <sub>T</sub>	transition frequency	$I_C = 10 \text{ mA}; V_{CE} = 10 \text{ V}; f = 100 \text{ MHz}$	60	_	MHz

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**BF820W** 

#### **LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter	_	300	V
$V_{CEO}$	collector-emitter voltage	open base	_	300	V
V <sub>EBO</sub>	emitter-base voltage	open collector	_	5	V
I <sub>C</sub>	collector current (DC)		_	50	mA
I <sub>CM</sub>	peak collector current		_	100	mA
I <sub>BM</sub>	peak base current		_	50	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
Tj	junction temperature		_	150	°C
T <sub>amb</sub>	operating ambient temperature		-65	+150	°C

#### Note

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

#### 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**

 $T_j$  = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I <sub>CBO</sub>	collector cut-off current	I <sub>E</sub> = 0; V <sub>CB</sub> = 200 V	_	10	nA
		I <sub>E</sub> = 0; V <sub>CB</sub> = 200 V; T <sub>j</sub> = 150 °C	_	10	μΑ
I <sub>EBO</sub>	emitter cut-off current	I <sub>C</sub> = 0; V <sub>EB</sub> = 5 V	_	50	nA
h <sub>FE</sub>	DC current gain	I <sub>C</sub> = 25 mA; V <sub>CE</sub> = 20 V	50	_	
V <sub>CEsat</sub>	collector-emitter saturation voltage	$I_C = 30 \text{ mA}; I_B = 5 \text{ mA}; \text{ note 1}$	_	600	mV
C <sub>re</sub>	feedback capacitance	$I_C = i_c = 0$ ; $V_{CB} = 30 \text{ V}$ ; $f = 1 \text{ MHz}$	_	1.6	pF
f <sub>T</sub>	transition frequency	$I_C = 10 \text{ mA}; V_{CE} = 10 \text{ V}; f = 100 \text{ MHz}$	60	_	MHz

#### Note

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

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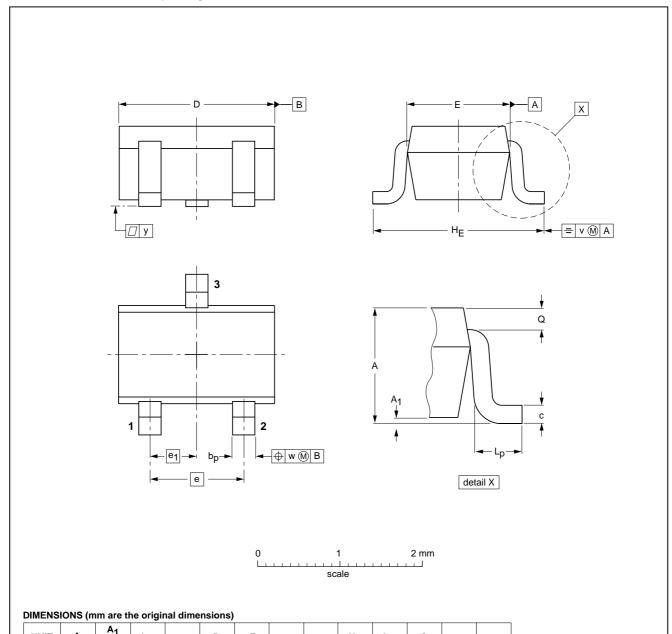
# NPN high-voltage transistor

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#### **PACKAGE OUTLINE**

Plastic surface mounted package; 3 leads

**SOT323** 



mm         1.1 0.8         0.1         0.4 0.25 0.10         2.2 1.35 1.15         1.3 0.65 2.2 0.45 0.15         0.45 0.23 0.15         0.23 0.13         0.2	0.2

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

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### 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.

#### **Notes**

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2003 Sep 09

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#### **Customer notification**

This data sheet was changed to reflect the new company name NXP Semiconductors. No changes were made to the content, except for the legal definitions and disclaimers.

#### **Contact information**

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