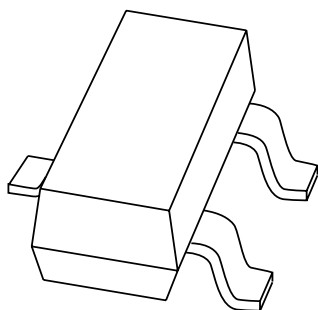


DATA SHEET



PBSS5120T

20 V, 1 A

PNP low V_{CEsat} (BISS) transistor

Product data sheet

2003 Sep 29

20 V, 1 A PNP low V_{CEsat} (BISS) transistor

PBSS5120T

FEATURES

- Low collector-emitter saturation voltage V_{CEsat}
- High collector current capability I_C and I_{CM}
- High efficiency leading to less heat generation
- Reduced printed-circuit board requirements
- Cost effective alternative for MOSFETs in specific applications.

APPLICATIONS

- Power management
 - DC/DC conversion
 - Supply line switching
 - Battery charger
 - LCD backlighting.
- Peripheral drivers
 - Driver in low supply voltage applications (e.g. lamps and LEDs)
 - Inductive load drivers (e.g. relays, buzzers and motors).

DESCRIPTION

PNP BISS transistor in a SOT23 plastic package providing ultra low V_{CEsat} and R_{CEsat} parameters.
NPN complement: PBSS4120T.

MARKING

TYPE NUMBER	MARKING CODE ⁽¹⁾
PBSS5120T	*3K

Note

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

ORDERING INFORMATION

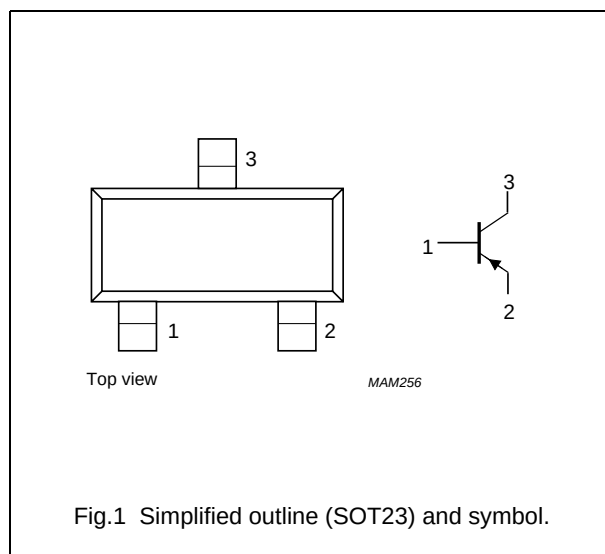
TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PBSS5120T	–	plastic surface mounted package; 3 leads	SOT23

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{CEO}	collector-emitter voltage	–20	V
I_C	collector current (DC)	–1	A
I_{CM}	peak collector current	–2	A
R_{CEsat}	equivalent on-resistance	250	mΩ

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



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PBSS5120T

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	–	–20	V
V_{CEO}	collector-emitter voltage	open base	–	–20	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		–	–200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$; note 1	–	300	mW
		$T_{amb} \leq 25\text{ °C}$; note 2	–	480	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

Notes

- Device mounted on a FR4 printed-circuit board, single-sided copper, tinplated, standard footprint.
- Device mounted on a FR4 printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm².

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	in free air; note 1	417	K/W
		in free air; note 2	260	K/W

Notes

- Device mounted on a FR4 printed-circuit board, single-sided copper, tinplated, standard footprint.
- Device mounted on a FR4 printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm².

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PBSS5120T

CHARACTERISTICS $T_{amb} = 25\text{ °C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	$V_{CB} = -20\text{ V}; I_E = 0$	–	–	–100	nA
		$V_{CB} = -20\text{ V}; I_E = 0; T_j = 150\text{ °C}$	–	–	–50	μA
I_{EBO}	emitter-base cut-off current	$V_{EB} = -4\text{ V}; I_C = 0$	–	–	–100	nA
h_{FE}	DC current gain	$V_{CE} = -2\text{ V}; I_C = -100\text{ mA}$	300	450	–	
		$V_{CE} = -2\text{ V}; I_C = -500\text{ mA}$	250	350	–	
		$V_{CE} = -2\text{ V}; I_C = -1\text{ A}$	200	290	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -100\text{ mA}; I_B = -1\text{ mA}$	–	–	–100	mV
		$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	–	–	–125	mV
		$I_C = -1\text{ A}; I_B = -50\text{ mA}$	–	–	–250	mV
R_{CEsat}	equivalent on-resistance	$I_C = -500\text{ mA}; I_B = -50\text{ mA}; \text{note 1}$	–	–	250	$\text{m}\Omega$
V_{BEon}	base-emitter turn-on voltage	$V_{CE} = -2\text{ V}; I_C = -100\text{ mA}$	–	–	–0.75	V
f_T	transition frequency	$I_C = -100\text{ mA}; V_{CE} = -10\text{ V}; f = 100\text{ MHz}$	100	–	–	MHz
C_c	collector capacitance	$V_{CB} = -10\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$	–	–	28	pF

Note

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

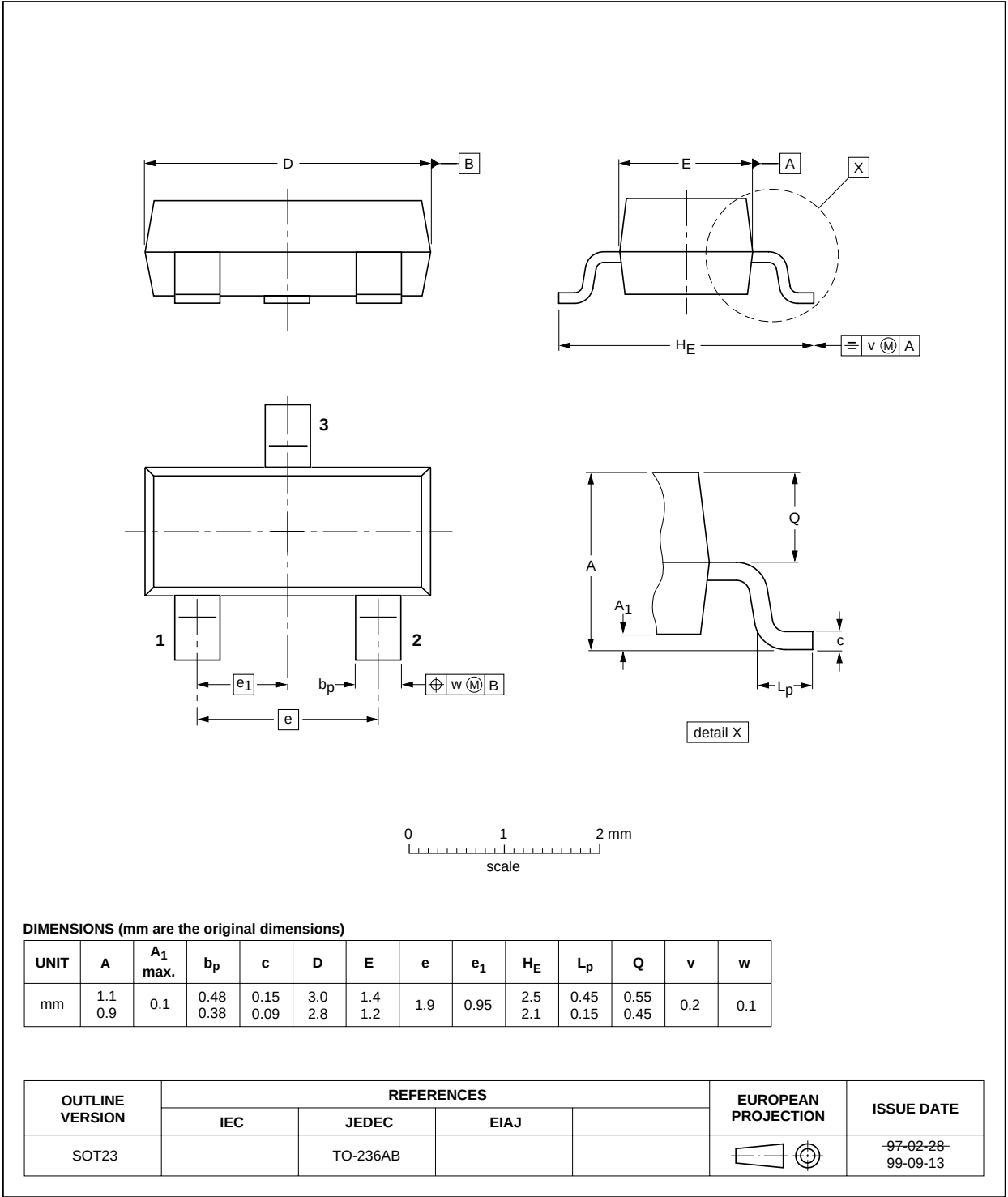
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PBSS5120T

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



20 V, 1 A
PNP low V_{CEsat} (BISS) transistor

PBSS5120T

DATA SHEET STATUS

DOCUMENT STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	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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