

# DATA SHEET



**PBSS8110S**

100 V, 1 A

NPN low  $V_{CEsat}$  (BISS) transistor

Product specification  
Supersedes data of 2003 Nov 11

2004 Aug 13

**100 V, 1 A  
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**PBSS8110S**

**FEATURES**

- SOT54 package
- Low collector-emitter saturation voltage  $V_{CEsat}$
- High collector current capability:  $I_C$  and  $I_{CM}$
- Higher efficiency leading to less heat generation.

**APPLICATIONS**

- Automotive 42 V power
- Telecom infrastructure
- General industrial applications
- Power management
  - DC/DC converters
  - Supply line switching
  - Battery charger
  - LCD backlighting.
- Peripheral drivers
  - Generic driver (e.g. lamps and LEDs)
  - Inductive load driver (e.g. relays, buzzers and motors).

**DESCRIPTION**

NPN low  $V_{CEsat}$  BISS transistor in a SOT54 plastic package.

**MARKING**

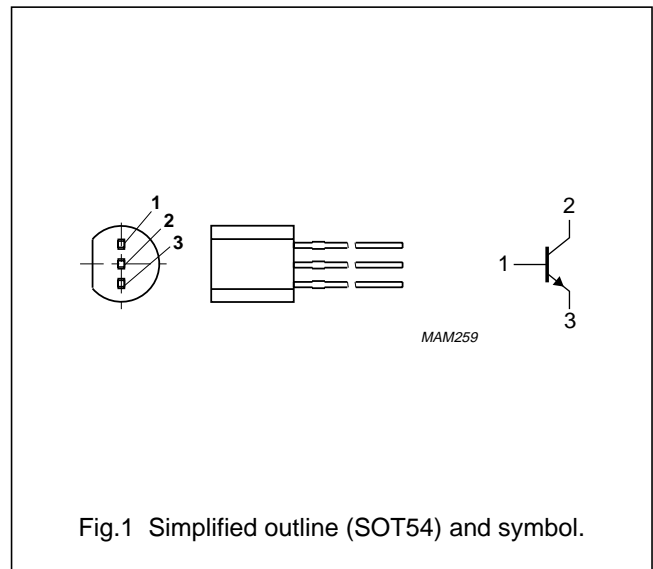
TYPE NUMBER	MARKING CODE
PBSS8110S	S8110S

**QUICK REFERENCE DATA**

SYMBOL	PARAMETER	MAX.	UNIT
$V_{CEO}$	collector-emitter voltage	100	V
$I_C$	collector current (DC)	1	A
$I_{CM}$	peak collector current	3	A
$R_{CEsat}$	equivalent on-resistance	200	m $\Omega$

**PINNING**

PIN	DESCRIPTION
1	base
2	collector
3	emitter



**ORDERING INFORMATION**

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PBSS8110S	–	plastic single-ended leaded (through hole) package; 3 leads	SOT54

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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	–	120	V
$V_{CEO}$	collector-emitter voltage	open base	–	100	V
$V_{EBO}$	emitter-base voltage	open collector	–	5	V
$I_C$	collector current (DC)		–	1	A
$I_{CM}$	peak collector current	$T_{j\max}$	–	3	A
$I_B$	base current (DC)		–	300	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$ ; note 1	–	830	mW
$T_j$	junction temperature		–	150	°C
$T_{amb}$	operating ambient temperature		–65	+150	°C
$T_{stg}$	storage temperature		–65	+150	°C

**Note**

1. Device mounted on a FR4 printed-circuit board; single-sided copper; tinplated; standard footprint.

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	in free air; note 1	150	K/W

**Note**

1. Device mounted on a FR4 printed-circuit board; single-sided copper; tinplated; standard footprint.

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$V_{CB} = 80\text{ V}; I_E = 0$	–	–	100	nA
		$V_{CB} = 80\text{ V}; I_E = 0; T_j = 150\text{ °C}$	–	–	50	$\mu\text{A}$
$I_{CES}$	collector cut-off current	$V_{CE} = 80\text{ V}; V_{BE} = 0$	–	–	100	nA
$I_{EBO}$	emitter cut-off current	$V_{EB} = 4\text{ V}; I_C = 0$	–	–	100	nA
$h_{FE}$	DC current gain	$V_{CE} = 10\text{ V}; I_C = 1\text{ mA}$	150	–	–	
		$V_{CE} = 10\text{ V}; I_C = 250\text{ mA}$	150	–	500	
		$V_{CE} = 10\text{ V}; I_C = 0.5\text{ A}; \text{note 1}$	100	–	–	
		$V_{CE} = 10\text{ V}; I_C = 1\text{ A}; \text{note 1}$	80	–	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 100\text{ mA}; I_B = 10\text{ mA}$	–	–	40	mV
		$I_C = 500\text{ mA}; I_B = 50\text{ mA}$	–	–	120	mV
		$I_C = 1\text{ A}; I_B = 100\text{ mA}$	–	–	200	mV
$R_{CEsat}$	equivalent on-resistance	$I_C = 1\text{ A}; I_B = 100\text{ mA}; \text{note 1}$	–	165	200	$\text{m}\Omega$
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 1\text{ A}; I_B = 100\text{ mA}; \text{note 1}$	–	–	1.05	V
$V_{BEon}$	base-emitter turn-on voltage	$V_{CE} = 10\text{ V}; I_C = 1\text{ A}$	–	–	0.9	V
$f_T$	transition frequency	$V_{CE} = 10\text{ V}; I_C = 50\text{ mA}; f = 100\text{ MHz}$	100	–	–	MHz
$C_c$	collector capacitance	$V_{CB} = 10\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$	–	–	7.5	pF

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

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PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; 3 leads

SOT54



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	b <sub>1</sub>	c	D	d	E	e	e <sub>1</sub>	L	L <sub>1</sub> <sup>(1)</sup> max.
mm	5.2 5.0	0.48 0.40	0.66 0.55	0.45 0.38	4.8 4.4	1.7 1.4	4.2 3.6	2.54	1.27	14.5 12.7	2.5

Note

1. Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
SOT54		TO-92	SC-43A		-97-02-28 04-06-28

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LEVEL	DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)(3)</sup>	DEFINITION
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