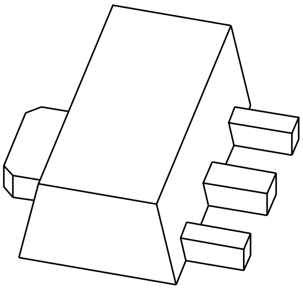
DATA SHEET



BF620; BF622
NPN high-voltage transistors

Product data sheet
Supersedes data of 1999 Apr 21

2004 Dec 14

founded by Philips

NPN high-voltage transistors BF620; BF622

FEATURES

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

APPLICATIONS

- Video output stages.

DESCRIPTION

NPN high-voltage transistor in a SOT89 plastic package.
PNP complements: BF621 and BF623.

MARKING

TYPE NUMBER	MARKING CODE
BF620	DC
BF622	DA

PINNING

PIN	DESCRIPTION
1	emitter
2	collector
3	base

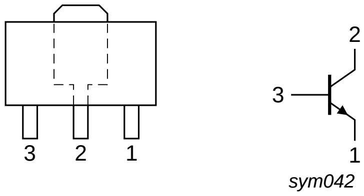


Fig.1 Simplified outline (SOT89) and symbol.

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BF620	SC-62	plastic surface mounted package; collector pad for good heat transfer; 3 leads	SOT89
BF622			

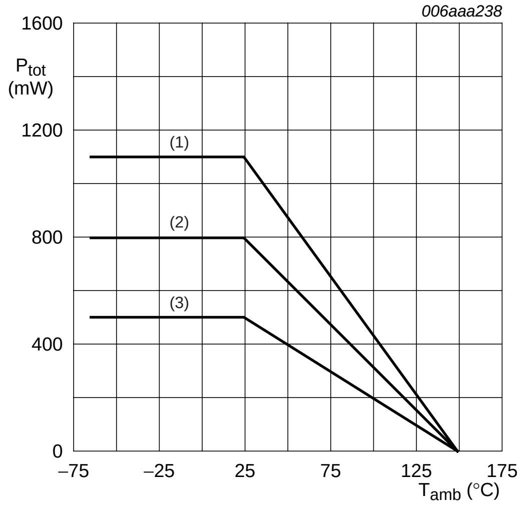
LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter			
	BF620		–	300	V
	BF622		–	250	V
V_{CEO}	collector-emitter voltage	open base			
	BF620		–	300	V
	BF622		–	250	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	$T_{amb} \leq 25$ °C			
		note 1	–	0.5	W
		note 2	–	0.8	W
		note 3	–	1.1	W
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	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^2.
3. Device mounted on a printed-circuit board, single-sided copper, tin-plated and mounting pad for collector 6 cm^2.



(1) FR4 PCB; 6 cm^2 mounting pad for collector.
(2) FR4 PCB; 1 cm^2 mounting pad for collector.
(3) FR4 PCB; standard footprint.

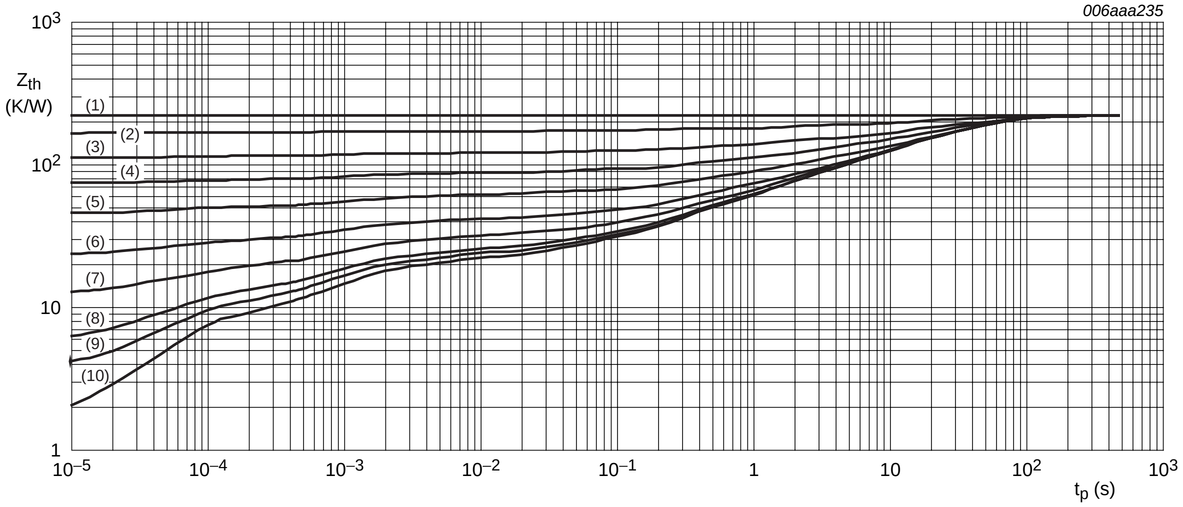
Fig.2 Power derating curves.

THERMAL CHARACTERISTICS

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

Notes

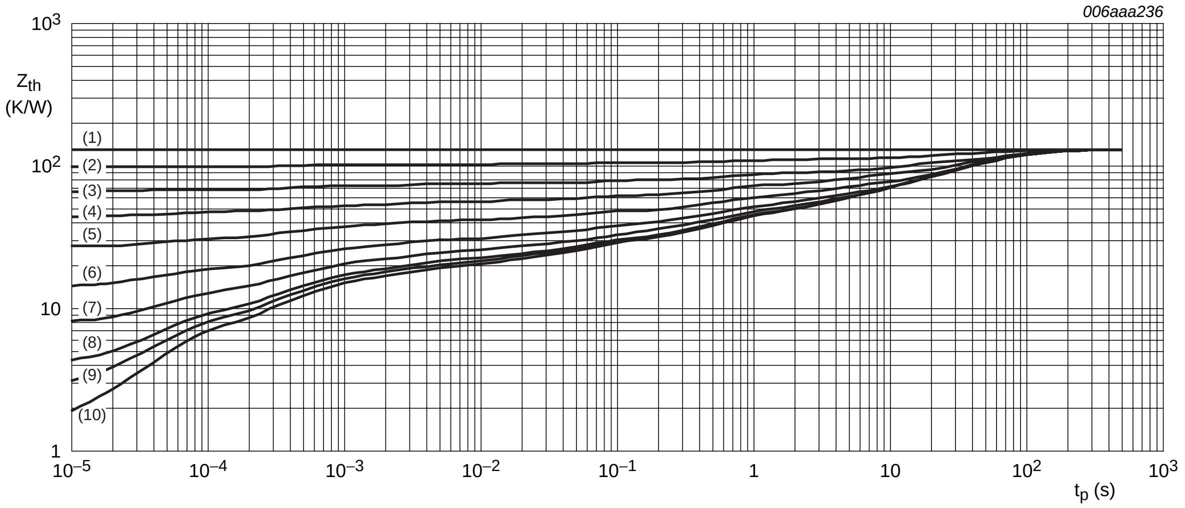
1. Device mounted on a printed-circuit board, single-sided copper, tin-plated and standard footprint.
2. Device mounted on a printed-circuit board, single-sided copper, tin-plated and mounting pad for collector 1 cm^2.
3. Device mounted on a printed-circuit board, single-sided copper, tin-plated and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



Mounted on FR4 printed-circuit board; standard footprint.

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

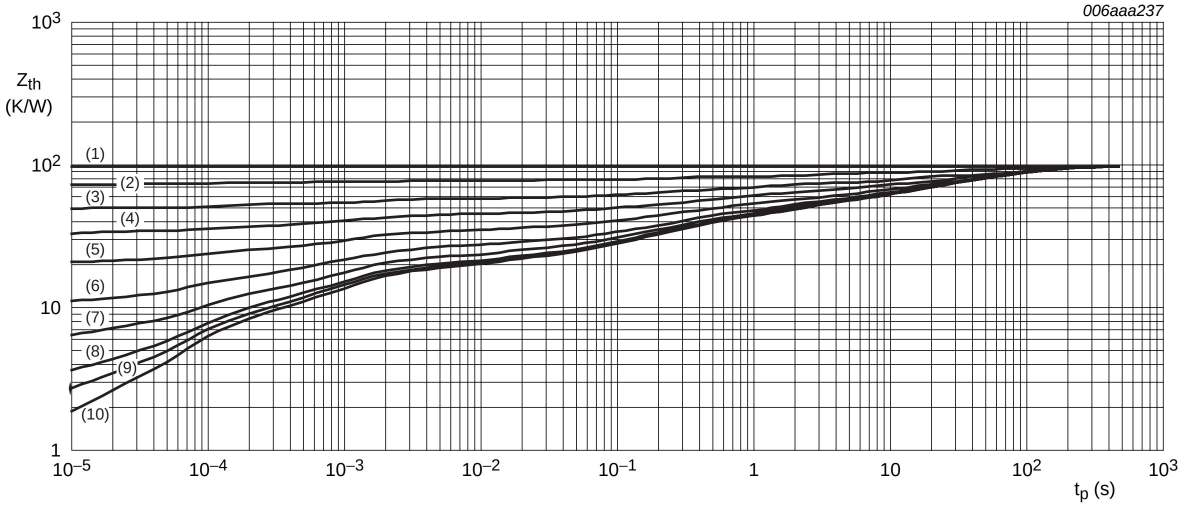
Fig.3 Transient thermal impedance as a function of pulse time; typical values.



Mounted on FR4 printed-circuit board; mounting pad for collector 1 cm^2.

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

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

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

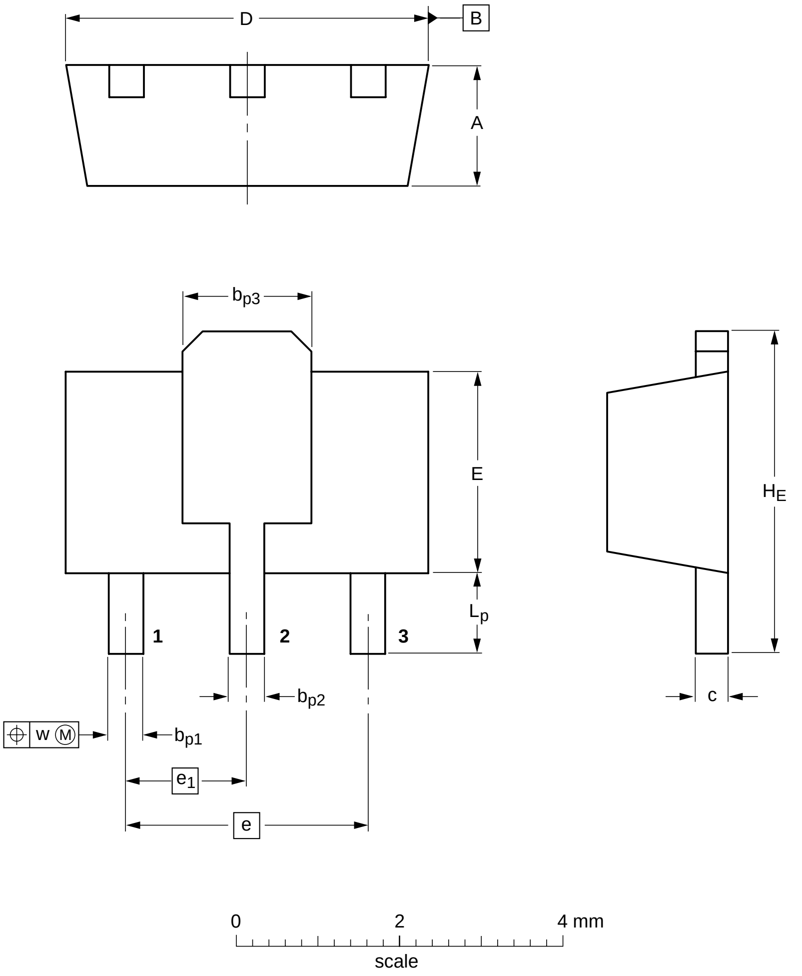
CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified.

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

PACKAGE OUTLINE

Plastic surface-mounted package; collector pad for good heat transfer; 3 leads SOT89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b_{p1}	b_{p2}	b_{p3}	c	D	E	e	e_1	H_E	L_p	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

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.

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