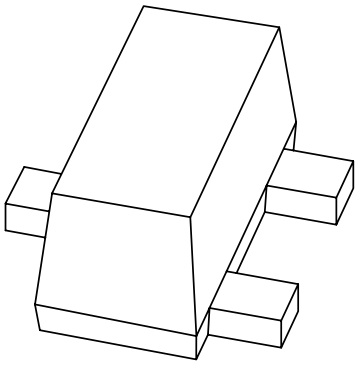
DATA SHEET



PDTA143XEF

PNP resistor-equipped transistor;
R1 = 4.7 kΩ, R2 = 10 kΩ

Product specification

2002 Mar 14

Philips
Semiconductors

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PNP resistor-equipped transistor; R1 = 4.7 kΩ, R2 = 10 kΩ

PDTA143XEF

FEATURES

- Built-in bias resistors
- 250 mW total power dissipation
- Very small 1.6 × 0.85 × 0.7 mm package
- Flat leads
- Excellent coplanarity
- Improved thermal behaviour
- Reduces number of components and required PCB area.

APPLICATIONS

- General purpose switching and amplification
- Inverter and interface circuits
- Driver circuits.

DESCRIPTION

PNP resistor-equipped transistor in a SOT490 (SC-89) plastic package.

MARKING

TYPE NUMBER	MARKING CODE
PDTA143XEF	41

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{CEO}	collector-emitter voltage	–50	V
I_O	output current (DC)	–100	mA
R1	bias resistor	4.7	kΩ
R2	bias resistor	10	kΩ

PINNING

PIN	DESCRIPTION
1	base/input
2	emitter/ground (+)
3	collector/output

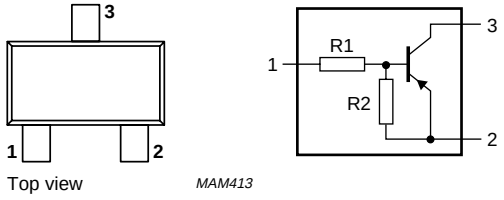


Fig.1 Simplified outline (SOT490) and symbol.

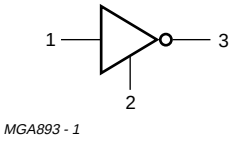


Fig.2 Equivalent inverter symbol.

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	–	–50	V
V_{CEO}	collector-emitter voltage	open base	–	–50	V
V_{EBO}	emitter-base voltage	open collector	–	–10	V
V_i	input voltage				
	positive		–	+7	V
	negative		–	–20	V
I_O	output current (DC)		–	–100	mA
I_{CM}	peak collector current		–	–100	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. For mounting conditions, see *"Thermal considerations and footprint design for SOT490 in the SC18 Data Handbook"*.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	in free air; note 1	500	K/W

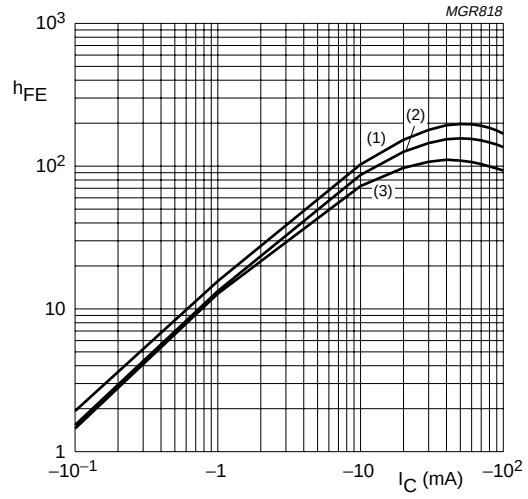
Note

1. For mounting conditions, see *"Thermal considerations and footprint design for SOT490 in the SC18 Data Handbook"*.

CHARACTERISTICS

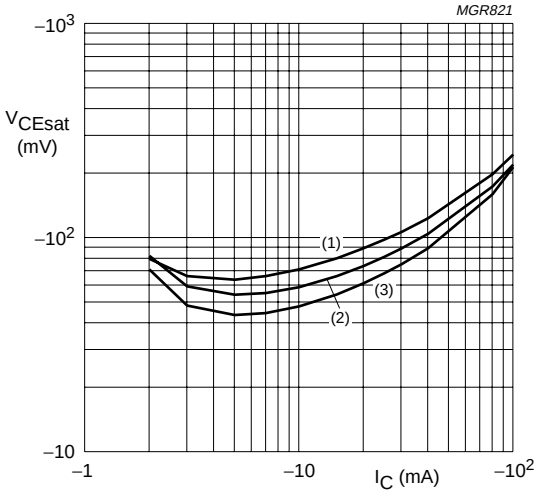
T_{amb} = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	V_{CB} = –50 V; I_E = 0	–	–	–100	nA
I_{CEO}	collector-emitter cut-off current	V_{CE} = –30 V; I_B = 0	–	–	–1	µA
		V_{CE} = –30 V; I_B = 0; T_j = 150 °C	–	–	–50	µA
I_{EBO}	emitter-base cut-off current	V_{EB} = –5 V; I_C = 0	–	–	–0.6	mA
h_{FE}	DC current gain	V_{CE} = –5 V; I_C = –10 mA	50	–	–	
V_{CEsat}	collector-emitter saturation voltage	I_C = –10 mA; I_B = –0.5 mA	–	–	–150	mV
$V_{i(off)}$	input off voltage	V_{CE} = –5 V; I_C = –100 µA	–	–	–0.3	V
$V_{i(on)}$	input on voltage	V_{CE} = –0.3 V; I_C = –20 mA	–2.5	–	–	V
R1	input resistor		3.3	4.7	6.1	kΩ
$\frac{R2}{R1}$	resistor ratio		1.7	2.1	2.6	
C_c	collector capacitance	$I_E = i_e$ = 0; V_{CB} = –10 V; f = 1 MHz	–	–	3	pF



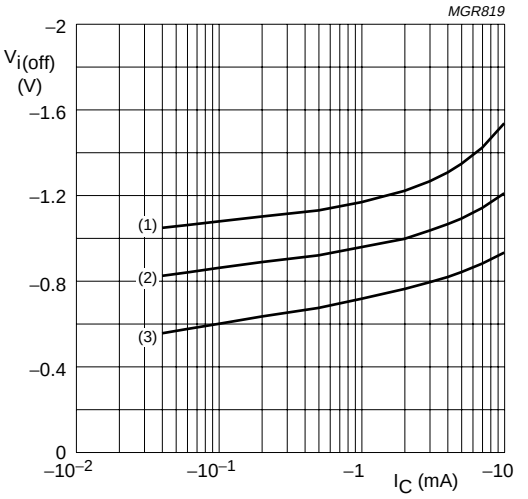
V_{CE} = −5 V.
(1) T_{amb} = 100 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = −40 °C.

Fig.3 DC current gain as a function of collector current; typical values.



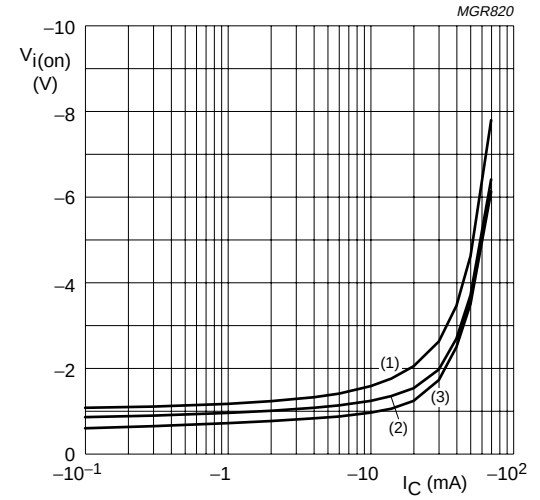
I_C/I_B = 20.
(1) T_{amb} = 100 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = −40 °C.

Fig.4 Collector-emitter saturation voltage as a function of collector current; typical values.



V_{CE} = −5 V.
(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = −40 °C.

Fig.5 Input-off voltage as a function of collector current; typical values.

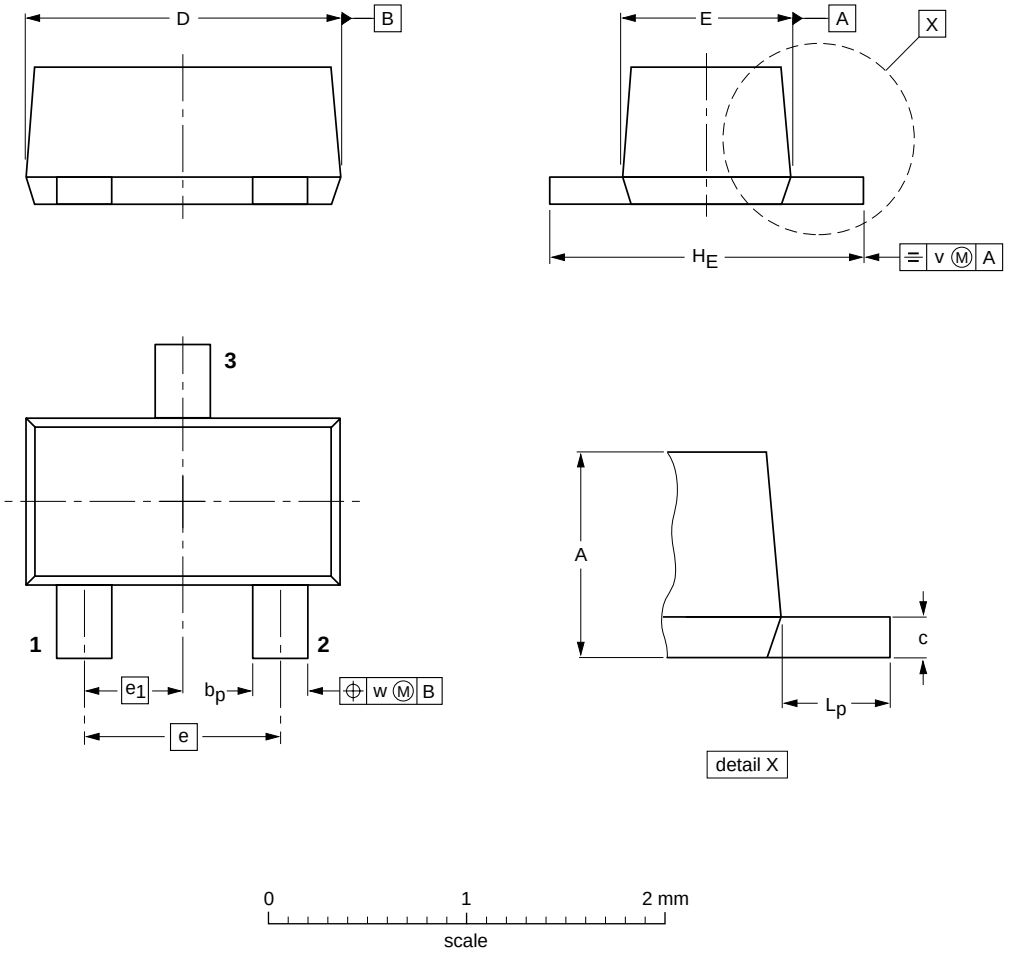


V_{CE} = −0.3 V.
(1) T_{amb} = 100 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = −40 °C.

Fig.6 Input-on voltage as a function of collector current; typical values.

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT490**



DIMENSIONS (mm are the original dimensions)

UNIT	A	b_p	c	D	E	e	e_1	H_E	L_p	v	w
mm	0.8 0.6	0.33 0.23	0.2 0.1	1.7 1.5	0.95 0.75	1.0	0.5	1.7 1.5	0.5 0.3	0.1	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT490			SC-89			98-10-23

DATA SHEET STATUS

DATA SHEET STATUS(1)	PRODUCT STATUS(2)	DEFINITIONS
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Contact information

For additional information please visit **http://www.semiconductors.philips.com**. Fax: **+31 40 27 24825**
For sales offices addresses send e-mail to: **sales.addresses@www.semiconductors.philips.com**.

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