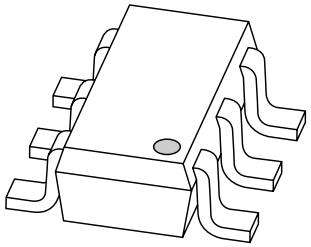
DATA SHEET



PBSS4350D
NPN transistor

Product specification

2000 Mar 08

Philips
Semiconductors

PHILIPS

NPN transistor PBSS4350D

FEATURES

- High current capabilities
- Low V_{CEsat}.

APPLICATIONS

- Heavy duty battery powered equipment (Automotive, Telecom and Audio/Video) such as motor and lamp drivers
- V_{CEsat} critical applications such as the latest low supply voltage IC applications
- All battery driven equipment to save battery power.

DESCRIPTION

NPN low V_{CEsat} transistor in a SC-74 plastic package.
PNP complement: PBSS5350D.

MARKING CODE

TYPE NUMBER	MARKING CODE
PBSS4350D	43

PINNING

PIN	DESCRIPTION
1	collector
2	collector
3	base
4	emitter
5	collector
6	collector

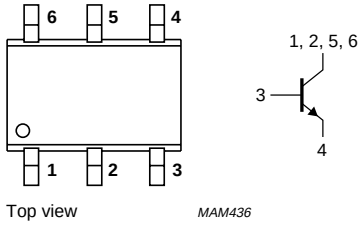


Fig.1 Simplified outline (SOT457) and symbol.

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	–	60	V
V_{CEO}	collector-emitter voltage	open base	–	50	V
V_{EBO}	emitter-base voltage	open collector	–	6	V
I_C	collector current (DC)		–	3	A
I_{CM}	peak collector current		–	5	A
I_{BM}	peak base current		–	1	A
P_{tot}	total power dissipation	T_{amb} = ≤ 25 °C			
		note 1	–	600	mW
		note 2	–	750	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	ambient temperature		–65	+150	°C

Notes

1. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm^2.
2. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 6 cm^2.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	in free air;		
		note 1	208	K/W
		note 2	160	K/W

Notes

1. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm^2.
2. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 6 cm^2.

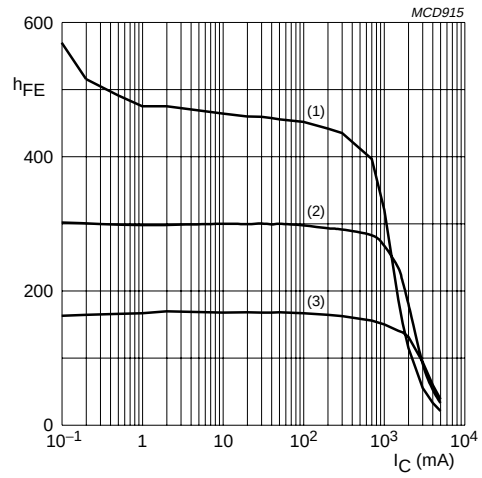
CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector cut-off current	I_E = 0; V_{CB} = 50 V	–	100	nA
		I_E = 0; V_{CB} = 50 V; T_j = 150 °C	–	50	µA
I_{EBO}	emitter cut-off current	I_C = 0; V_{EB} = 5 V	–	100	nA
h_{FE}	DC current gain	V_{CE} = 2 V;			
		I_C = 500 mA	200	–	
		I_C = 1 A; note 1	200	–	
		I_C = 2 A; note 1	100	–	
V_{CEsat}	collector-emitter saturation voltage	I_C = 500 mA; I_B = 50 mA	–	90	mV
		I_C = 1 A; I_B = 50 mA	–	170	mV
		I_C = 2 A; I_B = 200 mA; note 1	–	290	mV
V_{BEsat}	base-emitter saturation voltage	I_C = 2 A; I_B = 200 mA; note 1	–	1.2	V
V_{BEon}	base-emitter turn-on voltage	I_C = 1 A; V_{CE} = 2 V; note 1	–	1.1	V
C_c	collector capacitance	I_E = I_e = 0; V_{CB} = 10 V; f = 1 MHz	–	30	pF
f_T	transition frequency	I_C = 100 mA; V_{CE} = 5 V; f = 100 MHz	100	–	MHz

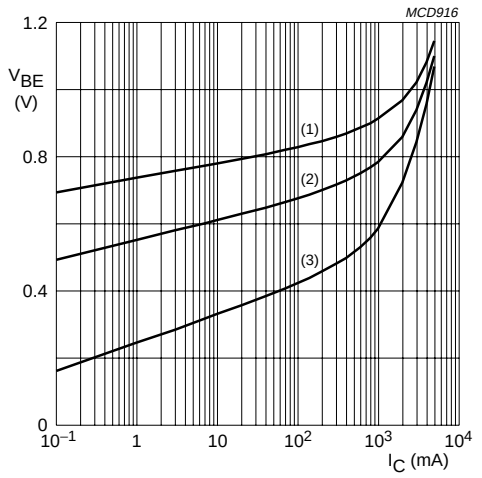
Note

1. Pulse test $t_p \leq 300$ µs, $\delta \leq 0.02$.



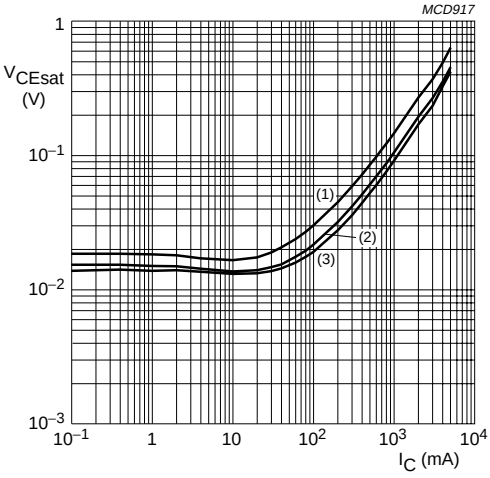
V_{CE} = 2 V.
(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = –55 °C.

Fig.2 DC current gain as a function of collector current.



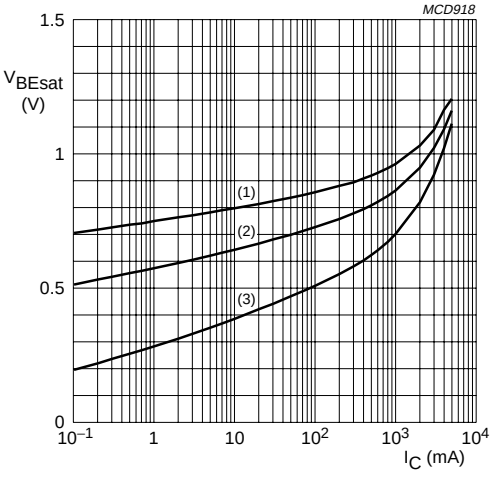
V_{CE} = 2 V.
(1) T_{amb} = –55 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = 150 °C.

Fig.3 Base-emitter voltage as a function of collector current.



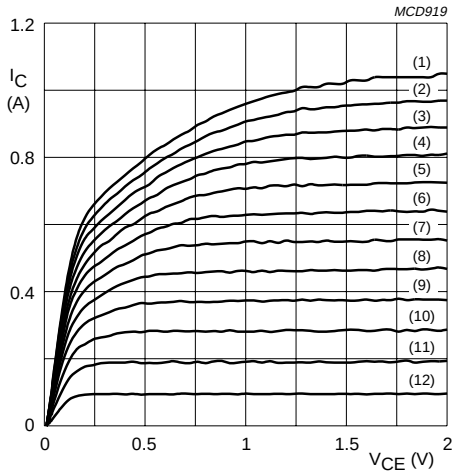
I_C/I_B = 20.
(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = –55 °C.

Fig.4 Collector-emitter saturation voltage as a function of collector current.



I_C/I_B = 20.
(1) T_{amb} = –55 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = 150 °C.

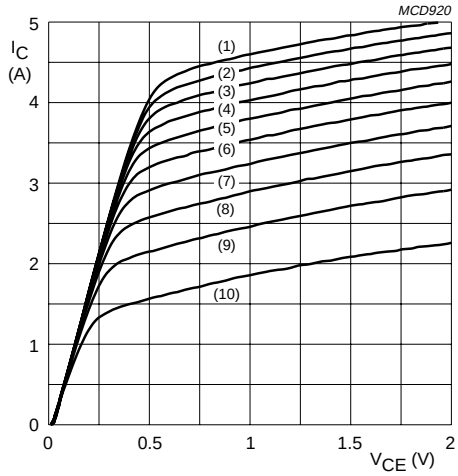
Fig.5 Base-emitter saturation voltage as a function of collector current.



T_{amb} = 25 °C.

(1) I_B = 3.96 mA.
(2) I_B = 3.63 mA.
(3) I_B = 3.3 mA.
(4) I_B = 2.97 mA.
(5) I_B = 2.64 mA.
(6) I_B = 2.31 mA.
(7) I_B = 1.98 mA.
(8) I_B = 1.65 mA.
(9) I_B = 1.32 mA.
(10) I_B = 990 µA.
(11) I_B = 660 µA.
(12) I_B = 330 µA.

Fig.6 Collector current as a function of base current and collector-emitter voltage.



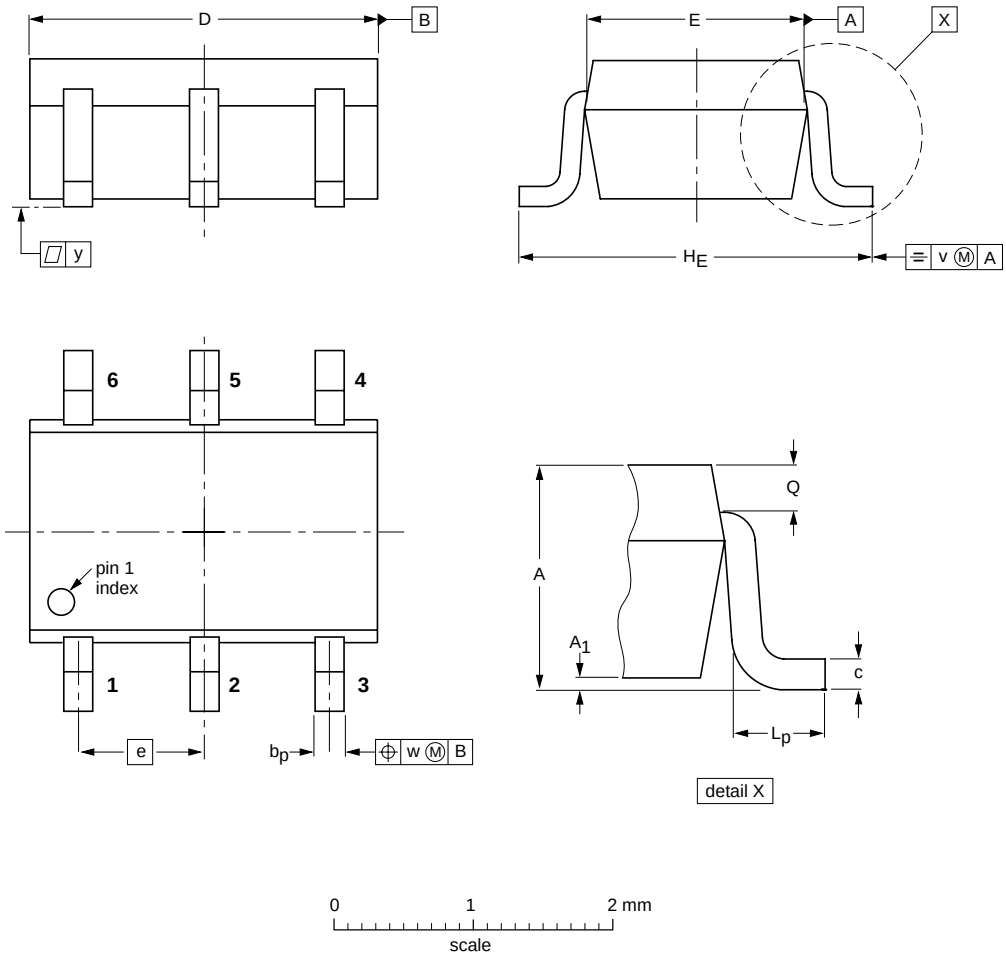
T_{amb} = 25 °C.

(1) I_B = 150 mA.
(2) I_B = 135 mA.
(3) I_B = 120 mA.
(4) I_B = 105 mA.
(5) I_B = 90 mA.
(6) I_B = 75 mA.
(7) I_B = 60 mA.
(8) I_B = 45 mA.
(9) I_B = 30 mA.
(10) I_B = 15 mA.

Fig.7 Collector current as a function of base current and collector-emitter voltage.

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

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 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.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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