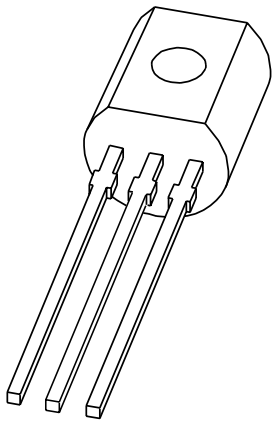
DATA SHEET



PSS9014C
NPN general purpose transistor

Product specification
Supersedes data of 2002 Mar 15

2002 Sep 20

Philips
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NPN general purpose transistor PSS9014C

FEATURES

- High power dissipation: 500 mW
- Low collector capacitance
- Low collector-emitter saturation voltage
- High current capability.

APPLICATIONS

- General purpose switching and amplification.

DESCRIPTION

NPN low V_{CEsat} transistor in a SOT54 (TO-92) plastic package.

MARKING

TYPE NUMBER	MARKING CODE
PSS9014C	S9014C

PINNING

PIN	DESCRIPTION
1	collector
2	base
3	emitter

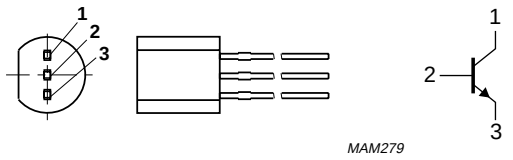


Fig.1 Simplified outline (SOT54) and symbol.

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	–	50	V
V_{CEO}	collector-emitter voltage	open base	–	45	V
V_{EBO}	emitter-base voltage	open collector	–	5	V
I_C	collector current (DC)		–	100	mA
I_{CM}	peak collector current		–	200	mA
I_{BM}	peak base current		–	200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C; note 1	–	500	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 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	250	K/W

Note

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

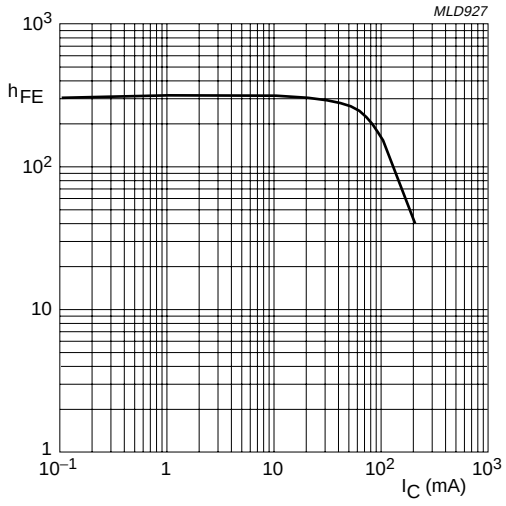
CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	V_{CB} = 30 V; I_E = 0	–	–	15	nA
		V_{CB} = 30 V; I_E = 0; T_{amb} = 150 °C	–	–	5	µA
I_{CEO}	collector-emitter cut-off current	V_{CE} = 30 V; I_B = 0	–	–	100	nA
I_{EBO}	emitter-base cut-off current	V_{EB} = 5 V; I_C = 0	–	–	100	nA
h_{FE}	DC current gain	I_C = 1 mA; V_{CE} = 5 V	200	300	600	
		I_C = 2 mA; V_{CE} = 5 V	200	300	450	
V_{CEsat}	collector-emitter saturation voltage	I_C = 100 mA; I_B = 5 mA; note 1	–	200	300	mV
V_{BEsat}	base-emitter saturation voltage	I_C = 100 mA; I_B = 0.5 mA; note 1	–	815	850	mV
V_{BEon}	base-emitter turn-on voltage	I_C = 2 mA; V_{CE} = 5 V	580	650	700	mV
f_T	transition frequency	I_C = 50 mA; V_{CE} = 10 V; f = 100 MHz	100	220	–	MHz
C_c	collector capacitance	V_{CB} = 10 V; I_E = i_e = 0; f = 1 MHz	–	1.6	1.75	pF
F	noise figure	V_{CE} = 5 V; I_C = 0.2 mA; R_S = 2 kΩ; f = 1 kHz; B = 200 Hz	–	–	10	dB

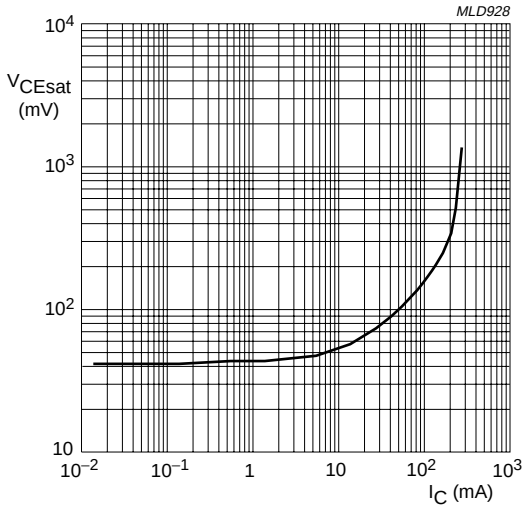
Note

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



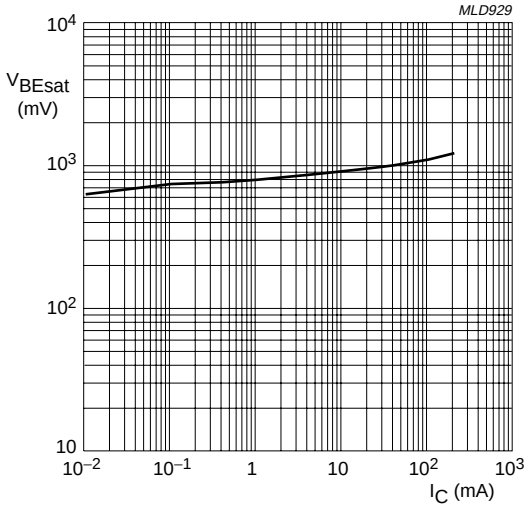
V_{CE} = 5 V.

Fig.2 DC current gain as a function of collector current; typical values.



I_C/I_B = 20.

Fig.3 Collector-emitter saturation voltage as a function of collector current; typical values.



I_C/I_B = 20.

Fig.4 Base-emitter saturation voltage as a function of collector current; typical values.

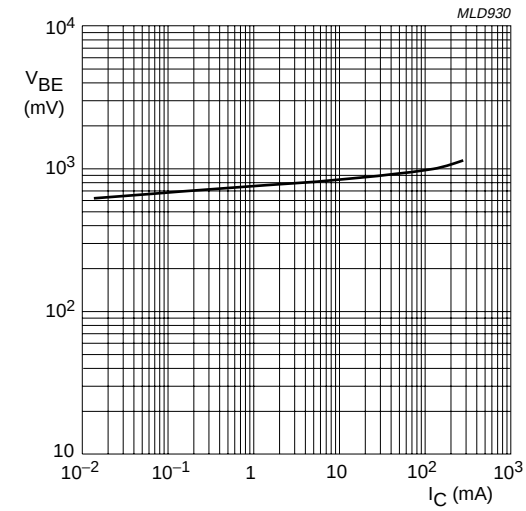
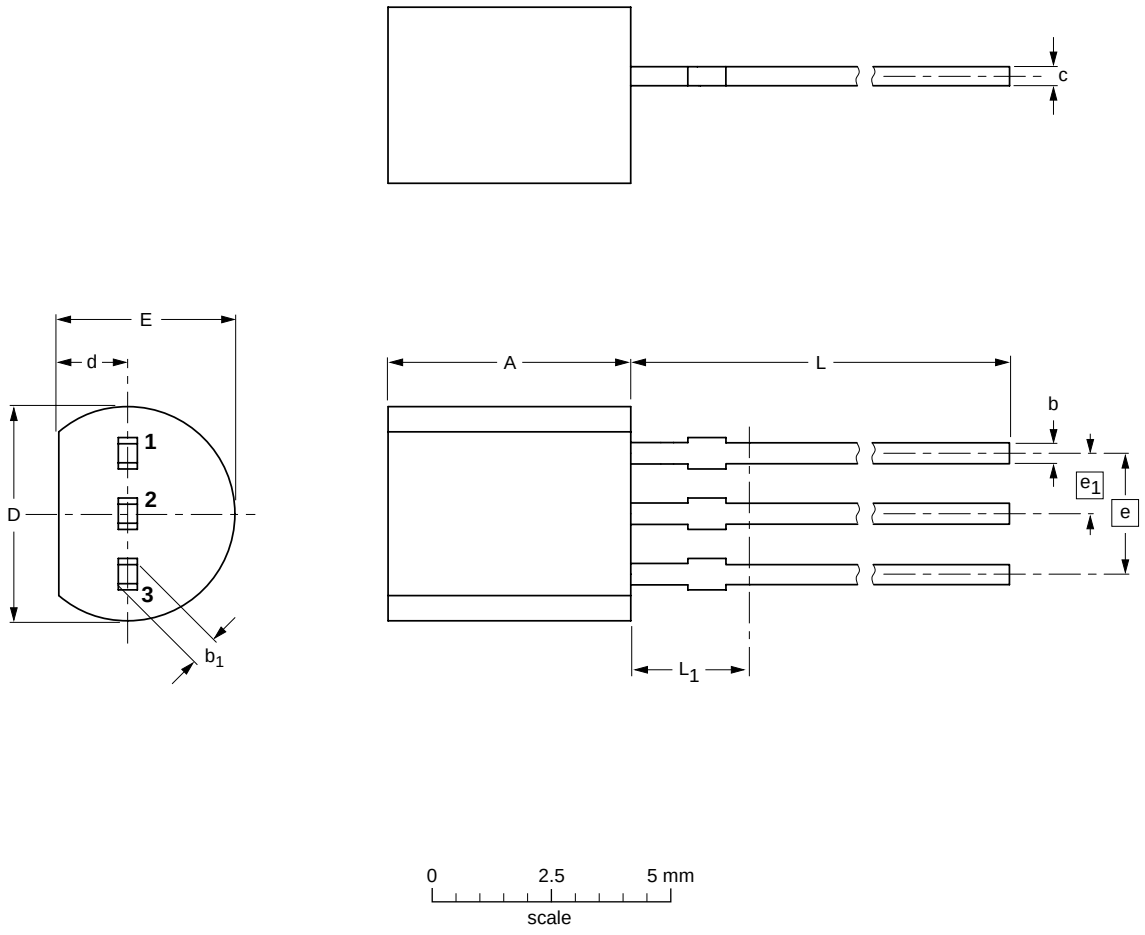


Fig.5 Base-emitter voltage as a function of collector current; typical values.

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)
mm	5.2 5.0	0.48 0.40	0.66 0.56	0.45 0.40	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	EIAJ			
SOT54		TO-92	SC-43			97-02-28

DATA SHEET STATUS

DATA SHEET STATUS[1]	PRODUCT STATUS[2]	DEFINITIONS
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.
Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Changes will be communicated according to the Customer Product/Process Change Notification (CPCN) procedure SNW-SQ-650A.

Notes

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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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