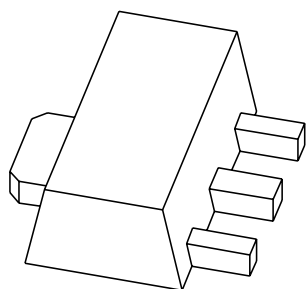


DATA SHEET



BC868

NPN medium power transistor

Product specification
Supersedes data of September 1994
File under Discrete Semiconductors, SC04

1997 Mar 19

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

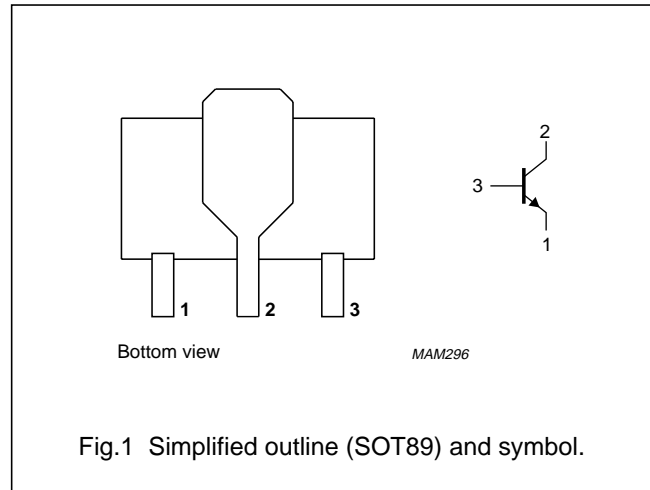
NPN medium power transistor in a SOT89 plastic package. PNP complement: BC869.

MARKING

TYPE NUMBER	MARKING CODE
BC868	CAC
BC868-10	CBC
BC868-16	CCC
BC868-25	CDC

PINNING

PIN	DESCRIPTION
1	emitter
2	collector
3	base



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	32	V
V_{CEO}	collector-emitter voltage	open base	–	20	V
I_{CM}	peak collector current		–	2	A
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ }^{\circ}\text{C}$	–	1.4	W
h_{FE}	DC current gain	$I_C = 500\text{ mA}; V_{CE} = 1\text{ V}$	85	375	
f_T	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	40	–	MHz

NPN medium power transistor

BC868

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	$T_{amb} \leq 25\text{ °C}$; note 1	–	1.4	W
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

Note

1. Device mounted on a printed-circuit board, single sided copper, tinned, mounting pad for collector 1 cm².
For other mounting conditions, see "*Thermal considerations for SOT89 in the General part of handbook SC04*".

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	89	K/W
$R_{th\ j-s}$	thermal resistance from junction to soldering point		8	K/W

Note

1. Device mounted on a printed-circuit board, single sided copper, tinned, mounting pad for collector 1 cm².
For other mounting conditions, see "*Thermal considerations for SOT89 in the General part of handbook SC04*".

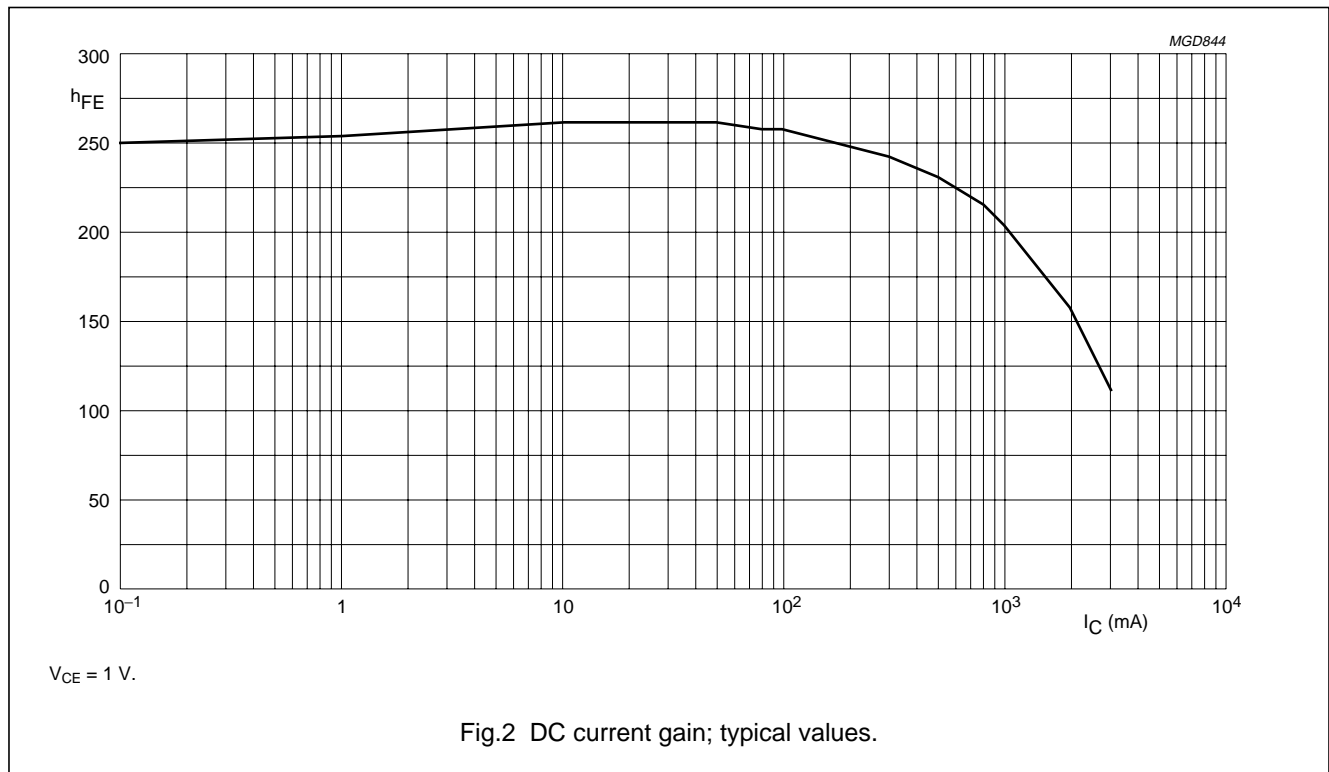
NPN medium power transistor

BC868

CHARACTERISTICS

 $T_j = 25\text{ }^\circ\text{C}$ 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	
		$I_E = 0; V_{CB} = 25\text{ V}; T_j = 150\text{ }^\circ\text{C}$	–	–	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	–	–		
h_{FE}	DC current gain	$V_{CE} = 1\text{ V}$; see Fig.2					
		$I_C = 500\text{ mA}$	85	–	375		
		$I_C = 1\text{ A}$	60	–	–		
h_{FE}	DC current gain	$I_C = 500\text{ mA}; V_{CE} = 1\text{ V}$; see Fig.2					
			BC868-10	–	–	160	
			BC868-16	100	–	250	
	BC868-25	160	–	–			
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		



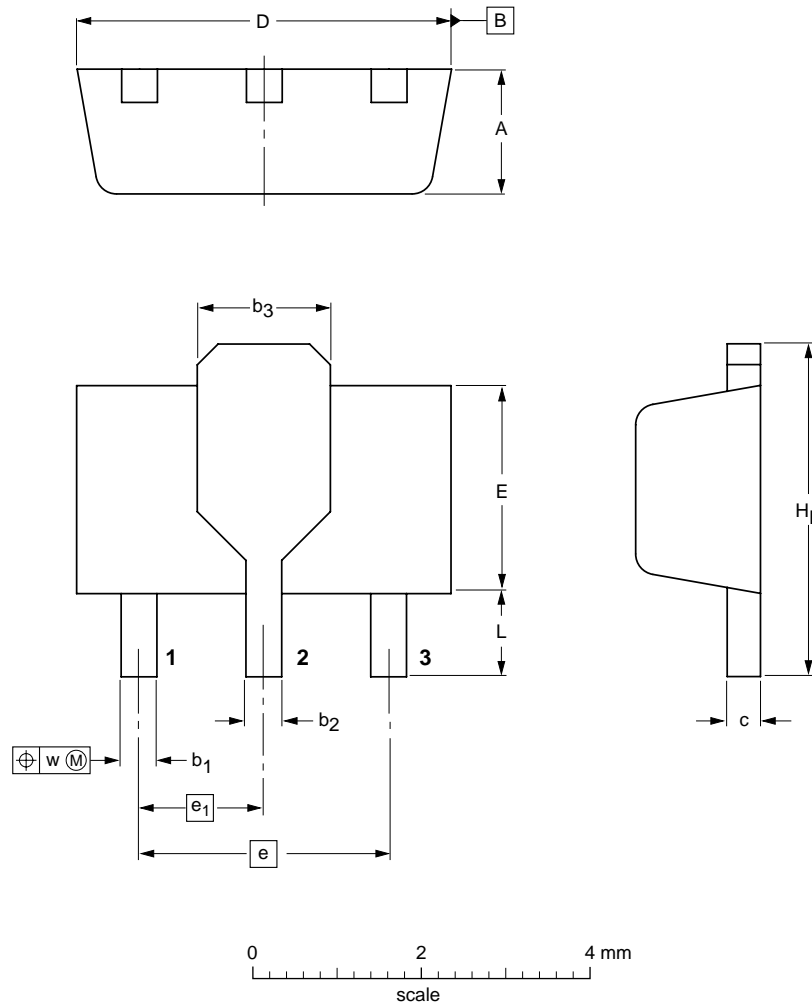
NPN medium power transistor

BC868

PACKAGE OUTLINE

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

SOT89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b ₁	b ₂	b ₃	c	D	E	e	e ₁	H _E	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

Data Sheet Status	
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.
Limiting values	
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.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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NPN medium power transistor

BC868

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