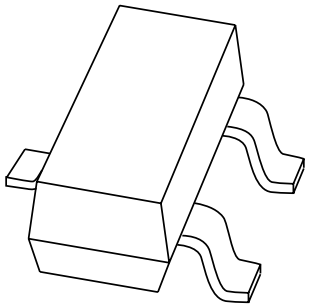
DATA SHEET



PMMT591A
PNP BISS transistor

Product specification
Supersedes data of 1999 Aug 04

2001 Jun 11

Philips
Semiconductors

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PNP BISS transistor PMMT591A

FEATURES

- High current (max. 1 A)
- Low collector-emitter saturation voltage ensures reduced power consumption.

APPLICATIONS

- Battery powered units where high current and low power consumption are important.

DESCRIPTION

PNP BISS (Breakthrough In Small Signal) transistor in a SOT23 plastic package. NPN complement: PMMT491A.

MARKING

TYPE NUMBER	MARKING CODE(1)
PMMT591A	9B∗

Note

1. ∗ = p: Made in Hong Kong.
   ∗ = t: Made in Malaysia.

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector

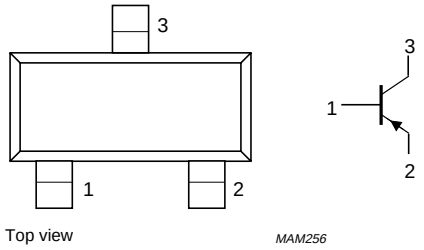


Fig.1 Simplified outline (SOT23) and symbol.

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	–	–40	V
V_{CEO}	collector-emitter voltage	open base	–	–40	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		–	–1	A
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C; note 1	–	250	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

Note

1. Transistor mounted on an FR4 printed-circuit board.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	500	K/W

Note

1. Transistor mounted on an FR4 printed-circuit board.

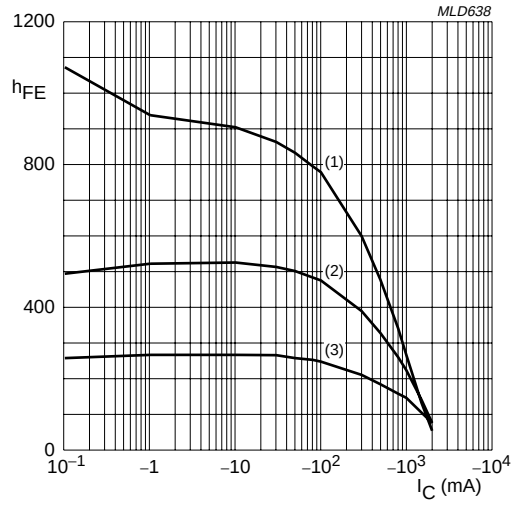
CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector cut-off current	I_E = 0; V_{CB} = –30 V	–	–100	nA
I_{CEO}	collector cut-off current	I_B = 0; V_{CE} = –30 V	–	–100	nA
I_{EBO}	emitter cut-off current	I_C = 0; V_{EB} = –5 V	–	–100	nA
h_{FE}	DC current gain	V_{CE} = –5 V; note 1			
		I_C = –1 mA	300	–	
		I_C = –100 mA	300	800	
		I_C = –500 mA	250	–	
		I_C = –1 A	160	–	
V_{CEsat}	collector-emitter saturation voltage	note 1			
		I_C = –100 mA; I_B = –1 mA	–	–200	mV
		I_C = –500 mA; I_B = –20 mA	–	–350	mV
		I_C = –1 A; I_B = –100 mA	–	–500	mV
V_{BEsat}	base-emitter saturation voltage	I_C = –1 A; I_B = –50 mA; note 1	–	–1.1	V
V_{BE}	base-emitter voltage	V_{CE} = –5 V; I_C = –1 A; note 1	–	–1	V
C_c	collector capacitance	$I_E = i_e$ = 0; V_{CB} = –10 V; f = 1 MHz	–	12	pF
f_T	transition frequency	I_C = –50 mA; V_{CE} = –10 V; f = 100 MHz	150	–	MHz

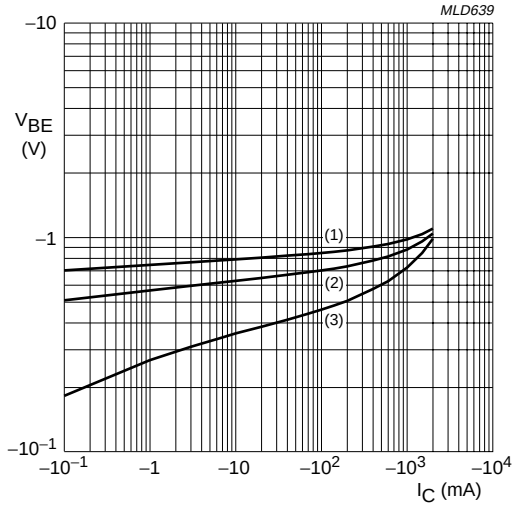
Note

1. Pulse test: $t_p \leq 300\ \mu s$; $\delta \leq 0.02$.



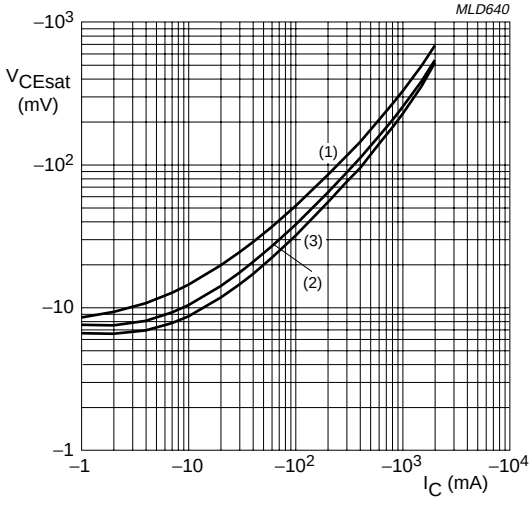
V_{CE} = −5 V.
(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = −55 °C.

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



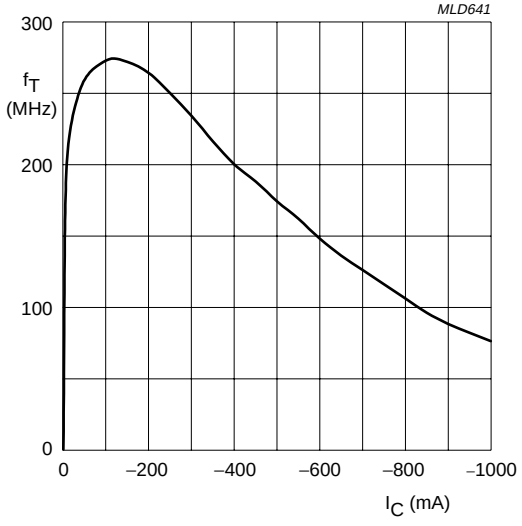
V_{CE} = −5 V.
(1) T_{amb} = −55 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = 150 °C.

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



I_C/I_B = 10.
(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; typical values.

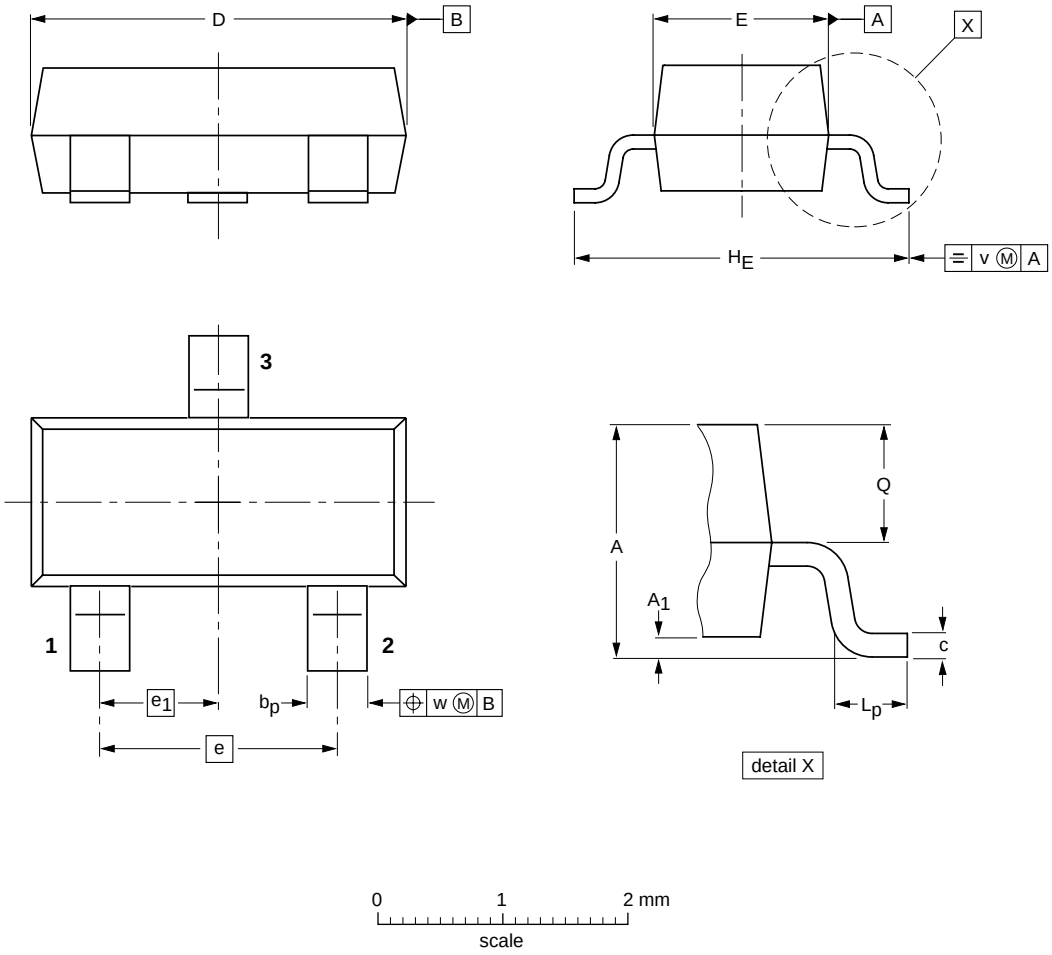


V_{CE} = −10 V.

Fig.5 Transition frequency as a function of collector current; typical values.

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT23**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23		TO-236AB				~~97-02-28~~ 99-09-13

DATA SHEET STATUS

DATA SHEET STATUS[1]	PRODUCT STATUS[2]	DEFINITIONS
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.
Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
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