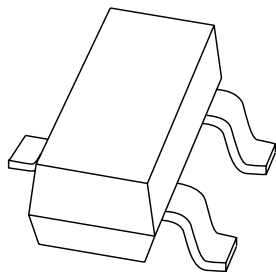


# DATA SHEET



**PBSS5320T**

20 V, 3 A

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

Product data sheet  
Supersedes data of 2002 Aug 08

2004 Jan 15

**20 V, 3 A**  
**PNP low  $V_{CEsat}$  (BISS) transistor**

**PBSS5320T**

**FEATURES**

- Low collector-emitter saturation voltage  $V_{CEsat}$  and corresponding low  $R_{CEsat}$
- High collector current capability
- High collector current gain
- Improved efficiency due to reduced heat generation.

**APPLICATIONS**

- Power management applications
- Low and medium power DC/DC convertors
- Supply line switching
- Battery chargers
- Linear voltage regulation with low voltage drop-out (LDO).

**DESCRIPTION**

PNP low  $V_{CEsat}$  transistor in a SOT23 plastic package.  
 NPN complement: PBSS4320T.

**MARKING**

TYPE NUMBER	MARKING CODE <sup>(1)</sup>
PBSS5320T	ZH*

**Note**

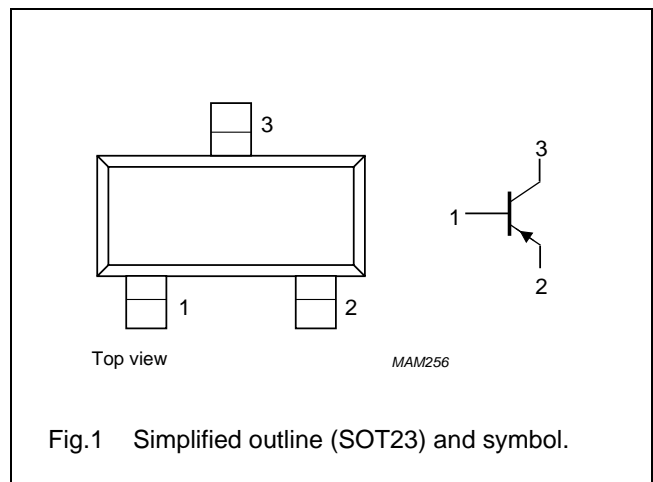
- \* = p: Made in Hong Kong.  
 \* = t: Made in Malaysia.  
 \* = W: Made in China.

**QUICK REFERENCE DATA**

SYMBOL	PARAMETER	MAX.	UNIT
$V_{CEO}$	collector-emitter voltage	-20	V
$I_C$	collector current (DC)	-2	A
$I_{CRP}$	repetitive peak collector current	-3	A
$R_{CEsat}$	equivalent on-resistance	105	m $\Omega$

**PINNING**

PIN	DESCRIPTION
1	base
2	emitter
3	collector



**ORDERING INFORMATION**

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PBSS5320T	-	plastic surface mounted package; 3 leads	SOT23

20 V, 3 A  
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PBSS5320T

**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
$I_{CRP}$	repetitive peak collector current	note 1	–	–3	A
$I_{CM}$	peak collector current	single peak	–	–5	A
$I_B$	base current (DC)		–	–0.5	A
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$ ; note 2	–	300	mW
		$T_{amb} \leq 25\text{ °C}$ ; note 3	–	480	mW
		$T_{amb} \leq 25\text{ °C}$ ; note 4	–	540	mW
		$T_{amb} \leq 25\text{ °C}$ ; notes 1 and 2	–	1.2	W
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–	150	°C
$T_{amb}$	operating ambient temperature		–65	+150	°C

**Notes**

- Operated under pulsed conditions: pulse width  $t_p \leq 100\text{ ms}$ ; duty cycle  $\delta \leq 0.25$ .
- Device mounted on a printed-circuit board; single sided copper; tin plated; standard footprint.
- Device mounted on a printed-circuit board; single sided copper; tin plated; mounting pad for collector  $1\text{ cm}^2$ .
- Device mounted on a printed-circuit board; single sided copper; tin plated; mounting pad for collector  $6\text{ cm}^2$ .

**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
		in free air; note 3	230	K/W
		in free air; notes 1 and 4	104	K/W

**Notes**

- Device mounted on a printed-circuit board; single sided copper; tin plated; standard footprint.
- Device mounted on a printed-circuit board; single sided copper; tin plated; mounting pad for collector  $1\text{ cm}^2$ .
- Device mounted on a printed-circuit board; single sided copper; tin plated; mounting pad for collector  $6\text{ cm}^2$ .
- Operated under pulsed conditions: pulse width  $t_p \leq 100\text{ ms}$ ; duty cycle  $\delta \leq 0.25$ .

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PBSS5320T

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

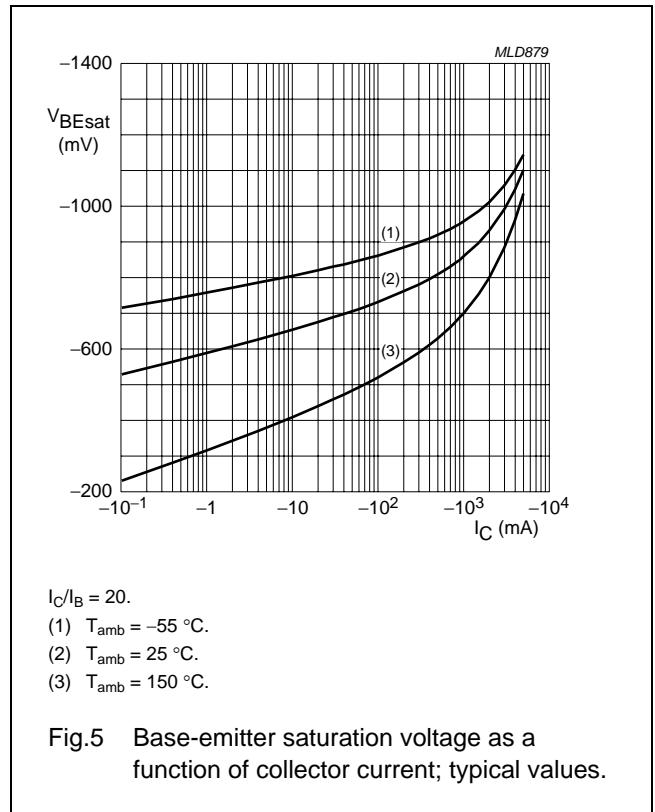
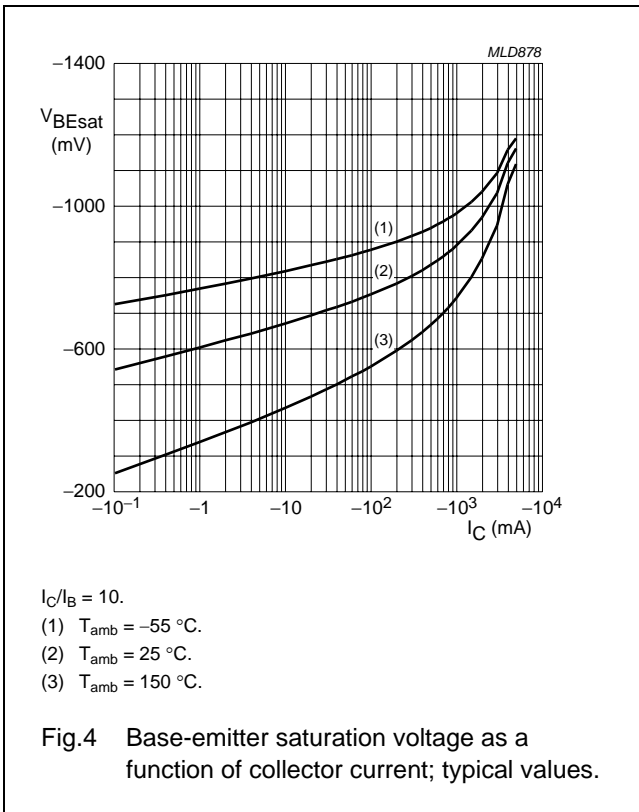
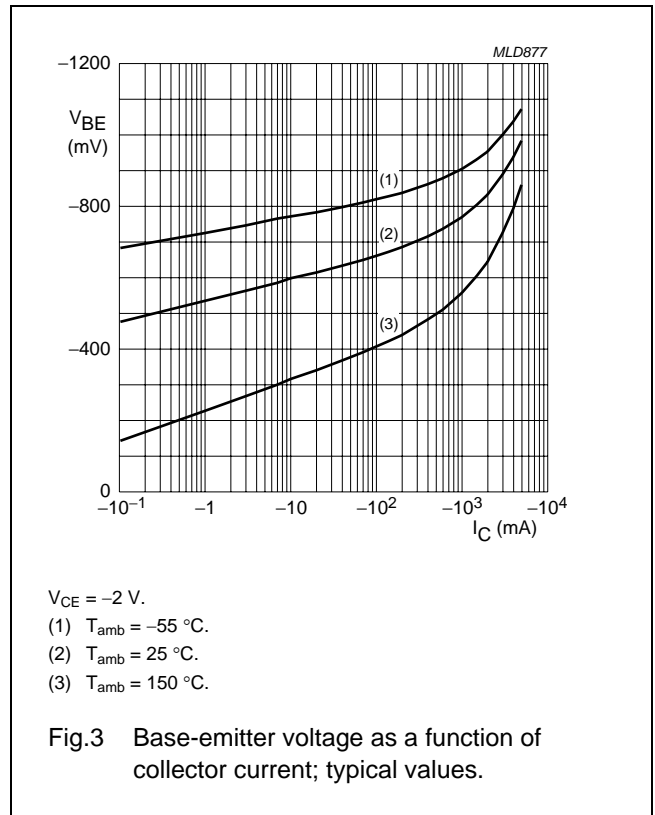
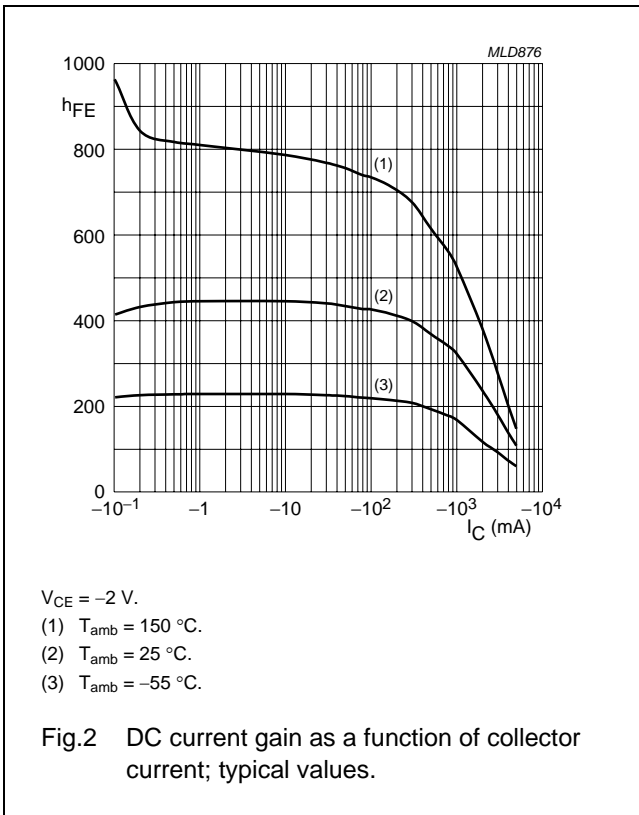
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector-base cut-off current	$V_{CB} = -20\text{ V}; I_E = 0$	–	–	–100	nA
		$V_{CB} = -20\text{ V}; I_E = 0; T_j = 150\text{ °C}$	–	–	–50	$\mu\text{A}$
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = -5\text{ V}; I_C = 0$	–	–	–100	nA
$h_{FE}$	DC current gain	$V_{CE} = -2\text{ V}; I_C = -100\text{ mA}$	220	–	–	
		$V_{CE} = -2\text{ V}; I_C = -500\text{ mA}$	220	–	–	
		$V_{CE} = -2\text{ V}; I_C = -1\text{ A};$ note 1	200	–	–	
		$V_{CE} = -2\text{ V}; I_C = -2\text{ A};$ note 1	150	–	–	
		$V_{CE} = -2\text{ V}; I_C = -3\text{ A};$ note 1	100	–	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	–	–	–70	mV
		$I_C = -1\text{ A}; I_B = -50\text{ mA}$	–	–	–130	mV
		$I_C = -2\text{ A}; I_B = -100\text{ mA};$ note 1	–	–	–230	mV
		$I_C = -2\text{ A}; I_B = -200\text{ mA};$ note 1	–	–	–210	mV
		$I_C = -3\text{ A}; I_B = -300\text{ mA};$ note 1	–	–	–300	mV
$R_{CEsat}$	equivalent on-resistance	$I_C = -2\text{ A}; I_B = -200\text{ mA};$ note 1	–	75	105	$\text{m}\Omega$
$V_{BEsat}$	base-emitter saturation voltage	$I_C = -2\text{ A}; I_B = -100\text{ mA};$ note 1	–	–	–1.1	V
		$I_C = -3\text{ A}; I_B = -300\text{ mA};$ note 1	–	–	–1.2	V
$V_{BE(on)}$	base-emitter turn-on voltage	$V_{CE} = -2\text{ V}; I_C = -1\text{ A};$ note 1	–1.2	–	–	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	$V_{CB} = -10\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$	–	–	50	pF

**Note**

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

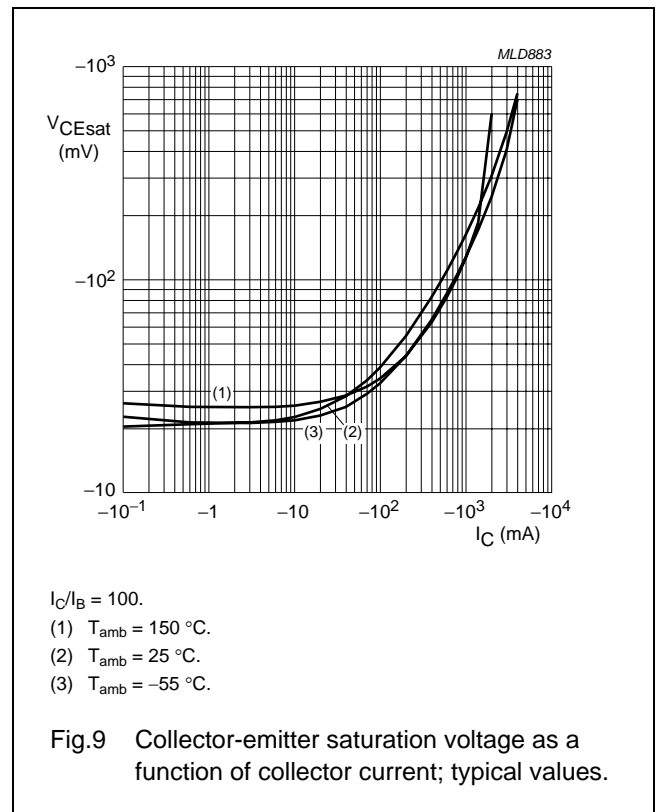
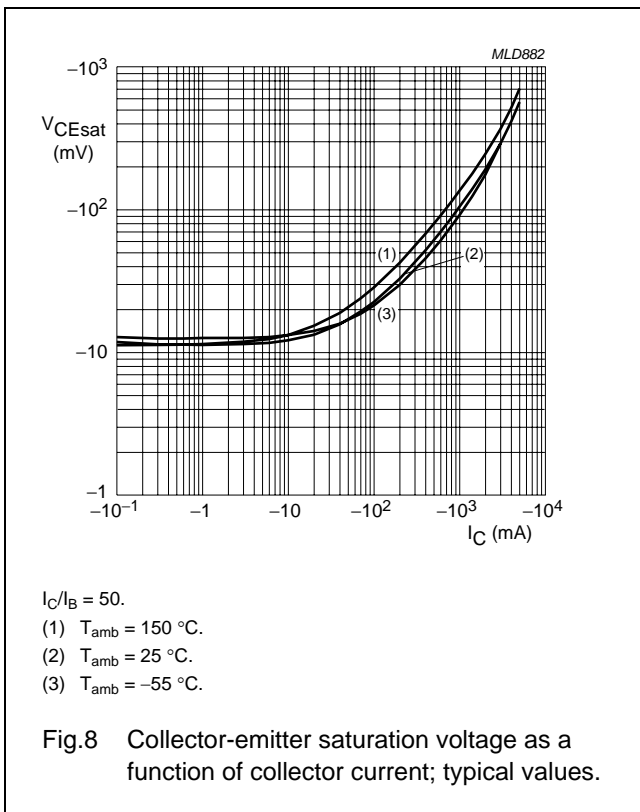
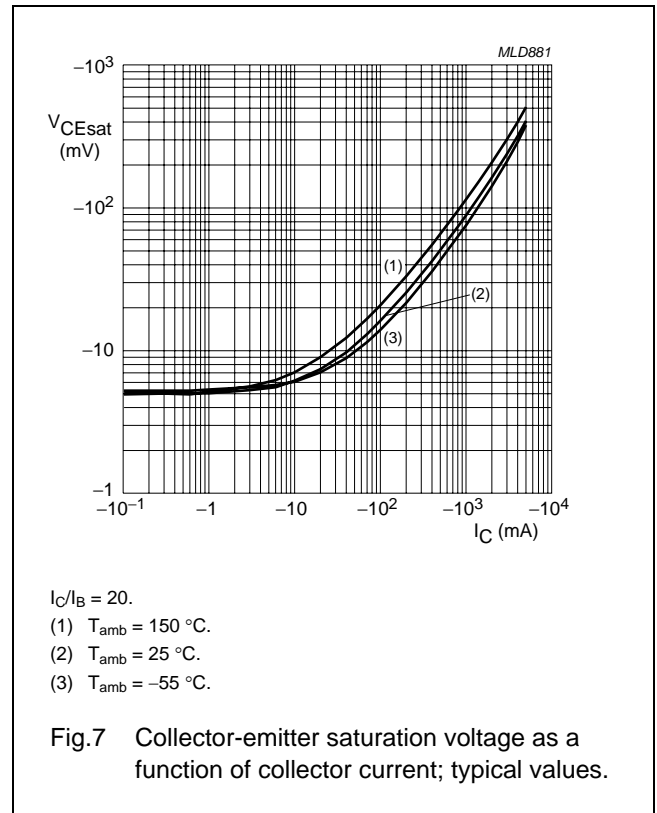
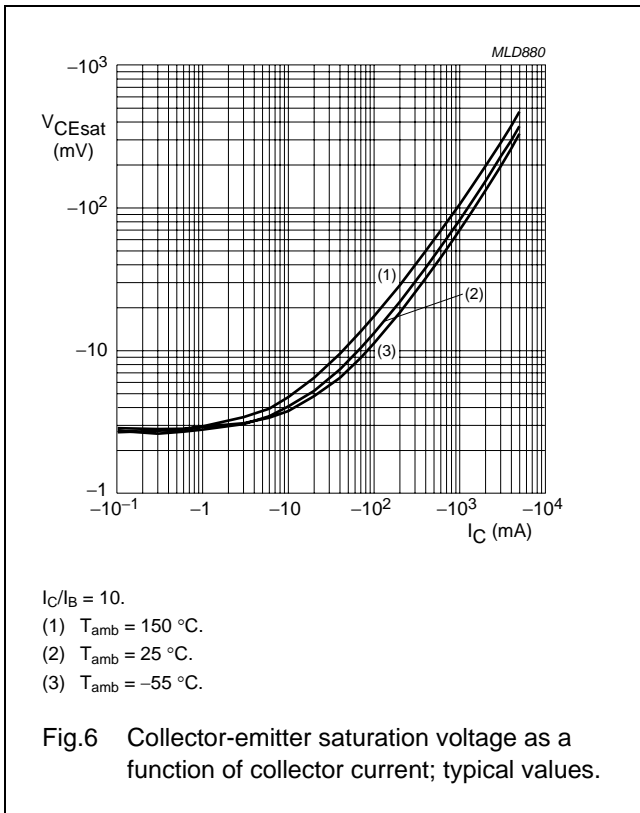
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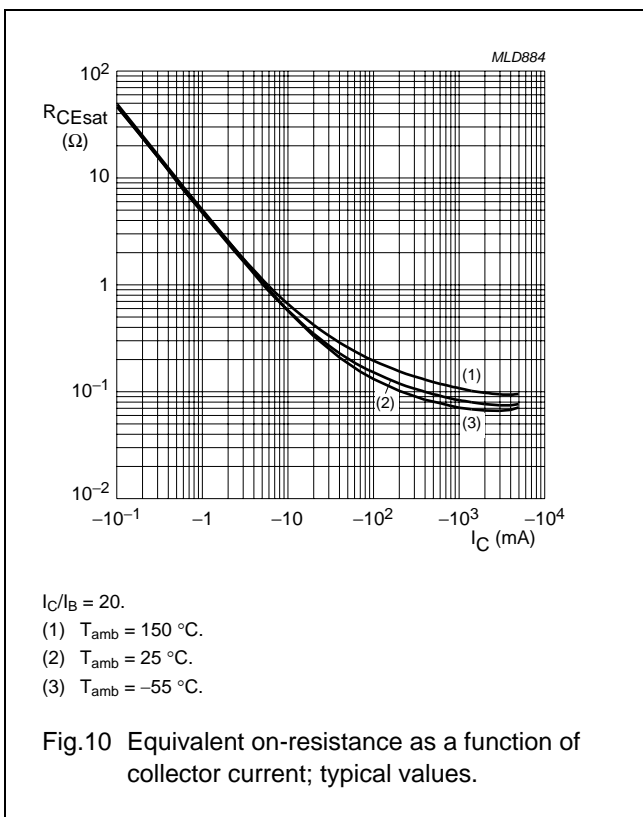
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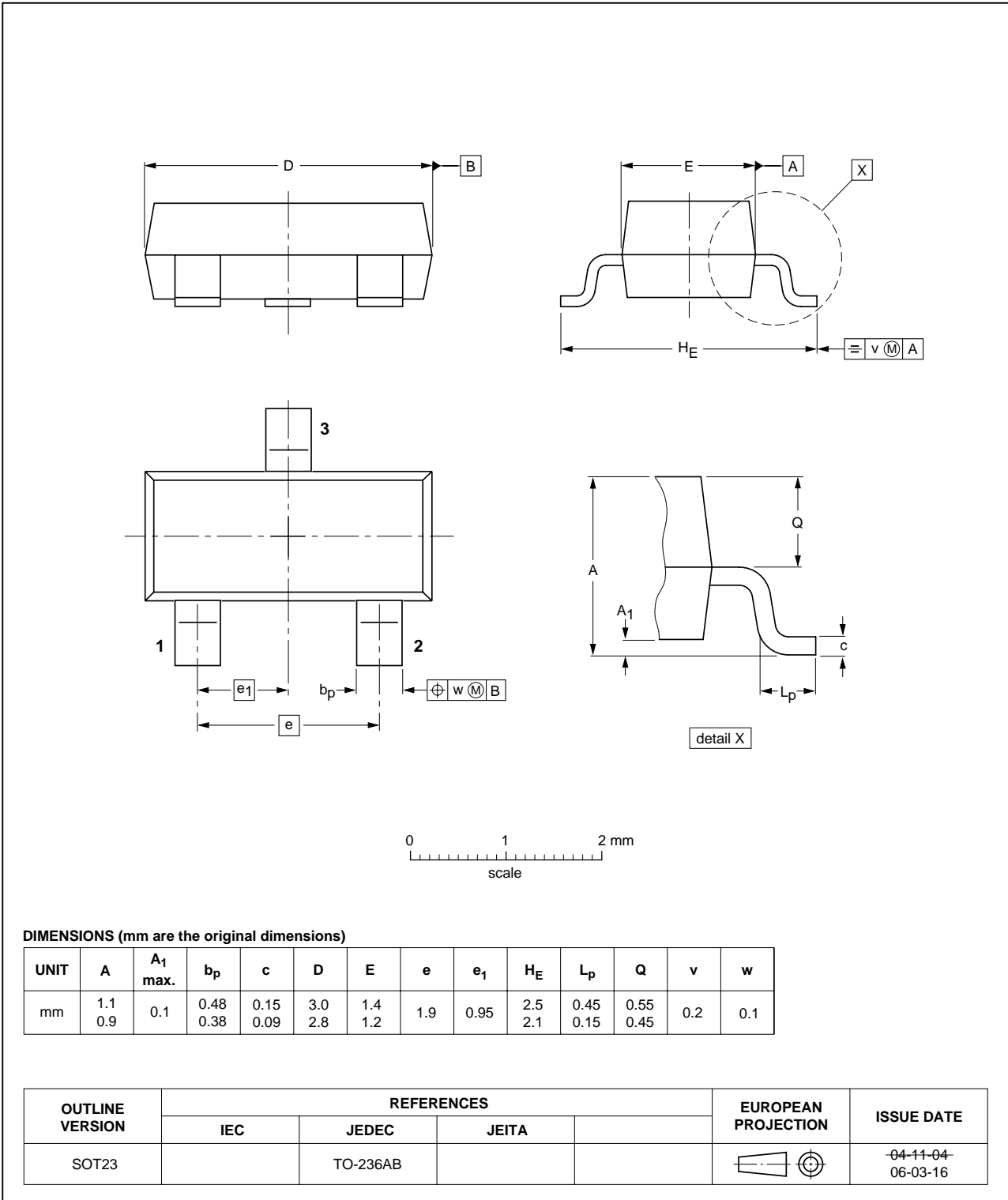
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PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23





20 V, 3 A  
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PBSS5320T

**DATA SHEET STATUS**

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	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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