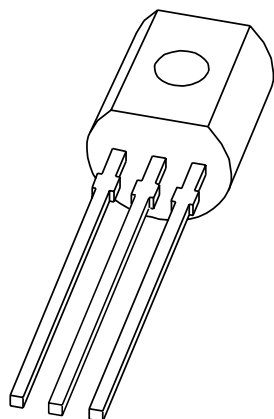


DATA SHEET



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

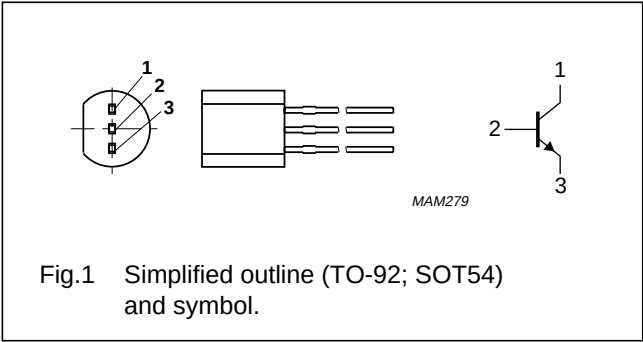
- Switching and amplification in high voltage applications such as telephony.

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	$T_{amb} \leq 25\text{ °C}$	—	630	mW
T_{stg}	storage temperature		−65	+150	°C
T_j	junction temperature		—	150	°C
T_{amb}	ambient temperature		−65	+150	°C

NPN high-voltage transistors

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THERMAL CHARACTERISTICS

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

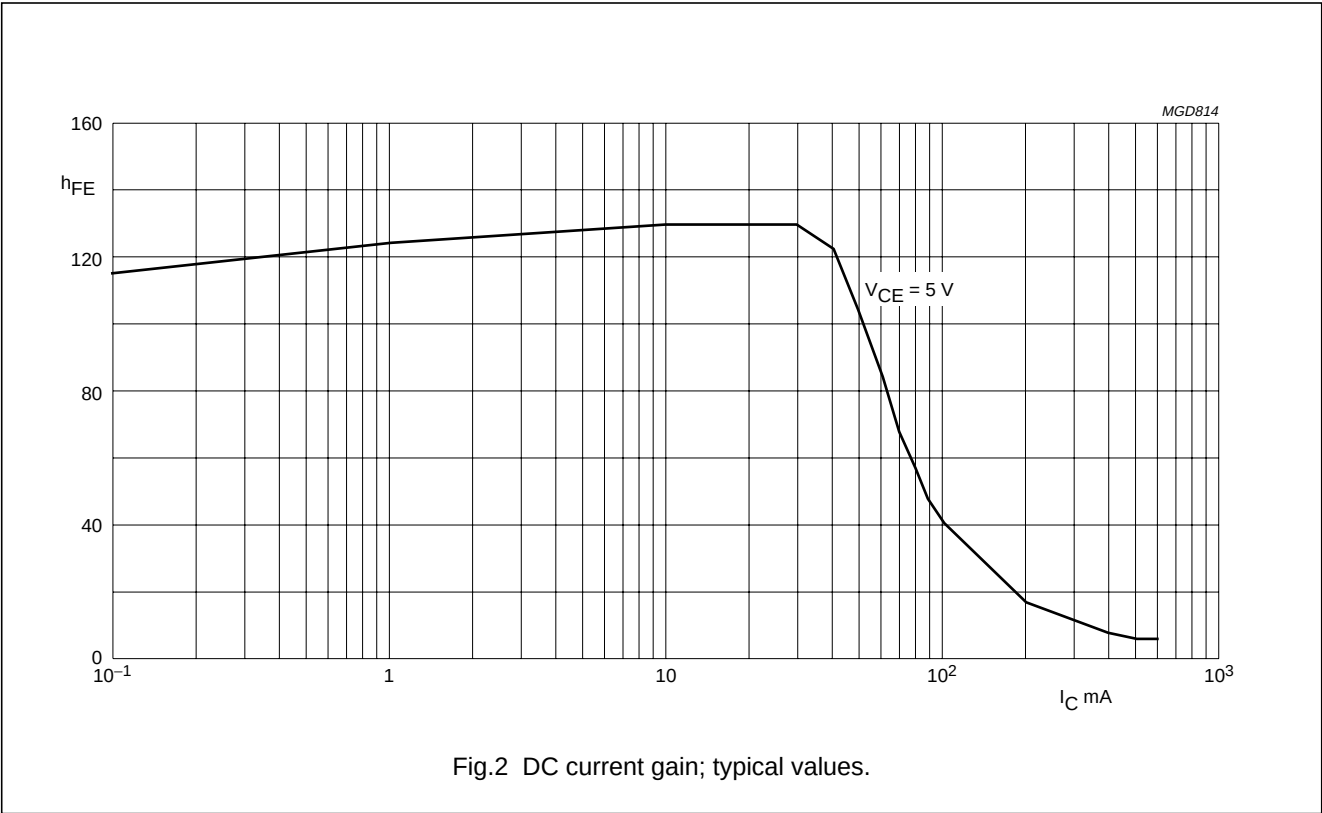
CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$ 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	μA
	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	μA
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

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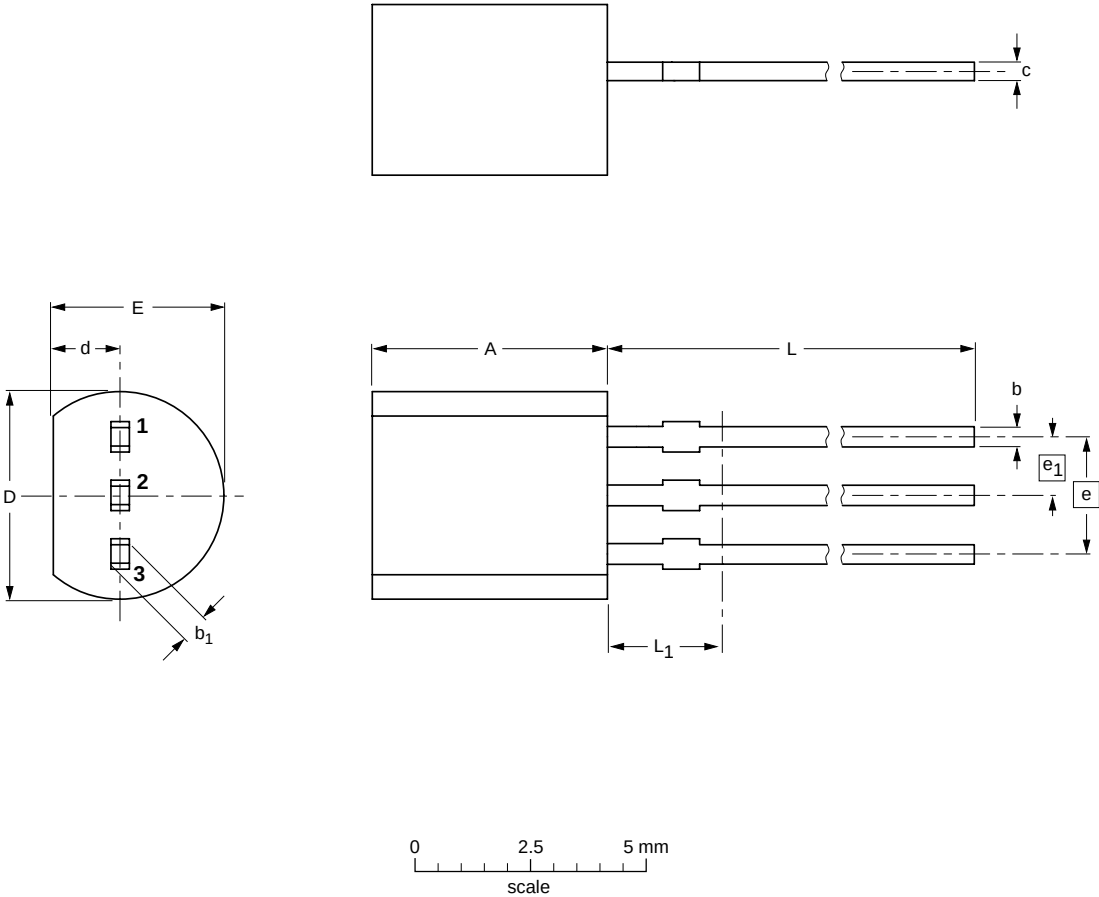
NPN high-voltage transistors

2N5550; 2N5551

PACKAGE OUTLINE

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

SOT54



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	b 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

NPN high-voltage transistors

2N5550; 2N5551

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.
II	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.
III	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. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN).

Notes

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2. The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL <http://www.semiconductors.philips.com>.
3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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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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