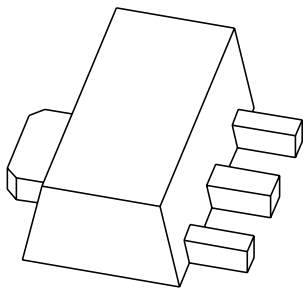


DATA SHEET



BC869

PNP medium power transistor;
20 V, 1 A

Product data sheet
Supersedes data of 2003 Dec 02

2004 Nov 08

PNP medium power transistor; 20 V, 1 A

BC869

FEATURES

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

APPLICATIONS

- Linear voltage regulators
- High side switch
- Supply line switch
- 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			
	BC869	85	375	–
	BC869-16	100	250	–
	BC869-25	160	375	–

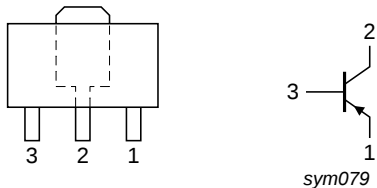
DESCRIPTION

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

PRODUCT OVERVIEW

TYPE NUMBER	PACKAGE		MARKING
	PHILIPS	EIAJ	
BC869	SOT89	SC-62	CEC
BC869-16	SOT89	SC-62	CGC
BC869-25	SOT89	SC-62	CHC

SIMPLIFIED OUTLINE, SYMBOL AND PINNING

TYPE NUMBER	SIMPLIFIED OUTLINE AND SYMBOL	PINNING	
		PIN	DESCRIPTION
BC869		1 2 3	emitter collector base

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ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BC869	SC-62	plastic surface mounted package; collector pad for good heat transfer; 3 leads	SOT89
BC869-16			
BC869-25			

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	$T_{amb} \leq 25\text{ °C}$			
		notes 1 and 2	–	0.5	W
		notes 1 and 3	–	0.85	W
		notes 1 and 4	–	1.2	W
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	ambient temperature		–65	+150	°C

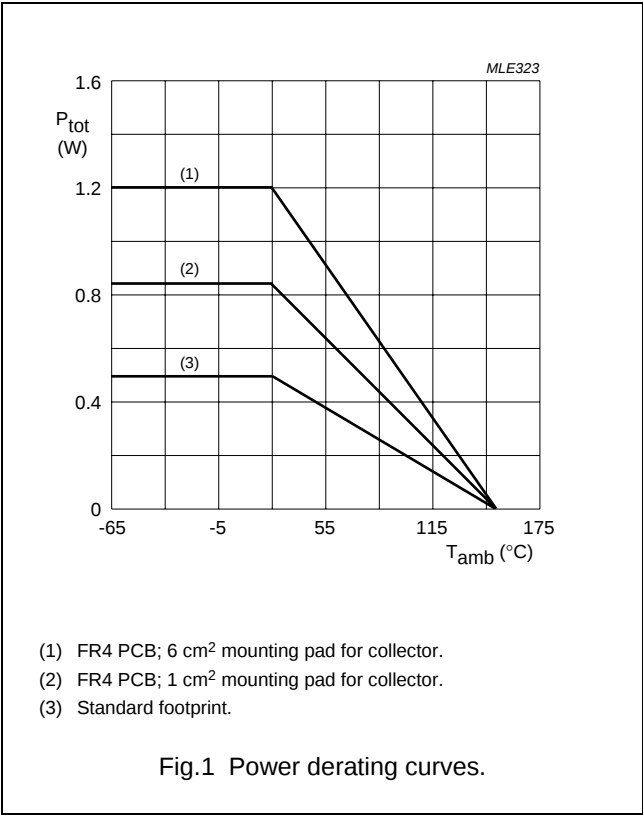
Notes

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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THERMAL CHARACTERISTICS

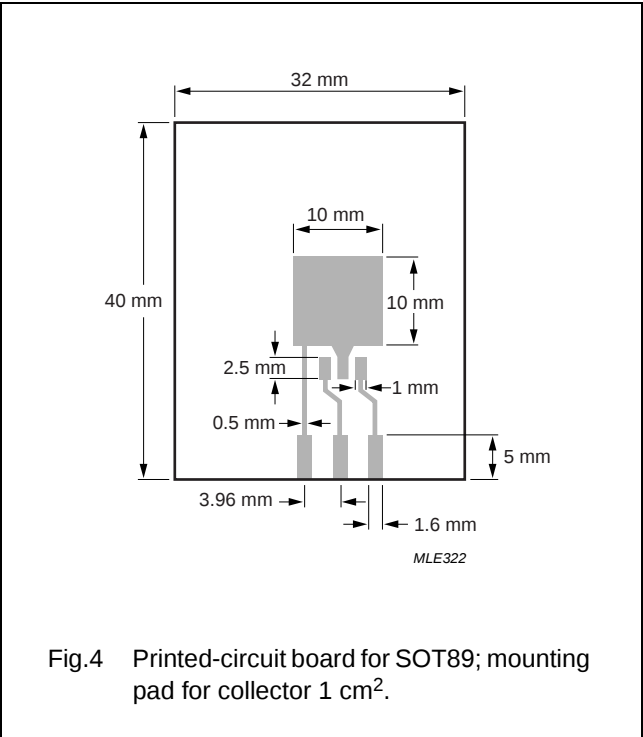
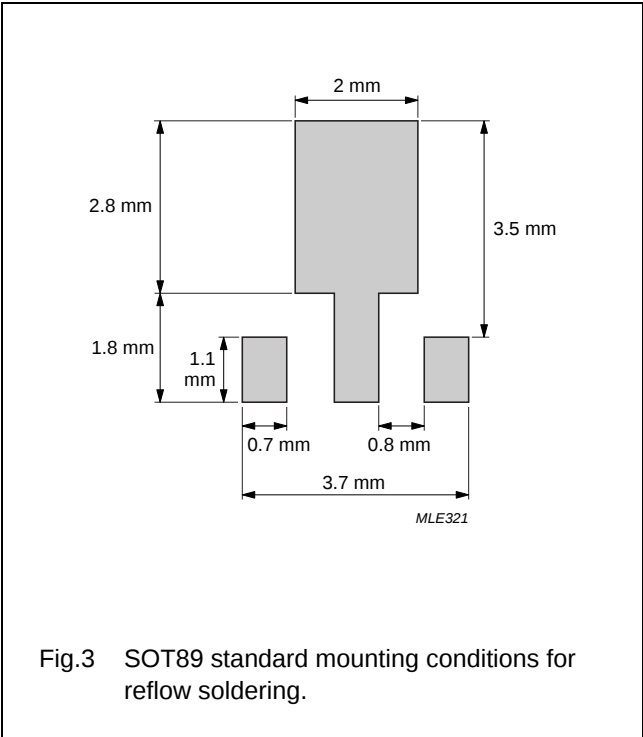
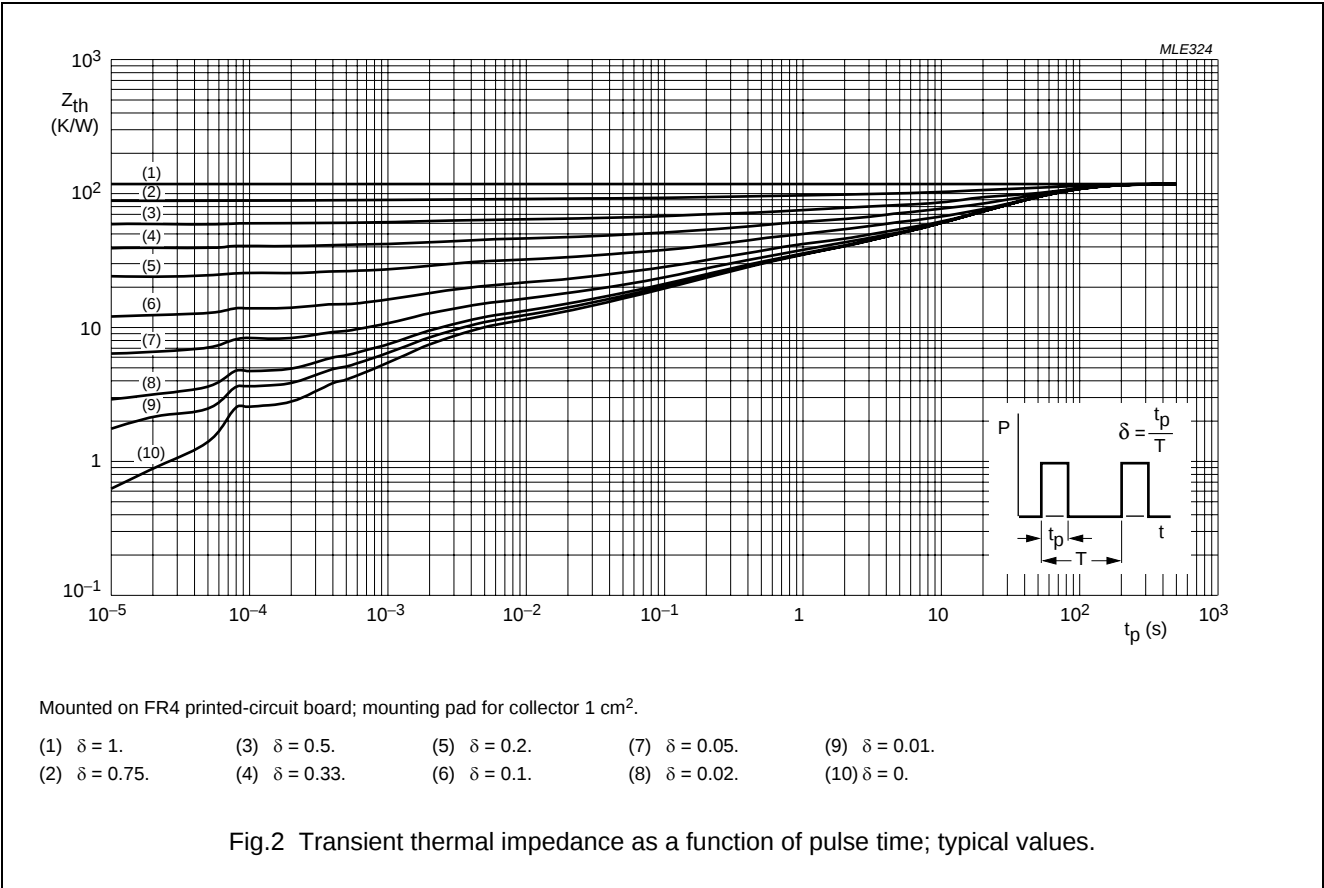
SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th(j-a)}	thermal resistance from junction to ambient	T _{amb} ≤ 25 °C		
		notes 1 and 2	250	K/W
		notes 1 and 3	147	K/W
		notes 1 and 4	104	K/W
R _{th(j-s)}	thermal resistance from junction to solder point	T _{amb} ≤ 25 °C	20	K/W

Notes

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

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PNP medium power transistor; 20 V, 1 A

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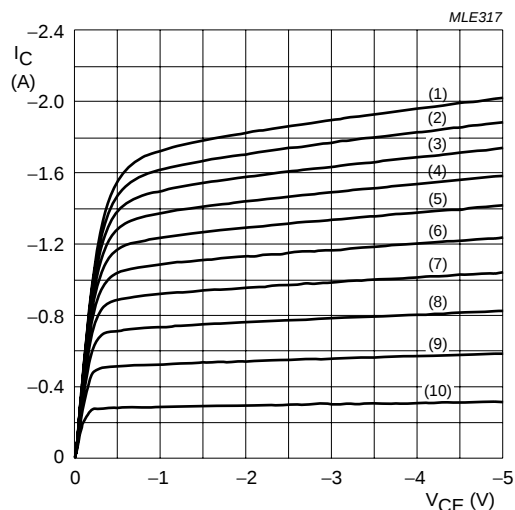
CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	$V_{CB} = -25\text{ V}; I_E = 0\text{ A}$	–	–	–100	nA
		$V_{CB} = -25\text{ V}; I_E = 0\text{ A}$	–	–	–10	μA
I_{EBO}	emitter-base cut-off current	$V_{EB} = -5\text{ V}; I_C = 0\text{ A}$	–	–	–100	nA
h_{FE}	DC current gain	BC869				
		$V_{CE} = -10\text{ V}; I_C = -5\text{ mA}$	50	–	–	
		$V_{CE} = -1\text{ V}; I_C = -500\text{ mA}$	85	–	375	
		$V_{CE} = -1\text{ V}; I_C = -1\text{ A}$	60	–	–	
		BC869-16				
V_{CEsat}	collector-emitter saturation voltage	$I_C = -1\text{ A}; I_B = -100\text{ mA}$	–	–	–500	mV
		$V_{CE} = -10\text{ V}; I_C = -5\text{ mA}$	–	–	–700	mV
		$V_{CE} = -1\text{ V}; I_C = -1\text{ A}$	–	–	–1	V
C_c	collector capacitance	$I_E = I_B = 0\text{ A}; V_{CB} = -10\text{ V};$ $f = 1\text{ MHz}$	–	28	–	pF
f_T	transition frequency	$V_{CE} = -5\text{ V}; I_C = -50\text{ mA};$ $f = 100\text{ MHz}$	40	140	–	MHz

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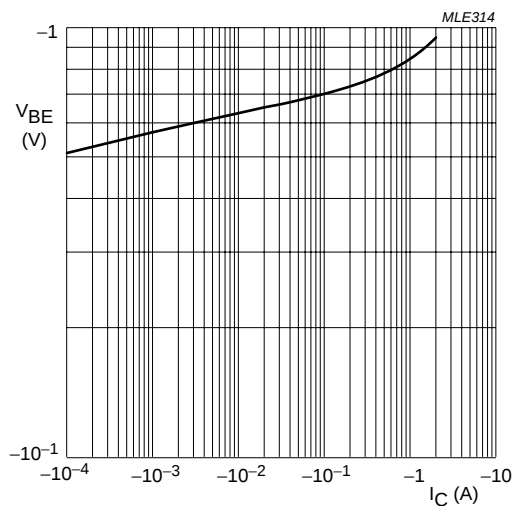
BC869



BC869-16.

- | | | |
|-----------------------|-----------------------|-----------------------|
| (1) $I_B = -18$ mA. | (5) $I_B = -10.8$ mA. | (9) $I_B = -3.6$ mA. |
| (2) $I_B = -16.2$ mA. | (6) $I_B = -9.0$ mA. | (10) $I_B = -1.8$ mA. |
| (3) $I_B = -14.4$ mA. | (7) $I_B = -7.2$ mA. | |
| (4) $I_B = -12.6$ mA. | (8) $I_B = -5.4$ mA. | |

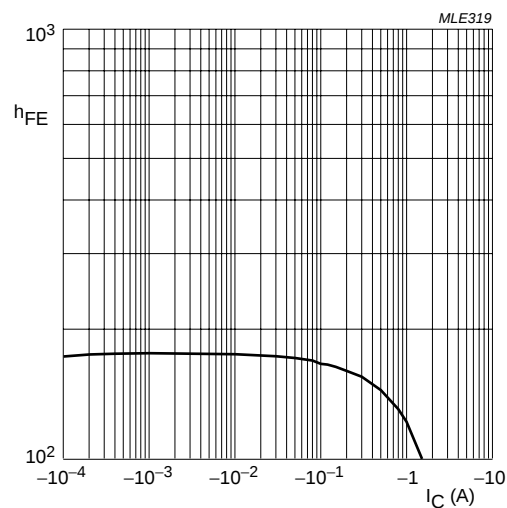
Fig.5 Collector current as a function of collector-emitter voltage; typical values.



BC869-16.

 $V_{CE} = -1$ V.

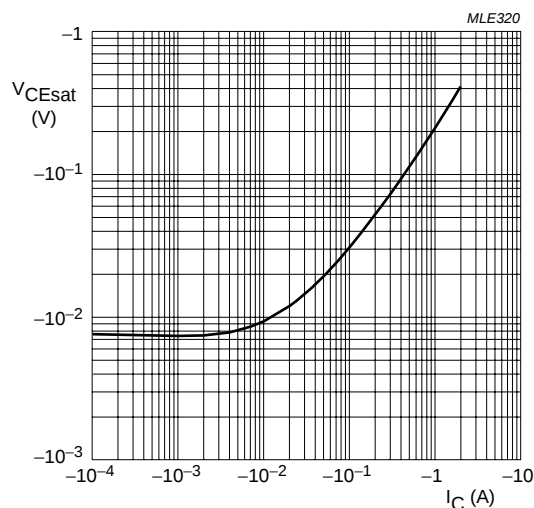
Fig.6 Base-emitter voltage as a function of collector current; typical values.



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 $V_{CE} = -1$ V.

Fig.7 DC current gain as a function of collector current; typical values.



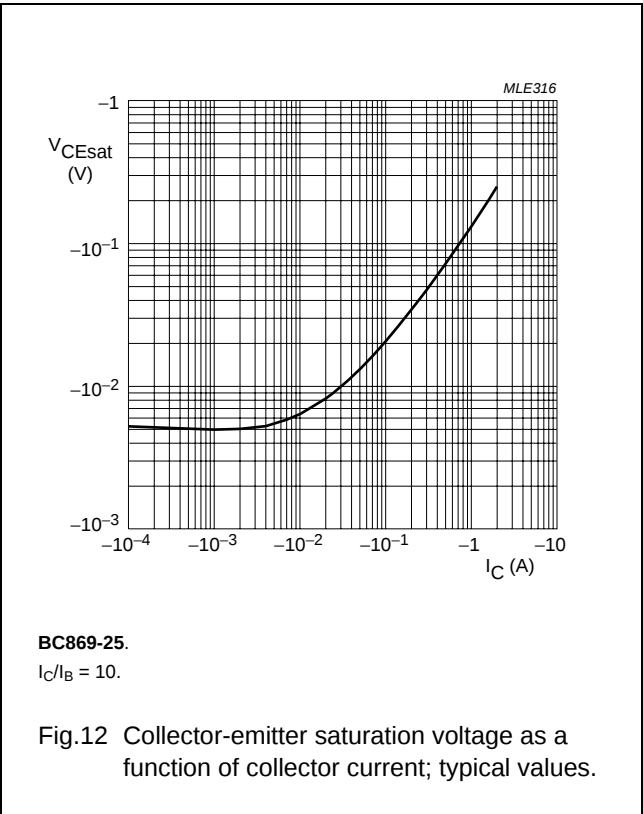
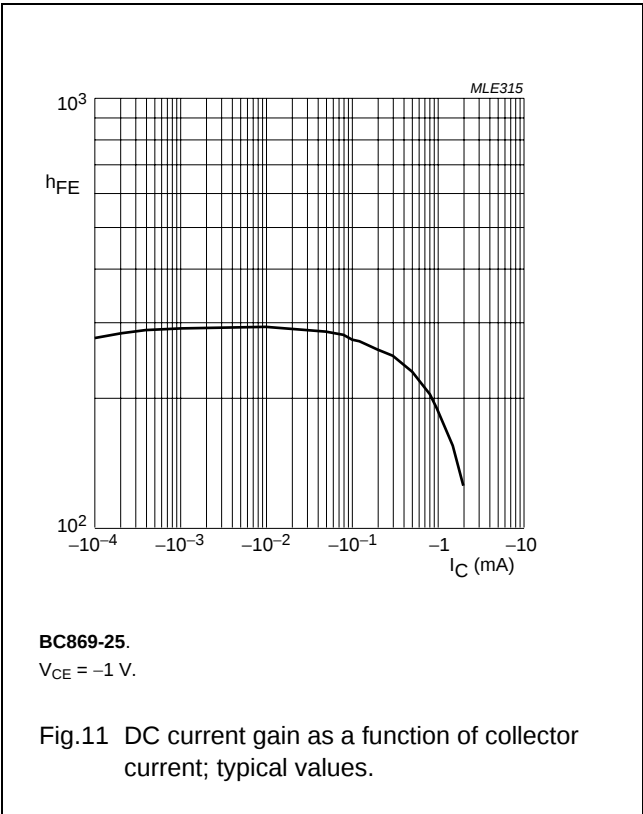
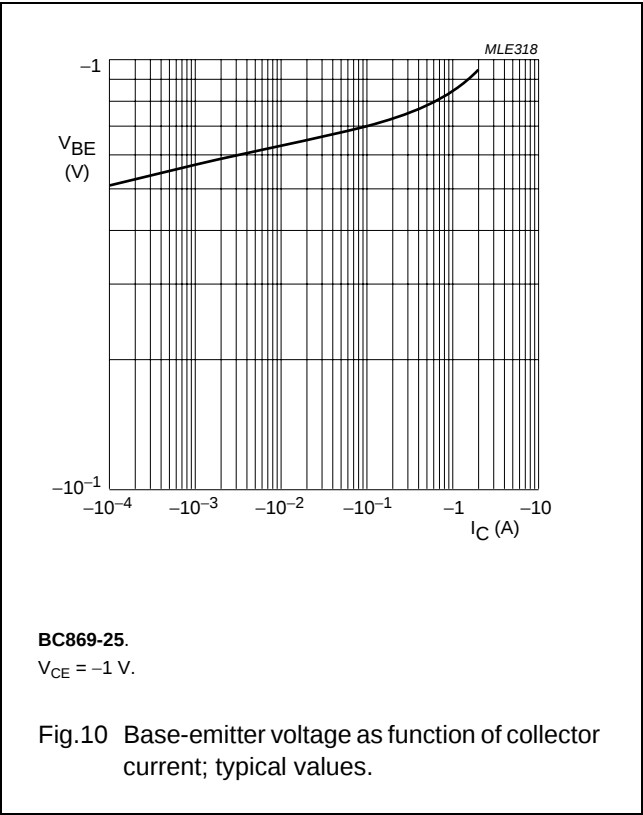
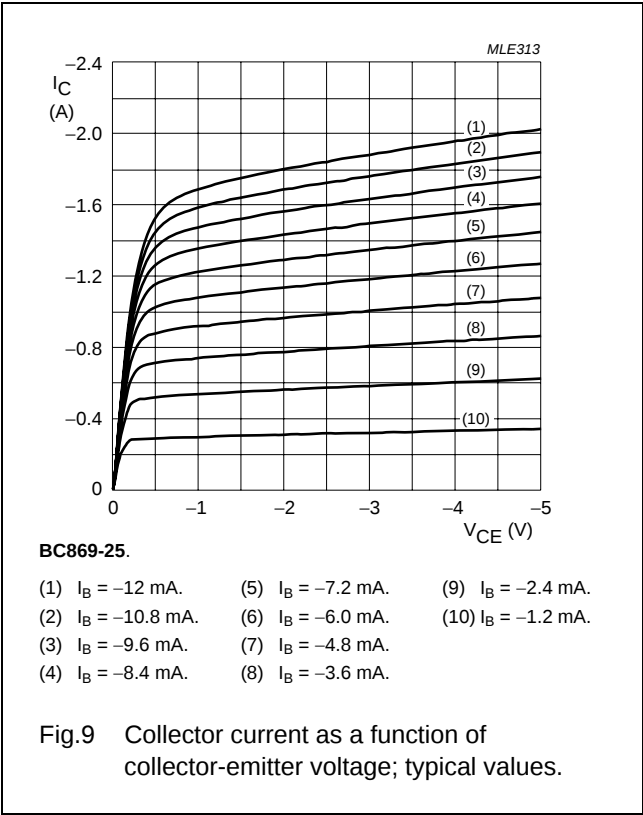
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 $I_C/I_B = 10$.

Fig.8 Collector-emitter saturation voltage as a function of collector current; typical values.

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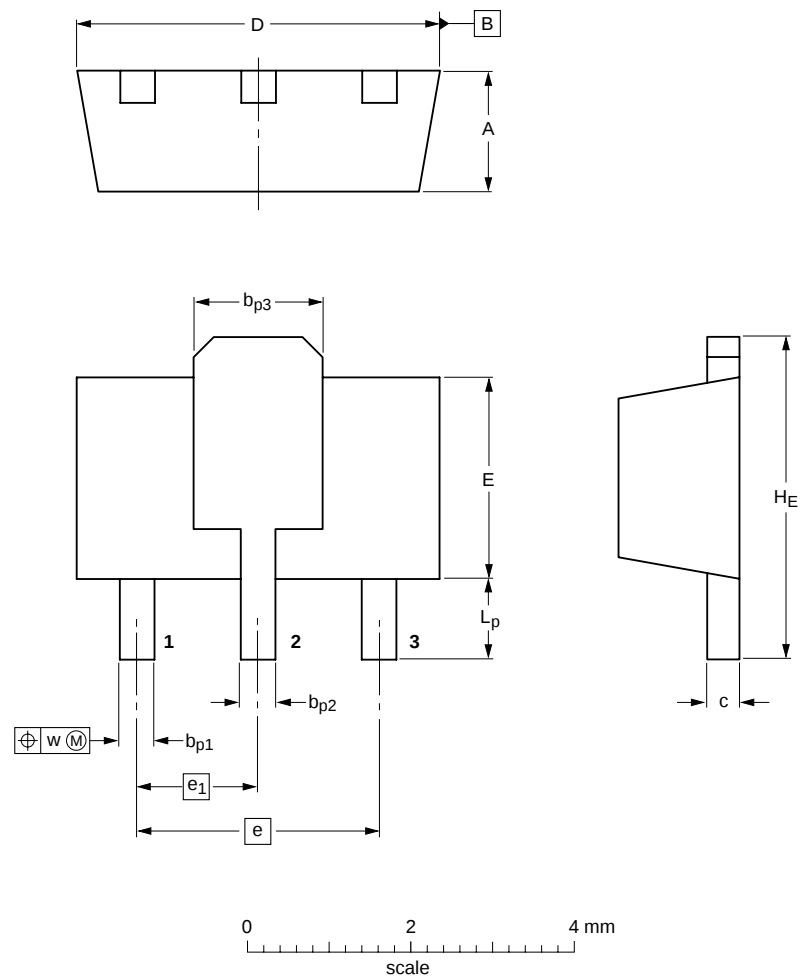
PNP medium power transistor;
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PACKAGE OUTLINE

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

SOT89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b _{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

PNP medium power transistor; 20 V, 1 A

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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.

Notes

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2. The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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Contact information

For additional information please visit: <http://www.nxp.com>

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