

# PBSS2515M,315 Datasheet



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DiGi Electronics Part Number	PBSS2515M,315-DG
Manufacturer	<a href="#">Nexperia USA Inc.</a>
Manufacturer Product Number	PBSS2515M,315
Description	TRANS NPN 15V 0.5A SOT883
Detailed Description	Bipolar (BJT) Transistor NPN 15 V 500 mA 420MHz 4 30 mW Surface Mount SOT-883



Tel: +00 852-30501935

RFQ Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)

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## Purchase and inquiry

Manufacturer Product Number:

PBSS2515M,315

Series:

-

Transistor Type:

NPN

Voltage - Collector Emitter Breakdown (Max):

15 V

Current - Collector Cutoff (Max):

100nA (ICBO)

Power - Max:

430 mW

Operating Temperature:

150°C (TJ)

Package / Case:

SC-101, SOT-883

Base Product Number:

PBSS2515

Manufacturer:

Nexperia USA Inc.

Product Status:

Active

Current - Collector (Ic) (Max):

500 mA

Vce Saturation (Max) @ Ib, Ic:

250mV @ 50mA, 500mA

DC Current Gain (hFE) (Min) @ Ic, Vce:

150 @ 100mA, 2V

Frequency - Transition:

420MHz

Mounting Type:

Surface Mount

Supplier Device Package:

SOT-883

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.21.0075

Moisture Sensitivity Level (MSL):

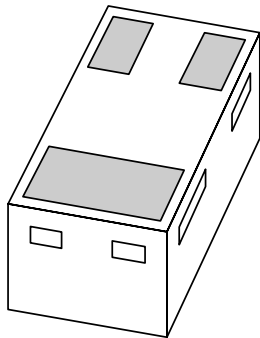
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ECCN:

EAR99

**DISCRETE SEMICONDUCTORS**

# DATA SHEET



**PBSS2515M**  
15 V, 0.5 A  
NPN low  $V_{CEsat}$  (BISS) transistor

Product data sheet  
Supersedes data of 2003 Jun 17

2003 Sep 15

# 15 V, 0.5 A NPN low $V_{CEsat}$ (BISS) transistor

## PBSS2515M

### FEATURES

- Low collector-emitter saturation voltage  $V_{CEsat}$
- High collector current capability  $I_C$  and  $I_{CM}$
- High efficiency leading to reduced heat generation
- Reduced printed-circuit board requirements.

### APPLICATIONS

- Power management:
  - DC-DC converter
  - Supply line switching
  - Battery charger
  - LCD backlighting.
- Peripheral driver:
  - Driver in low supply voltage applications (e.g. lamps and LEDs)
  - Inductive load drivers (e.g. relays, buzzers and motors).

### DESCRIPTION

Low  $V_{CEsat}$  NPN transistor in a SOT883 leadless ultra small plastic package.  
PNP complement: PBSS3515M.

### MARKING

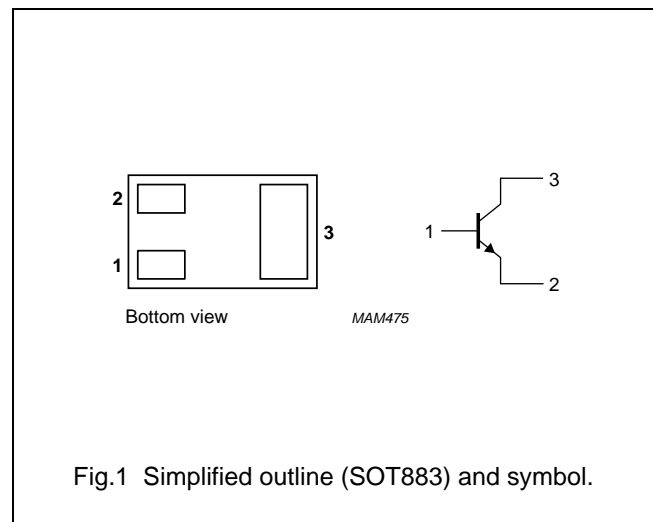
TYPE NUMBER	MARKING CODE
PBSS2515M	S2

### QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
$V_{CEO}$	collector-emitter voltage	15	V
$I_C$	collector current (DC)	500	mA
$I_{CM}$	peak collector current	1	A
$R_{CEsat}$	equivalent on-resistance	<500	m $\Omega$

### 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	–	15	V
$V_{CEO}$	collector-emitter voltage	open base	–	15	V
$V_{EBO}$	emitter-base voltage	open collector	–	6	V
$I_C$	collector current (DC)	notes 1 and 2	–	500	mA
$I_{CM}$	peak collector current		–	1	A
$I_{BM}$	peak base current		–	100	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$ ; notes 1 and 2	–	250	mW
		$T_{amb} \leq 25\text{ °C}$ ; note 1 and 3	–	430	mW
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–	150	°C
$T_{amb}$	operating ambient temperature		–65	+150	°C

**Notes**

1. Refer to SOT883 standard mounting conditions.
2. Device mounted on an FR4 printed-circuit board, single-sided copper, tinplated, standard footprint, with 60  $\mu\text{m}$  copper strip line.
3. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1  $\text{cm}^2$ .

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	in free air; notes 1 and 2	500	K/W
		in free air; notes 1, 3 and 4	290	K/W

**Notes**

1. Refer to SOT883 standard mounting conditions.
2. Device mounted on an FR4 printed-circuit board, single-sided copper, tinplated, standard footprint, with 60  $\mu\text{m}$  copper strip line.
3. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1  $\text{cm}^2$ .
4. Operated under pulsed conditions: duty cycle  $\delta \leq 20\%$ , pulse width  $t_p \leq 30\text{ ms}$ .

**Soldering**

Reflow soldering is the only recommended soldering method.

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

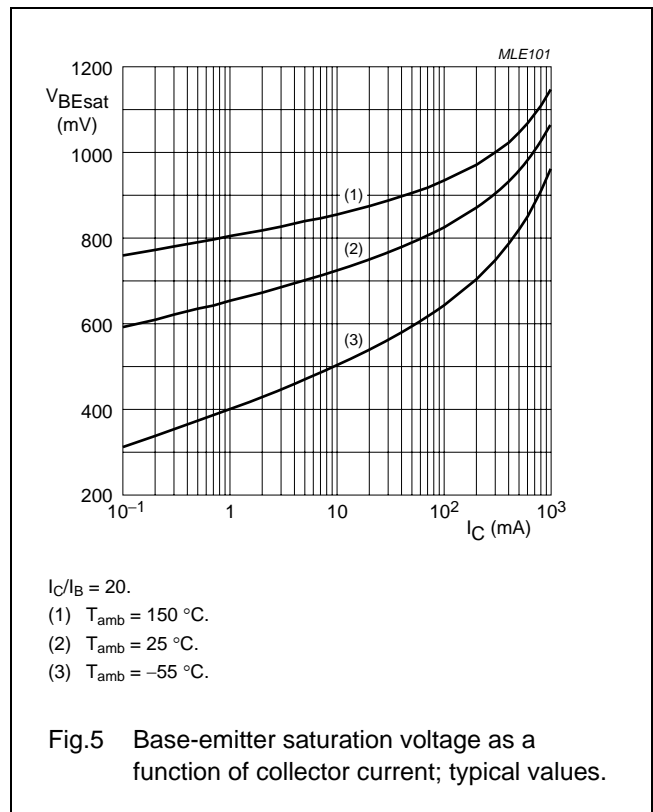
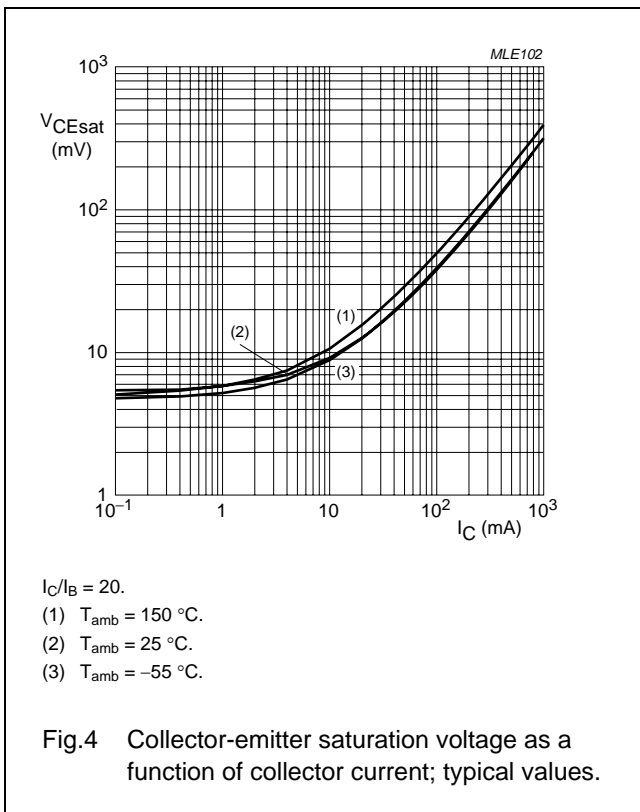
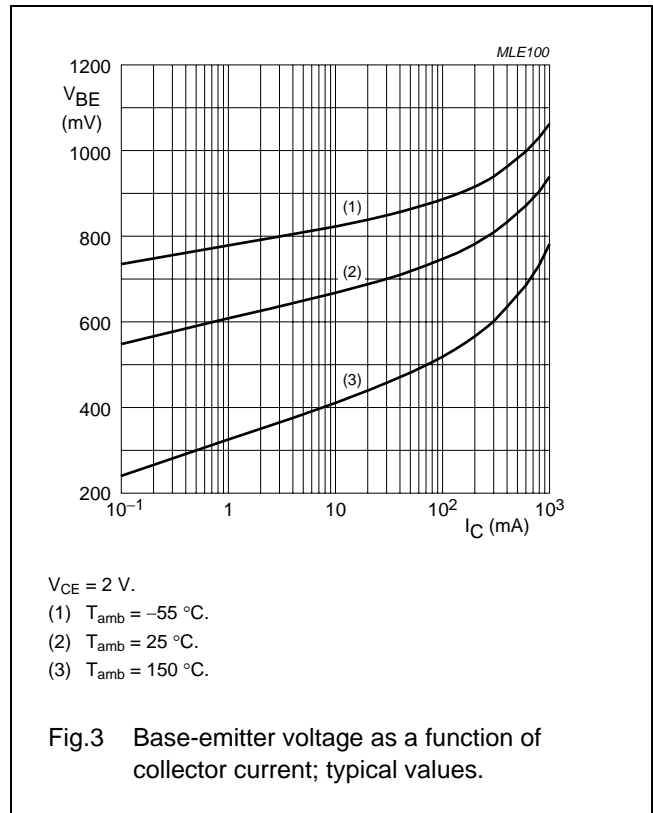
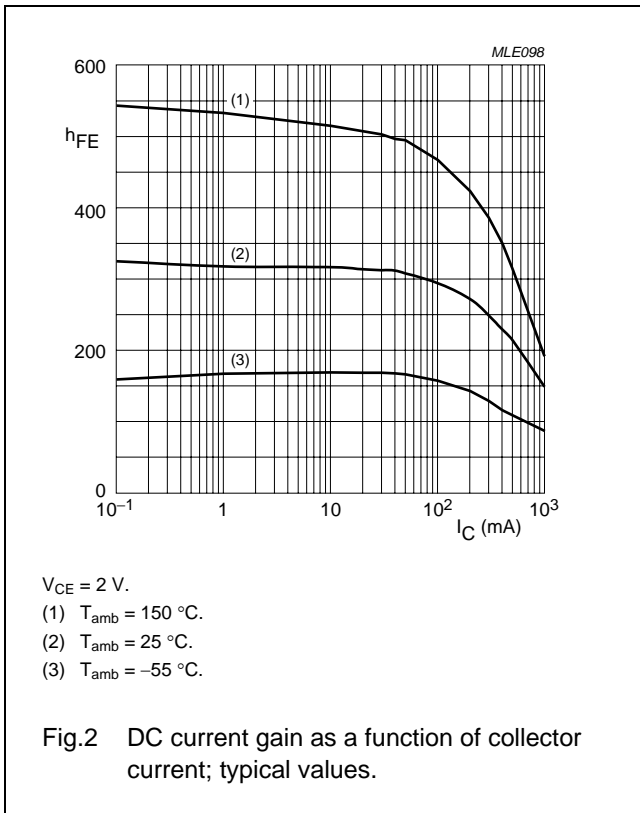
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector-base cut-off current	$V_{CB} = 15\text{ V}; I_E = 0$	–	–	100	nA
		$V_{CB} = 15\text{ V}; I_E = 0; T_J = 150\text{ °C}$	–	–	50	$\mu\text{A}$
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = 5\text{ V}; I_C = 0$	–	–	100	nA
$h_{FE}$	DC current gain	$V_{CE} = 2\text{ V}; I_C = 10\text{ mA}$	200	–	–	
		$V_{CE} = 2\text{ V}; I_C = 100\text{ mA};$ note 1	150	–	–	
		$V_{CE} = 2\text{ V}; I_C = 500\text{ mA};$ note 1	90	–	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	–	–	25	mV
		$I_C = 200\text{ mA}; I_B = 10\text{ mA};$ note 1	–	–	150	mV
		$I_C = 500\text{ mA}; I_B = 50\text{ mA};$ note 1	–	–	250	mV
$R_{CEsat}$	equivalent on-resistance	$I_C = 500\text{ mA}; I_B = 50\text{ mA};$ note 1	–	360	<500	$\text{m}\Omega$
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 500\text{ mA}; I_B = 50\text{ mA};$ note 1	–	–	1.1	V
$V_{BEon}$	base-emitter turn-on voltage	$V_{CE} = 2\text{ V}; I_C = 100\text{ mA};$ note 1	–	–	0.9	V
$f_T$	transition frequency	$I_C = 100\text{ mA}; V_{CE} = 5\text{ V};$ $f = 100\text{ MHz}$	250	420	–	MHz
$C_C$	collector capacitance	$V_{CB} = 10\text{ V}; I_E = I_C = 0; f = 1\text{ MHz}$	–	4.4	6	pF

**Note**

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

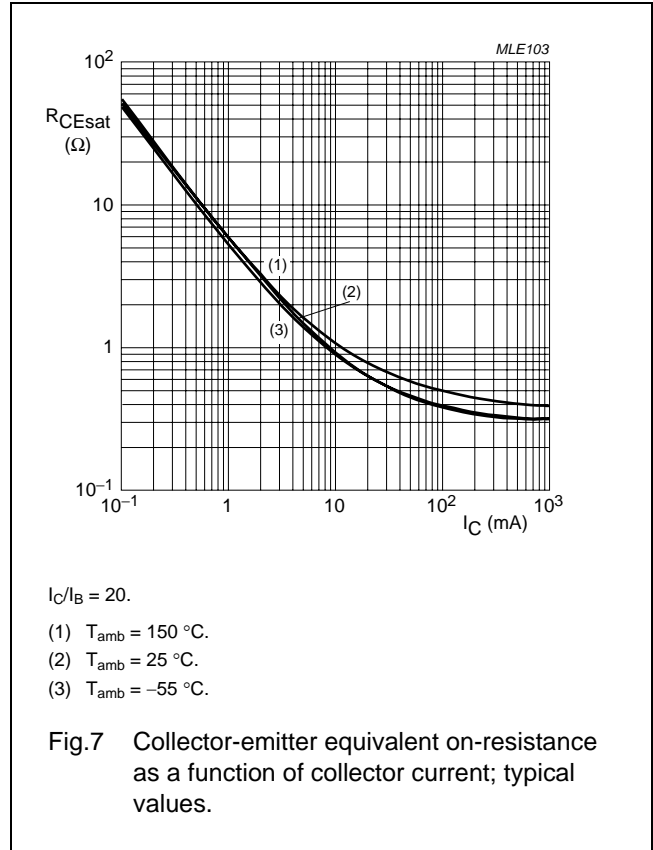
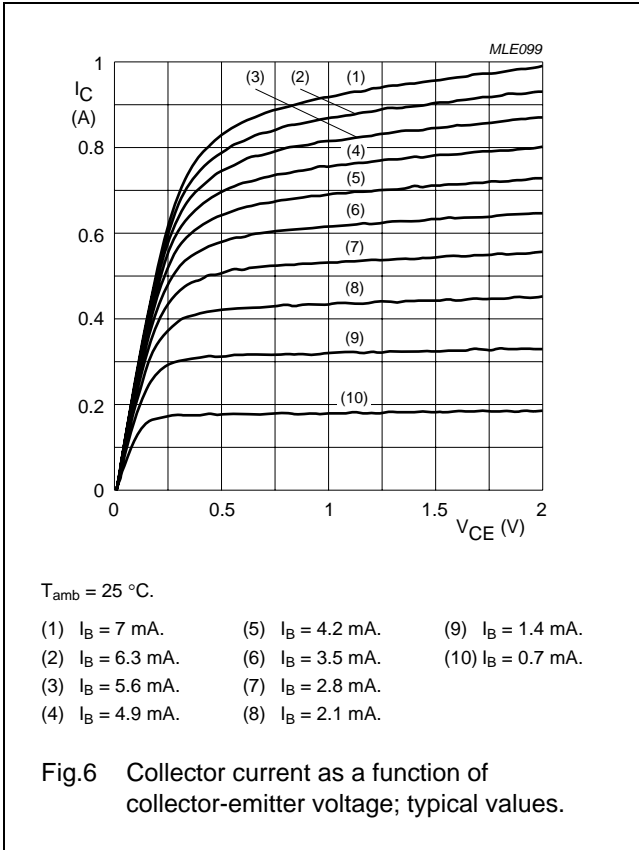
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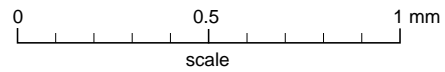
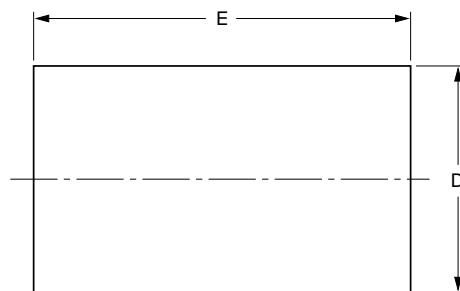
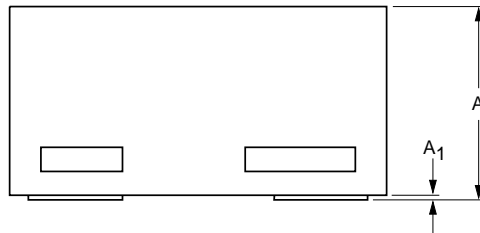
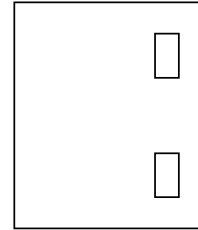
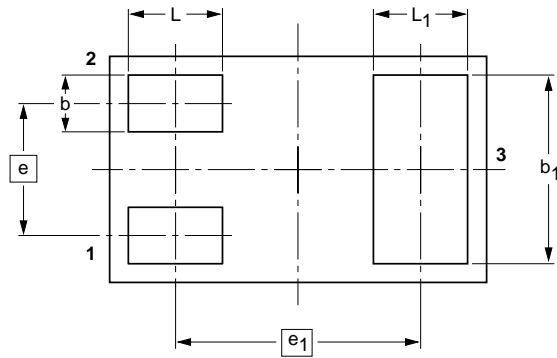
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PACKAGE OUTLINE

Leadless ultra small plastic package; 3 solder lands; body 1.0 x 0.6 x 0.5 mm

SOT883




DIMENSIONS (mm are the original dimensions)

UNIT	A <sup>(1)</sup>	A <sub>1</sub> max.	b	b <sub>1</sub>	D	E	e	e <sub>1</sub>	L	L <sub>1</sub>
mm	0.50 0.46	0.03	0.20 0.12	0.55 0.47	0.62 0.55	1.02 0.95	0.35	0.65	0.30 0.22	0.30 0.22

Note

1. Including plating thickness

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT883			SC-101			03-02-05- 03-04-03

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**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**

For additional information please visit: <http://www.nxp.com>

For sales offices addresses send e-mail to: [salesaddresses@nxp.com](mailto:salesaddresses@nxp.com)

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