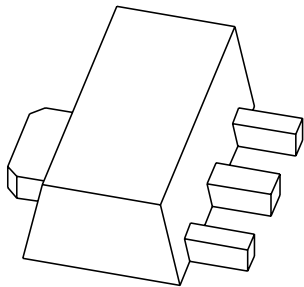


# DATA SHEET



**BC868**

**NPN medium power transistor**

Product specification  
Supersedes data of 1998 Jul 16

1999 Apr 08

## NPN medium power transistor

BC868

## FEATURES

- High current (max. 1 A)
- Low voltage (max. 20 V).

## APPLICATIONS

- General purpose switching and amplification
- Power applications such as audio output stages.

## DESCRIPTION

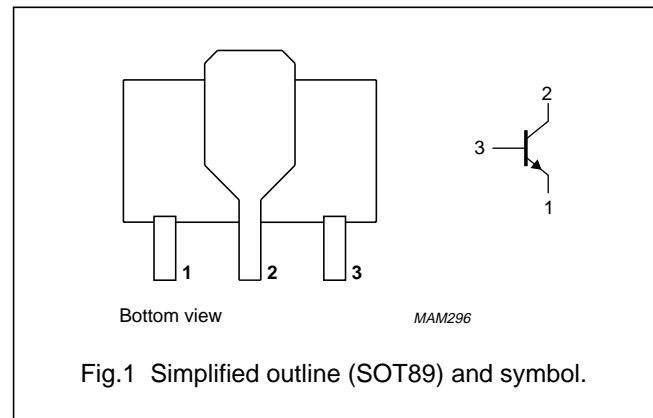
NPN medium power transistor in a SOT89 plastic package. PNP complement: BC869.

## MARKING

TYPE NUMBER	MARKING CODE
BC868	CAC
BC868-25	CDC

## PINNING

PIN	DESCRIPTION
1	emitter
2	collector
3	base



## LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

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	$T_{amb} \leq 25\text{ }^\circ\text{C}$ ; note 1	–	1.35	W
$T_{stg}$	storage temperature		–65	+150	$^\circ\text{C}$
$T_j$	junction temperature		–	150	$^\circ\text{C}$
$T_{amb}$	operating ambient temperature		–65	+150	$^\circ\text{C}$

## Note

1. Device mounted on a printed-circuit board, single sided copper, tinplated, mounting pad for collector 6 cm<sup>2</sup>. For other mounting conditions, see “*Thermal considerations for SOT89 in the General Part of associated Handbook*”.

## NPN medium power transistor

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## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	93	K/W
$R_{th\ j-s}$	thermal resistance from junction to soldering point		13	K/W

## Note

- Device mounted on a printed-circuit board, single sided copper, tinplated, mounting pad for collector 6 cm<sup>2</sup>.  
For other mounting conditions, see "Thermal considerations for SOT89 in the General Part of associated Handbook".

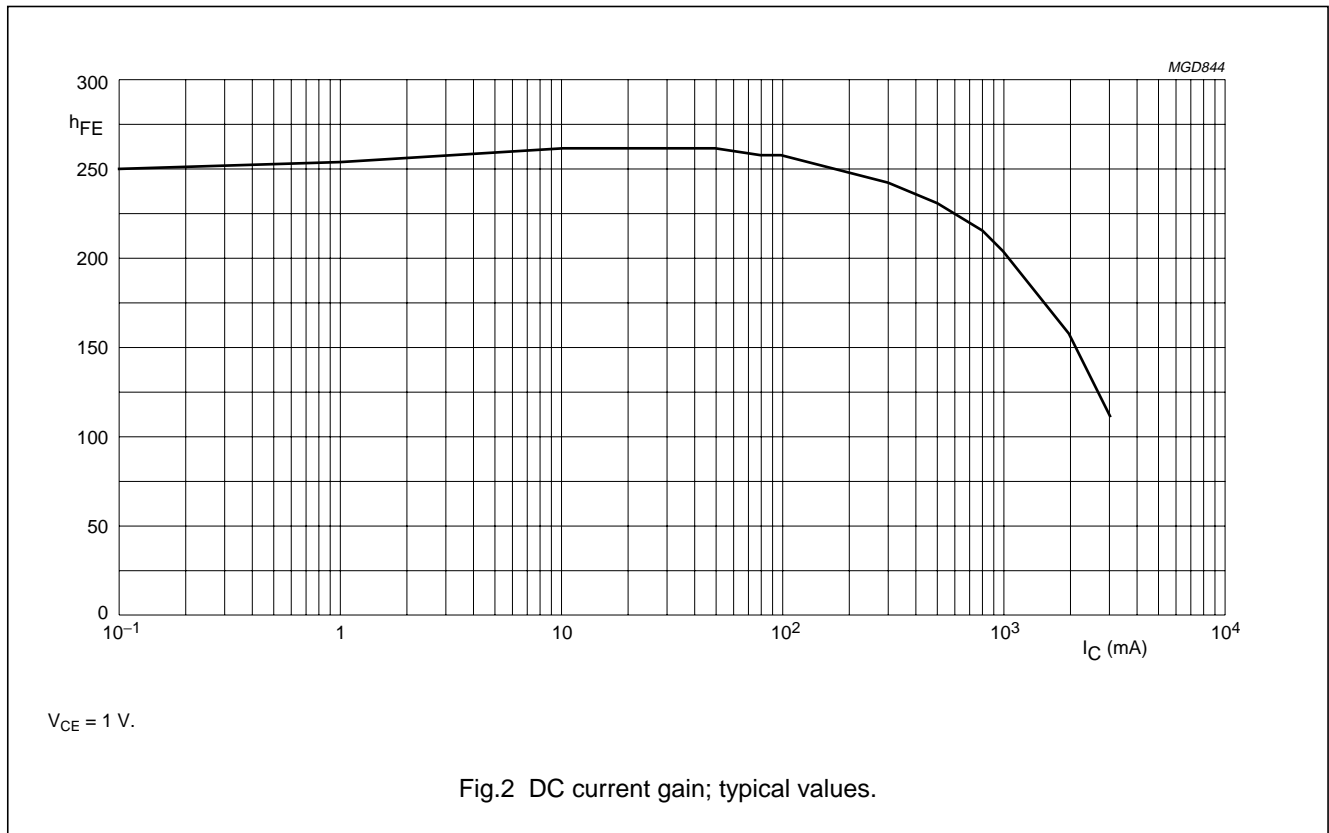
## CHARACTERISTICS

$T_j = 25\text{ °C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = 25\text{ V}$	–	–	100	nA
		$I_E = 0; V_{CB} = 25\text{ V}; T_j = 150\text{ °C}$	–	–	10	μA
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	–	–	100	nA
$h_{FE}$	DC current gain	$I_C = 5\text{ mA}; V_{CE} = 10\text{ V}$	50	–	–	
		$I_C = 500\text{ mA}; V_{CE} = 1\text{ V};$ see Fig.2	85	–	375	
		$I_C = 1\text{ A}; V_{CE} = 1\text{ V};$ see Fig.2	60	–	–	
	DC current gain BC868-25	$I_C = 500\text{ mA}; V_{CE} = 1\text{ V};$ see Fig.2	160	–	375	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 1\text{ A}; I_B = 100\text{ mA}$	–	–	500	mV
$V_{BE}$	base-emitter voltage	$I_C = 5\text{ mA}; V_{CE} = 10\text{ V}$	–	620	–	mV
		$I_C = 1\text{ A}; V_{CE} = 1\text{ V}$	–	–	1	V
$f_T$	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	40	–	–	MHz
$\frac{h_{FE1}}{h_{FE2}}$	DC current gain ratio of the complementary pairs	$ I_C  = 0.5\text{ A};  V_{CE}  = 1\text{ V}$	–	–	1.6	

NPN medium power transistor

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NPN medium power transistor

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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>1</sub>	b <sub>2</sub>	b <sub>3</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L min.	w
mm	1.6 1.4	0.48 0.35	0.53 0.40	1.8 1.4	0.44 0.37	4.6 4.4	2.6 2.4	3.0	1.5	4.25 3.75	0.8	0.13

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT89						97-02-28

## NPN medium power transistor

BC868

**DEFINITIONS**

<b>Data Sheet Status</b>	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

**LIFE SUPPORT APPLICATIONS**

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

NPN medium power transistor

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