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Team Nexperia

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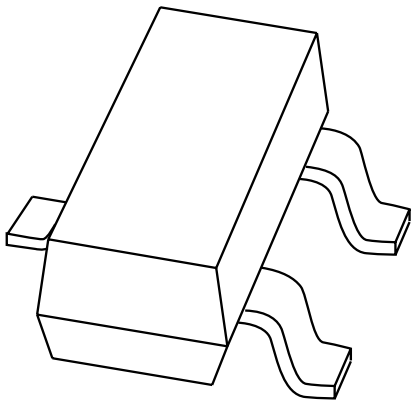
DATA SHEET



PBSS5250T

50 V, 2 A

PNP low V_{CEsat} (BISS) transistor

Product data sheet

2003 Oct 09

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50 V, 2 A PNP low V_{CEsat} (BISS) transistor

PBSS5250T

FEATURES

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

APPLICATIONS

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

DESCRIPTION

PNP BISS transistor in a SOT23 plastic package offering ultra low V_{CEsat} and R_{CEsat} parameters.

MARKING

TYPE NUMBER	MARKING CODE(1)
PBSS5250T	3H*

Note

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

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{CEO}	collector-emitter voltage	–50	V
I_C	collector current (DC)	–2	A
I_{CM}	peak collector current	–3	A
R_{CEsat}	equivalent on-resistance	150	mΩ

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector

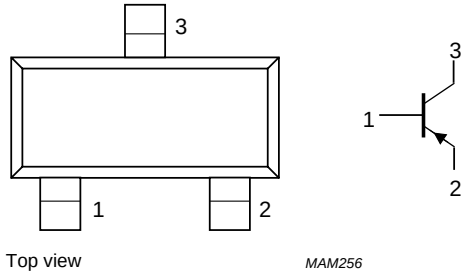

Fig.1 Simplified outline (SOT23) and symbol.

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PBSS5250T	–	plastic surface mounted package; 3 leads	SOT23

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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	–	−50	V
V_{CEO}	collector-emitter voltage	open base	–	−50	V
V_{EBO}	emitter-base voltage	open collector	–	−5	V
I_C	collector current (DC)		–	−2	A
I_{CM}	peak collector current	single peak	–	−3	A
I_B	base current (DC)		–	−300	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C; note 1		300	mW
		$T_{amb} \leq 25$ °C; note 2	–	480	mW
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		−65	+150	°C
T_{stg}	storage temperature		−65	+150	°C

Notes

1. Device mounted on a FR4 printed-circuit board; single-sided copper; tinplated; standard footprint.
2. Device mounted on a FR4 printed-circuit board; single-sided copper; tinplated; mounting pad for collector 1 cm^2.

THERMAL CHARACTERISTICS

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

Notes

1. Device mounted on a FR4 printed-circuit board; single-sided copper; tinplated; standard footprint.
2. Device mounted on a FR4 printed-circuit board; single-sided copper; tinplated; mounting pad for collector 1 cm^2.

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50 V, 2 A PNP low V_{CEsat} (BISS) transistor

PBSS5250T

CHARACTERISTICS

T_j = 25 °C; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current	V_{CB} = –50 V; I_E = 0	–	–	–100	nA
		V_{CB} = –50 V; I_E = 0; T_j = 150 °C	–	–	–50	μA
I_{EBO}	emitter cut-off current	V_{EB} = –5 V; I_C = 0	–	–	–100	nA
h_{FE}	DC current gain	V_{CE} = –2 V; I_C = 0.5 A	200	–	–	
		V_{CE} = –2 V; I_C = 1 A; note 1	200	–	–	
		V_{CE} = –2 V; I_C = 2 A; note 1	130	–	–	
V_{CEsat}	collector-emitter saturation voltage	I_C = –0.5 A; I_B = –50 mA	–	–	–90	mV
		I_C = –1 A; I_B = –50 mA	–	–	–180	mV
		I_C = –2 A; I_B = –100 mA	–	–	–300	mV
R_{CEsat}	equivalent on-resistance	I_C = –2 A; I_B = –200 mA; note 1	–	–	150	mΩ
V_{BEsat}	base-emitter saturation voltage	I_C = –2 A; I_B = –100 mA; note 1	–	–	–1.1	V
V_{BEon}	base-emitter turn-on voltage	V_{CE} = –2 V; I_C = –1 A; note 1	–1.2	–	–	V
f_T	transition frequency	I_C = –100 mA; V_{CE} = –5 V; f = 100 MHz	100	–	–	MHz
C_c	collector capacitance	V_{CB} = –10 V; I_E = I_e = 0; f = 1 MHz	–	–	35	pF

Note

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

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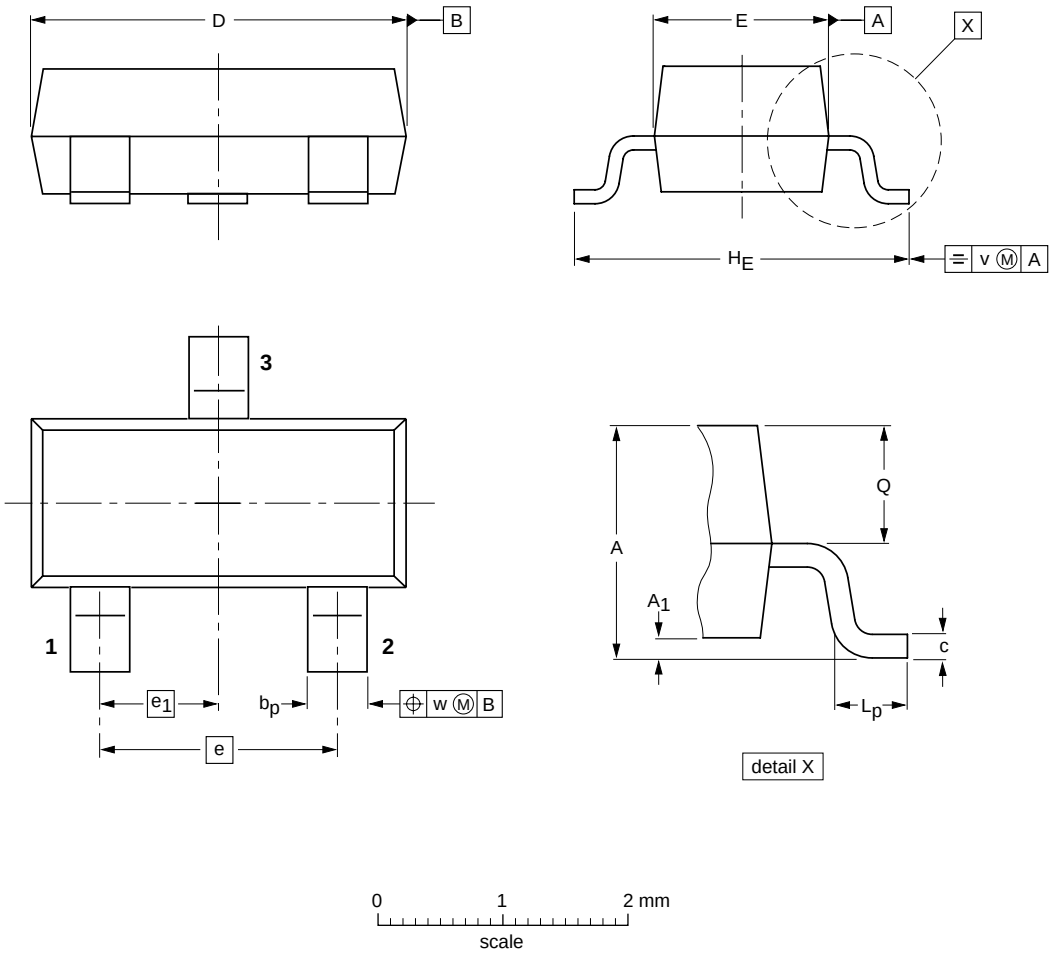
PACKAGE OUTLINE

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

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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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Contact information

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