

# DATA SHEET



## **PMBT5550** NPN high-voltage transistor

Product data sheet  
Supersedes data of 1999 Apr 15

2004 Jan 21

# NPN high-voltage transistor

# PMBT5550

### FEATURES

- Low current (max. 300 mA)
- Low voltage (max. 140 V).

### APPLICATIONS

- Telephony.

### DESCRIPTION

NPN high-voltage transistor in a SOT23 plastic package.  
PNP complement: PMBT5401.

### MARKING

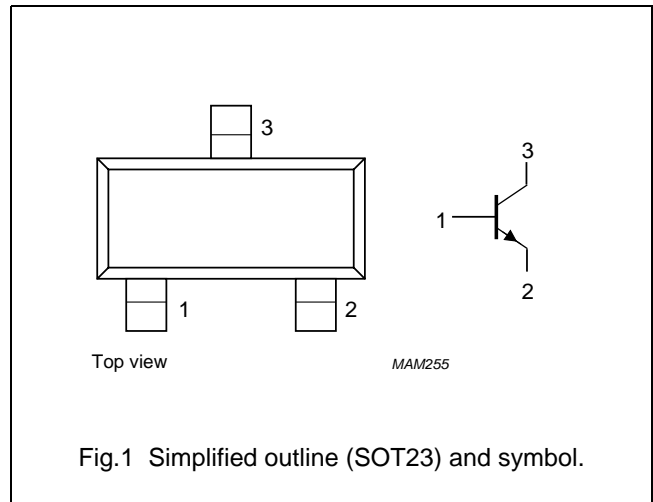
TYPE NUMBER	MARKING CODE <sup>(1)</sup>
PMBT5550	*1F

### Note

- \* = p : Made in Hong Kong.  
\* = t : Made in Malaysia.  
\* = W : Made in China.

### PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



### ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PMBT5550	–	plastic surface mounted package; 3 leads	SOT23

### 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
$V_{CEO}$	collector-emitter voltage	open base	–	140	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	$T_{amb} \leq 25\text{ °C}$ ; note 1	–	250	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.

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## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient	note 1	500	K/W

## Note

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

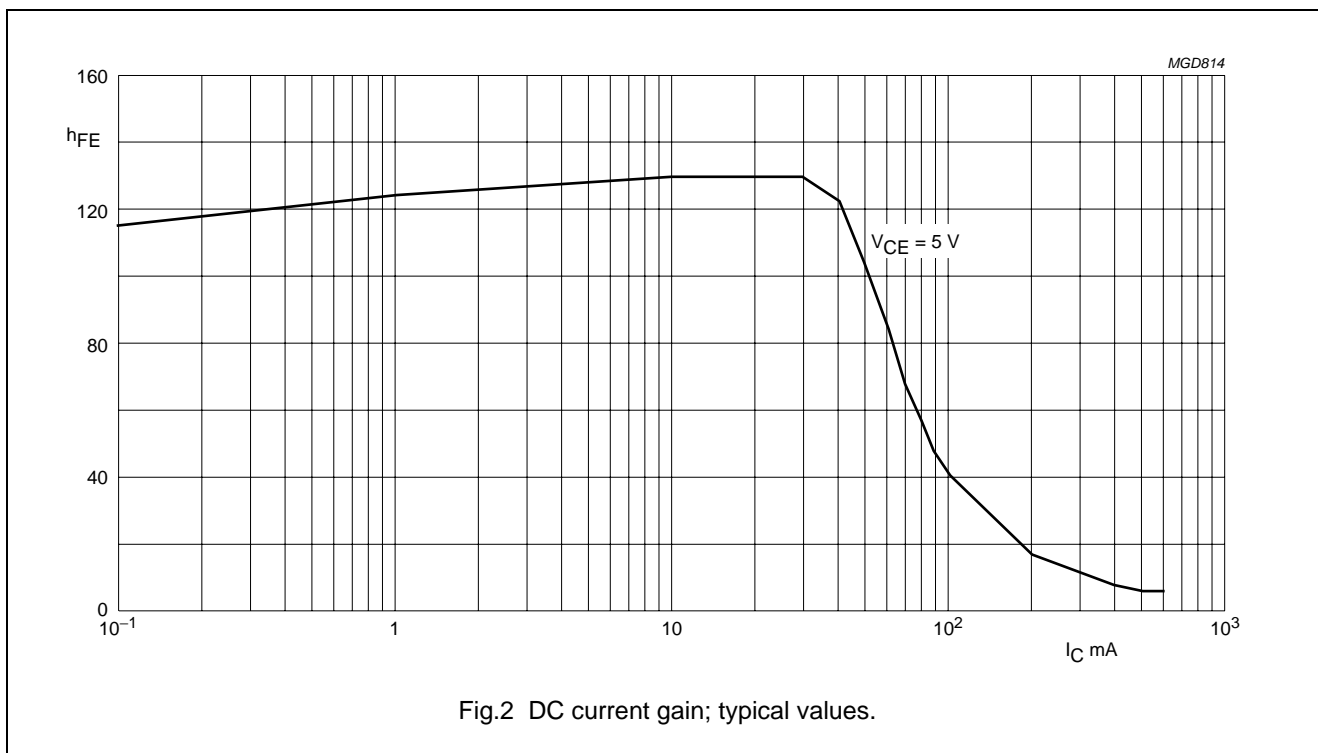
## CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{CBO}$	collector-base cut-off current	$I_E = 0; V_{CB} = 100\text{ V}$	–	50	nA
		$I_E = 0; V_{CB} = 100\text{ V}; T_{amb} = 100\text{ °C}$	–	50	$\mu\text{A}$
$I_{EBO}$	emitter-base cut-off current	$I_C = 0; V_{EB} = 4\text{ V}$	–	50	nA
$h_{FE}$	DC current gain	$V_{CE} = 5\text{ V};$ (see Fig.2)			
		$I_C = 1\text{ mA}$	60	–	
		$I_C = 10\text{ mA}$	60	250	
		$I_C = 50\text{ mA}$	20	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 1\text{ mA}$	–	150	mV
		$I_C = 50\text{ mA}; I_B = 5\text{ mA}$	–	250	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 1\text{ mA}$	–	1	V
		$I_C = 50\text{ mA}; I_B = 5\text{ mA}$	–	1.2	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	$I_C = 200\text{ }\mu\text{A}; V_{CE} = 5\text{ V}; R_S = 2\text{ k}\Omega;$ $f = 10\text{ Hz to }15.7\text{ kHz}$	–	10	dB

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PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23

