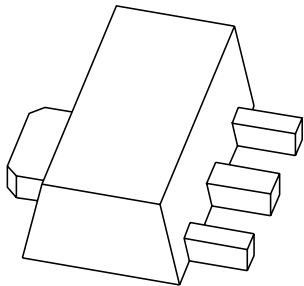


# DATA SHEET



## **BF621; BF623** PNP high-voltage transistors

Product data sheet  
Supersedes data of 1999 Apr 21

2004 Dec 14

# PNP high-voltage transistors

# BF621; BF623

### FEATURES

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

### APPLICATIONS

- Video output stages.

### DESCRIPTION

PNP high-voltage transistor in a SOT89 plastic package.  
NPN complements: BF620 and BF622.

### MARKING

TYPE NUMBER	MARKING CODE
BF621	DF
BF623	DB

### PINNING

PIN	DESCRIPTION
1	emitter
2	collector
3	base

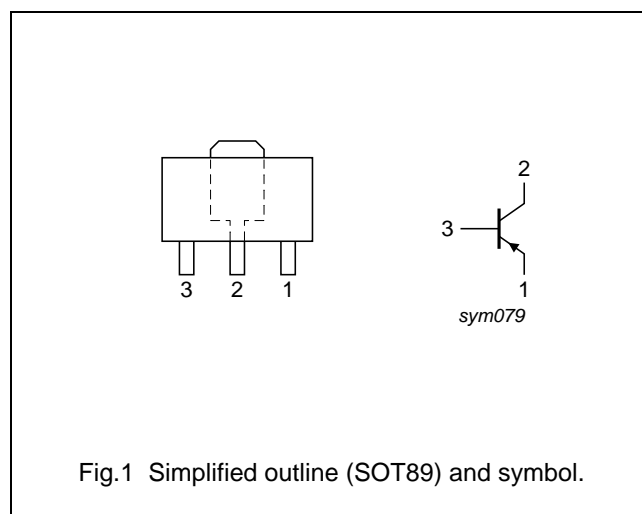


Fig.1 Simplified outline (SOT89) and symbol.

### ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BF621	SC-62	plastic surface mounted package; collector pad for good heat transfer; 3 leads	SOT89
BF623			

## PNP high-voltage transistors

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**LIMITING VALUES**

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

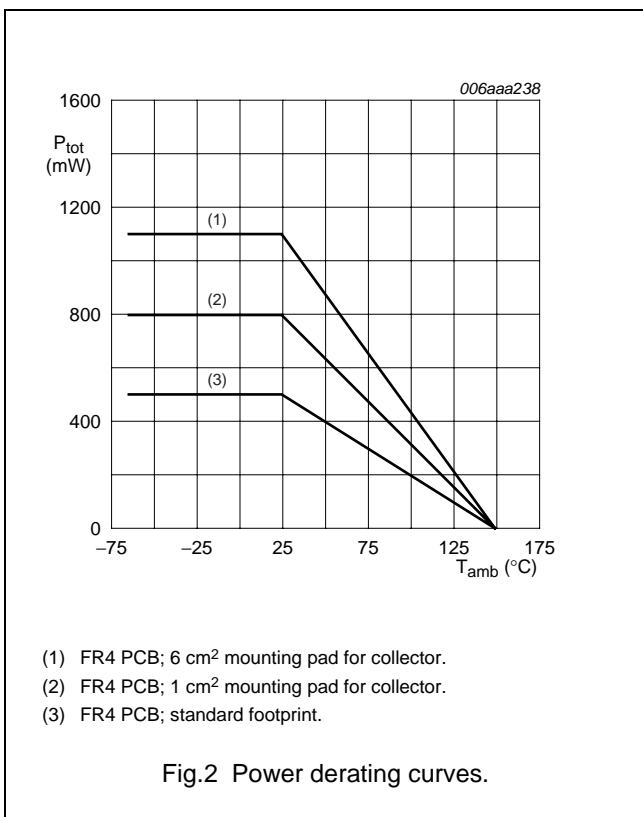
SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter			
	BF621		–	–300	V
	BF623		–	–250	V
V <sub>CEO</sub>	collector-emitter voltage	open base			
	BF621		–	–300	V
	BF623		–	–250	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	–5	V
I <sub>C</sub>	collector 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	–	0.5	W
		note 2	–	0.8	W
		note 3	–	1.1	W
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	150	°C
T <sub>amb</sub>	ambient temperature		–65	+150	°C

**Notes**

1. Device mounted on a printed-circuit board, single-sided copper, tin-plated and standard footprint.
2. Device mounted on a printed-circuit board, single-sided copper, tin-plated and mounting pad for collector 1 cm<sup>2</sup>.
3. Device mounted on a printed-circuit board, single-sided copper, tin-plated and mounting pad for collector 6 cm<sup>2</sup>.

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PNP high-voltage transistors

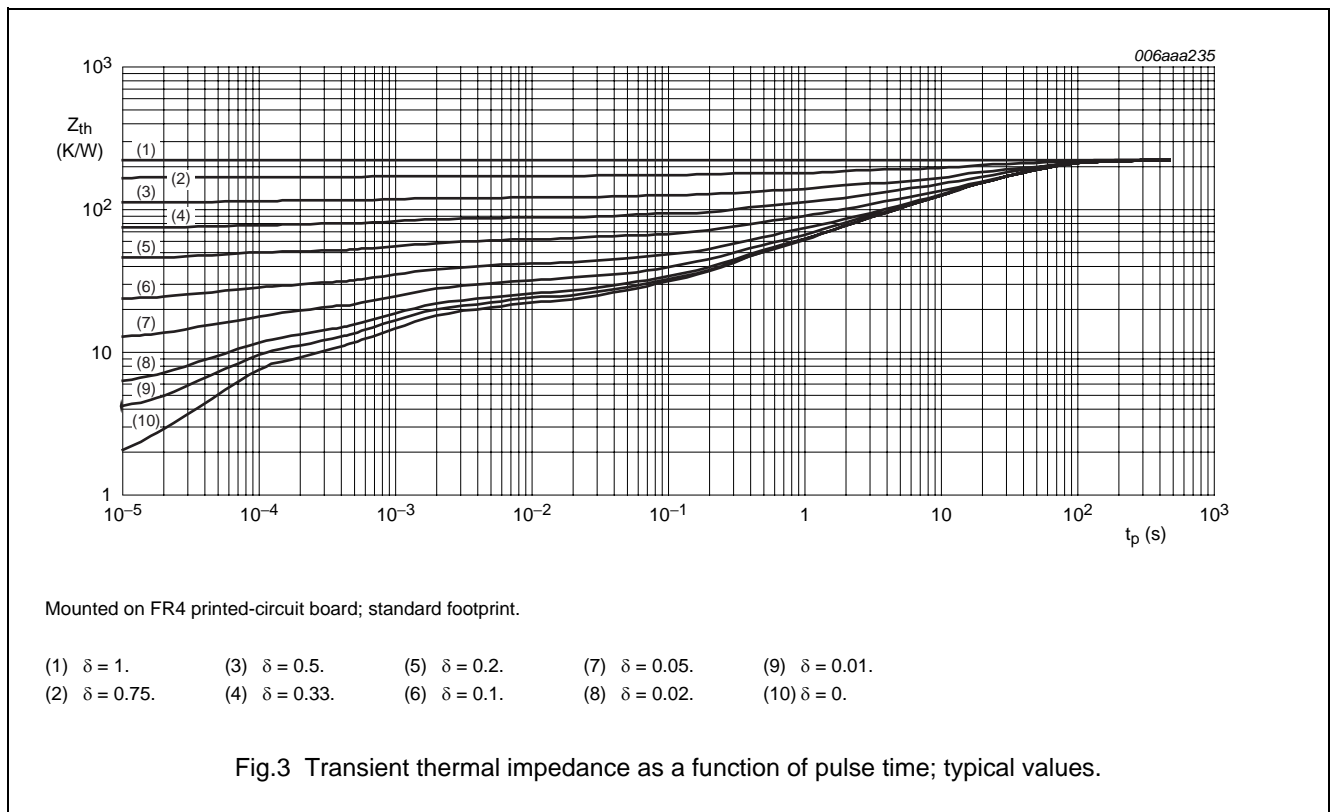
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**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	in free air		
		note 1	250	K/W
		note 2	156	K/W
		note 3	113	K/W
R <sub>th(j-s)</sub>	thermal resistance from junction to soldering point		30	K/W

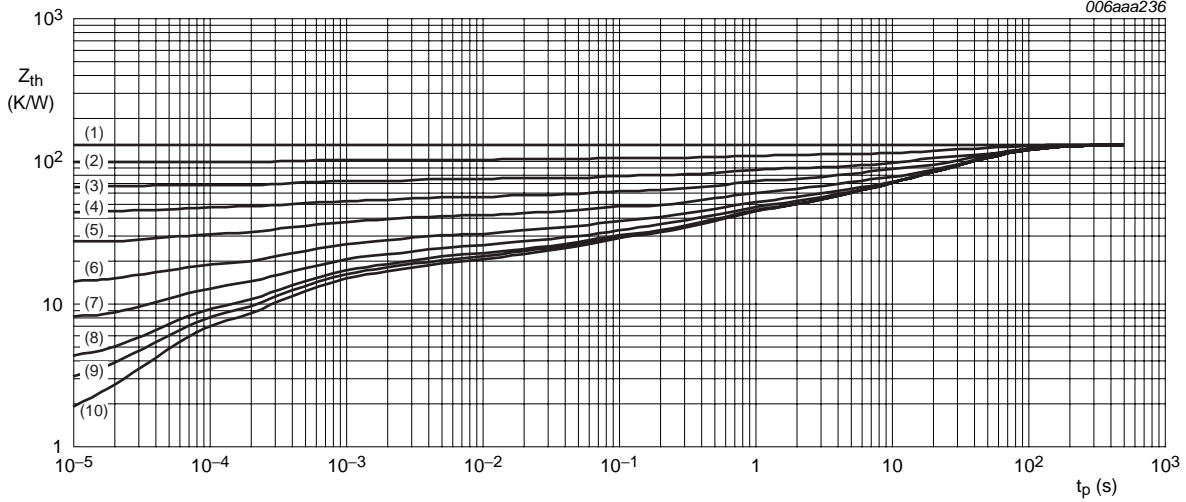
**Notes**

1. Device mounted on a printed-circuit board, single-sided copper, tin-plated and standard footprint.
2. Device mounted on a printed-circuit board, single-sided copper, tin-plated and mounting pad for collector 1 cm<sup>2</sup>.
3. Device mounted on a printed-circuit board, single-sided copper, tin-plated and mounting pad for collector 6 cm<sup>2</sup>.



PNP high-voltage transistors

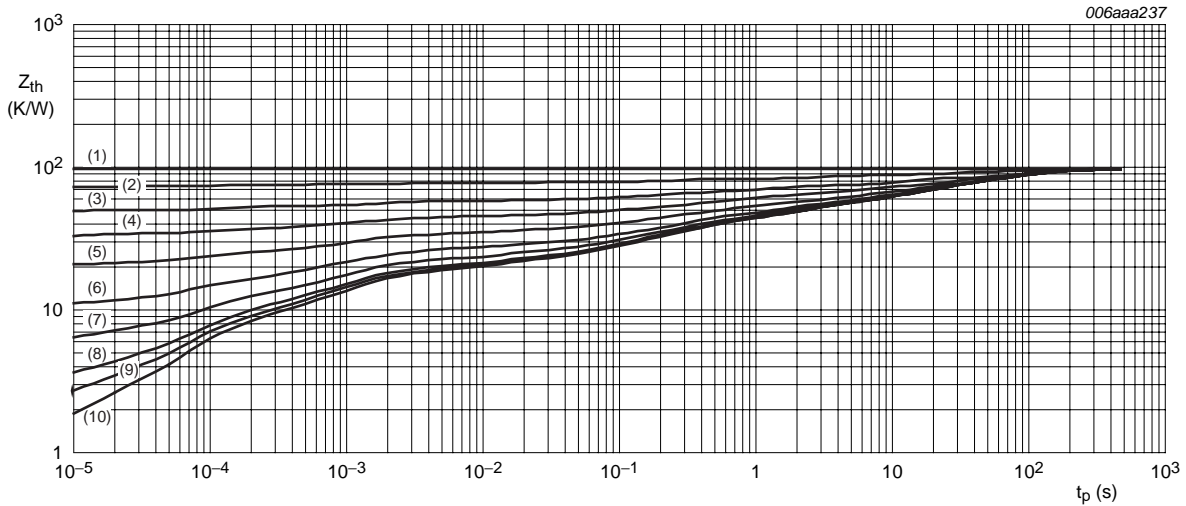
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Mounted on FR4 printed-circuit board; mounting pad for collector 1 cm<sup>2</sup>.

- (1)  $\delta = 1.$       (3)  $\delta = 0.5.$       (5)  $\delta = 0.2.$       (7)  $\delta = 0.05.$       (9)  $\delta = 0.01.$
- (2)  $\delta = 0.75.$       (4)  $\delta = 0.33.$       (6)  $\delta = 0.1.$       (8)  $\delta = 0.02.$       (10)  $\delta = 0.$

Fig.4 Transient thermal impedance as a function of pulse time; typical values.



Mounted on FR4 printed-circuit board; mounting pad for collector 6 cm<sup>2</sup>.

- (1)  $\delta = 1.$       (3)  $\delta = 0.5.$       (5)  $\delta = 0.2.$       (7)  $\delta = 0.05.$       (9)  $\delta = 0.01.$
- (2)  $\delta = 0.75.$       (4)  $\delta = 0.33.$       (6)  $\delta = 0.1.$       (8)  $\delta = 0.02.$       (10)  $\delta = 0.$

Fig.5 Transient thermal impedance as a function of pulse time; typical values.

## PNP high-voltage transistors

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{CBO}$	collector-base cut-off current	$I_E = 0\text{ A}; V_{CB} = -200\text{ V}$	–	–10	nA
		$I_E = 0\text{ A}; V_{CB} = -200\text{ V}; T_j = 150\text{ °C}$	–	–10	$\mu\text{A}$
$I_{EBO}$	emitter-base cut-off current	$I_C = 0\text{ A}; V_{EB} = -5\text{ V}$	–	–50	nA
$h_{FE}$	DC current gain	$I_C = -25\text{ mA}; V_{CE} = -20\text{ V}$	50	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -30\text{ mA}; I_B = -5\text{ mA}$	–	–800	mV
$C_{re}$	feedback capacitance	$I_C = i_c = 0\text{ A}; V_{CE} = -30\text{ V}; f = 1\text{ MHz}$	–	1.6	pF
$f_T$	transition frequency	$I_C = -10\text{ mA}; V_{CE} = -10\text{ V}; f = 100\text{ MHz}$	60	–	MHz

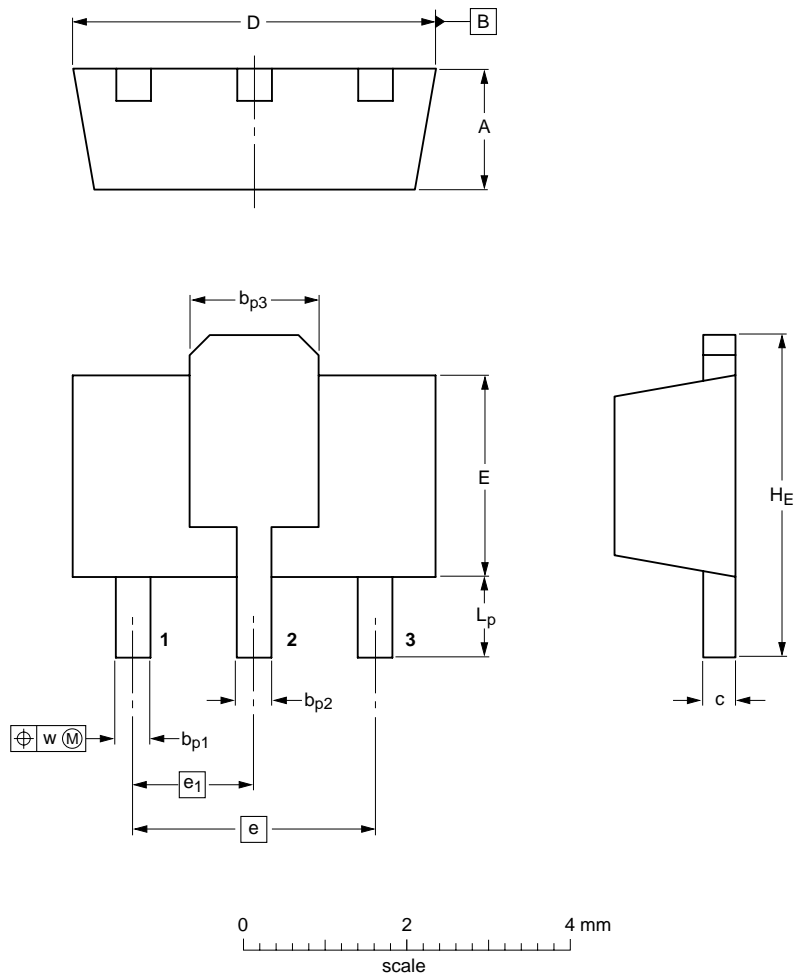
PNP high-voltage transistors

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PACKAGE OUTLINE

Plastic surface-mounted package; collector pad for good heat transfer; 3 leads

SOT89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b <sub>p1</sub>	b <sub>p2</sub>	b <sub>p3</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	w
mm	1.6 1.4	0.48 0.35	0.53 0.40	1.8 1.4	0.44 0.23	4.6 4.4	2.6 2.4	3.0	1.5	4.25 3.75	1.2 0.8	0.13

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
SOT89		TO-243	SC-62		04-08-03 06-03-16



PNP high-voltage transistors

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**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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## **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>

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