

NPN high-voltage transistors

2N5550; 2N5551

FEATURES

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

APPLICATIONS

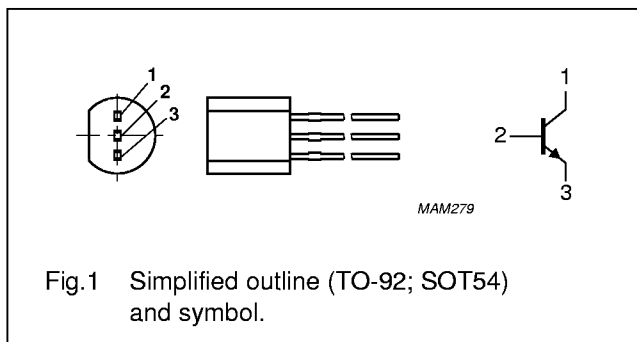
- Switching and amplification in high voltage applications such as telephony.

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



LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	—	160	V
	2N5550		—	180	V
	2N5551				
V_{CEO}	collector-emitter voltage	open base	—	140	V
	2N5550		—	160	V
	2N5551				
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}	operating ambient temperature		−65	+150	°C

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

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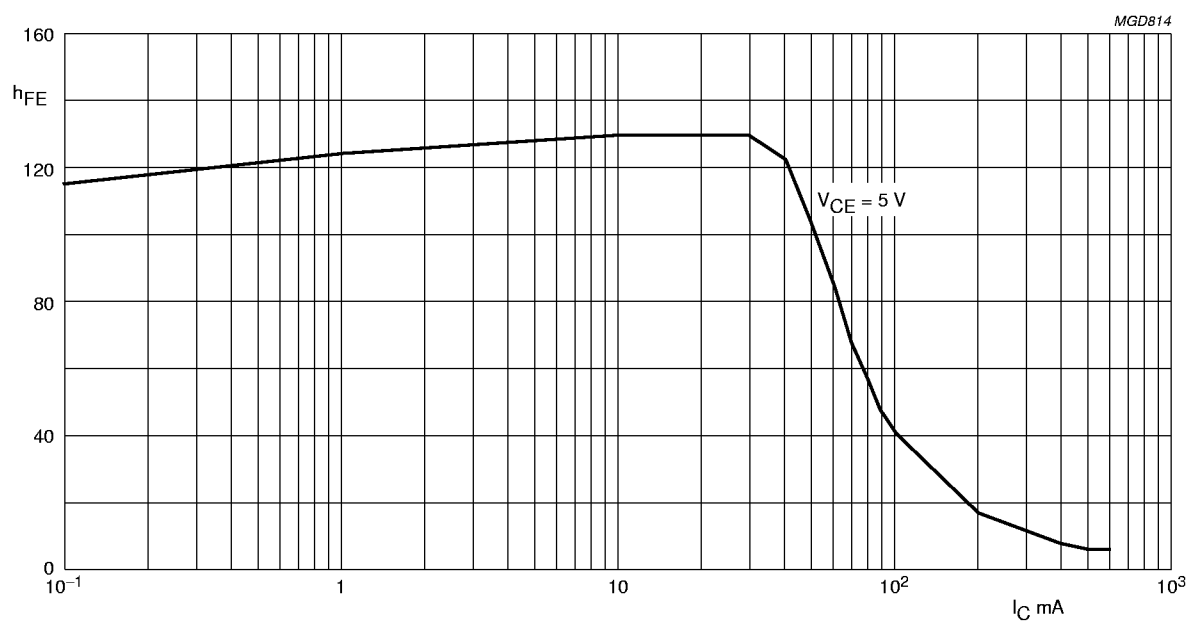


Fig.2 DC current gain; typical values.

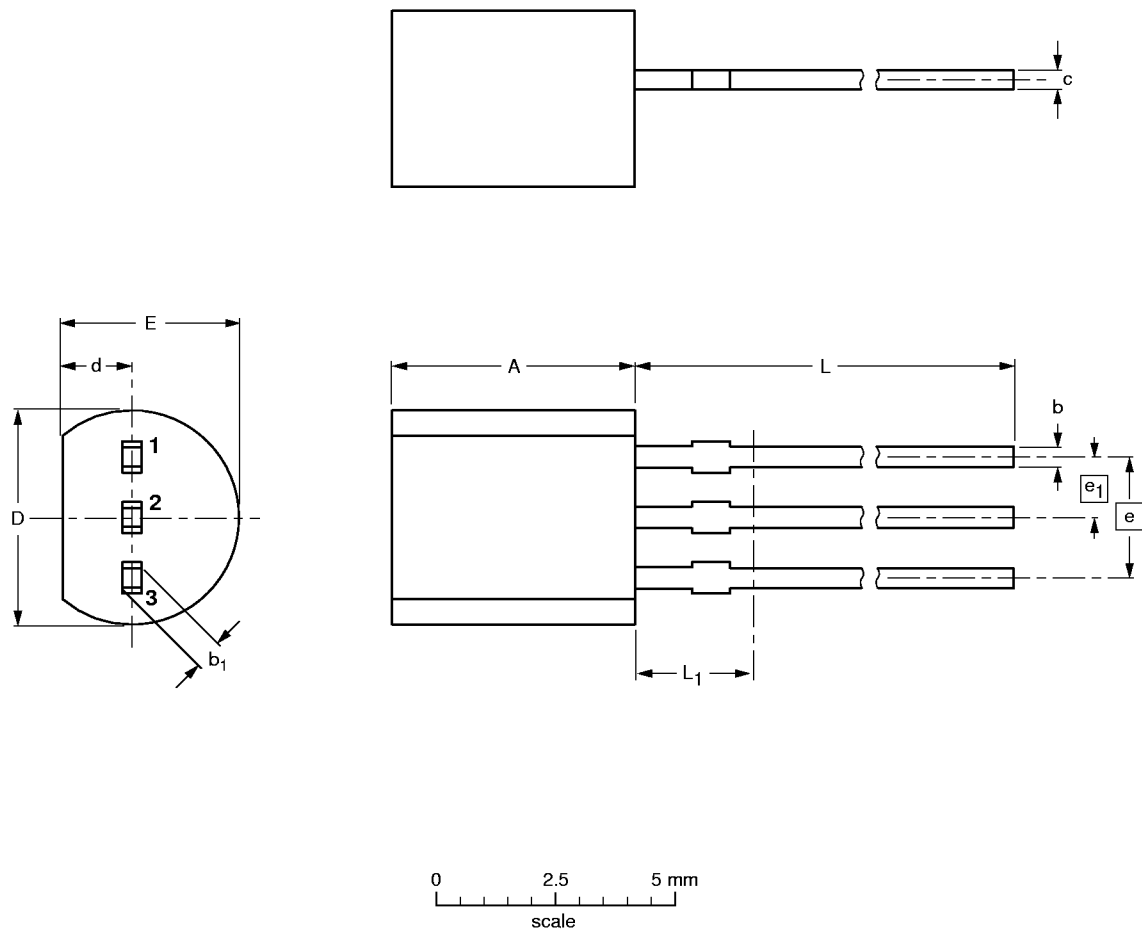
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PACKAGE OUTLINE

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