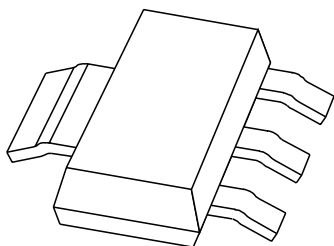


DATA SHEET



BCP69 PNP medium power transistor

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

1997 Mar 12

PNP medium power transistor

BCP69

FEATURES

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

APPLICATIONS

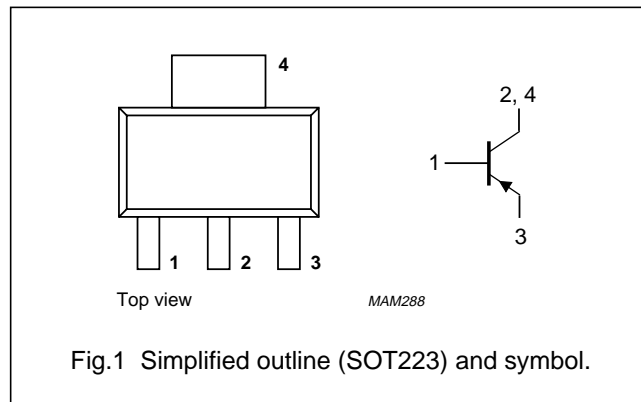
- General purpose switching and amplification
- Power applications such as audio output stages.

DESCRIPTION

PNP medium power transistor in a SOT223 plastic package. NPN complement: BCP68.

PINNING

PIN	DESCRIPTION
1	base
2, 4	collector
3	emitter



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	$T_{amb} \leq 25\text{ }^{\circ}\text{C}$	–	1.35	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

PNP medium power transistor

BCP69

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} ≤ 25 °C; note 1	–	1.35	W
T _{stg}	storage temperature		–65	+150	°C
T _j	junction temperature		–	150	°C
T _{amb}	operating ambient temperature		–65	+150	°C

Note

- 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 SOT223 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	91	K/W
R _{th j-s}	thermal resistance from junction to soldering point		10	K/W

Note

- 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 SOT223 in the General part of handbook SC04”*.

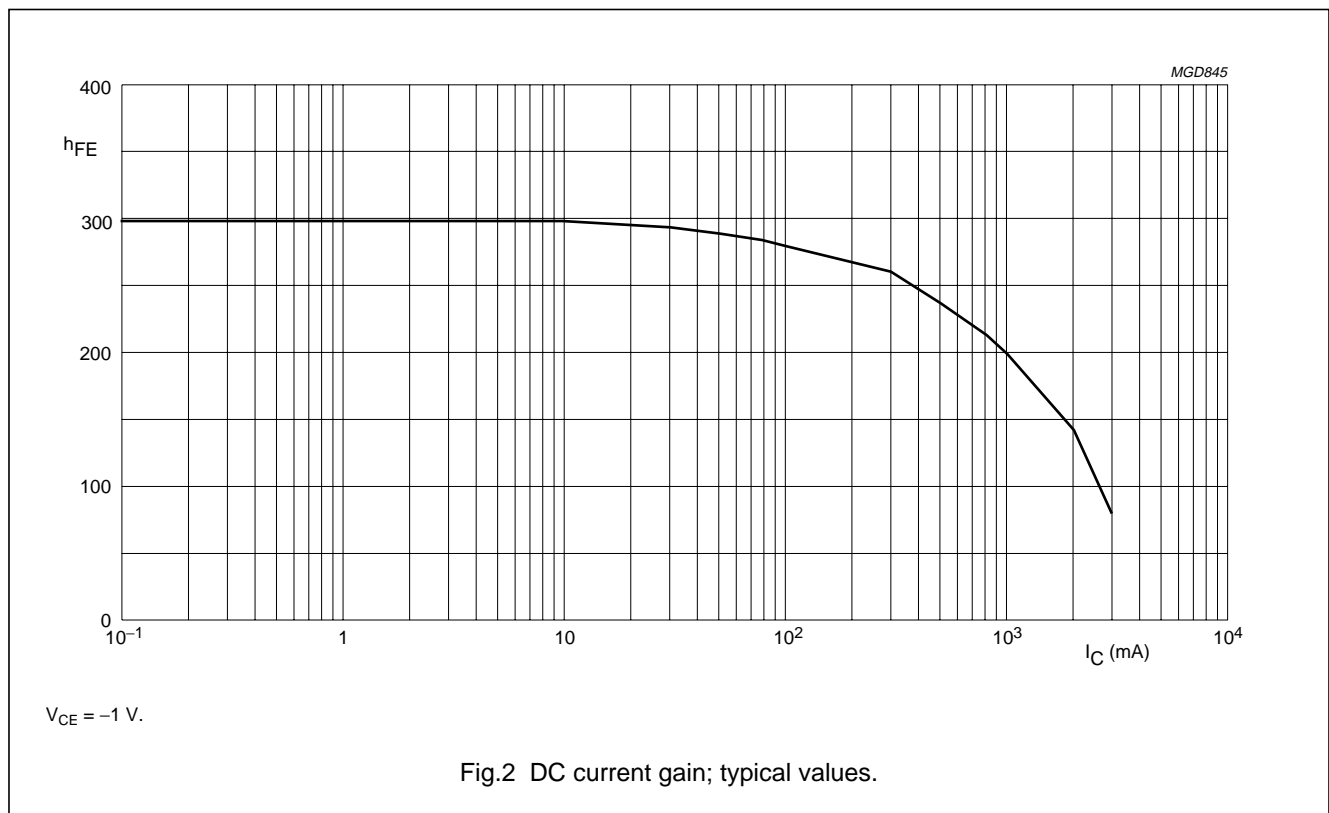
PNP medium power transistor

BCP69

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	–	–	
		$I_C = -500\text{ mA}; V_{CE} = -1\text{ V};$ see Fig.2	85	375	–	
		$I_C = -1\text{ A}; V_{CE} = -1\text{ V};$ see Fig.2	60	–	–	
h_{FE}	DC current gain BCP69-10 BCP69-16 BCP69-25	$I_C = -500\text{ mA}; V_{CE} = -1\text{ V};$ see Fig.2	–	–	160	
			100	–	250	
			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
C_c	collector capacitance	$I_E = i_e = 0; V_{CB} = -5\text{ V}; f = 1\text{ MHz}$	–	48	–	pF
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	



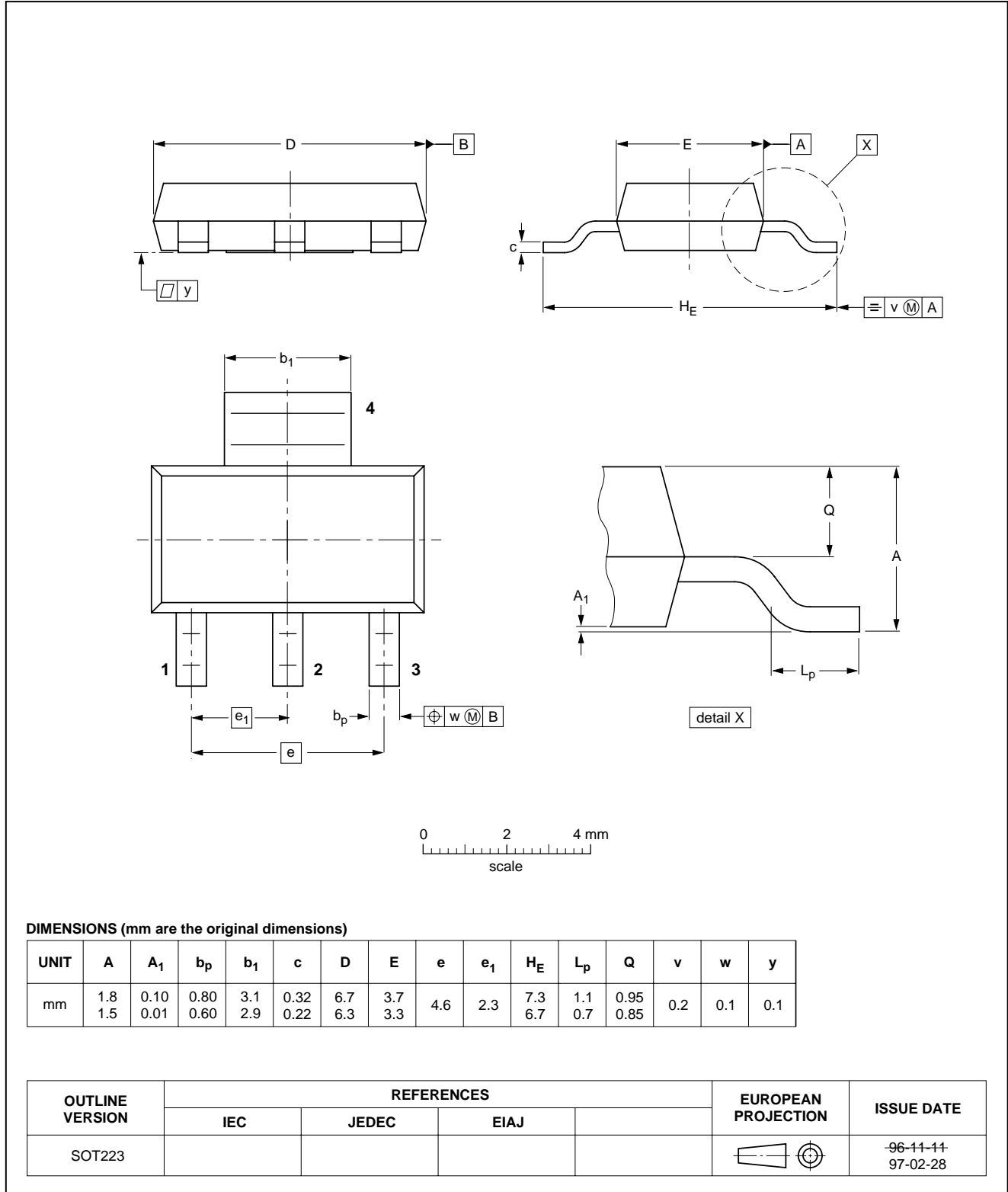
PNP medium power transistor

BCP69

PACKAGE OUTLINE

Plastic surface mounted package; collector pad for good heat transfer; 4 leads

SOT223



PNP medium power transistor

BCP69

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.	

LIFE SUPPORT APPLICATIONS

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PNP medium power transistor

BCP69

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