

DATA SHEET



BC868

**NPN medium power transistor;
20 V, 1 A**

Product data sheet
Supersedes data of 2003 Dec 02

2004 Nov 08

**NPN medium power transistor;
20 V, 1 A**

BC868

FEATURES

- High current
- Two current gain selections
- 1.2 W total power dissipation.

APPLICATIONS

- Linear voltage regulators
- Low side switch
- Supply line switch for negative voltages
- MOSFET driver
- Audio (pre-) amplifier.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
V_{CEO}	collector-emitter voltage	–	20	V
I_C	collector current (DC)	–	1	A
I_{CM}	peak collector current	–	2	A
h_{FE}	DC current gain			
	BC868	85	375	–
	BC868-25	160	375	–

DESCRIPTION

NPN medium power transistor (see “Simplified outline, symbol and pinning” for package details).

PRODUCT OVERVIEW

TYPE NUMBER	PACKAGE		MARKING CODE
	PHILIPS	EIAJ	
BC868	SOT89	SC-62	CAC
BC868-25	SOT89	SC-62	CDC

SIMPLIFIED OUTLINE, SYMBOL AND PINNING

TYPE NUMBER	SIMPLIFIED OUTLINE AND SYMBOL	PINNING	
		PIN	DESCRIPTION
BC868		1 2 3	emitter collector base

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BC868	SC-62	plastic surface mounted package; collector pad for good heat transfer; 3 leads	SOT89
BC868-25			

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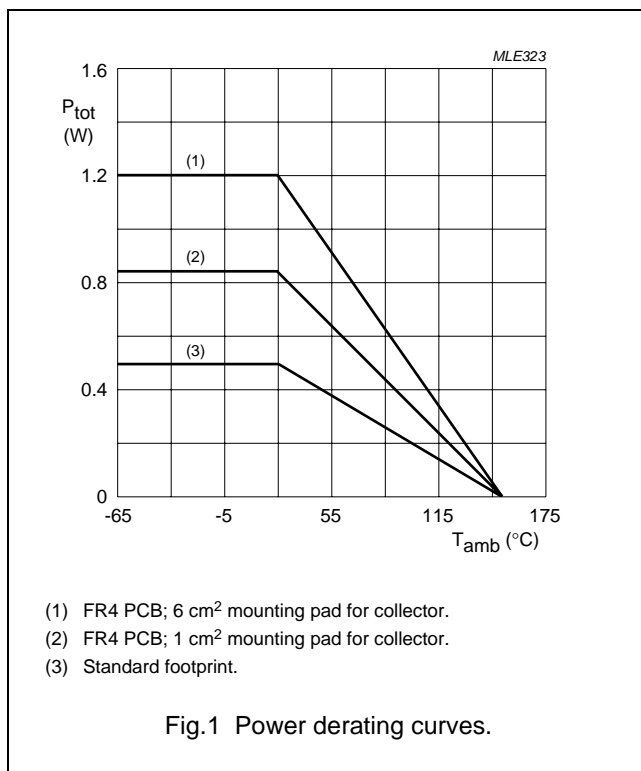
LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{CBO}	collector-base voltage	open emitter	–	32	V
V _{CEO}	collector-emitter voltage	open base	–	20	V
V _{EBO}	emitter-base voltage	open collector	–	5	V
I _C	collector current (DC)		–	1	A
I _{CM}	peak collector current		–	2	A
I _{BM}	peak base current		–	200	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	–	0.5	W
		notes 1 and 2	–	0.85	W
		notes 1 and 3	–	1.2	W
		notes 1 and 4	–		
T _{stg}	storage temperature		–65	+150	°C
T _j	junction temperature		–	150	°C
T _{amb}	ambient temperature		–65	+150	°C

Notes

1. Refer to SOT89 standard mounting conditions.
2. Device mounted on an FR4 printed-circuit board, single-sided copper, tin-plated footprint.
3. Device mounted on an FR4 printed-circuit board, single-sided copper, tin-plated, mounting pad for collector 1 cm².
4. Device mounted on an FR4 printed-circuit board, single-sided copper, tin-plated, mounting pad for collector 6 cm².



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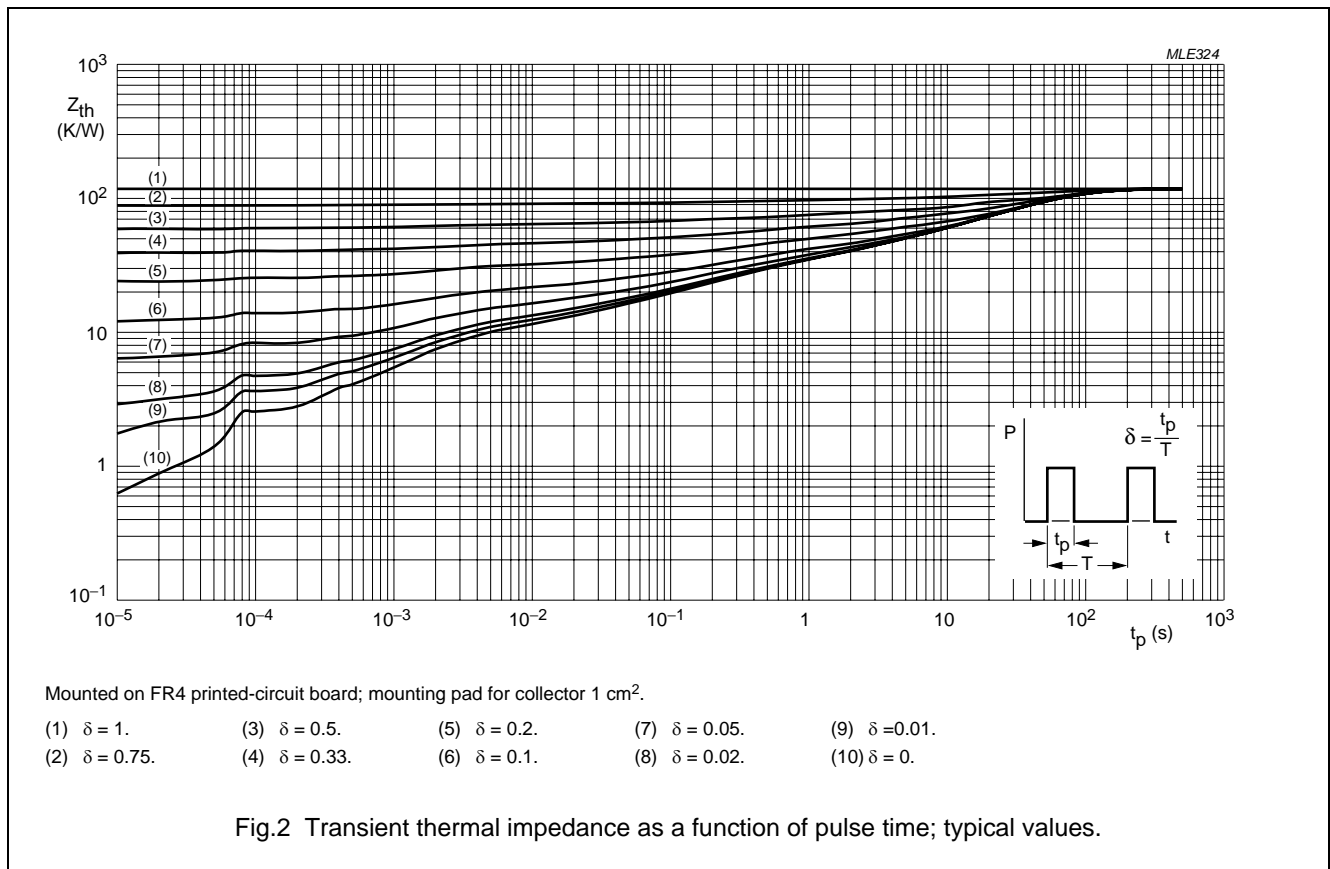
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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th(j-a)}	thermal resistance from junction to ambient	T _{amb} ≤ 25 °C		
		notes 1 and 2	250	K/W
		notes 1 and 3	147	K/W
		notes 1 and 4	104	K/W
R _{th(j-s)}	thermal resistance from junction to solder point	T _{amb} ≤ 25 °C	20	K/W

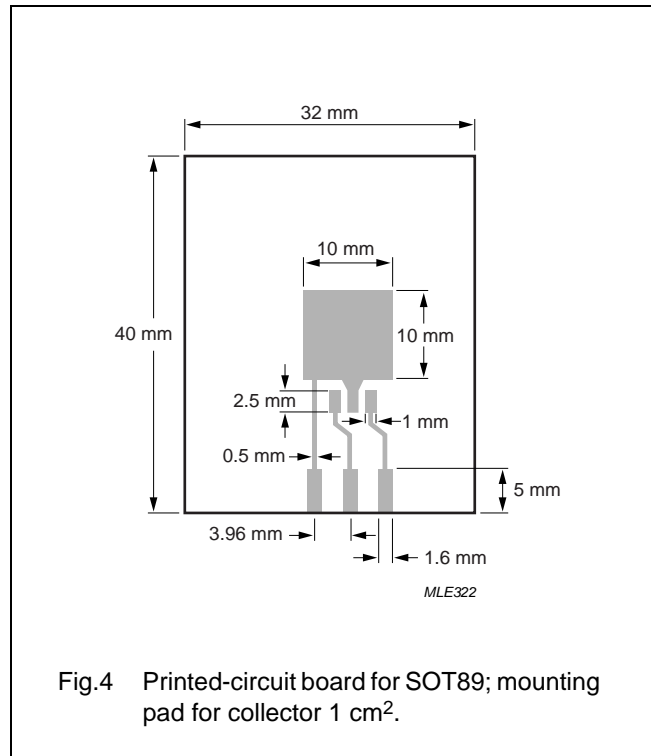
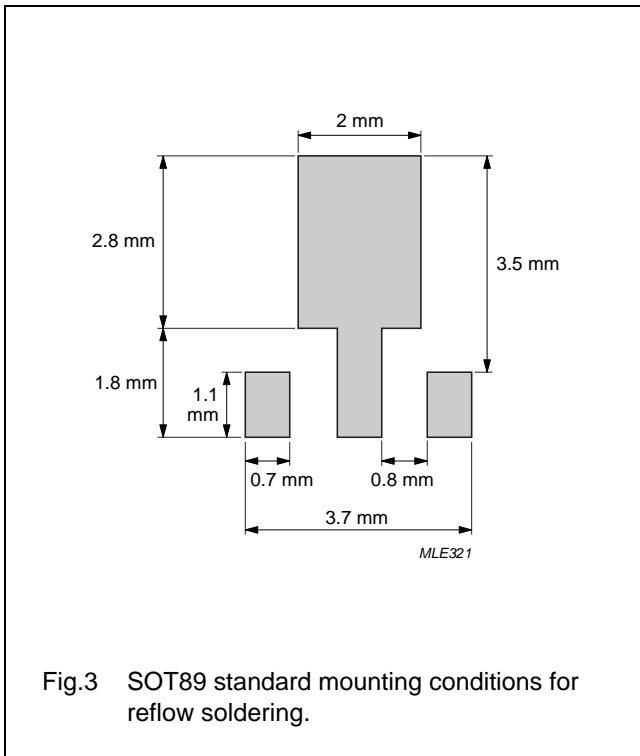
Notes

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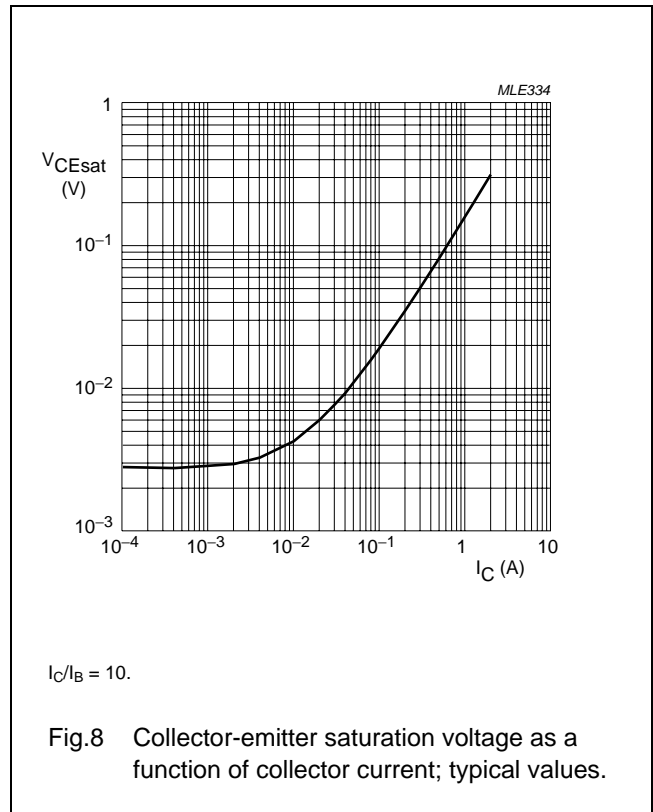
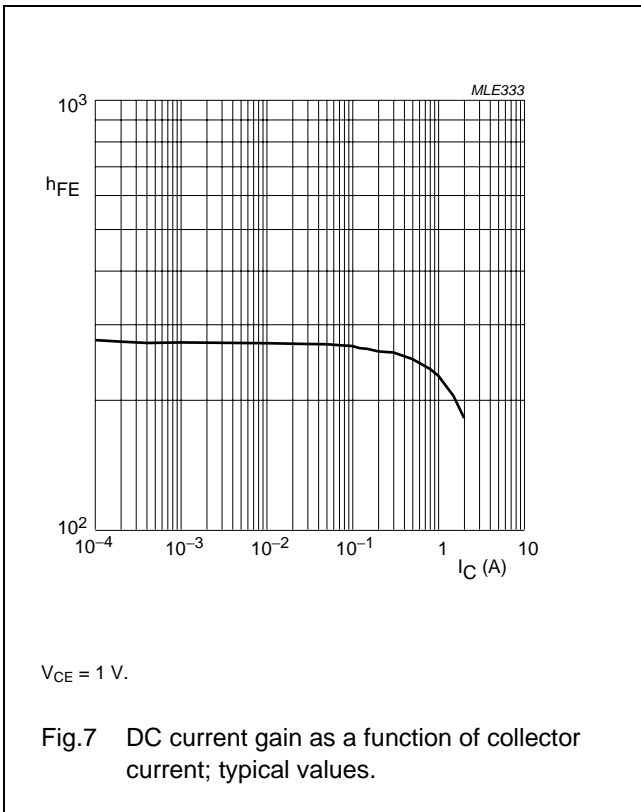
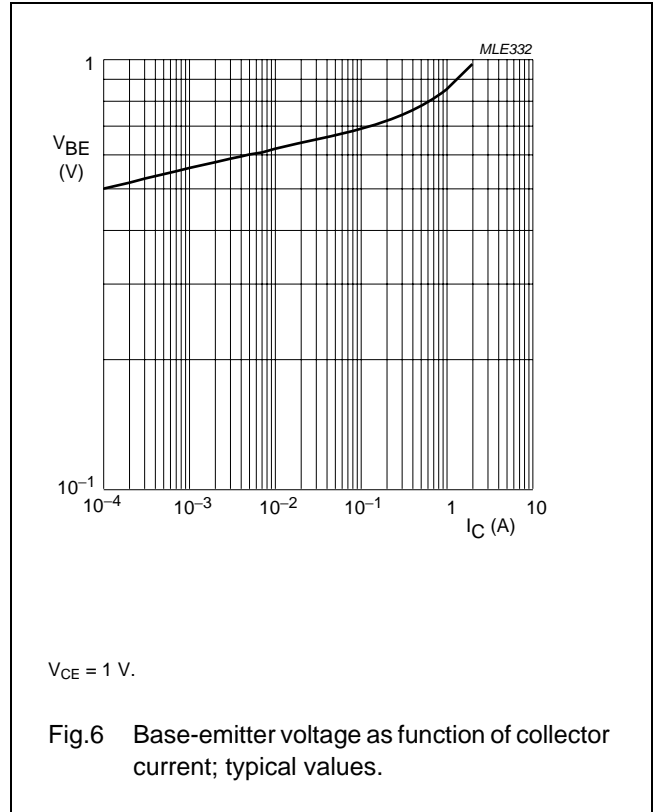
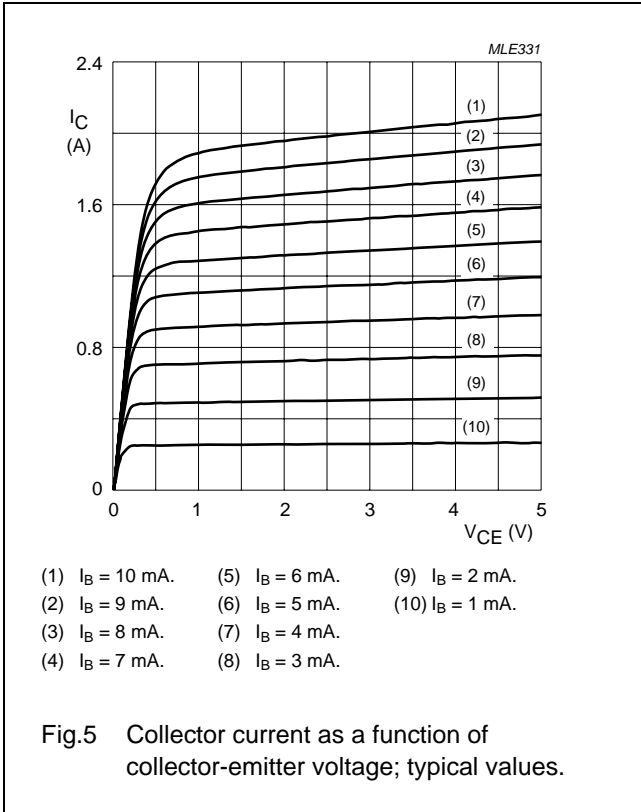
CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I _{CBO}	collector-base cut-off current	V _{CB} = 25 V; I _E = 0 A	–	–	100	nA
		V _{CB} = 25 V; I _E = 0 A; T _j = 25 °C	–	–	10	μA
I _{EBO}	emitter-base cut-off current	V _{EB} = 5 V; I _C = 0 A	–	–	100	nA
h _{FE}	DC current gain	BC868				
		V _{CE} = 10 V; I _C = 5 mA	50	–	–	
		V _{CE} = 1 V; I _C = 500 mA	85	–	375	
h _{FE}	DC current gain	BC868-25				
		V _{CE} = 1 V; I _C = 500 mA	160	–	375	
V _{CEsat}	collector-emitter saturation voltage	I _C = 1 A; I _B = 100 mA	–	–	500	mV
V _{BE}	base-emitter voltage	V _{CE} = 10 V; I _C = 5 mA	–	–	700	mV
		V _{CE} = 1 V; I _C = 1 A	–	–	1	V
C _c	collector capacitance	I _E = i _e = 0 A; V _{CB} = 10 V; f = 1 MHz	–	22	–	pF
f _T	transition frequency	V _{CE} = 5 V; I _C = 50 mA; f = 100 MHz	40	170	–	MHz

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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 _{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

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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.

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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.

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