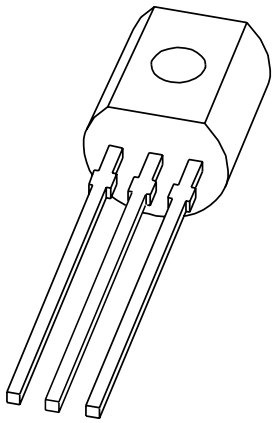
DATA SHEET



PBSS8110S
100 V, 1 A
NPN low V_{CEsat} (BISS) transistor

Product data sheet
Supersedes data of 2003 Nov 11

2004 Aug 13

100 V, 1 A NPN low V_{CEsat} (BISS) transistor

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	mΩ

PINNING

PIN	DESCRIPTION
1	base
2	collector
3	emitter

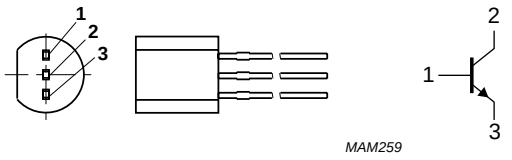


Fig.1 Simplified outline (SOT54) and symbol.

ORDERING INFORMATION

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

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	$T_{amb} \leq 25$ °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
$R_{th\,j\text{-}a}$	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.

CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

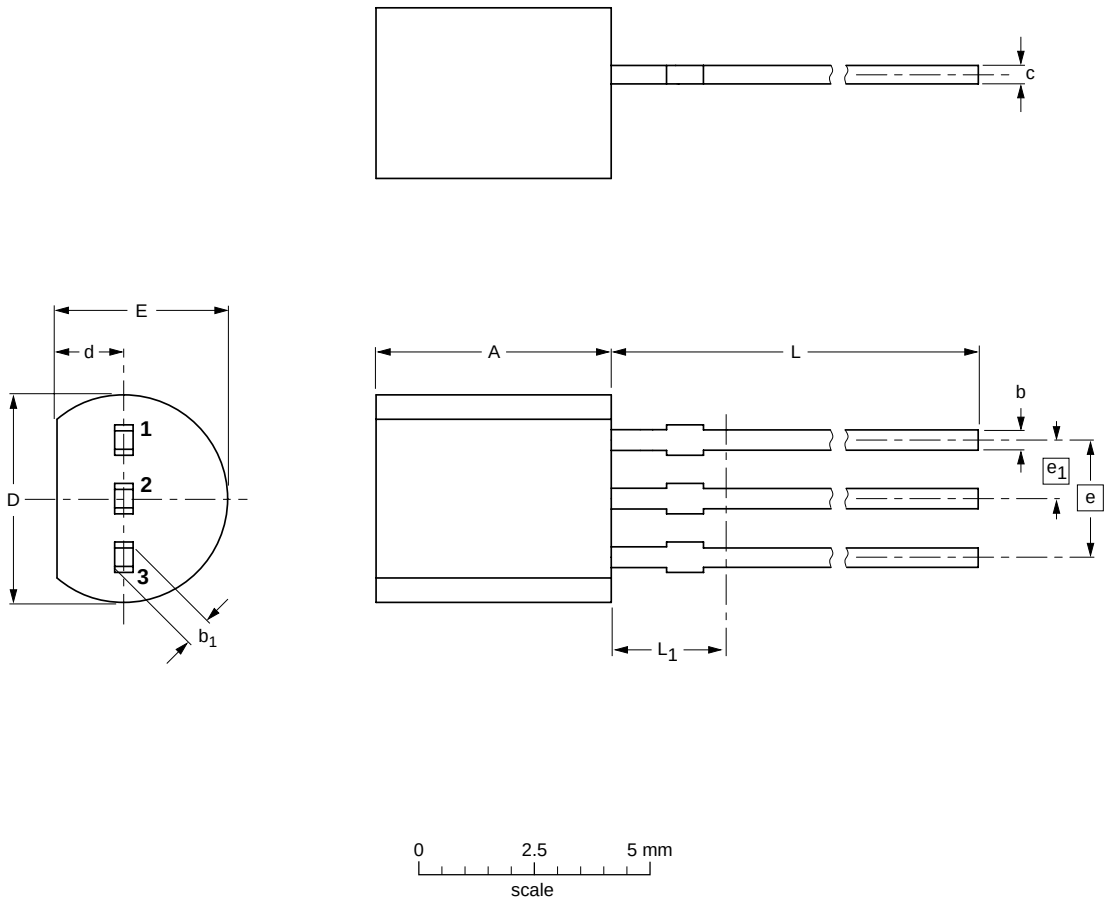
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current	V_{CB} = 80 V; I_E = 0	–	–	100	nA
		V_{CB} = 80 V; I_E = 0; T_j = 150 °C	–	–	50	μA
I_{CES}	collector cut-off current	V_{CE} = 80 V; V_{BE} = 0	–	–	100	nA
I_{EBO}	emitter cut-off current	V_{EB} = 4 V; I_C = 0	–	–	100	nA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

Note

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

PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; 3 leads **SOT54**



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	b_1	c	D	d	E	e	e_1	L	L_1 (1) 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			~~04-06-28~~ 04-11-16

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.

Notes

1. Please consult the most recently issued document before initiating or completing a design.
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NXP Semiconductors

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.

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