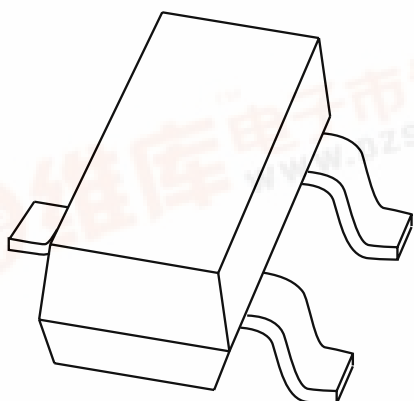


DATA SHEET



PBSS5220T

20 V, 2 A

PNP low V_{CEsat} (BISS) transistor

Product data sheet

2003 Dec 18

NXP
founded by Philips

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

PBSS5220T

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⁾
PBSS5230T	3F*

Note

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

ORDERING INFORMATION

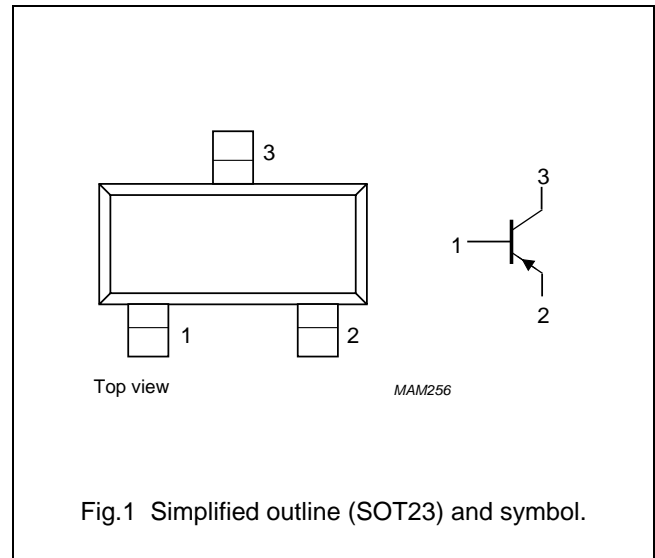
TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PBSS5220T	–	plastic surface mounted package; 3 leads	SOT23

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{CEO}	collector-emitter voltage	–20	V
I_C	collector current (DC)	–2	A
I_{CM}	peak collector current	–3	A
R_{CEsat}	equivalent on-resistance	113	m Ω

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



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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	–	–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)		–	–2	A
I_{CM}	peak collector current	single peak	–	–3	A
I_B	base current (DC)		–	–300	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$; note 1	–	300	mW
		$T_{amb} \leq 25\text{ °C}$; 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 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

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 cm².

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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	$V_{EB} = -5\text{ V}; I_C = 0$	–	–	–100	nA
h_{FE}	DC current gain	$V_{CE} = -2\text{ V}; I_C = -100\text{ mA}$	225	–	–	
		$V_{CE} = -2\text{ V}; I_C = -500\text{ mA}$	225	–	–	
		$V_{CE} = -2\text{ V}; I_C = -1\text{ A}; \text{note 1}$	200	–	–	
		$V_{CE} = -2\text{ V}; I_C = -2\text{ A}; \text{note 1}$	150	–	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	–	–	–80	mV
		$I_C = -1\text{ A}; I_B = -50\text{ mA}$	–	–	–150	mV
		$I_C = -2\text{ A}; I_B = -100\text{ mA}; \text{note 1}$	–	–	–250	mV
		$I_C = -2\text{ A}; I_B = -200\text{ mA}; \text{note 1}$	–	–	–225	mV
R_{CEsat}	equivalent on-resistance	$I_C = -2\text{ A}; I_B = -200\text{ mA}; \text{note 1}$	–	–	113	$\text{m}\Omega$
V_{BEsat}	base-emitter saturation voltage	$I_C = -2\text{ A}; I_B = -100\text{ mA}; \text{note 1}$	–	–	–1.1	V
V_{BEon}	base-emitter turn on voltage	$V_{CE} = -2\text{ V}; I_C = -1\text{ A}; \text{note 1}$	–1.2	–	–	V
f_T	transition frequency	$V_{CE} = -5\text{ V}; I_C = -100\text{ mA}; f = 100\text{ MHz}$	100	–	–	MHz
C_c	collector capacitance	$V_{CB} = -10\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$	–	–	50	pF

Note1. Pulse test: $t_p \leq 300\text{ }\mu\text{s}$, $\delta \leq 0.02$.

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PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23



20 V, 2 A
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PBSS5220T

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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2. The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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Customer notification

This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content, except for package outline drawings which were updated to the latest version.

Contact information

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