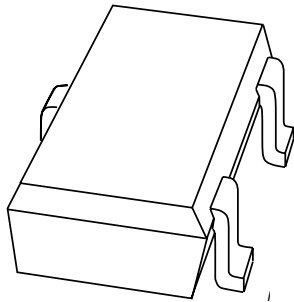


# DATA SHEET



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

Product specification  
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

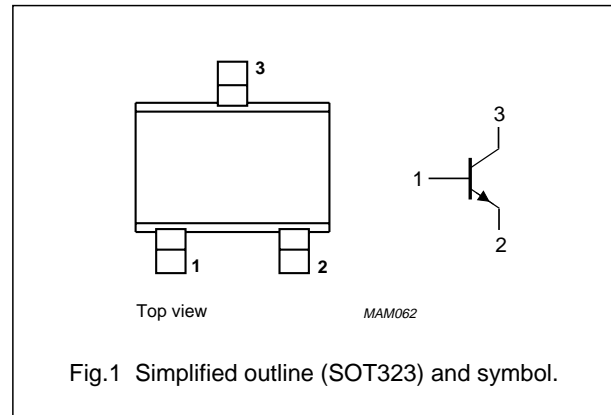
TYPE NUMBER	MARKING CODE <sup>(1)</sup>
BF820W	1V*

## 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	$T_{amb} \leq 25\text{ }^{\circ}\text{C}$	–	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	$\mu\text{A}$
$I_{EBO}$	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:  $t_p \leq 300\text{ }\mu\text{s}$ ;  $\delta \leq 0.02$ .

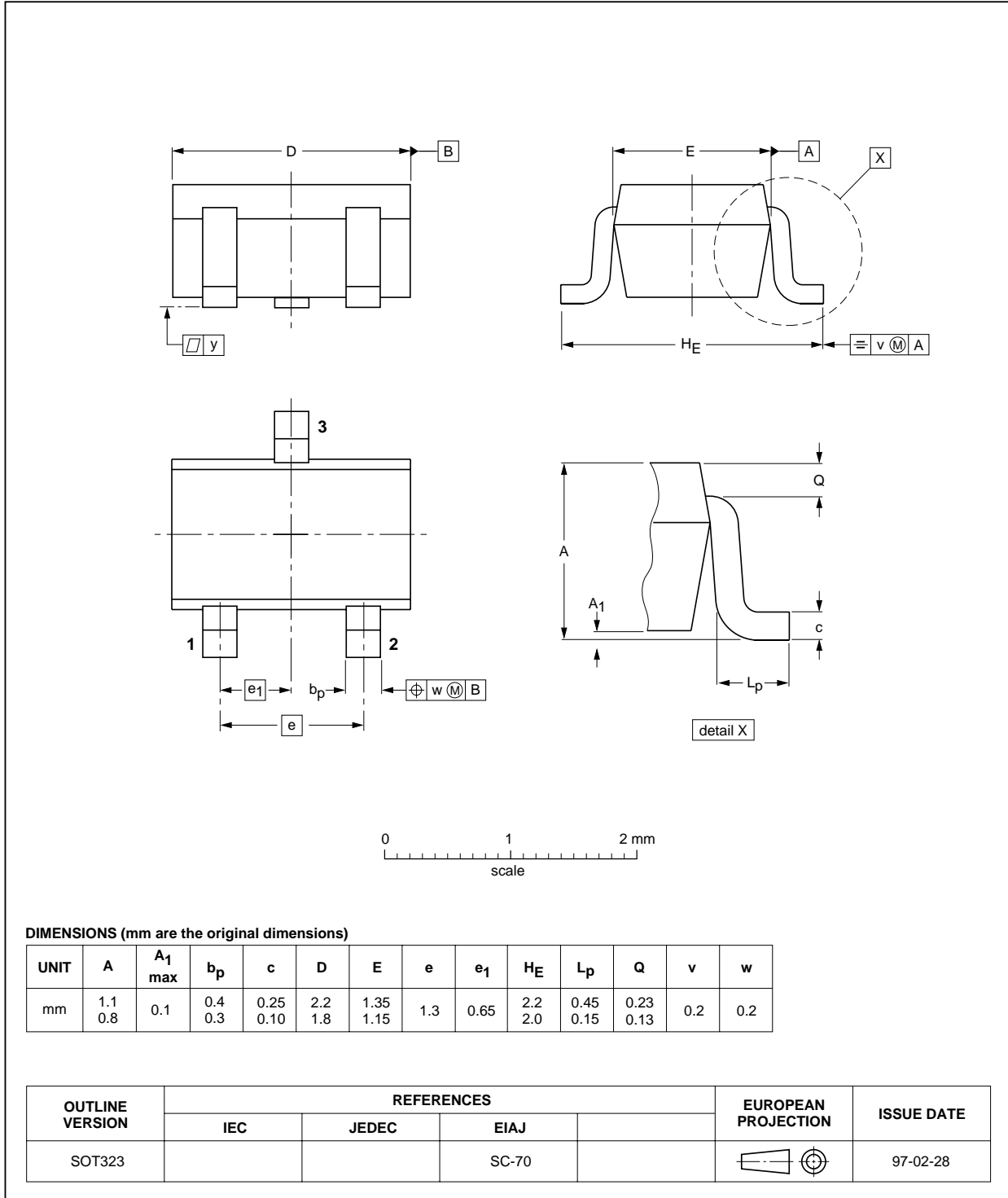
NPN high-voltage transistor

BF820W

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT323



## NPN high-voltage transistor

BF820W

## 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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