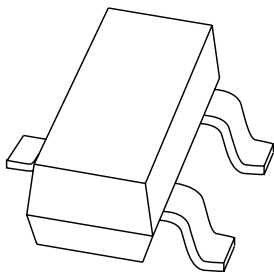


# DATA SHEET



## **PMMT591A** PNP BISS transistor

Product data sheet  
Supersedes data of 2001 Jun 11

2004 Jan 13

## 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

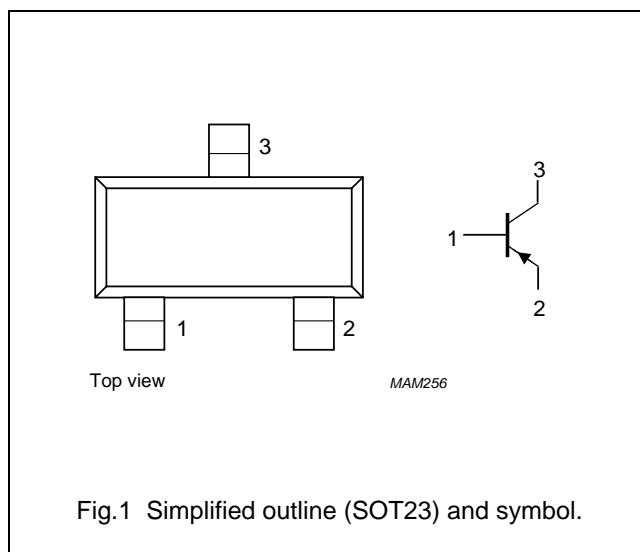
TYPE NUMBER	MARKING CODE <sup>(1)</sup>
PMMT591A	9B*

## Note

- \* = p : Made in Hong Kong.  
 \* = t : Made in Malaysia.  
 \* = W : Made in China.

## PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



## ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PMMT591A	—	plastic surface mounted package; 3 leads	SOT23

## 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	$T_{amb} \leq 25\text{ °C}$ ; 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.

## PNP BISS transistor

## PMMT591A

## THERMAL CHARACTERISTICS

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

## Note

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

## CHARACTERISTICS

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

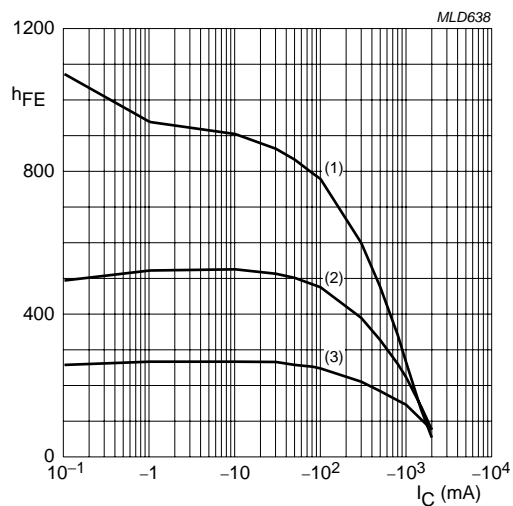
SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0$ ; $V_{CB} = -30\text{ V}$	–	–100	nA
$I_{CEO}$	collector cut-off current	$I_B = 0$ ; $V_{CE} = -30\text{ V}$	–	–100	nA
$I_{EBO}$	emitter cut-off current	$I_C = 0$ ; $V_{EB} = -5\text{ V}$	–	–100	nA
$h_{FE}$	DC current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

## Note

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

## PNP BISS transistor

## PMMT591A



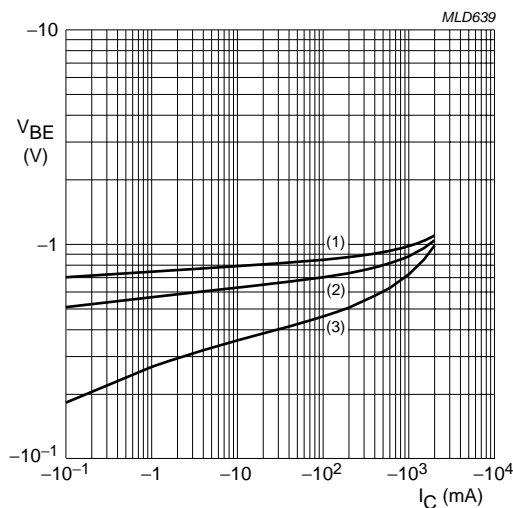
$V_{CE} = -5 \text{ V}$ .

(1)  $T_{amb} = 150 \text{ }^{\circ}\text{C}$ .

(2)  $T_{amb} = 25 \text{ }^{\circ}\text{C}$ .

(3)  $T_{amb} = -55 \text{ }^{\circ}\text{C}$ .

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



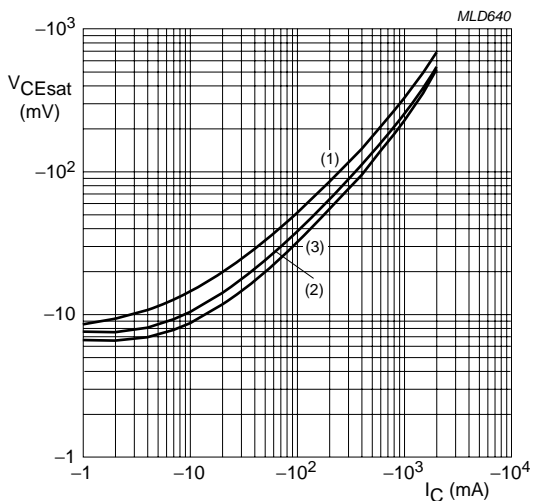
$V_{CE} = -5 \text{ V}$ .

(1)  $T_{amb} = -55 \text{ }^{\circ}\text{C}$ .

(2)  $T_{amb} = 25 \text{ }^{\circ}\text{C}$ .

(3)  $T_{amb} = 150 \text{ }^{\circ}\text{C}$ .

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



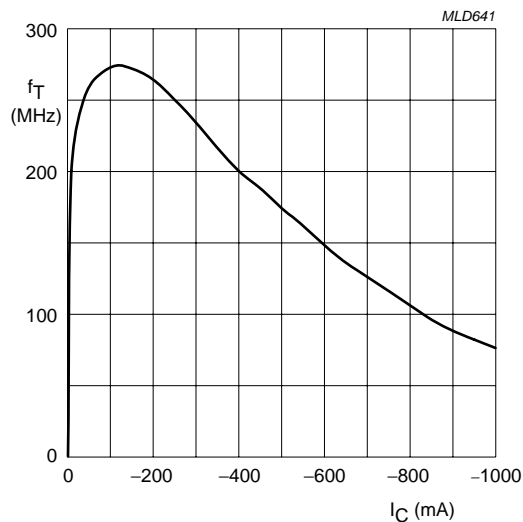
$I_C/I_B = 10$ .

(1)  $T_{amb} = 150 \text{ }^{\circ}\text{C}$ .

(2)  $T_{amb} = 25 \text{ }^{\circ}\text{C}$ .

(3)  $T_{amb} = -55 \text{ }^{\circ}\text{C}$ .

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



$V_{CE} = -10 \text{ V}$ .

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

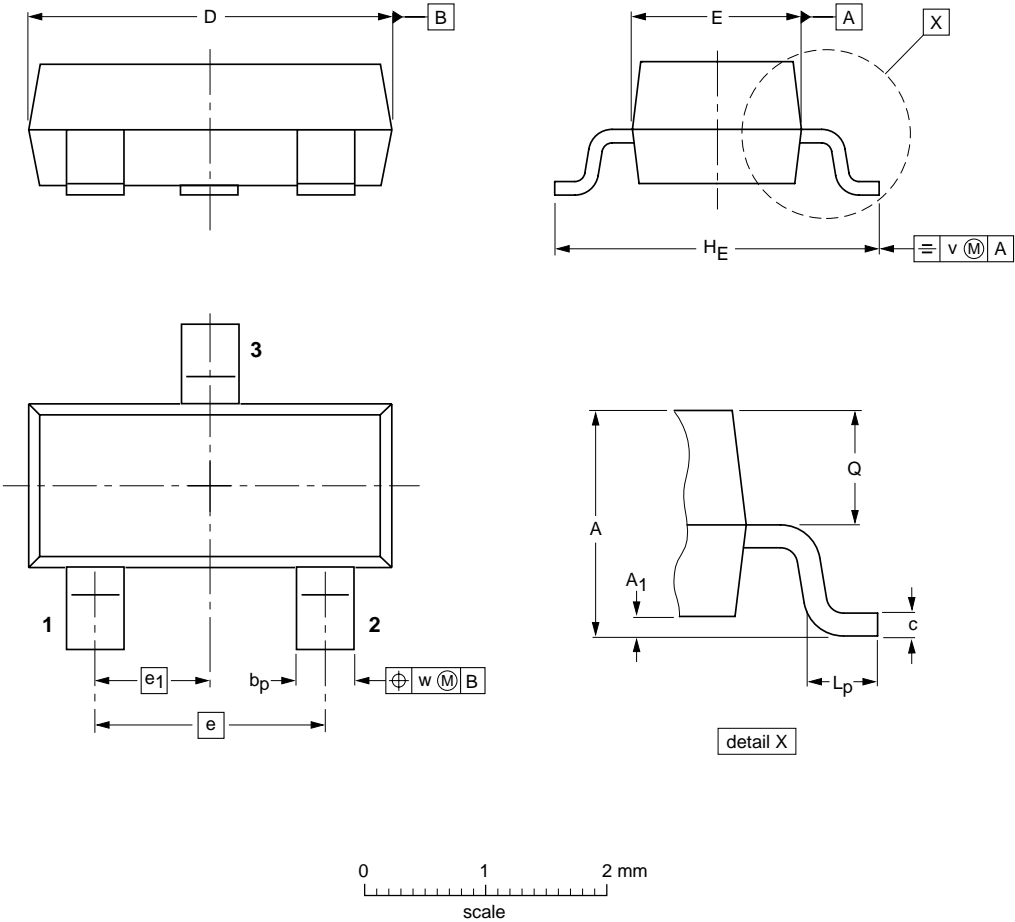
PNP BISS transistor

PMMT591A

PACKAGE OUTLINE


Plastic surface-mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub> max.	b <sub>P</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>P</sub>	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	JEITA			
SOT23		TO-236AB				04-11-04 06-03-16

## PNP BISS transistor

## PMMT591A

## DATA SHEET STATUS

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	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.

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## **Contact information**

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