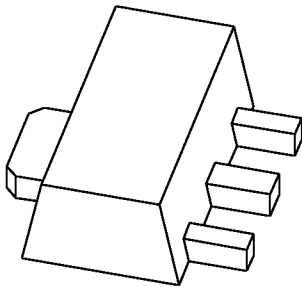


DATA SHEET



BC868

NPN medium power transistor

Product specification
Supersedes data of 1997 Mar 19
File under Discrete Semiconductors, SC10

1998 Jul 16

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

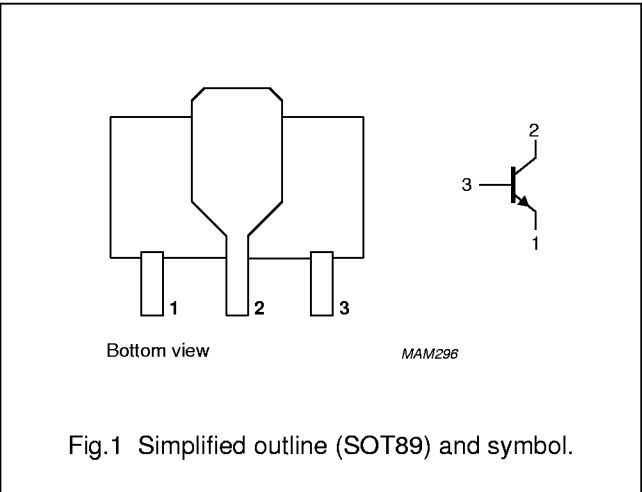
NPN medium power transistor in a SOT89 plastic package. PNP complement: BC869.

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

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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	—	1.4	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 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, tinplated, 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

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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	$V_{CE} = 1\text{ V}; \text{ see Fig.2}$				
		$I_C = 500\text{ mA}$	85	–	375	
		$I_C = 1\text{ A}$	60	–	–	
h_{FE}	DC current gain	$I_C = 500\text{ mA}; V_{CE} = 1\text{ V}; \text{ see Fig.2}$				
			85	–	160	
			100	–	250	
			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	

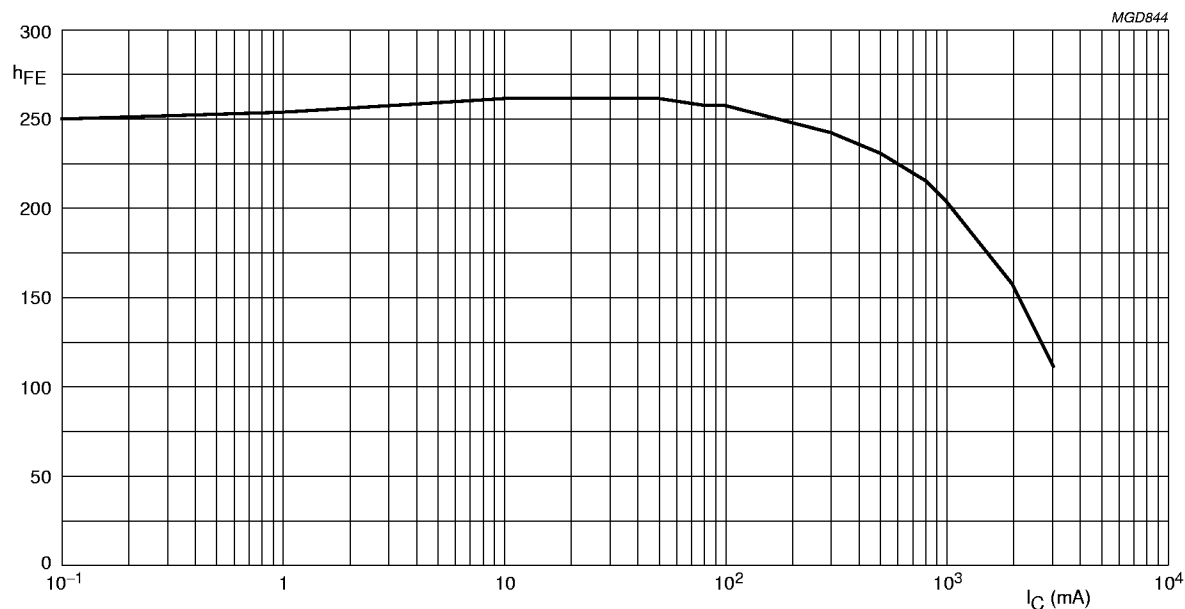


Fig.2 DC current gain; typical values.

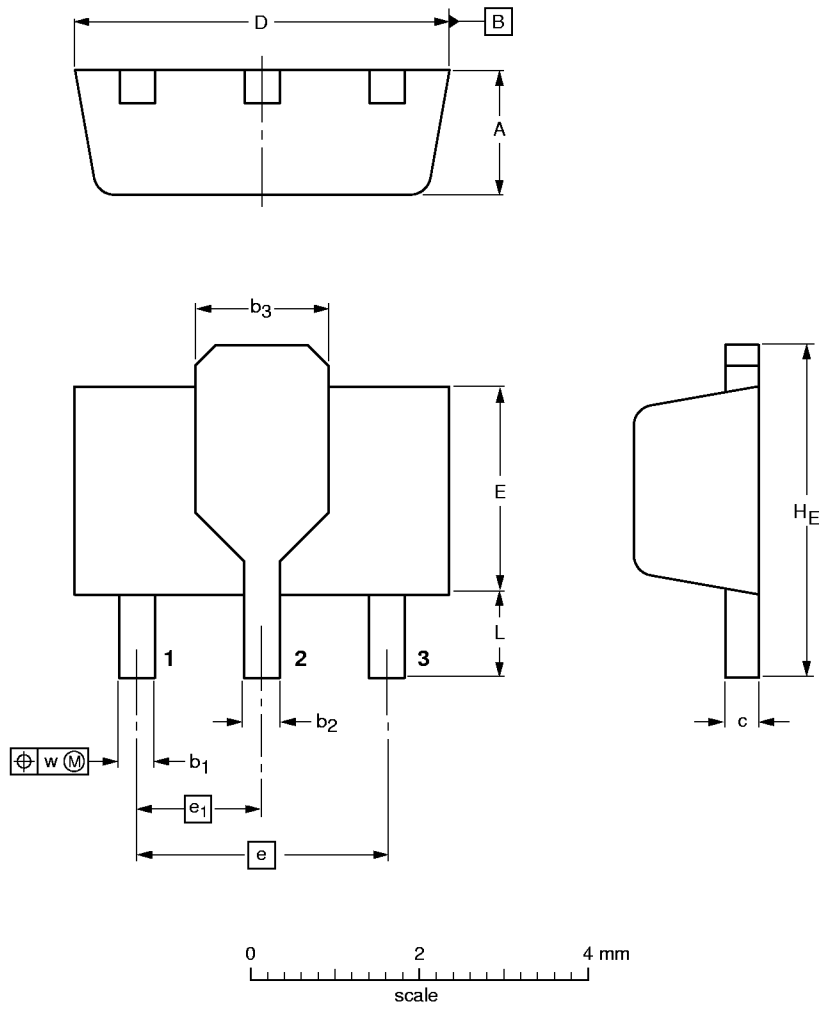
NPN medium power transistor

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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 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