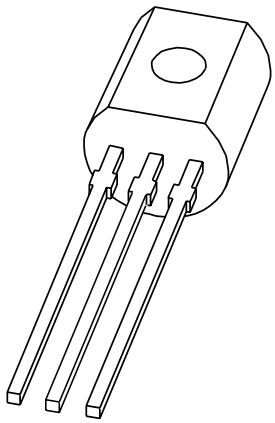
DATA SHEET



BC368

NPN medium power transistor; 20 V, 1 A

Product specification

2004 Nov 05

Supersedes data of 2003 Dec 01

Philips Semiconductors

PHILIPS

NPN medium power transistor; 20 V, 1 A

BC368

FEATURES

- High current.

APPLICATIONS

- Linear voltage regulators
- Low side switch
- Supply line switch for negative voltages
- 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	85	375	–

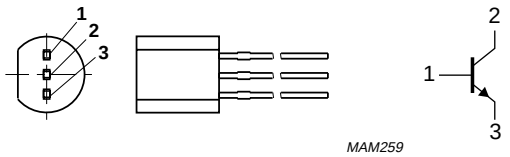
DESCRIPTION

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

PRODUCT OVERVIEW

TYPE NUMBER	PACKAGE		MARKING CODE	PNP COMPLEMENT
	PHILIPS	EIAJ		
BC368	SOT54	SC-43A	C368	BC369

SIMPLIFIED OUTLINE, SYMBOL AND PINNING

TYPE NUMBER	SIMPLIFIED OUTLINE AND SYMBOL	PINNING	
		PIN	DESCRIPTION
BC368		1 2 3	base collector emitter

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BC368	SC-43A	plastic single-ended (through hole) package; 3 leads	SOT54

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	output current (DC)		–	1	mA
I_{CM}	peak collector current		–	2	mA
I_{BM}	peak collector current		–	200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C; notes 1 and 2	–	0.83	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 SOT54 (SC-43A) standard mounting conditions.
2. Device mounted on an FR4 printed-circuit board, single-sided copper, tin-plated footprint.

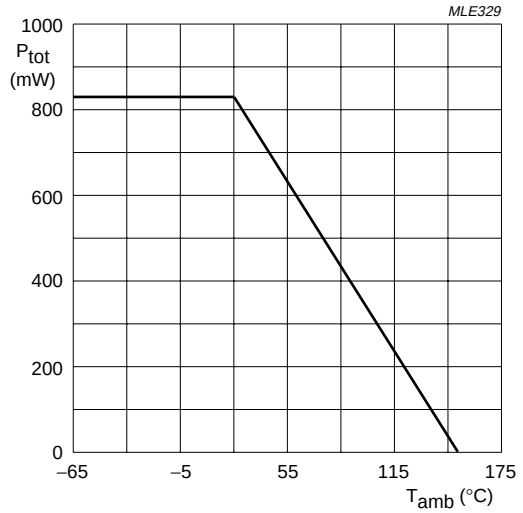


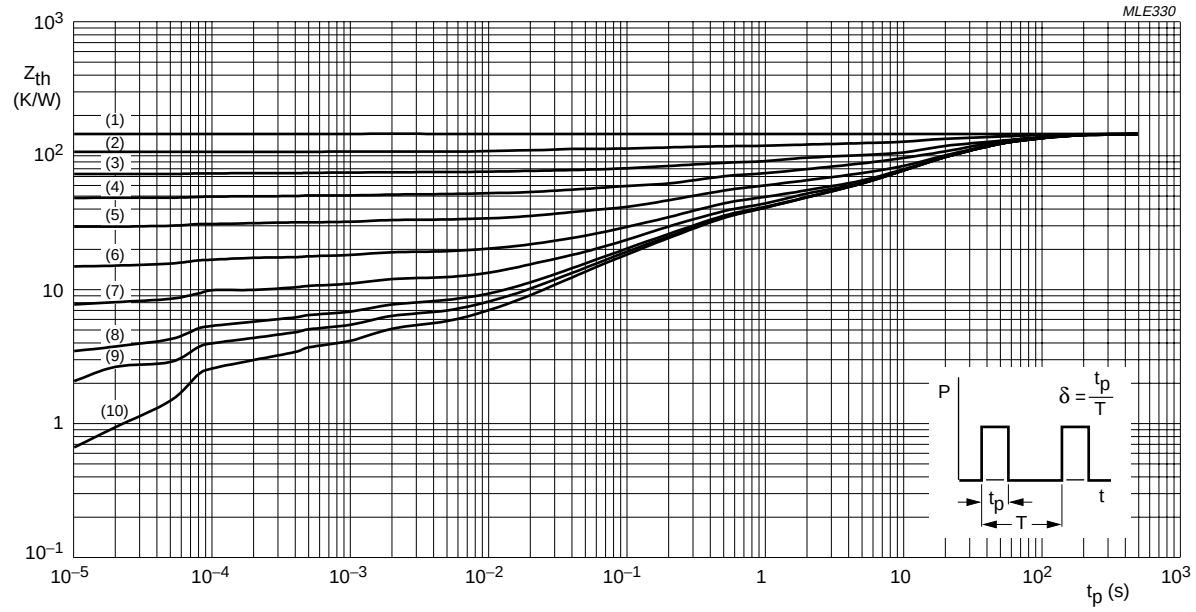
Fig.1 Power derating curve.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient	$T_{amb} \leq 25$ °C; notes 1 and 2	150	K/W

Notes

1. Refer to SOT54 (SC-43A) standard mounting conditions.
2. Device mounted on an FR4 printed-circuit board, single-sided copper, tin-plated footprint.



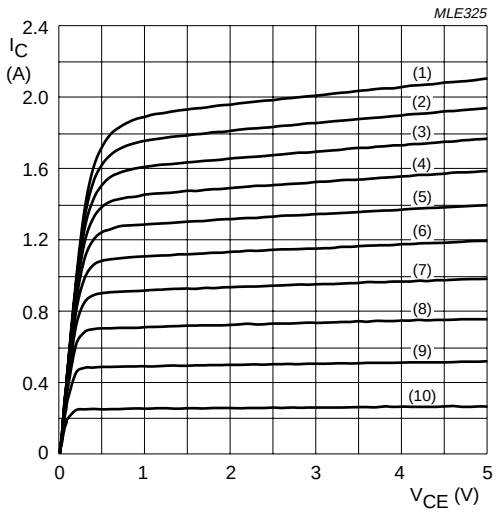
(1) δ = 1.
(2) δ = 0.75.
(3) δ = 0.5.
(4) δ = 0.33.
(5) δ = 0.2.
(6) δ = 0.1.
(7) δ = 0.05.
(8) δ = 0.02.
(9) δ = 1.
(10) δ = 0.

Fig.2 Transient thermal impedance as a function of pulse time; typical values.

CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified.

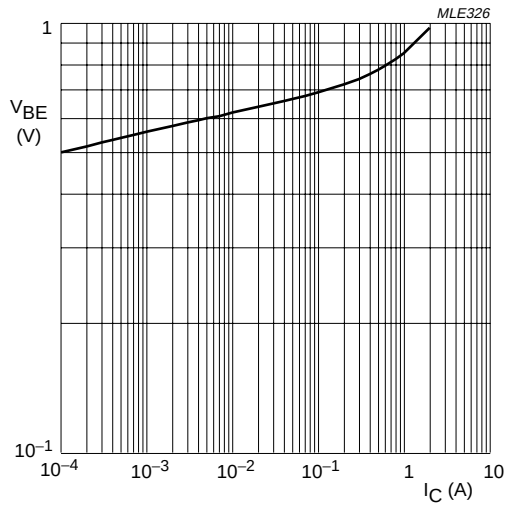
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	V_{CB} = 25 V; I_E = 0 A	–	–	100	nA
		V_{CB} = 25 V; I_E = 0 A; T_{amb} = 150 °C	–	–	10	µA
I_{EBO}	emitter-base cut-off current	V_{EB} = 5 V; I_C = 0 A	–	–	100	nA
h_{FE}	DC current gain	V_{CE} = 10 V; I_C = 5 mA	50	–	–	
		V_{CE} = 1 V; I_C = 500 mA	85	–	375	
		V_{CE} = 1 V; I_C = 1 mA	60	–	–	
V_{CEsat}	collector-emitter saturation voltage	I_C = 1 A; I_B = 100 mA	–	–	500	mV
V_{BE}	base-emitter voltage	V_{CE} = 10 V; I_C = 5 mA	–	–	700	mV
		V_{CE} = 1 V; I_C = 1 A	–	–	1	V
C_c	collector capacitance	V_{CB} = 10 V; I_E = i_e = 0 A; f = 1 MHz	–	22	–	pF
f_T	transition frequency	V_{CE} = 5 V; I_C = 50 mA; f = 100 MHz	40	170	–	MHz



T_{amb} = 25 °C.

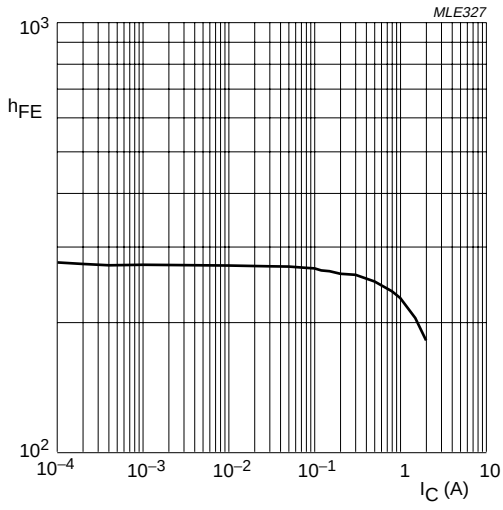
(1) I_B = 10 mA.
(2) I_B = 9 mA.
(3) I_B = 8 mA.
(4) I_B = 7 mA.
(5) I_B = 6 mA.
(6) I_B = 5 mA.
(7) I_B = 4 mA.
(8) I_B = 3 mA.
(9) I_B = 2 mA.
(10) I_B = 1 mA.

Fig.3 Collector current as a function of collector-emitter voltage; typical values.



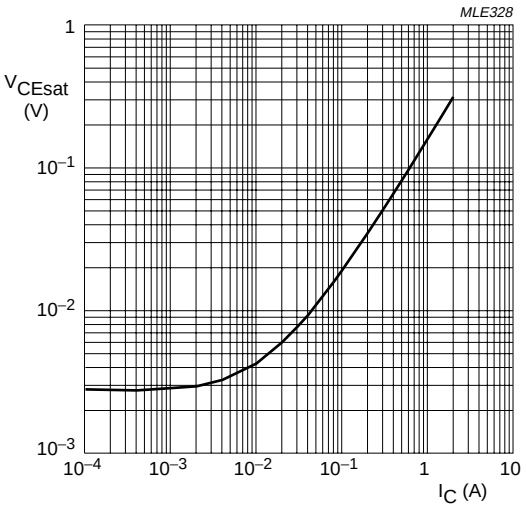
V_{CE} = 1 V.

Fig.4 Base-emitter voltage as function of collector current; typical values.



V_{CE} = 1 V.

Fig.5 DC current gain as a function of collector current; typical values.

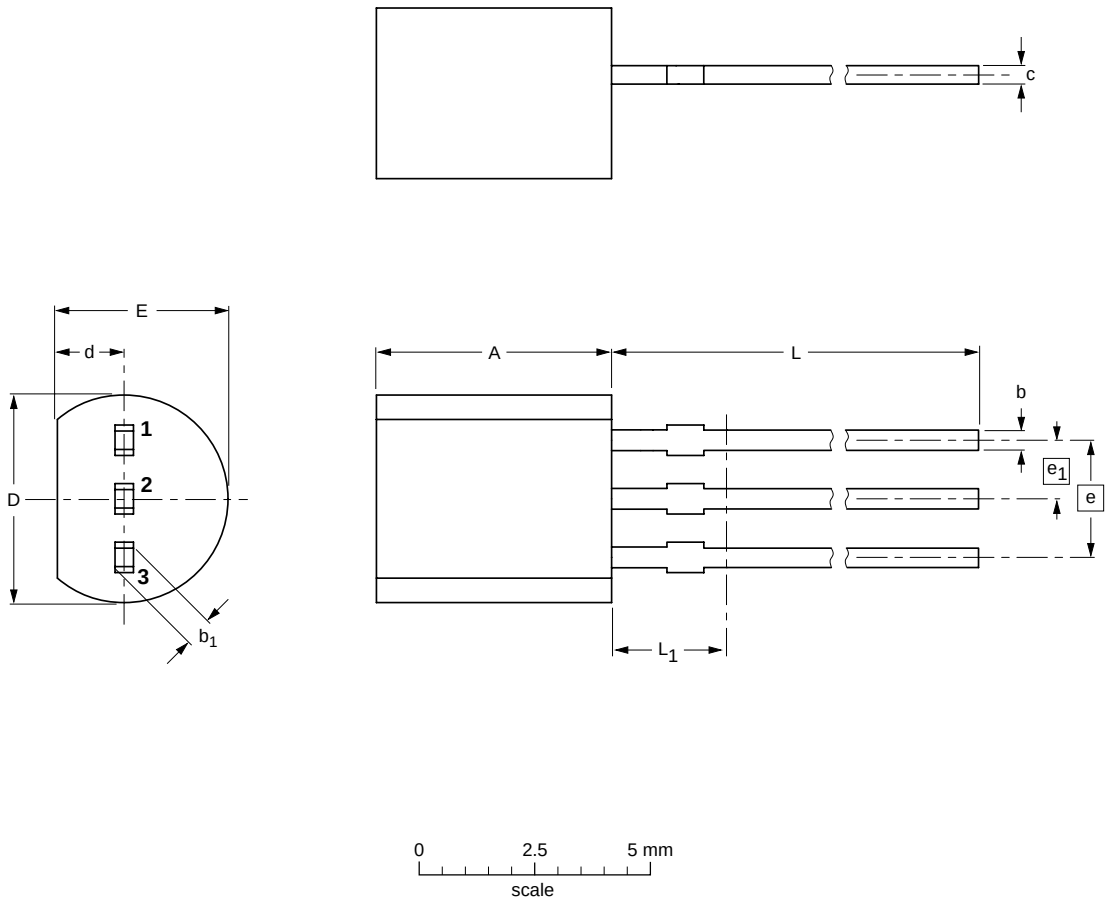


I_C/I_B = 10.

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

PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; 3 leads **SOT54**



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	b_1	c	D	d	E	e	e_1	L	L_1 (1) max.
mm	5.2 5.0	0.48 0.40	0.66 0.55	0.45 0.38	4.8 4.4	1.7 1.4	4.2 3.6	2.54	1.27	14.5 12.7	2.5

Note

1. Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT54		TO-92	SC-43A			~~97-02-28~~ 04-06-28

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS(1)	PRODUCT STATUS(2)(3)	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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Notes

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3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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Contact information

For additional information please visit **http://www.semiconductors.philips.com**. Fax: **+31 40 27 24825**
For sales offices addresses send e-mail to: **sales.addresses@www.semiconductors.philips.com**.

Printed in The Netherlands R75/05/pp9 Date of release: 2004 Nov 05 Document order number: 9397 750 13564

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