

DATA SHEET



PBSS5250X

50 V, 2 A

PNP low V_{CEsat} (BISS) transistor

Objective specification

2003 Jun 17

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PBSS5250X

FEATURES

- SOT89 (SC-62) package
- 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.

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

NPN low V_{CEsat} transistor in a SOT89 plastic package.
 NPN complement: PBSS4250X.

MARKING

TYPE NUMBER	MARKING CODE ⁽¹⁾
PBSS5250X	*1L

Note

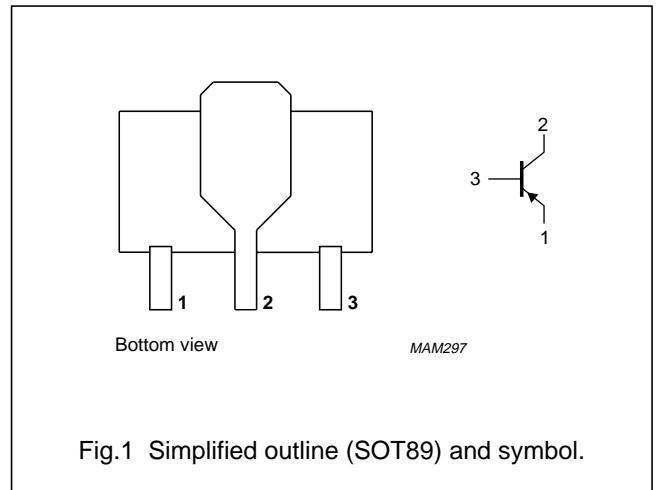
1. * = p : made in Hong Kong
 * = t : made in Malaysia
 * = W : made in China.

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	-5	A
R_{CEsat}	equivalent on-resistance	160	m Ω

PINNING

PIN	DESCRIPTION
1	emitter
2	collector
3	base



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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	continuous collector current (DC)		–	–2	A
I_{CM}	peak collector current	$T_{j\ max}$	–	–5	A
I_B	continuous base current (DC)		–	–0.5	A
P_{tot}	total power dissipation	$T_{amb} \leq 25\ ^\circ\text{C}$ note 1 note 2	– –	550 1	mW W
T_j	junction temperature		–	150	$^\circ\text{C}$
T_{amb}	operating ambient temperature		–65	+150	$^\circ\text{C}$
T_{stg}	storage temperature		–65	+150	$^\circ\text{C}$

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 note 2	225 125	K/W K/W
$R_{th\ j-s}$	thermal resistance from junction to soldering point		16	K/W

Notes

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CHARACTERISTICS $T_j = 25\text{ °C}$; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector cut-off current	$V_{CB} = -50\text{ V}; I_E = 0$	–	–100	nA
		$V_{CB} = -50\text{ V}; I_E = 0; T_j = 150\text{ °C}$	–	–50	μA
I_{CES}	collector cut-off current	$V_{CE} = -50\text{ V}; V_{BE} = 0$	–	–100	nA
I_{EBO}	emitter cut-off current	$V_{EB} = -5\text{ V}; I_C = 0$	–	–100	nA
h_{FE}	DC current gain	$V_{CE} = -2\text{ V}$ $I_C = -0.1\text{ A}$	200	–	
		$I_C = -0.5\text{ A}$	200	–	
		$I_C = -1\text{ A}$; note 1	200	–	
		$I_C = -2\text{ A}$; note 1	100	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -0.5\text{ A}; I_B = -50\text{ mA}$	–	–90	mV
		$I_C = -1\text{ A}; I_B = -50\text{ mA}$	–	–250	mV
		$I_C = -2\text{ A}; I_B = -100\text{ mA}$	–	–380	mV
		$I_C = -2\text{ A}; I_B = -200\text{ mA}$; note 1	–	–320	mV
R_{CEsat}	equivalent on-resistance	$I_C = -2\text{ A}; I_B = -200\text{ mA}$; note 1	–	160	$\text{m}\Omega$
V_{BEsat}	base-emitter saturation voltage	$I_C = -2\text{ A}; I_B = -100\text{ mA}$	–	–1.1	V
V_{BEon}	base-emitter turn-on voltage	$V_{CE} = -2\text{ V}; I_C = -1\text{ A}$	–1.1	–	V
f_T	transition frequency	$I_C = -100\text{ mA}; V_{CE} = -5\text{ V};$ $f = 100\text{ MHz}$	100	–	MHz
C_c	collector capacitance	$V_{CB} = -10\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$	–	35	pF

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

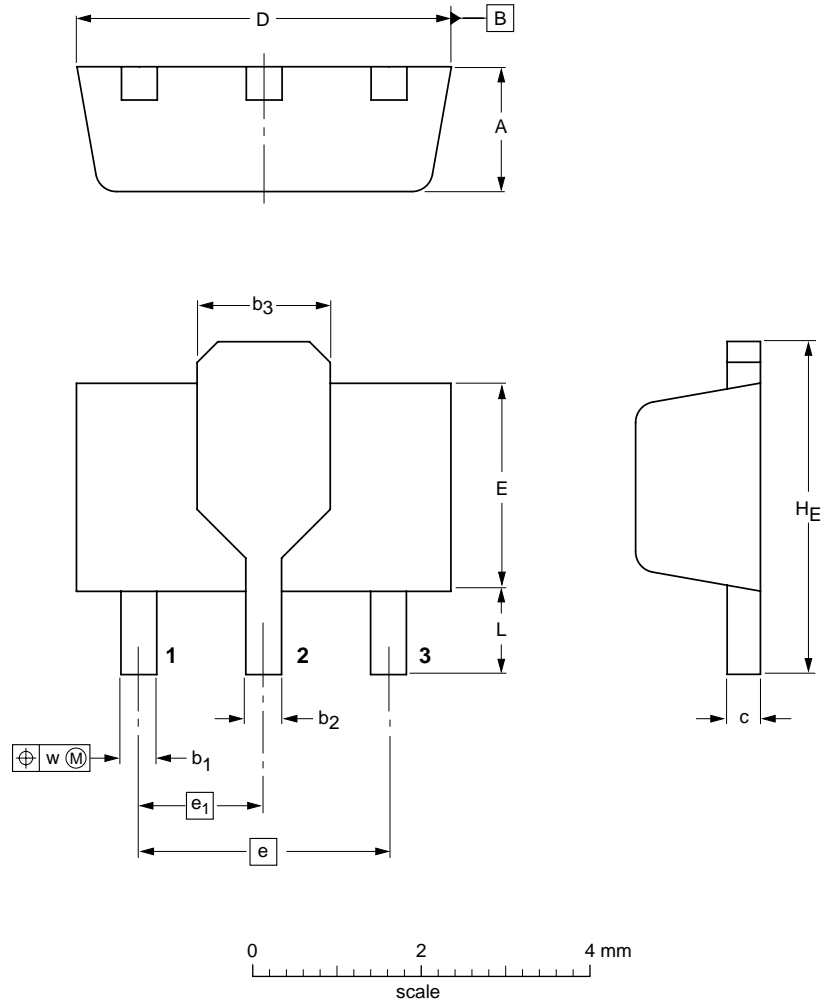
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PACKAGE OUTLINE

Plastic surface mounted package; collector pad for good heat transfer; 3 leads

SOT89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b ₁	b ₂	b ₃	c	D	E	e	e ₁	H _E	L min.	w
mm	1.6 1.4	0.48 0.35	0.53 0.40	1.8 1.4	0.44 0.37	4.6 4.4	2.6 2.4	3.0	1.5	4.25 3.75	0.8	0.13

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT89		TO-243	SC-62			97-02-28 99-09-13

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DATA SHEET STATUS

LEVEL	DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾⁽³⁾	DEFINITION
I	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.
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