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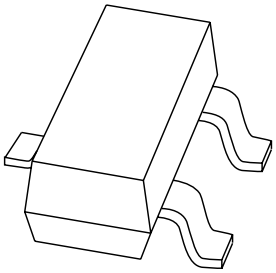
Kind regards,

Team Nexperia

DATA SHEET



PMBTA13; PMBTA14
NPN Darlington transistors

Product data sheet
Supersedes data of 1999 Apr 29

2004 Jan 22

NPN Darlington transistors PMBTA13; PMBTA14

FEATURES

- High current (max. 500 mA)
- Low voltage (max. 30 V)
- High DC current gain (min. 10000).

APPLICATIONS

- High input impedance preamplifiers.

DESCRIPTION

NPN Darlington transistor in a SOT23 plastic package.
PNP complement: PMBTA64.

MARKING

TYPE NUMBER	MARKING CODE(1)
PMBTA13	*1M
PMBTA14	*1N

Note

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

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector

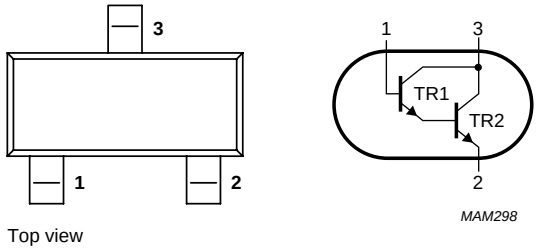


Fig.1 Simplified outline (SOT23) and symbol.

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PMBTA13	–	plastic surface mounted package; 3 leads	SOT23
PMBTA14			

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	–	30	V
V_{CES}	collector-emitter voltage	V_{BE} = 0	–	30	V
V_{EBO}	emitter-base voltage	open collector	–	10	V
I_C	collector current (DC)		–	500	mA
I_{CM}	peak collector current		–	800	mA
I_B	base current (DC)		–	200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °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.

THERMAL CHARACTERISTICS

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

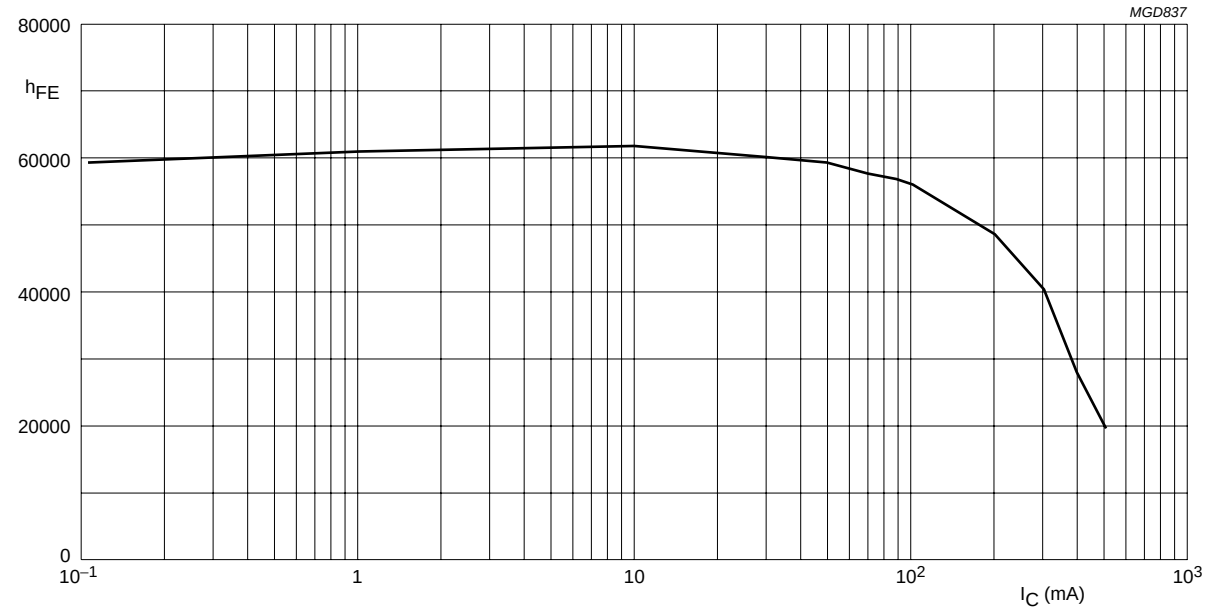
Note

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

CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector cut-off current	I_E = 0; V_{CB} = 30 V	–	100	nA
I_{EBO}	emitter cut-off current	I_C = 0; V_{EB} = 10 V	–	100	nA
h_{FE}	DC current gain	I_C = 10 mA; V_{CE} = 5 V; (see Fig.2)			
	PMBTA13		5000	–	
	PMBTA14		10000	–	
	DC current gain	I_C = 100 mA; V_{CE} = 5 V; (see Fig.2)			
	PMBTA13		10000	–	
	PMBTA14		20000	–	
V_{CEsat}	collector-emitter saturation voltage	I_C = 100 mA; I_B = 0.1 mA	–	1.5	V
V_{BEon}	base-emitter on-state voltage	I_C = 100 mA; V_{CE} = 5 V	–	1.4	V
f_T	transition frequency	I_C = 10 mA; V_{CE} = 5 V; f = 100 MHz	125	–	MHz

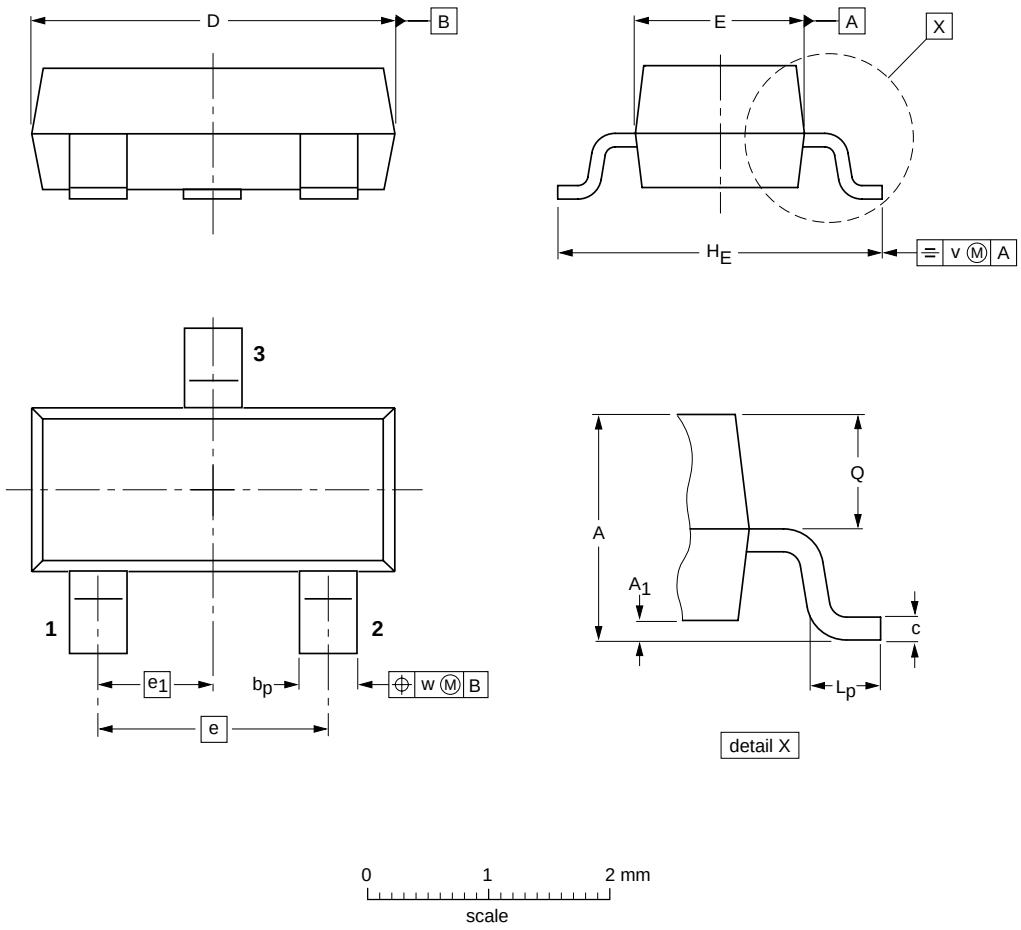


V_{CE} = 2 V.

Fig.2 DC current gain; typical values.

PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads **SOT23**



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 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT23		TO-236AB				~~04-11-04~~ 06-03-16

DATA SHEET STATUS

DOCUMENT STATUS[1]	PRODUCT STATUS[2]	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

Notes

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