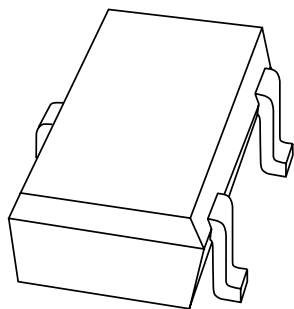


DATA SHEET



PMST5550; PMST5551 NPN high-voltage transistors

Product specification
Supersedes data of 1997 Apr 16
File under Discrete Semiconductors, SC04

1997 May 20

NPN high-voltage transistors

PMST5550; PMST5551

FEATURES

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

APPLICATIONS

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

DESCRIPTION

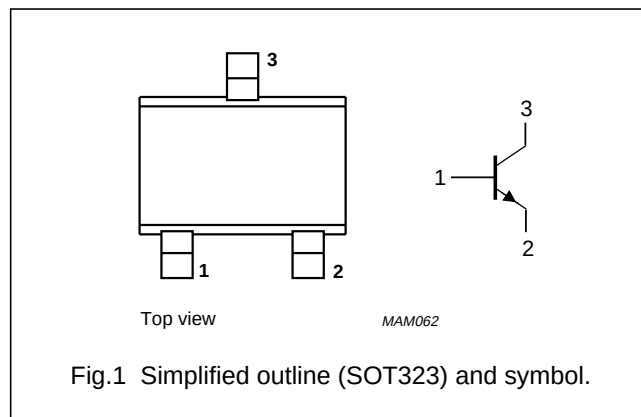
NPN high-voltage transistor in a SOT323 plastic package.
PNP complement: PMST5401.

MARKING

TYPE NUMBER	MARKING CODE
PMST5550	t1F
PMST5551	tG3

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	—	160	V
	PMST5550			180	V
V_{CEO}	collector-emitter voltage	open base	—	140	V
	PMST5551			160	V
I_{CM}	peak collector current		—	600	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$	—	200	mW
h_{FE}	DC current gain	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}$	60	250	
	PMST5550			250	
C_c	collector capacitance	$I_E = I_e = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	—	6	pF
f_T	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$	100	300	MHz

NPN high-voltage transistors

PMST5550; PMST5551

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			
	PMST5550		–	160	V
	PMST5551		–	180	V
V _{CEO}	collector-emitter voltage	open base			
	PMST5550		–	140	V
	PMST5551		–	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} ≤ 25 °C; note 1	–	200	mW
T _{stg}	storage temperature		–65	+150	°C
T _j	junction temperature		–	150	°C
T _{amb}	operating ambient temperature		–65	+150	°C

Note

1. Transistor mounted on an FR4 printed-circuit board.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th j-a}	thermal resistance from junction to ambient	note 1	625	K/W

Note

1. Transistor mounted on an FR4 printed-circuit board.

NPN high-voltage transistors

PMST5550; PMST5551

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector cut-off current PMST5550	$I_E = 0$; $V_{CB} = 100\text{ V}$	–	100	nA
		$I_E = 0$; $V_{CB} = 100\text{ V}$; $T_{amb} = 100\text{ °C}$	–	100	μA
I_{CBO}	collector cut-off current PMST5551	$I_E = 0$; $V_{CB} = 120\text{ V}$	–	50	nA
		$I_E = 0$; $V_{CB} = 120\text{ V}$; $T_{amb} = 100\text{ °C}$	–	50	μA
I_{EBO}	emitter cut-off current	$I_C = 0$; $V_{EB} = 4\text{ V}$	–	50	nA
h_{FE}	DC current gain PMST5550	$V_{CE} = 5\text{ V}$; see Fig.2			
		$I_C = 1\text{ mA}$	60	–	
		$I_C = 10\text{ mA}$	60	250	
		$I_C = 50\text{ mA}$; note 1	20	–	
h_{FE}	DC current gain PMST5551	$V_{CE} = 5\text{ V}$; see Fig.2			
		$I_C = 1\text{ mA}$	80	–	
		$I_C = 10\text{ mA}$	80	250	
		$I_C = 50\text{ mA}$; note 1	30	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 10\text{ mA}$; $I_B = 1\text{ mA}$	–	150	mV
V_{CEsat}	collector-emitter saturation voltage PMST5550 PMST5551	$I_C = 50\text{ mA}$; $I_B = 5\text{ mA}$; note 1	–	250	mV
			–	200	mV
V_{BEsat}	base-emitter saturation voltage	$I_C = 10\text{ mA}$; $I_B = 1\text{ mA}$	–	1	V
V_{BEsat}	base-emitter saturation voltage PMST5550 PMST5551	$I_C = 50\text{ mA}$; $I_B = 5\text{ mA}$; note 1	–	1.2	V
			–	1	V
C_c	collector capacitance	$I_E = i_e = 0$; $V_{CB} = 10\text{ V}$; $f = 1\text{ MHz}$	–	6	pF
C_e	emitter capacitance	$I_C = i_c = 0$; $V_{EB} = 0.5\text{ V}$; $f = 1\text{ MHz}$	–	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 PMST5551	$I_C = 200\text{ }\mu\text{A}$; $V_{CE} = 5\text{ V}$; $R_S = 2\text{ k}\Omega$; $f = 10\text{ Hz}$ to 15.7 kHz	–	8	dB

Note

1. Pulse test: $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$.

NPN high-voltage transistors

PMST5550; PMST5551

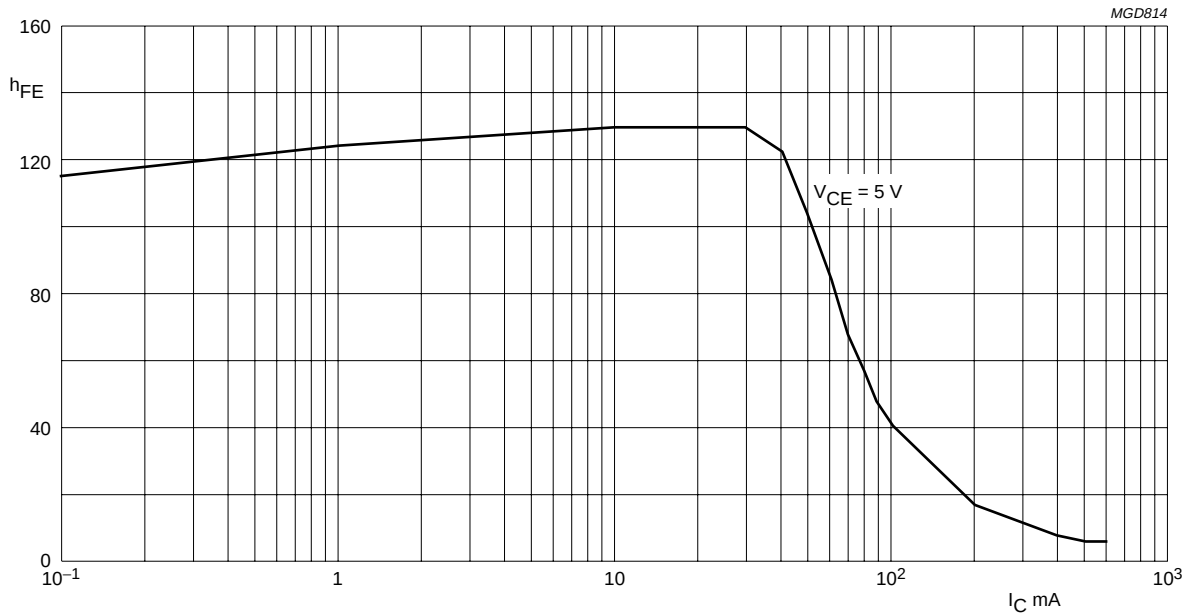


Fig.2 DC current gain; typical values.

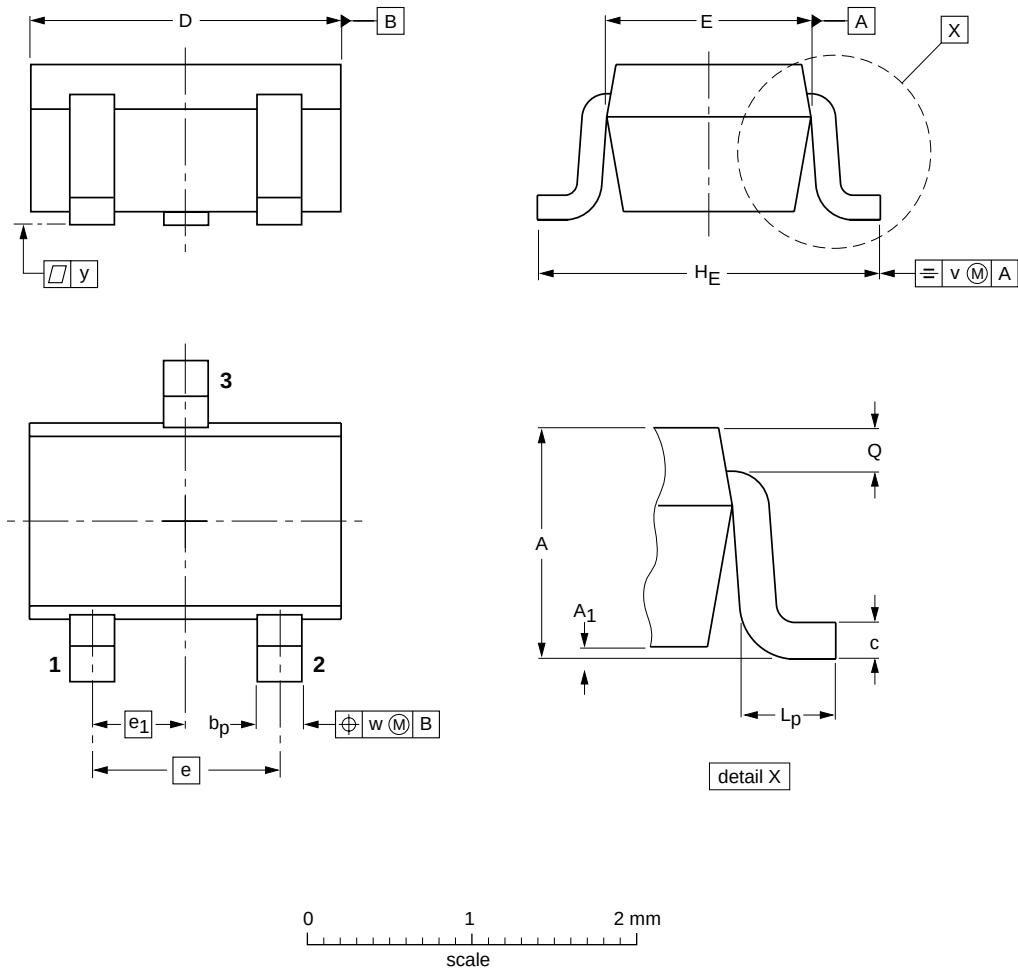
NPN high-voltage transistors

PMST5550; PMST5551

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT323



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	1.1 0.8	0.1	0.4 0.3	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.23 0.13	0.2	0.2

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT323			SC-70			97-02-28

NPN high-voltage transistorsPMST5550; PMST5551

DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). 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.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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