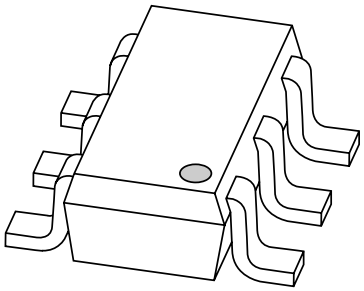
DATA SHEET



BF485PN
NPN/PNP high voltage transistors

Product specification

2000 Aug 02

Philips
Semiconductors

NPN/PNP high voltage transistors BF485PN

FEATURES

- High voltage (max. 350 V)
- Low current (max. 200 mA)
- High power dissipation (600 mW)
- Two independently working transistors.

APPLICATIONS

- Complementary high-voltage configurations
- Hook switch in telephone applications.

DESCRIPTION

NPN/PNP transistors in a SOT457 (SC-74) plastic package.

MARKING CODE

TYPE NUMBER	CODE
BF485PN	HS

PINNING

PIN	DESCRIPTION
1 and 4	emitter TR1; TR2
5 and 2	base TR1; TR2
6 and 3	collector TR1; TR2

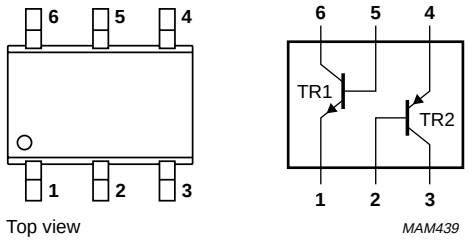


Fig.1 Simplified outline (SOT457) and symbol

LIMITING VALUES

In accordance with Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per transistor; for the PNP transistor with negative polarity					
V_{CBO}	collector-base voltage	open emitter	–	350	V
V_{CEO}	collector-emitter voltage	open base	–	350	V
V_{EBO}	emitter-base voltage	open collector	–	6	V
I_O	output current (DC)		–	100	mA
I_{CM}	peak collector current		–	200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C; note 1	–	600	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature range		–65	+150	°C
Per device					
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C; note 1	–	300	mW

Note

1. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm^2.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	from junction to ambient	in free air; note 1	208	K/W

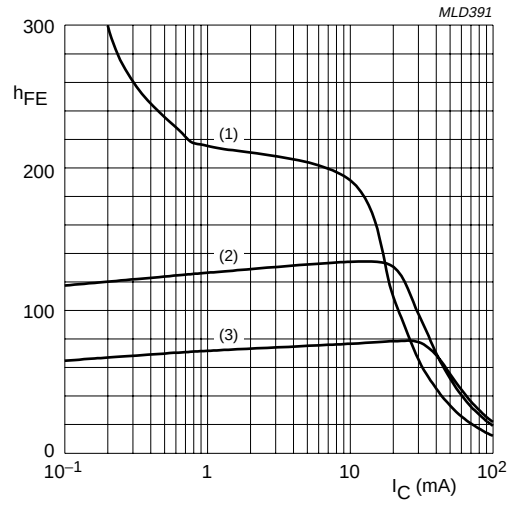
Note

1. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm^2.

CHARACTERISTICS

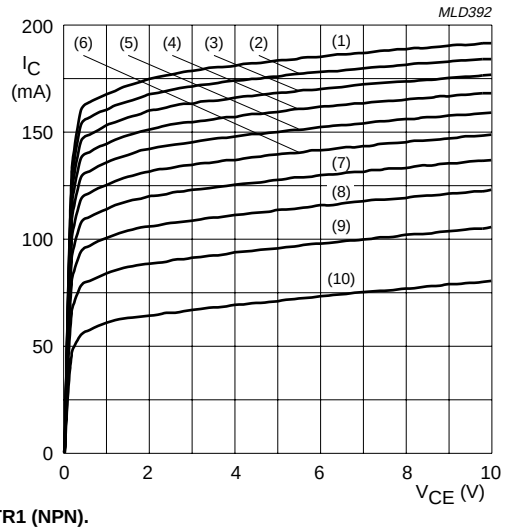
T_{amb} = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per transistor; for the PNP transistor with negative polarity					
I_{CBO}	collector-base cut-off current	I_E = 0; V_{CB} = 300 V;	–	50	nA
		I_E = 0; V_{CB} = 250 V; T_j = 150 °C	–	50	µA
I_{EBO}	emitter-base cut-off current	I_C = 0; V_{EB} = 5 V	–	100	nA
h_{FE}	DC current gain	I_C = 1 mA; V_{CE} = 10 V	60	–	
		I_C = 30 mA; V_{CE} = 10 V	50	–	
V_{CEsat}	saturation voltage	I_C = 20 mA; I_B = 2 mA	–	250	mV
V_{BEsat}	saturation voltage	I_C = 20 mA; I_B = 2 mA	–	850	mV
C_c	collector capacitance	$I_E = I_e$ = 0; V_{CB} = 20 V; f = 1 MHz	–	6	pF
f_T	transition frequency	I_C = 10 mA; V_{CE} = 20 V; f = 100 MHz	50	–	MHz



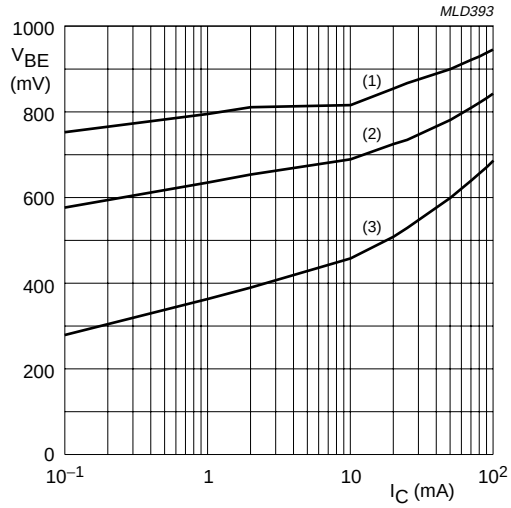
TR1 (NPN); V_{CE} = 10 V.
(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = −55 °C.

Fig.2 DC current gain as a function of collector current: typical values.



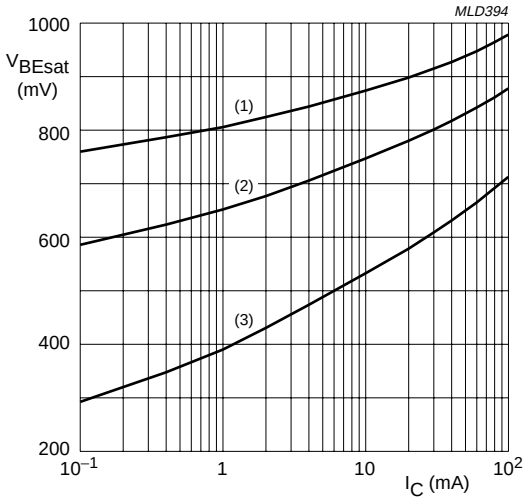
TR1 (NPN).
(1) I_B = 30 mA.
(2) I_B = 27 mA.
(3) I_B = 24 mA.
(4) I_B = 21 mA.
(5) I_B = 18 mA.
(6) I_B = 15 mA.
(7) I_B = 12 mA.
(8) I_B = 9 mA.
(9) I_B = 6 mA.
(10) I_B = 3 mA.

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



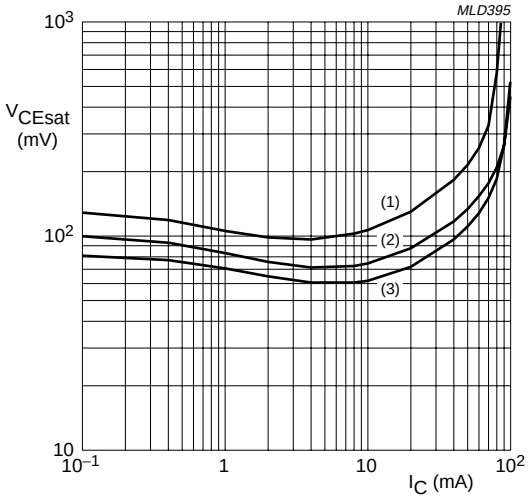
TR1 (NPN); V_{CE} = 10 V.
(1) T_{amb} = –55 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = 150 °C.

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



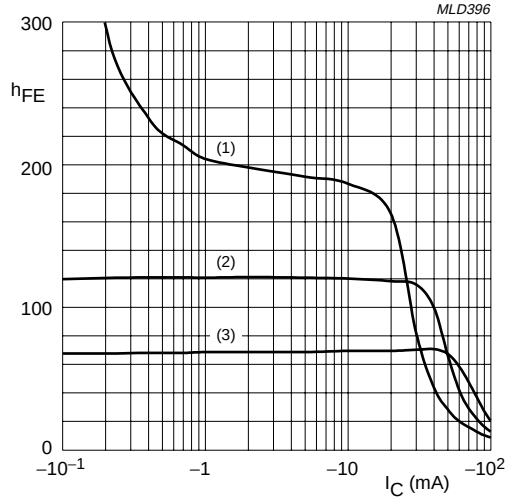
TR1 (NPN); I_C/I_B = 10.
(1) T_{amb} = –55 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = 150 °C.

Fig.5 Base-emitter saturation voltage as a function of collector current.



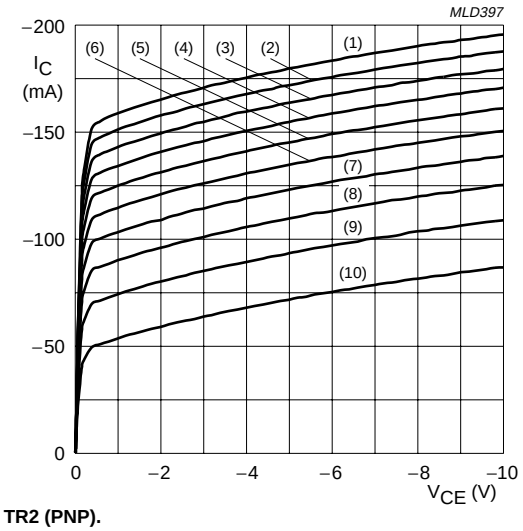
TR1 (NPN); I_C/I_B = 10.
(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = –55 °C.

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



TR2 (PNP); V_{CE} = –10 V.
(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = –55 °C.

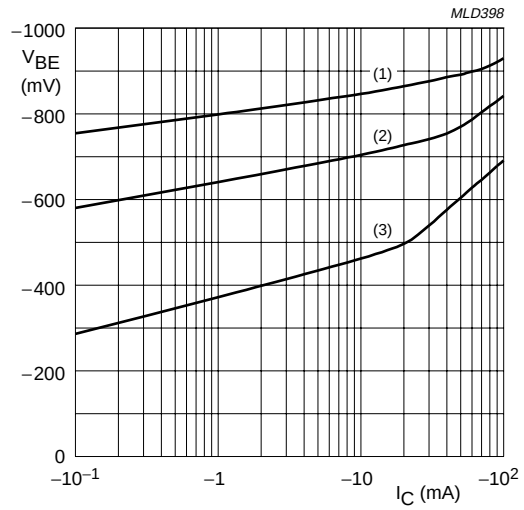
Fig.7 DC current gain as a function of collector current: typical values.



TR2 (PNP).

(1) I_B = –50 mA.
(2) I_B = –45 mA.
(3) I_B = –40 mA.
(4) I_B = –35 mA.
(5) I_B = –30 mA.
(6) I_B = –25 mA.
(7) I_B = –20 mA.
(8) I_B = –15 mA.
(9) I_B = –10 mA.
(10) I_B = –5 mA.

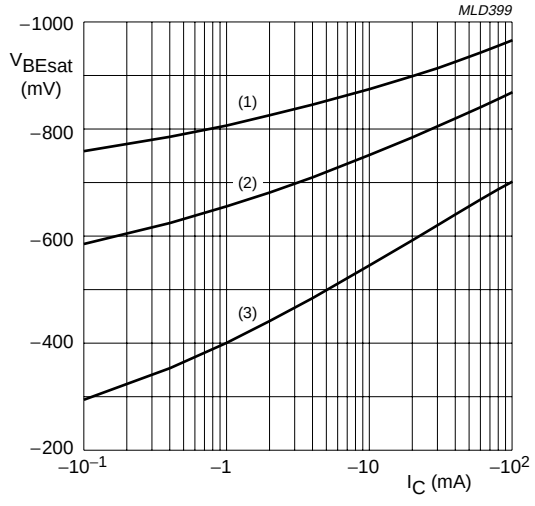
Fig.8 Collector current as a function of collector-emitter voltage; typical values.



TR2 (PNP); V_{CE} = –10 V.

(1) T_{amb} = –55 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = 150 °C.

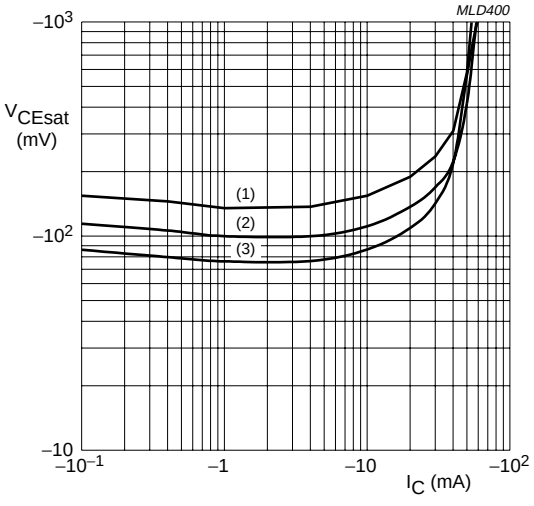
Fig.9 Base-emitter voltage as a function of collector current; typical values.



TR2 (PNP); I_C/I_B = 10.

(1) T_{amb} = –55 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = 150 °C.

Fig.10 Base-emitter saturation voltage as a function of collector current.



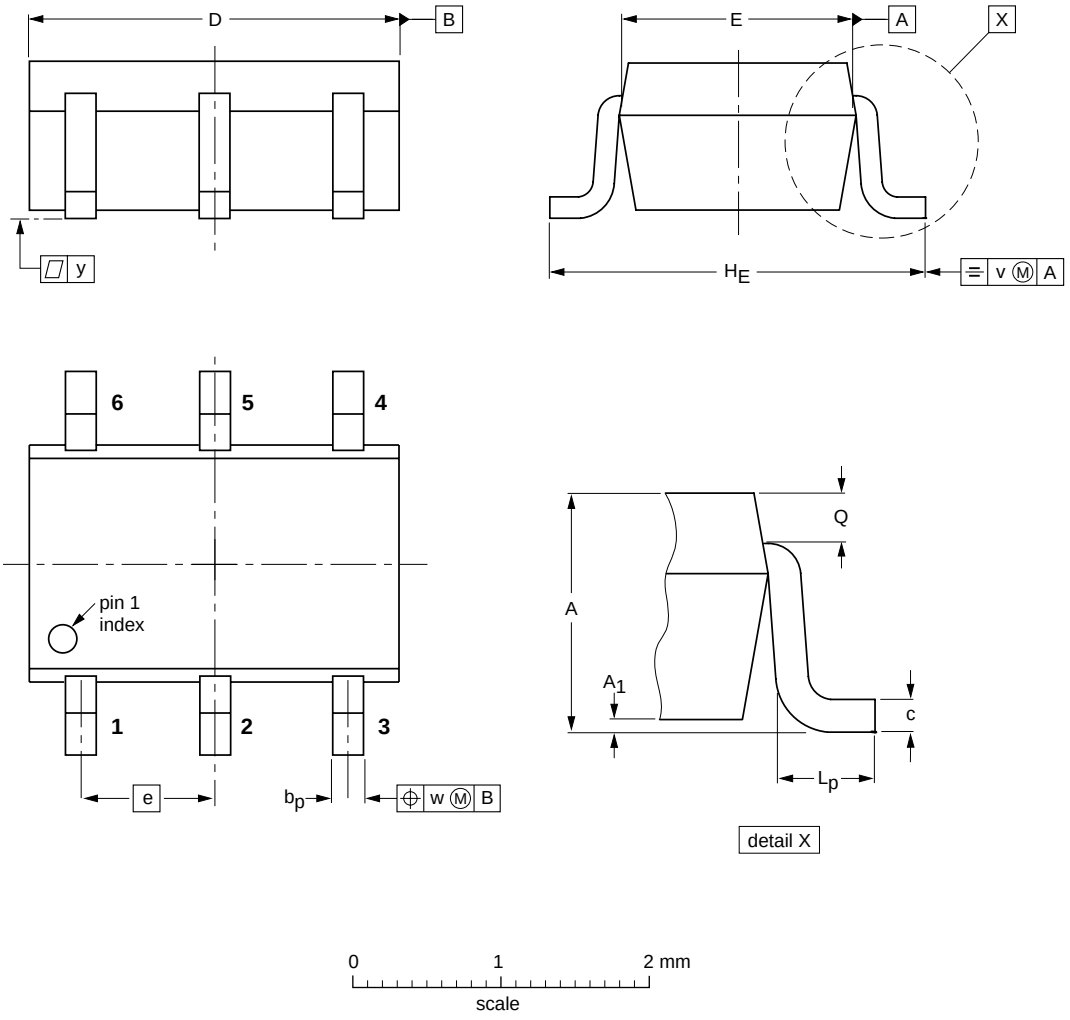
TR2 (PNP); I_C/I_B = 10.

(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = –55 °C.

Fig.11 Collector-emitter saturation voltage as a function of collector current: typical values.

PACKAGE OUTLINE

Plastic surface mounted package; 6 leads **SOT457**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1	b_p	c	D	E	e	H_E	L_p	Q	v	w	y
mm	1.1 0.9	0.1 0.013	0.40 0.25	0.26 0.10	3.1 2.7	1.7 1.3	0.95	3.0 2.5	0.6 0.2	0.33 0.23	0.2	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT457			SC-74			97-02-28

DATA SHEET STATUS

DATA SHEET STATUS	PRODUCT STATUS	DEFINITIONS (1)
Objective specification	Development	This data sheet contains the design target or goal specifications for product development. Specification may change in any manner without notice.
Preliminary specification	Qualification	This data sheet contains preliminary data, and supplementary data will be published at a later date. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
Product specification	Production	This data sheet contains final specifications. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.

Note

1. Please consult the most recently issued data sheet before initiating or completing a design.

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Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

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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