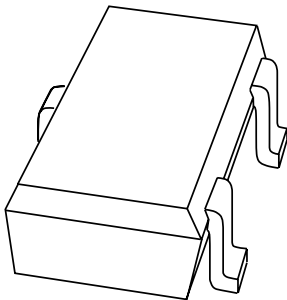


DATA SHEET



PBSS4140U

40 V low V_{CEsat} NPN transistor

Product specification
Supersedes data of 2001 Mar 27

2001 Jul 13

40 V low V_{CEsat} NPN transistor

PBSS4140U

FEATURES

- Low collector-emitter saturation voltage
- High current capabilities.
- Improved device reliability due to reduced heat generation.
- Enhanced performance over SOT231A general purpose packaged transistors.

APPLICATIONS

- General purpose switching and muting
- LCD backlighting
- Supply line switching circuits
- Battery driven equipment (mobile phones, video cameras and hand-held devices).

DESCRIPTION

NPN low V_{CEsat} transistor in a SOT323 plastic package. PNP complement: PBSS5140U.

MARKING

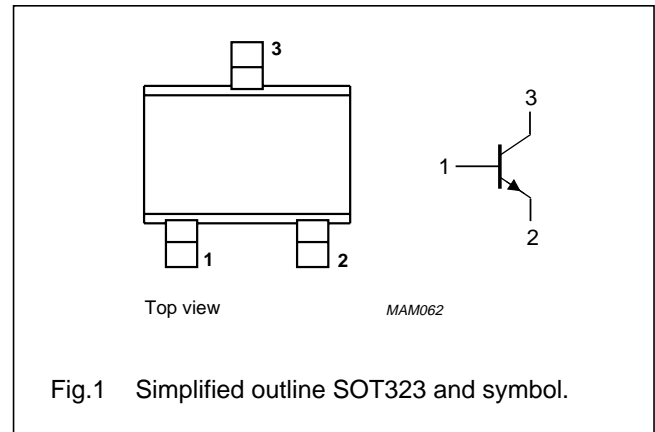
TYPE NUMBER	MARKING CODE
PBSS4140U	41t

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{CEO}	collector-emitter voltage	40	V
I_{CM}	peak collector current	2	A
R_{CEsat}	equivalent on-resistance	<500	m Ω

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



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	–	40	V
V_{CEO}	collector-emitter voltage	open base	–	40	V
V_{EBO}	emitter-base voltage	open collector	–	5	V
I_C	collector current (DC)		–	1	A
I_{CM}	peak collector current		–	2	A
I_{BM}	peak base current		–	1	A
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$; note 1	–	250	mW
		$T_{amb} \leq 25\text{ }^\circ\text{C}$; note 2	–	350	mW
T_{stg}	storage temperature		–65	+150	$^\circ\text{C}$
T_j	junction temperature		–	150	$^\circ\text{C}$
T_{amb}	operating ambient temperature		–65	+150	$^\circ\text{C}$

Notes

1. Device mounted on a printed-circuit board; single sided copper; tinplated; standard footprint.
2. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 1 cm.

40 V low V_{CEsat} NPN transistor

PBSS4140U

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	in free air; note 1	500	K/W
		in free air; note 2	357	K/W

Notes

1. Device mounted on a printed-circuit board, single sided copper, tinplated and standard footprint.
2. Device mounted on a printed-circuit board, single sided copper, tinplated, mounting pad for collector 1 cm².

CHARACTERISTICS

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

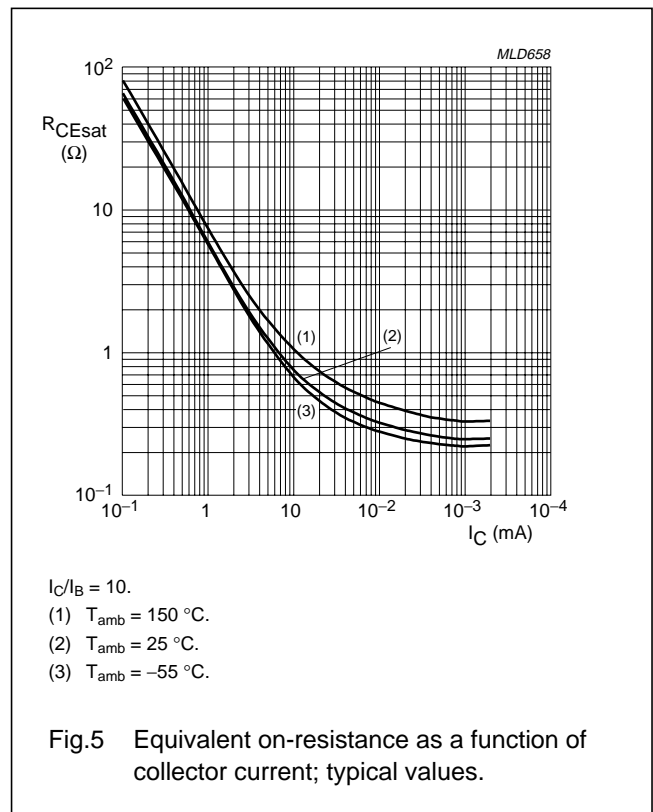
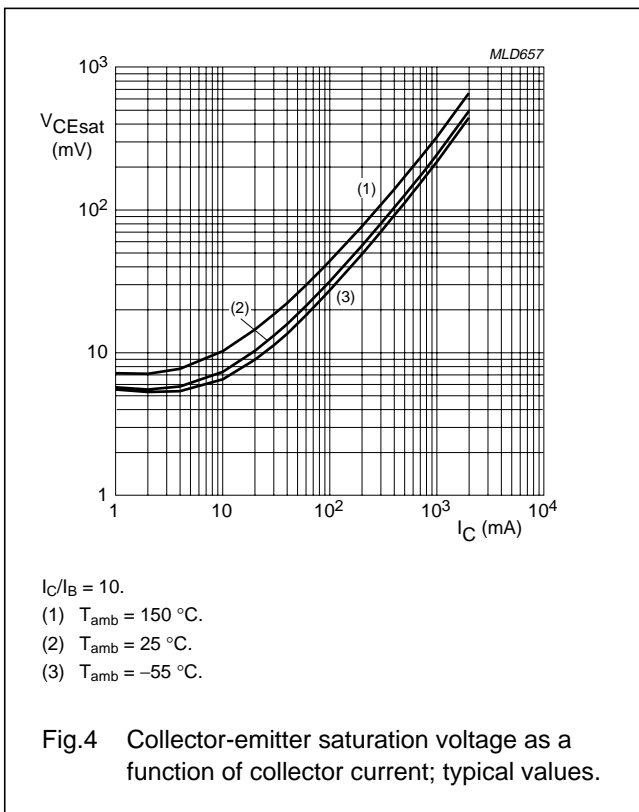
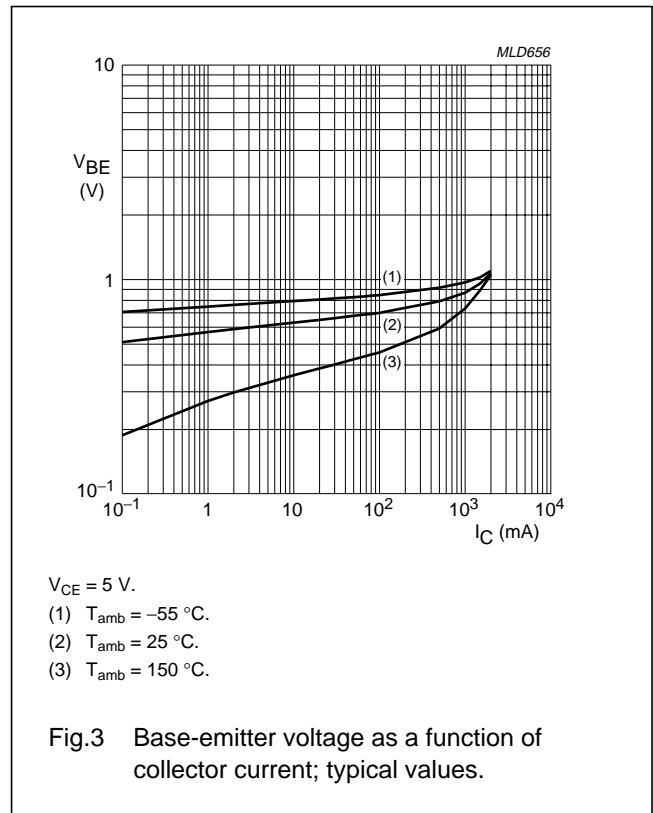
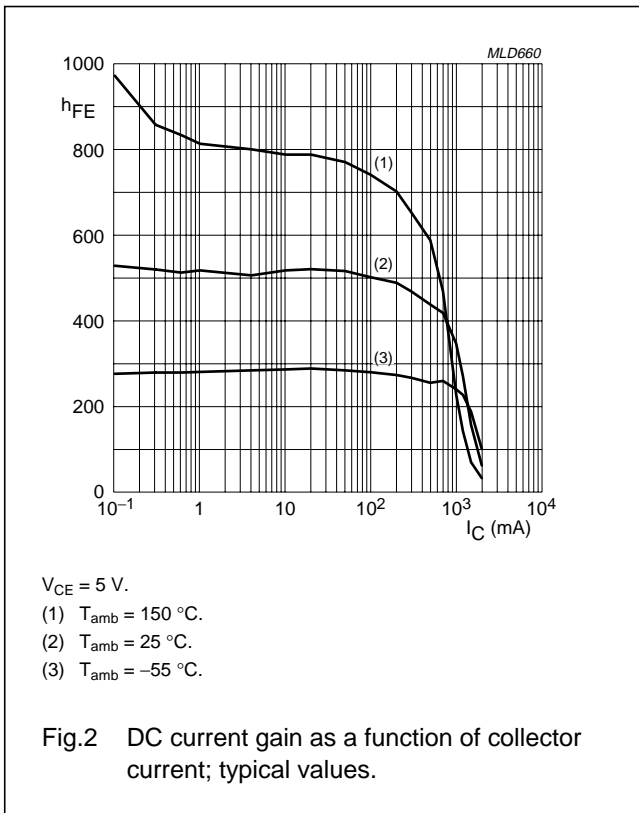
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	$V_{CB} = 40\text{ V}; I_C = 0$	–	–	100	nA
		$V_{CB} = 40\text{ V}; I_C = 0; T_{amb} = 150\text{ °C}$	–	–	50	μA
I_{CEO}	collector-emitter cut-off current	$V_{CE} = 30\text{ V}; I_B = 0$	–	–	100	nA
I_{EBO}	emitter-base cut-off current	$V_{EB} = 5\text{ V}; I_C = 0$	–	–	100	nA
h_{FE}	DC current gain	$V_{CE} = 5\text{ V}; I_C = 1\text{ mA}$	300	–	–	
		$V_{CE} = 5\text{ V}; I_C = 500\text{ mA}$	300	–	900	
		$V_{CE} = 5\text{ V}; I_C = 1\text{ A}$	200	–	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 100\text{ mA}; I_B = 1\text{ mA}$	–	–	200	mV
		$I_C = 500\text{ mA}; I_B = 50\text{ mA}$	–	–	250	mV
		$I_C = 1\text{ A}; I_B = 100\text{ mA}$	–	–	500	mV
R_{CEsat}	equivalent on-resistance	$I_C = 500\text{ mA}; I_B = 50\text{ mA}; \text{note 1}$	–	260	<500	m Ω
V_{BEsat}	base-emitter saturation voltage	$I_C = 1\text{ A}; I_B = 100\text{ mA}$	–	–	1.2	V
V_{BEon}	base-emitter turn-on voltage	$V_{CE} = 5\text{ V}; I_C = 1\text{ A}$	–	–	1.1	V
f_T	transition frequency	$I_C = 50\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$	150	–	–	MHz
C_c	collector capacitance	$V_{CB} = 10\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$	–	–	10	pF

Note

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

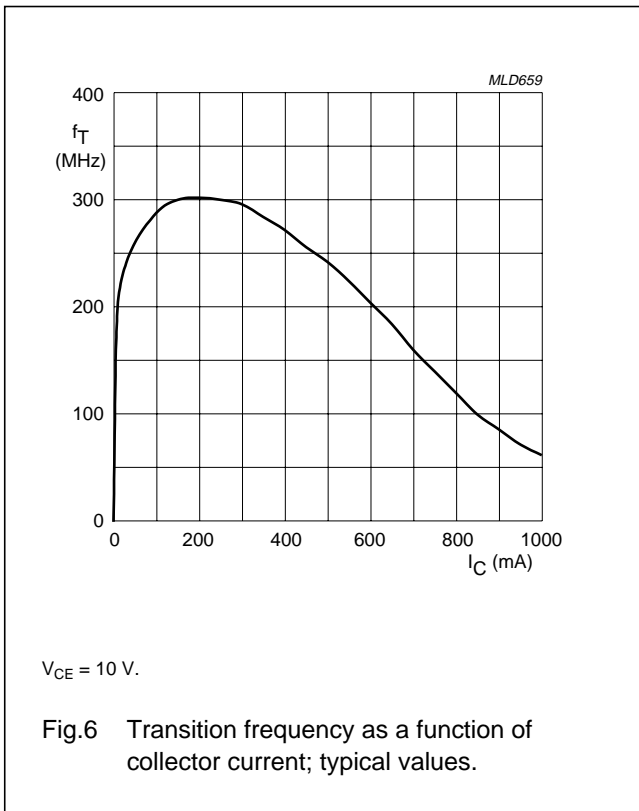
40 V low V_{CEsat} NPN transistor

PBSS4140U



40 V low V_{CEsat} NPN transistor

PBSS4140U



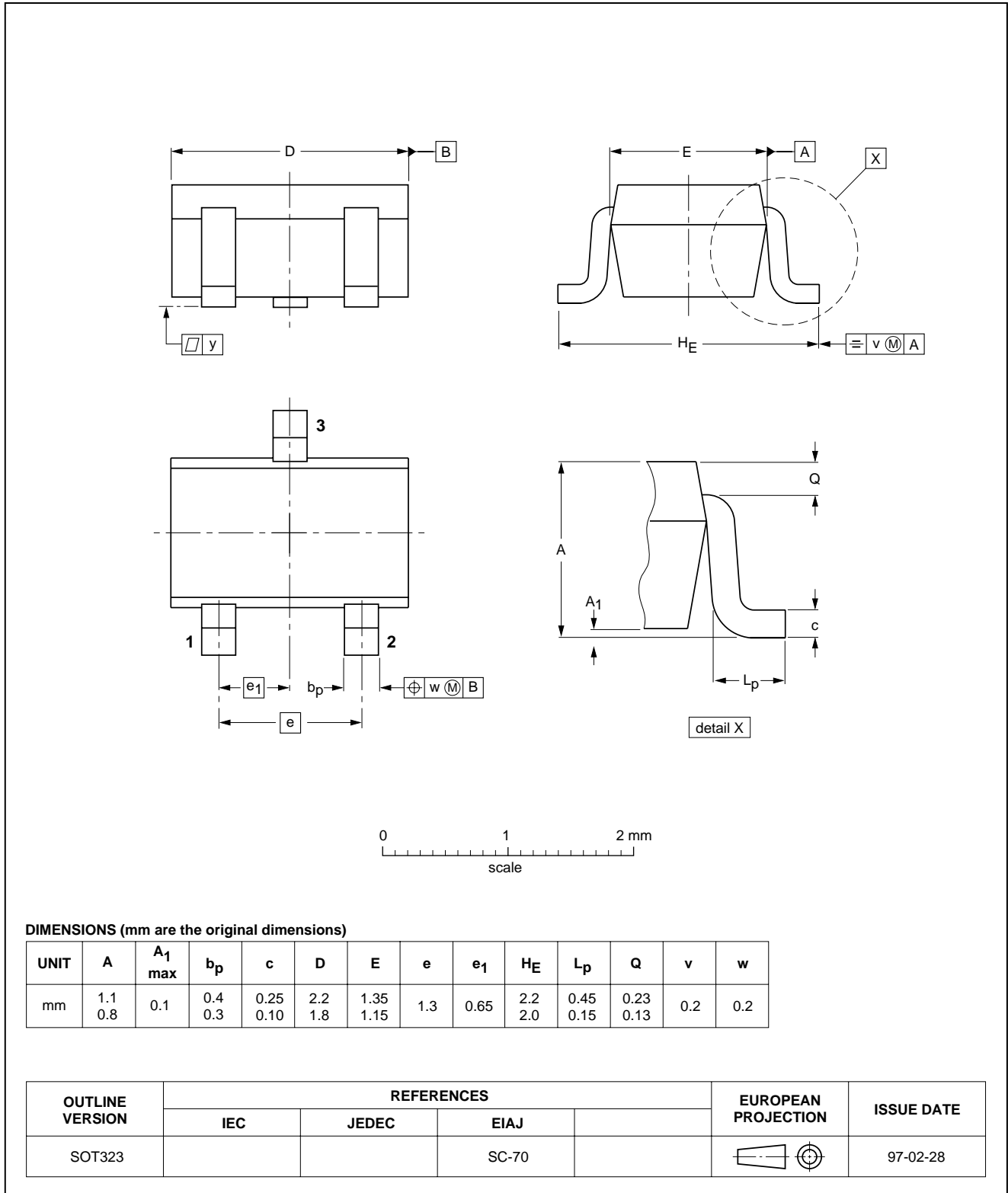
40 V low V_{CEsat} NPN transistor

PBSS4140U

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT323



40 V low V_{CEsat} NPN transistor

PBSS4140U

DATA SHEET STATUS

DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITIONS
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Printed in The Netherlands

613514/02/pp8

Date of release: 2001 Jul 13

Document order number: 9397 750 08427

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