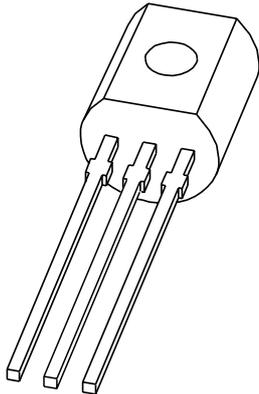


DATA SHEET



PSS9013 series 20 V NPN general purpose transistors

Product specification
Supersedes data of 2003 May 15

2004 Aug 10

20 V NPN general purpose transistors

PSS9013 series

FEATURES

- High power dissipation: 710 mW
- Low collector capacitance
- Low collector-emitter saturation voltage
- High current capability.

APPLICATIONS

- General purpose switching and amplification.

DESCRIPTION

NPN general purpose transistor in a SOT54 (TO-92) leaded plastic package. PNP complement: PSS9012 series.

MARKING

TYPE NUMBER	MARKING CODE
PSS9013G	S9013G
PSS9013H	S9013H

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{CEO}	collector-emitter voltage	20	V
I_C	collector current (DC)	500	mA
I_{CM}	peak collector current	1	A

PINNING

PIN	DESCRIPTION
1	collector
2	base
3	emitter

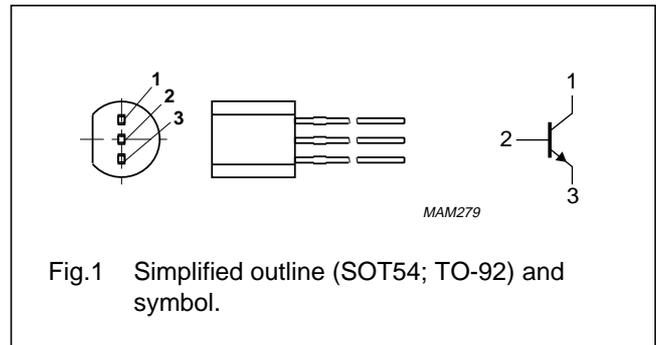


Fig.1 Simplified outline (SOT54; TO-92) and symbol.

LIMITING VALUES

In accordance with the Absolute Maximum 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	–	20	V
V_{EBO}	emitter-base voltage	open collector	–	5	V
I_C	collector current (DC)		–	500	mA
I_{CM}	peak collector current		–	1	A
I_{BM}	peak base current		–	100	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$; note 1	–	710	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

Note

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

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PSS9013 series

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	in free air; note 1	175	K/W

Note

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

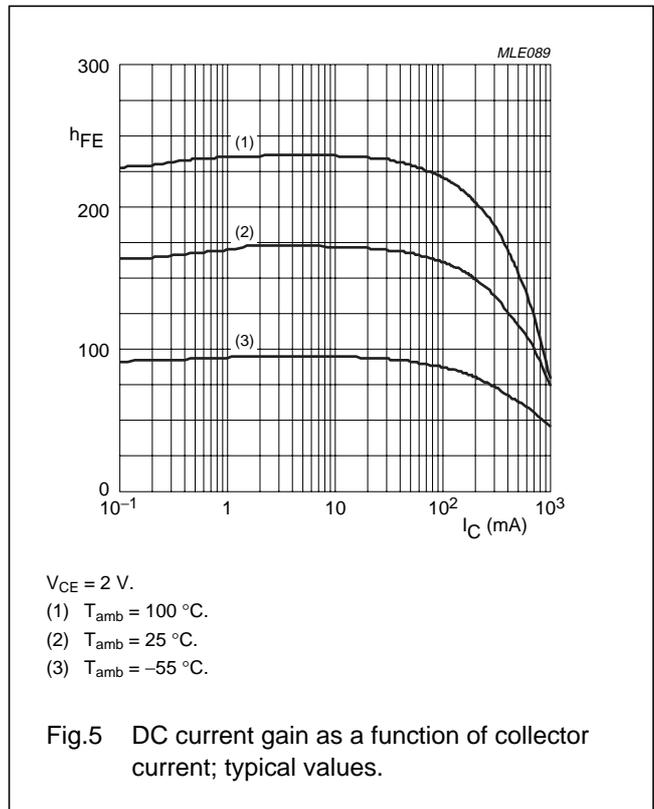
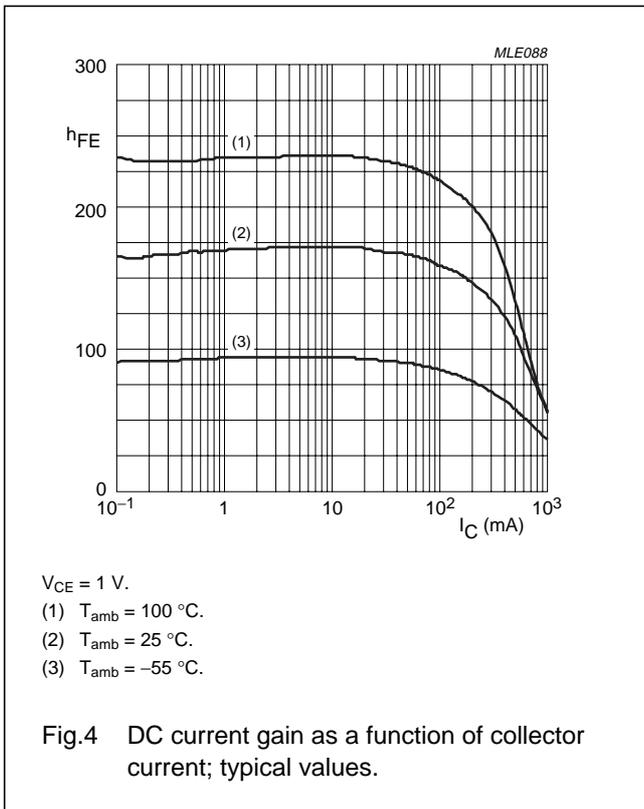
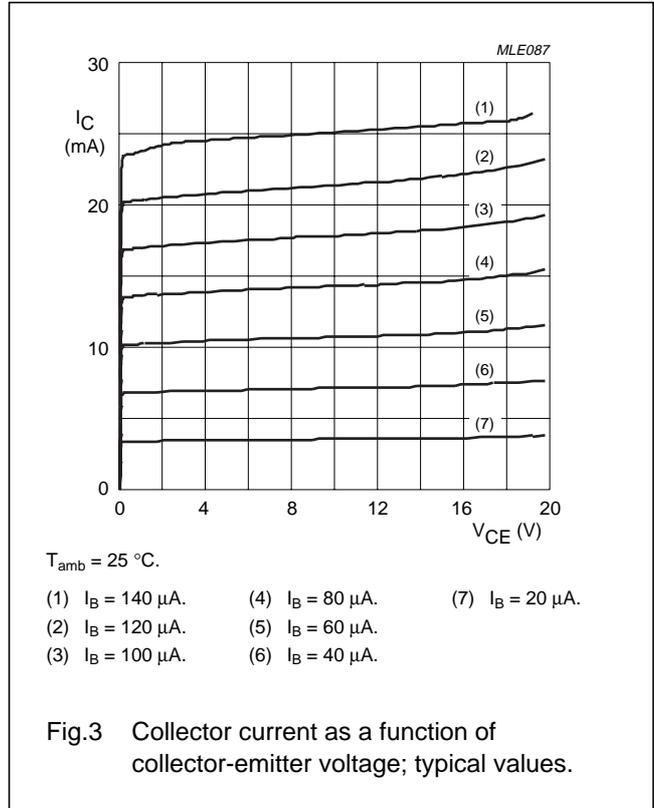
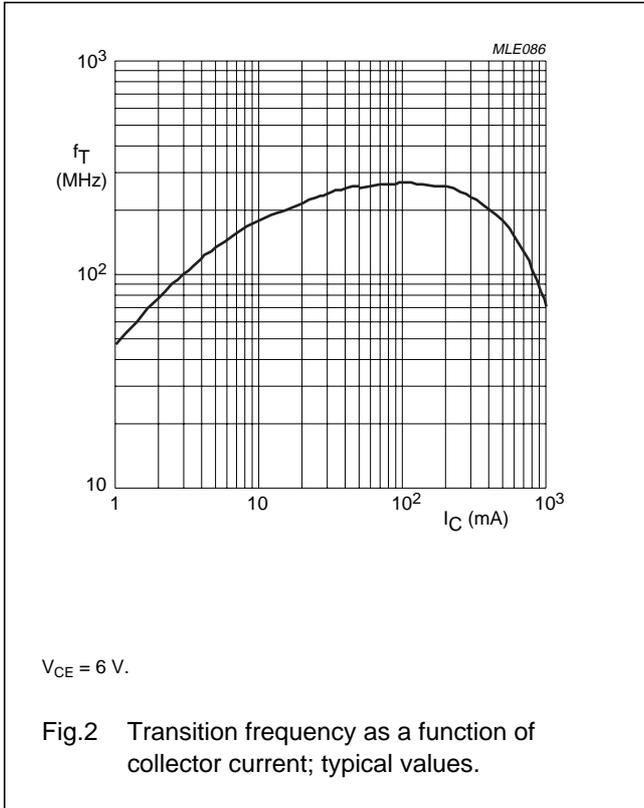
CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	$V_{CB} = 35\text{ V}; I_E = 0$	–	–	100	nA
		$V_{CB} = 35\text{ V}; I_E = 0; T_j = 150\text{ °C}$	–	–	50	μA
I_{EBO}	emitter-base cut-off current	$V_{EB} = 5\text{ V}; I_C = 0$	–	–	100	nA
h_{FE}	DC current gain	$V_{CE} = 1\text{ V}; I_C = 500\text{ mA}$	40	–	–	
h_{FE}	DC current gain PSS9013G PSS9013H	$V_{CE} = 1\text{ V}; I_C = 50\text{ mA}$	112	–	166	
			144	–	202	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 100\text{ mA}; I_B = 10\text{ mA}$	–	60	250	mV
		$I_C = 500\text{ mA}; I_B = 50\text{ mA}$	–	250	600	mV
V_{BEsat}	base-emitter saturation voltage	$I_C = 500\text{ mA}; I_B = 50\text{ mA}$	–	1	1.2	V
V_{BEon}	base-emitter turn on voltage	$V_{CE} = 1\text{ V}; I_C = 100\text{ mA}$	–	760	1000	mV
C_c	collector capacitance	$V_{CB} = 6\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$	–	5	–	pF

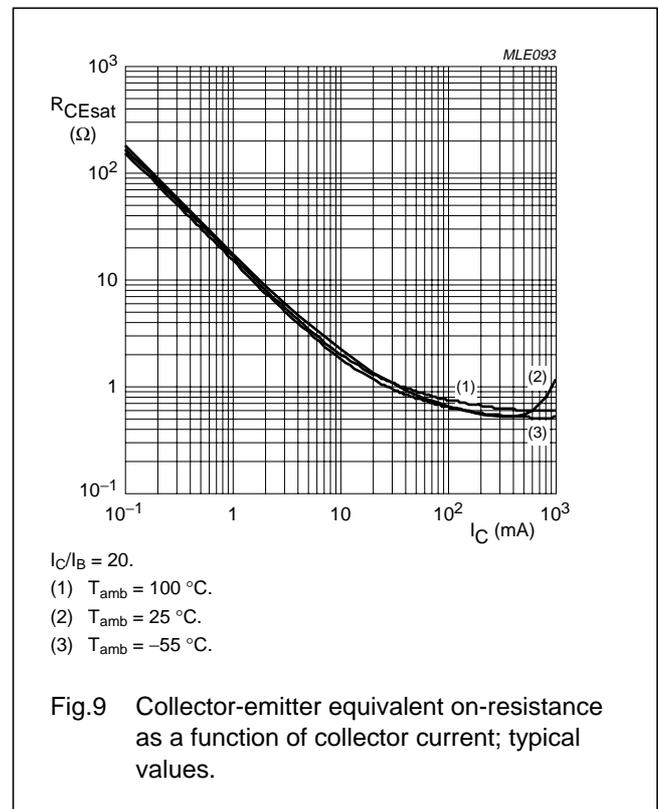
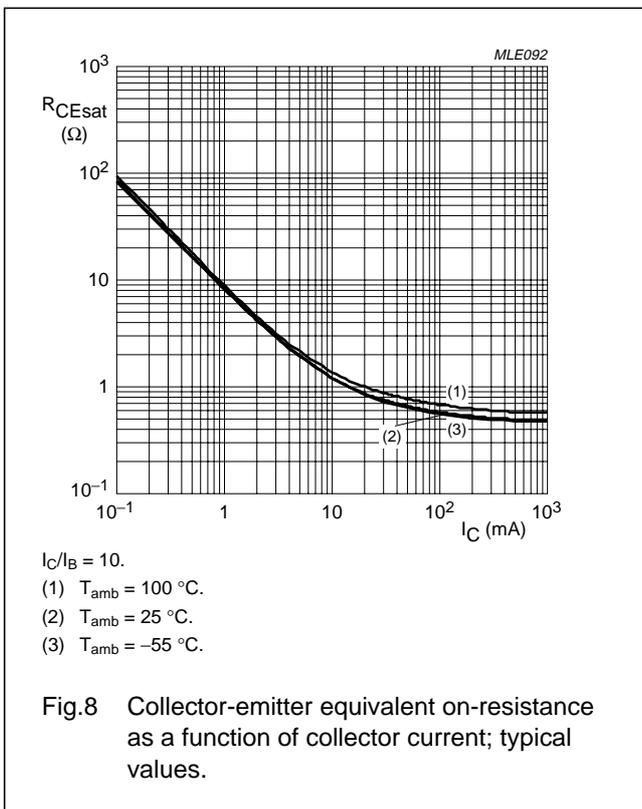
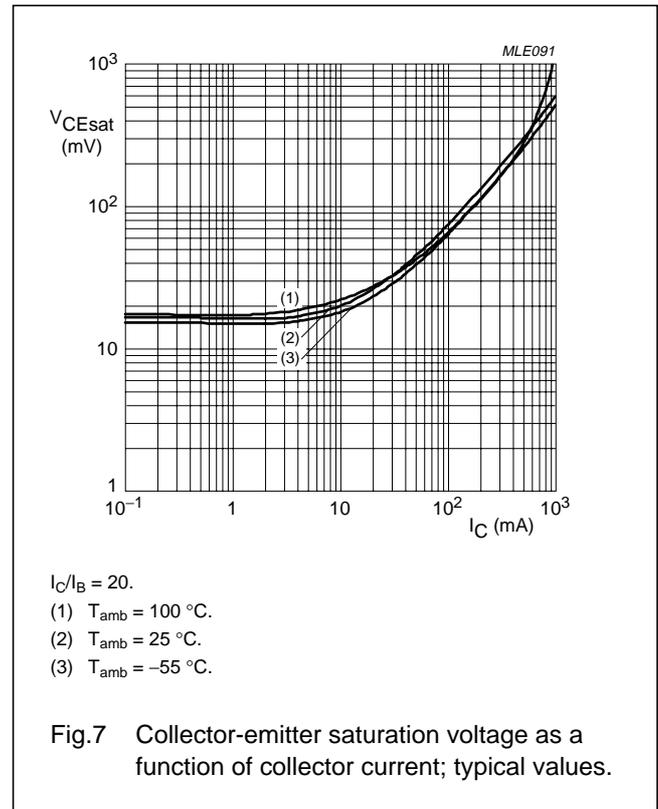
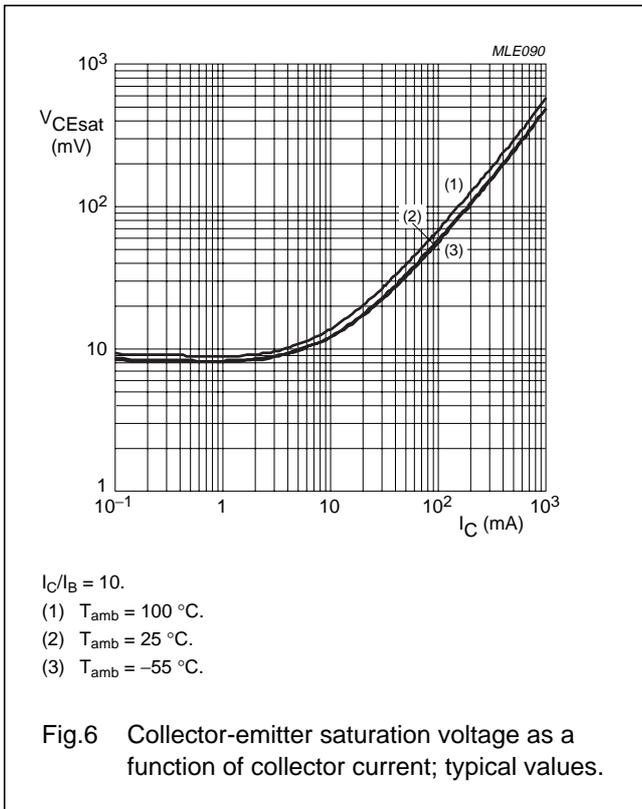
20 V NPN general purpose transistors

PSS9013 series



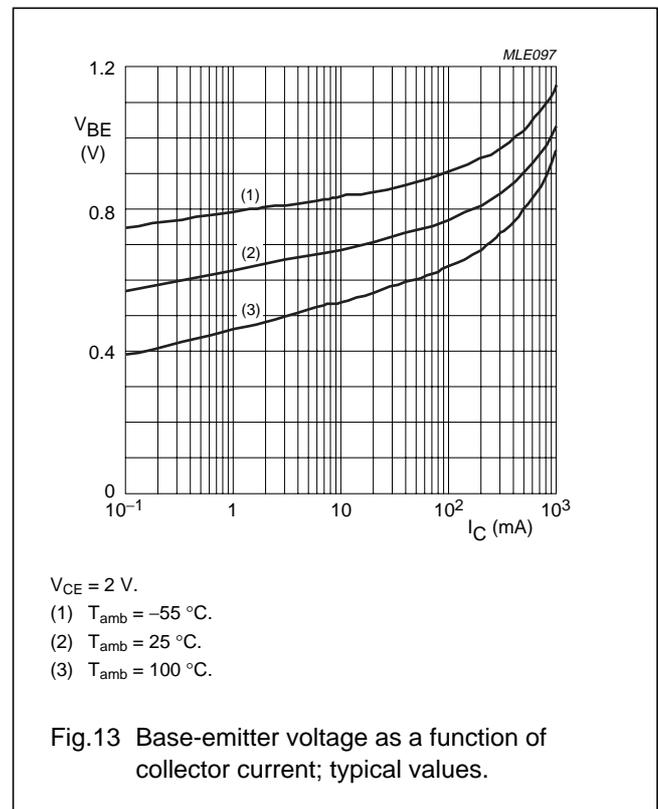
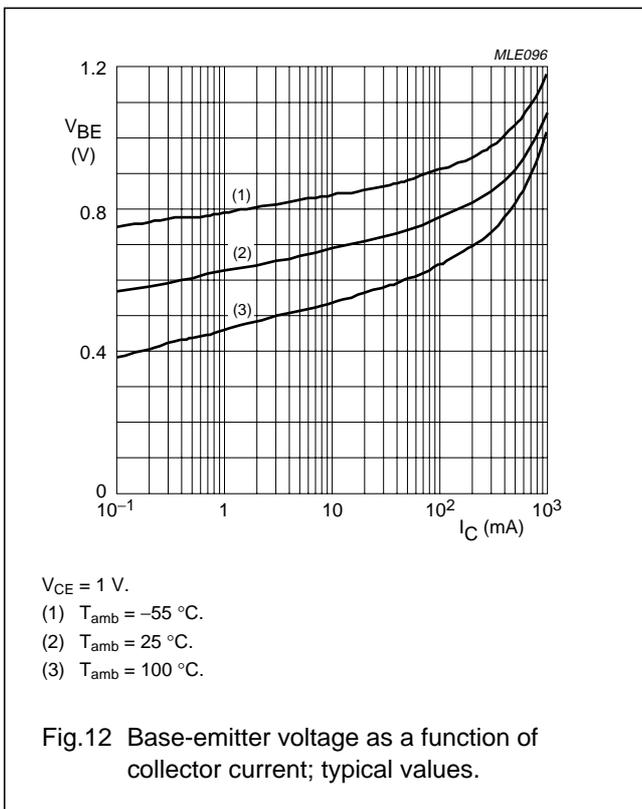
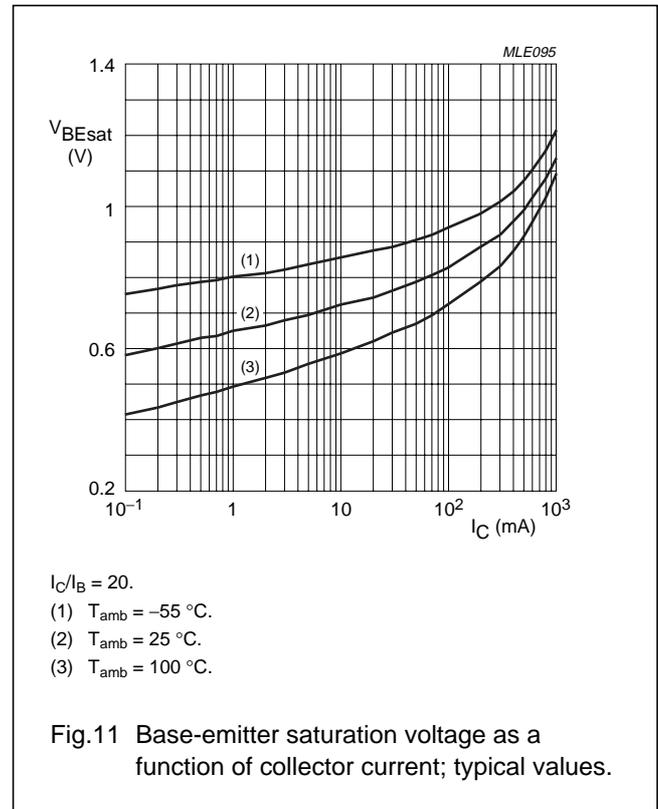
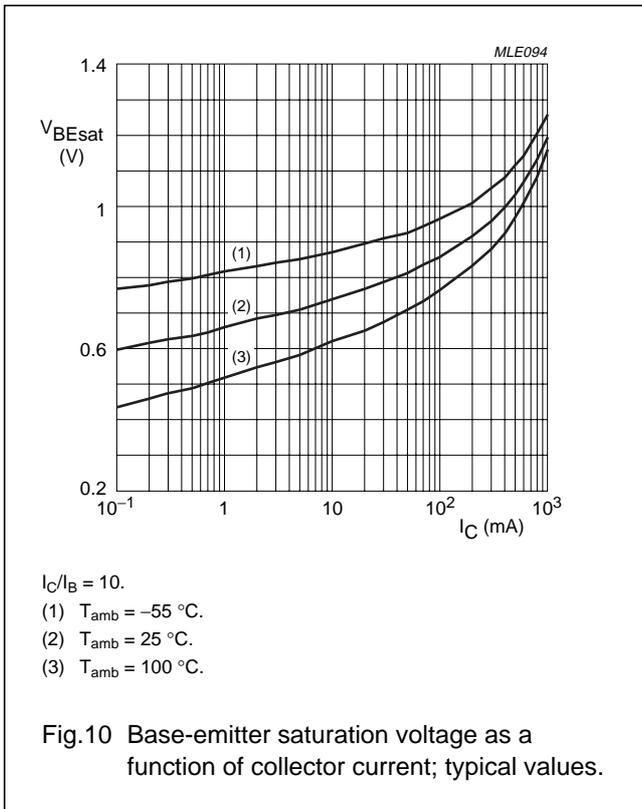
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PSS9013 series



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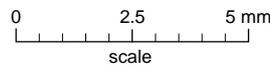
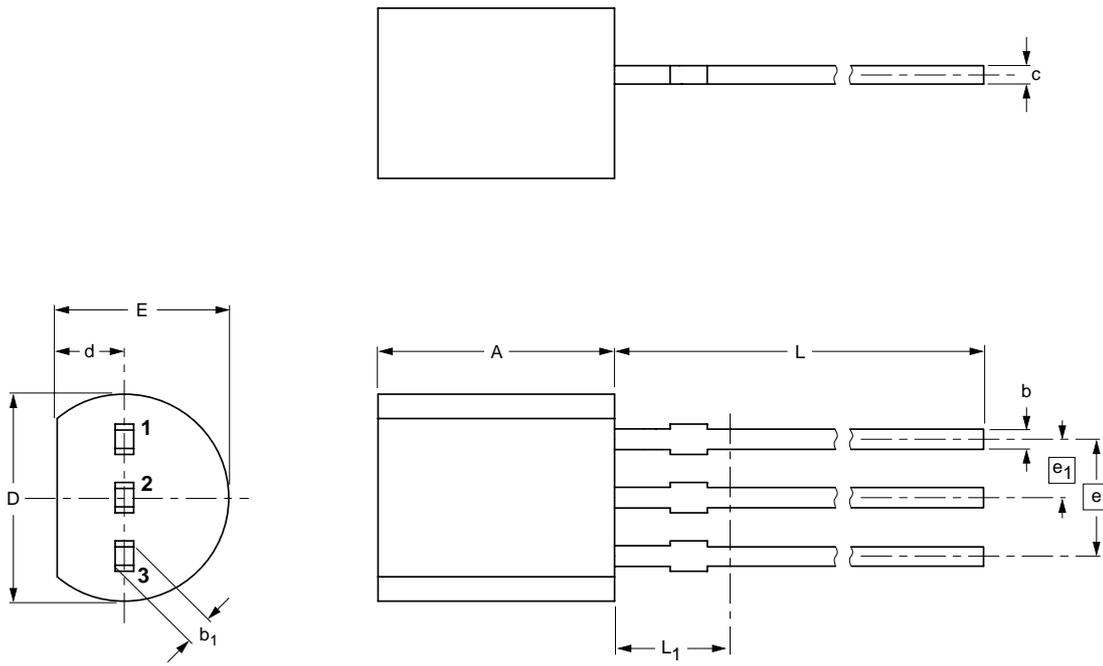
20 V NPN general purpose transistors

PSS9013 series

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		-97-02-28 04-06-28

20 V NPN general purpose transistors

PSS9013 series

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾⁽³⁾	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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