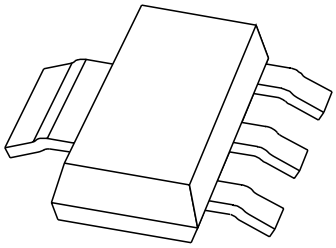
DATA SHEET



PZTA44; PZTA45
NPN high-voltage transistors

Product specification
Supersedes data of September 1994
File under Discrete Semiconductors, SC04

1997 Jul 02

Philips
Semiconductors

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NPN high-voltage transistors PZTA44; PZTA45

FEATURES

- Low current (max. 300 mA)
- High voltage (max. 400 V).

APPLICATIONS

- Telecommunication.

DESCRIPTION

NPN high-voltage transistor in a SOT223 plastic package.

PINNING

PIN	DESCRIPTION
1	base
2, 4	collector
3	emitter

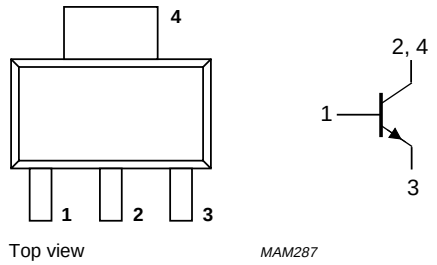


Fig.1 Simplified outline (SOT223) and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter			
	PZTA44		–	500	V
	PZTA45		–	400	V
V_{CEO}	collector-emitter voltage	open base			
	PZTA44		–	400	V
	PZTA45		–	350	V
I_{CM}	peak collector current		–	300	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	–	1.35	W
h_{FE}	DC current gain	I_C = 100 mA; V_{CE} = 10 V	40	–	
f_T	transition frequency	I_C = 10 mA; V_{CE} = 10 V; f = 100 MHz	20	–	MHz

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			
	PZTA44		–	500	V
	PZTA45		–	400	V
V_{CEO}	collector-emitter voltage	open base			
	PZTA44		–	400	V
	PZTA45		–	350	V
V_{EBO}	emitter-base voltage	open collector	–	6	V
I_C	collector current (DC)		–	300	mA
I_{CM}	peak collector current		–	300	mA
I_{BM}	peak base current		–	100	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C; note 1	–	1.35	W
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

Note

1. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm^2. For other mounting conditions, see *"Thermal considerations for SOT223 in the General part of handbook SC04"*.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	91	K/W
$R_{th\ j\text{-}s}$	thermal resistance from junction to soldering point		10	K/W

Note

1. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm^2. For other mounting conditions, see *"Thermal considerations for SOT223 in the General part of handbook SC04"*.

CHARACTERISTICS

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

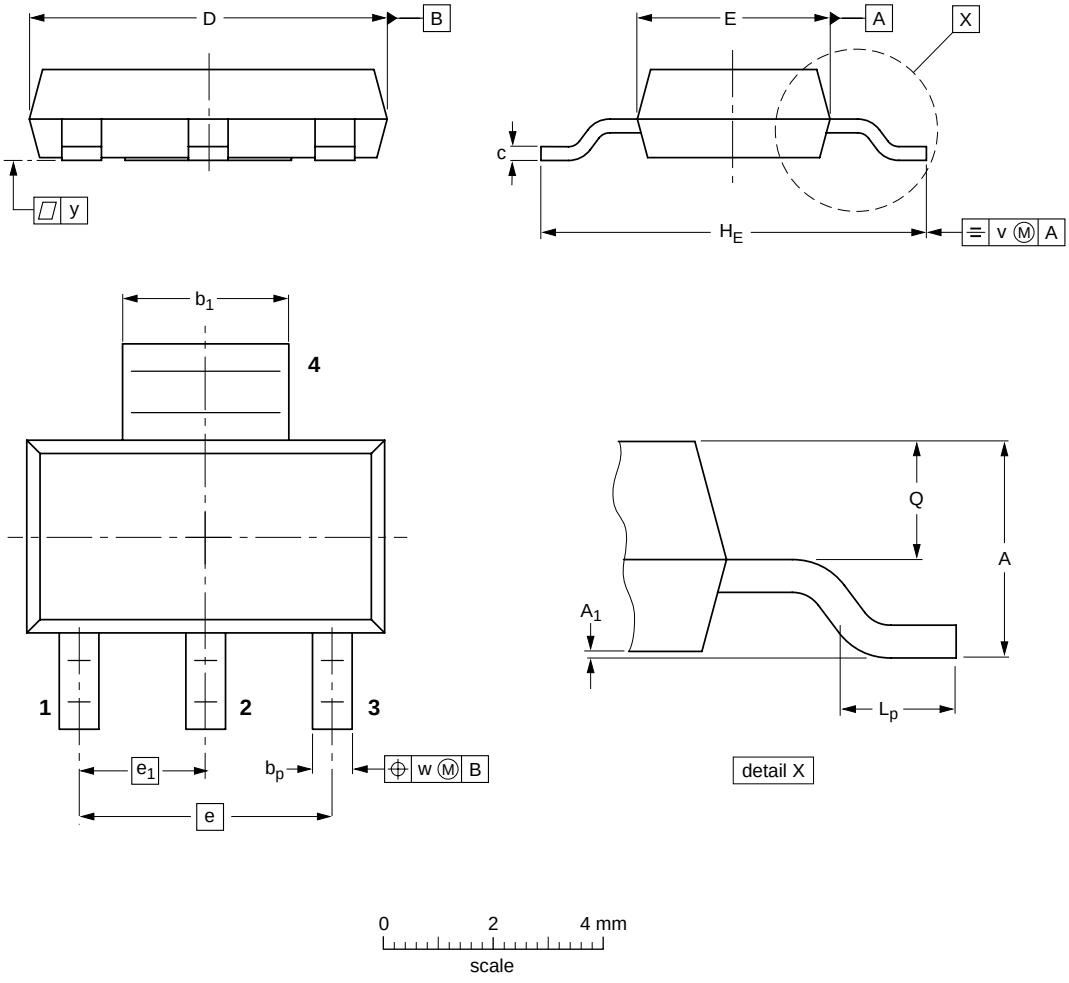
SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector cut-off current				
	PZTA44	I_E = 0; V_{CB} = 400 V	–	100	nA
		I_E = 0; V_{CB} = 400 V; T_j = 150 °C	–	10	µA
I_{CBO}	collector cut-off current				
	PZTA45	I_E = 0; V_{CB} = 320 V	–	100	nA
		I_E = 0; V_{CB} = 320 V; T_j = 150 °C	–	10	µA
I_{EBO}	emitter cut-off current	I_C = 0; V_{EB} = 4 V	–	100	nA
h_{FE}	DC current gain	V_{CE} = 10 V			
		I_C = 1 mA	40	–	
		I_C = 10 mA	50	200	
		I_C = 50 mA; note 1	45	–	
		I_C = 100 mA; note 1	40	–	
V_{CEsat}	collector-emitter saturation voltage	I_C = 1 mA; I_B = 0.1 mA	–	400	mV
		I_C = 10 mA; I_B = 1 mA	–	500	mV
		I_C = 50 mA; I_B = 5 mA; note 1	–	750	mV
C_c	collector capacitance	$I_E = i_e$ = 0; V_{CB} = 20 V; f = 1 MHz	–	7	pF
C_e	emitter capacitance	$I_C = i_c$ = 0; V_{EB} = 500 mV; f = 1 MHz	–	180	pF
f_T	transition frequency	I_C = 10 mA; V_{CE} = 10 V; f = 100 MHz	20	–	MHz

Note

1. Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

PACKAGE OUTLINE

Plastic surface mounted package; collector pad for good heat transfer; 4 leads **SOT223**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1	b_p	b_1	c	D	E	e	e_1	H_E	L_p	Q	v	w	y
mm	1.8 1.5	0.10 0.01	0.80 0.60	3.1 2.9	0.32 0.22	6.7 6.3	3.7 3.3	4.6	2.3	7.3 6.7	1.1 0.7	0.95 0.85	0.2	0.1	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT223						~~96-11-11~~ 97-02-28

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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