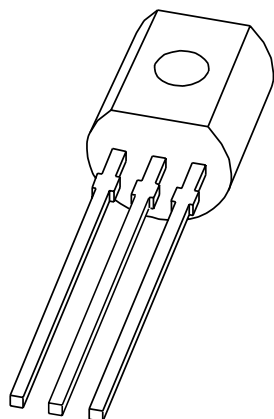


# DATA SHEET



## **2N5550; 2N5551** **NPN high-voltage transistors**

Product specification  
Supersedes data of 1999 Apr 23

2004 Oct 28

NPN high-voltage transistors

2N5550; 2N5551

FEATURES

- Low current (max. 300 mA)
- High voltage (max. 160 V).

APPLICATIONS

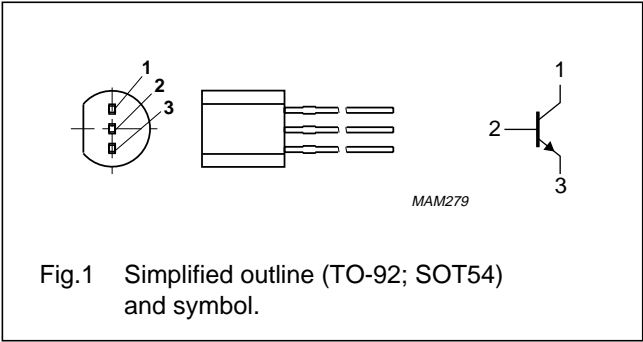
- Switching and amplification in high voltage applications such as telephony.

DESCRIPTION

NPN high-voltage transistor in a TO-92; SOT54 plastic package. PNP complements: 2N5400 and 2N5401.

PINNING

PIN	DESCRIPTION
1	collector
2	base
3	emitter



ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
2N5550	SC-43A	plastic single-ended leaded (through hole) package; 3 leads	SOT54
2N5551			

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	—	160	V
	2N5550			180	V
$V_{CEO}$	collector-emitter voltage	open base	—	140	V
	2N5551			160	V
$V_{EBO}$	emitter-base voltage	open collector	—	6	V
$I_C$	collector current (DC)		—	300	mA
$I_{CM}$	peak collector current		—	600	mA
$I_{BM}$	peak base current		—	100	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ }^{\circ}\text{C}$	—	630	mW
$T_{stg}$	storage temperature		−65	+150	$^{\circ}\text{C}$
$T_j$	junction temperature		—	150	$^{\circ}\text{C}$
$T_{amb}$	ambient temperature		−65	+150	$^{\circ}\text{C}$

## NPN high-voltage transistors

## 2N5550; 2N5551

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient	200	K/W

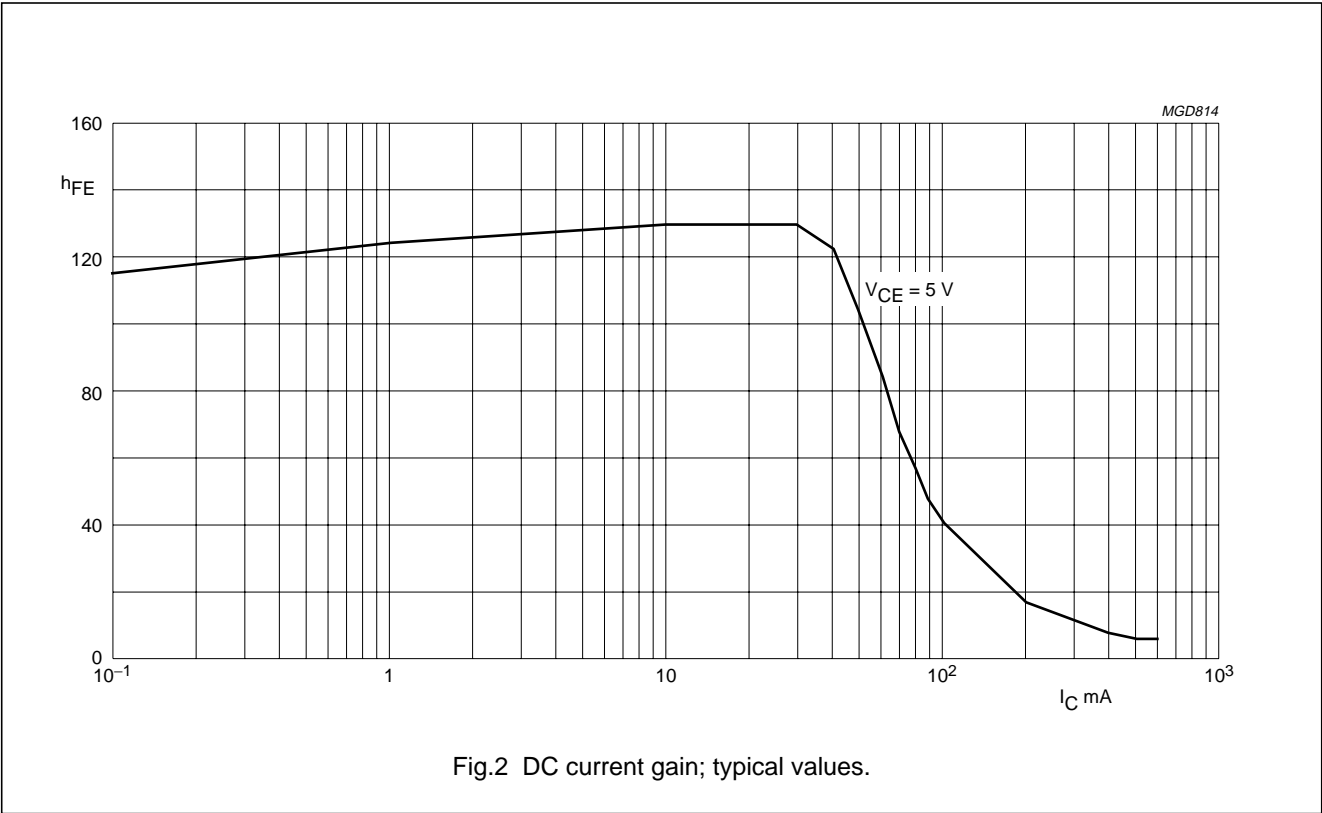
## CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{CBO}$	collector-base cut-off current 2N5550	$V_{CB} = 100\text{ V}; I_E = 0\text{ A}$	–	100	nA
		$V_{CB} = 100\text{ V}; I_E = 0\text{ A}; T_j = 100\text{ }^{\circ}\text{C}$	–	100	$\mu\text{A}$
	collector-base cut-off current 2N5551	$V_{CB} = 120\text{ V}; I_E = 0\text{ A}$	–	50	nA
		$V_{CB} = 120\text{ V}; I_E = 0\text{ A}; T_j = 100\text{ }^{\circ}\text{C}$	–	50	$\mu\text{A}$
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = 4\text{ V}; I_C = 0\text{ A}$	–	50	nA
$h_{FE}$	DC current gain 2N5550 2N5551	$V_{CE} = 5\text{ V}; I_C = 1\text{ mA}; \text{ see Fig.2}$	60	–	
			80	–	
	DC current gain 2N5550 2N5551	$V_{CE} = 5\text{ V}; I_C = 10\text{ mA}; \text{ see Fig.2}$	60	250	
			80	250	
	DC current gain 2N5550 2N5551	$V_{CE} = 5\text{ V}; I_C = 50\text{ mA}; \text{ see Fig.2}$	20	–	
			30	–	
$V_{CEsat}$	collector-emitter saturation voltage 2N5550 2N5551	$I_C = 10\text{ mA}; I_B = 1\text{ mA}$	–	150	mV
			–	150	mV
	collector-emitter saturation voltage 2N5550 2N5551	$I_C = 50\text{ mA}; I_B = 5\text{ mA}$	–	250	mV
			–	200	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 1\text{ mA}$	–	1	V
		$I_C = 50\text{ mA}; I_B = 5\text{ mA}$	–	1	V
$C_c$	collector capacitance	$V_{CB} = 10\text{ V}; I_E = i_e = 0\text{ A}; f = 1\text{ MHz}$	–	6	pF
$C_e$	emitter capacitance	$V_{EB} = 0.5\text{ V}; I_C = i_c = 0\text{ A}; f = 1\text{ MHz}$	–	30	pF
$f_T$	transition frequency	$V_{CE} = 10\text{ V}; I_C = 10\text{ mA}; f = 100\text{ MHz}$	100	300	MHz
F	noise figure 2N5550 2N5551	$V_{CE} = 5\text{ V}; I_C = 200\text{ }\mu\text{A}; R_S = 2\text{ k}\Omega;$ $f = 10\text{ Hz to }15.7\text{ kHz}$	–	10	dB
			–	8	dB

NPN high-voltage transistors

2N5550; 2N5551



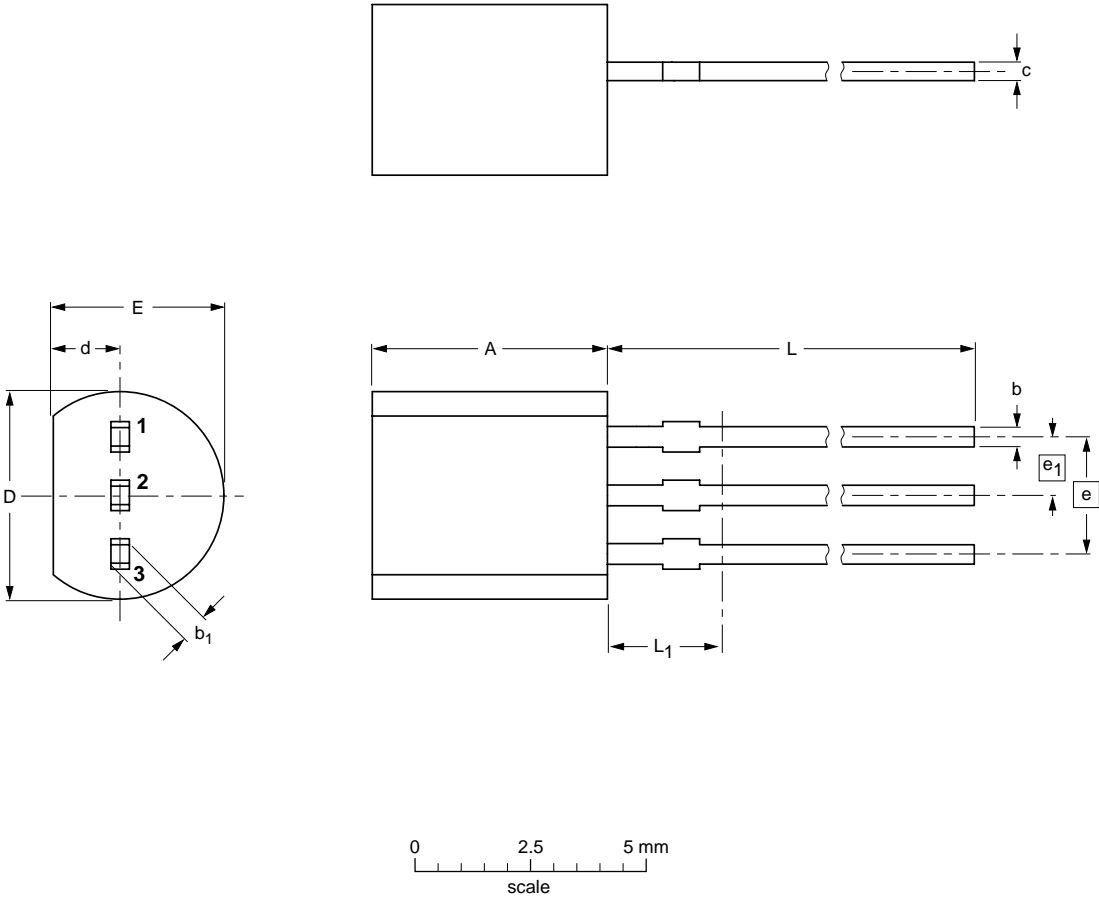
NPN high-voltage transistors

2N5550; 2N5551

PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; 3 leads

SOT54



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	b <sub>1</sub>	c	D	d	E	e	e <sub>1</sub>	L	L <sub>1</sub> <sup>(1)</sup> 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

## NPN high-voltage transistors

2N5550; 2N5551

## DATA SHEET STATUS

LEVEL	DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)(3)</sup>	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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## **Contact information**

For additional information please visit **<http://www.semiconductors.philips.com>**. Fax: **+31 40 27 24825**

For sales offices addresses send e-mail to: **[sales.addresses@www.semiconductors.philips.com](mailto:sales.addresses@www.semiconductors.philips.com)**.

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Printed in The Netherlands

R75/04/pp7

Date of release: 2004 Oct 28

Document order number: 9397 750 13548

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