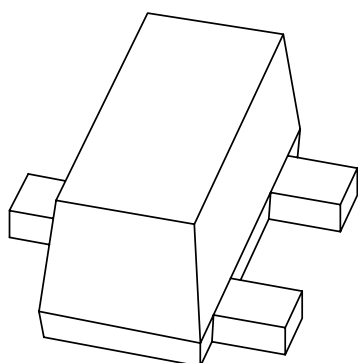


DATA SHEET



PDTC124EEF

NPN resistor-equipped transistor;
 $R1 = 22\text{ k}\Omega$, $R2 = 22\text{ k}\Omega$

Product specification

2002 Mar 14

NPN resistor-equipped transistor;
R1 = 22 kΩ, R2 = 22 kΩ

PDTC124EEF

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

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

MARKING

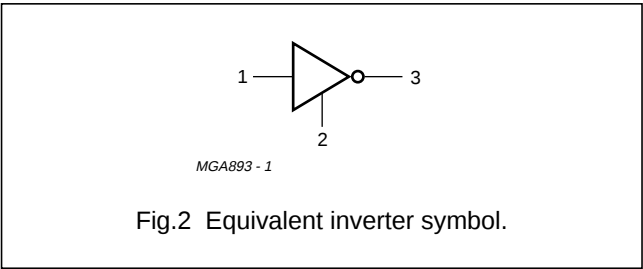
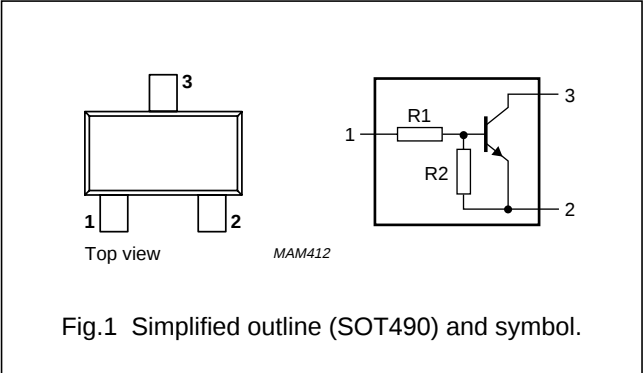
TYPE NUMBER	MARKING CODE
PDTC124EEF	36

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V _{CEO}	collector-emitter voltage	50	V
I _O	output current (DC)	100	mA
R1	bias resistor	22	kΩ
R2	bias resistor	22	kΩ

PINNING

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



NPN resistor-equipped transistor; R1 = 22 k Ω , R2 = 22 k Ω

PDTC124EEF

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		–	+40	V
	negative		–	–10	V
I _O	output current (DC)		–	100	mA
I _{CM}	peak collector current		–	100	mA
P _{tot}	total power dissipation	T _{amb} ≤ 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

- 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-a}	thermal resistance from junction to ambient	in free air; note 1	500	K/W

Note

- For mounting conditions, see “Thermal considerations and footprint design for SOT490 in the SC18 Data Handbook”.

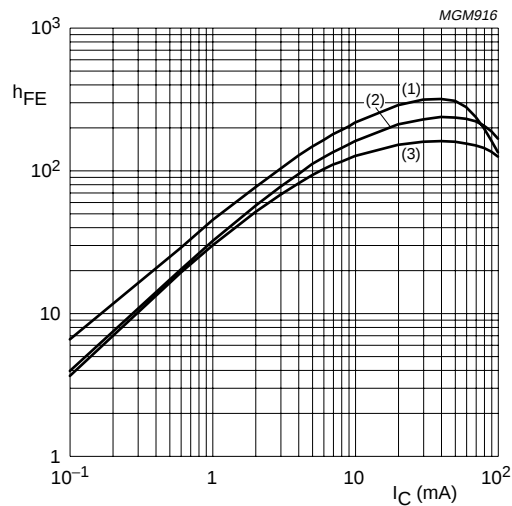
CHARACTERISTICS

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	–	–	180	μA
h _{FE}	DC current gain	V _{CE} = 5 V; I _C = 5 mA	60	–	–	
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	–	1.1	0.8	V
V _{i(on)}	input on voltage	V _{CE} = 0.3 V; I _C = 5 mA	2.5	1.7	–	V
R1	input resistor		15.4	22	28.6	k Ω
$\frac{R2}{R1}$	resistor ratio		0.8	1	1.2	
C _c	collector capacitance	I _E = I _e = 0; V _{CB} = 10 V; f = 1 MHz	–	–	2.5	pF

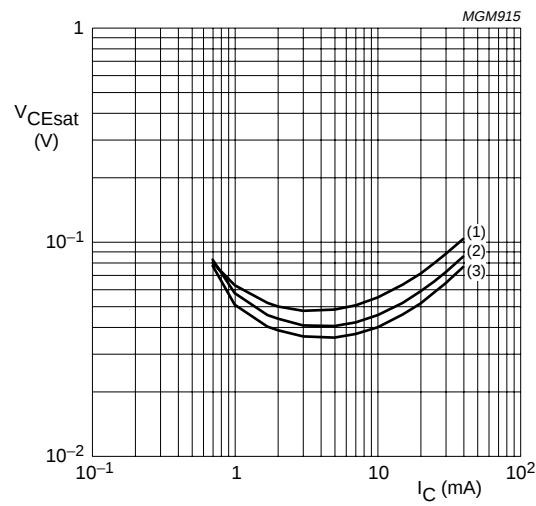
NPN resistor-equipped transistor;
R1 = 22 kΩ, R2 = 22 kΩ

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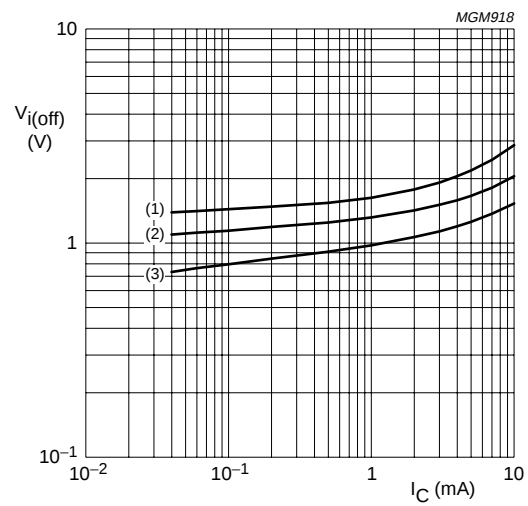
$V_{CE} = 5\text{ V.}$
(1) $T_{amb} = 150^\circ\text{C.}$
(2) $T_{amb} = 25^\circ\text{C.}$
(3) $T_{amb} = -40^\circ\text{C.}$

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



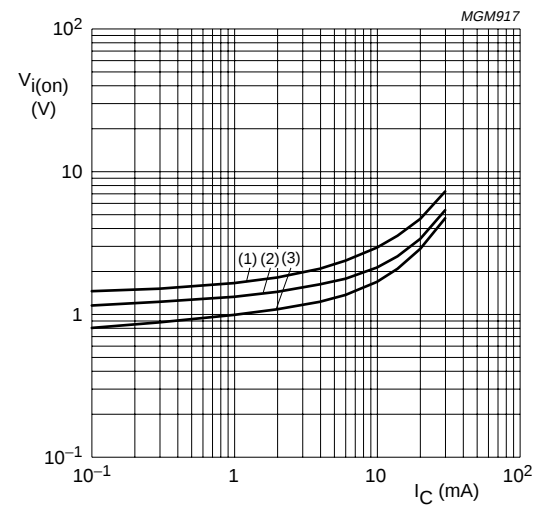
$I_C/I_B = 20.$
(1) $T_{amb} = 100^\circ\text{C.}$
(2) $T_{amb} = 25^\circ\text{C.}$
(3) $T_{amb} = -40^\circ\text{C.}$

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



$V_{CE} = 5\text{ V.}$
(1) $T_{amb} = -40^\circ\text{C.}$
(2) $T_{amb} = 25^\circ\text{C.}$
(3) $T_{amb} = 100^\circ\text{C.}$

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



$V_{CE} = 0.3\text{ V.}$
(1) $T_{amb} = -40^\circ\text{C.}$
(2) $T_{amb} = 25^\circ\text{C.}$
(3) $T_{amb} = 100^\circ\text{C.}$

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

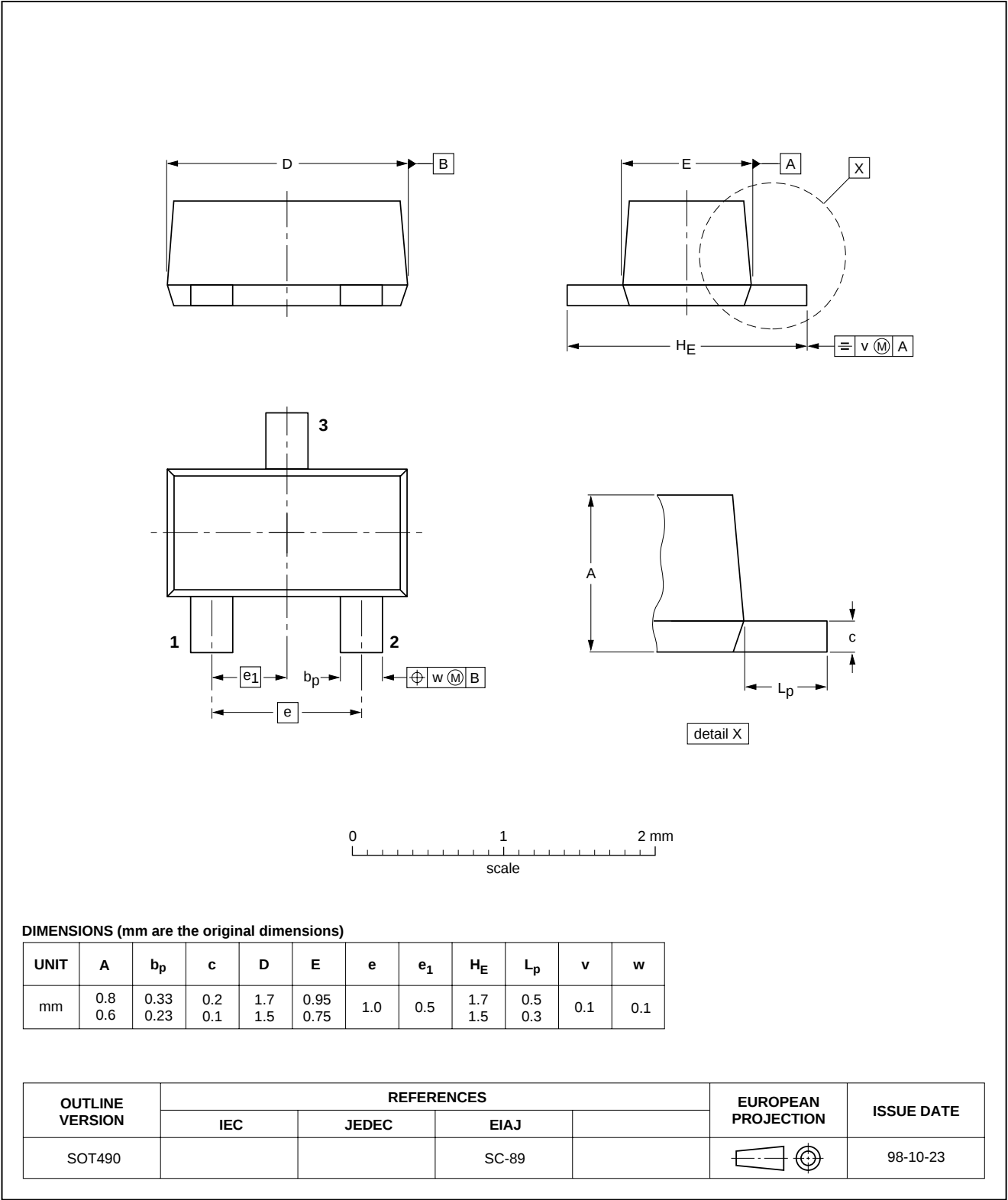
NPN resistor-equipped transistor;
R1 = 22 kΩ, R2 = 22 kΩ

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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT490



NPN resistor-equipped transistor;
R1 = 22 k Ω , R2 = 22 k Ω

PDTC124EEF

DATA SHEET STATUS

DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITIONS
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R1 = 22 k Ω , R2 = 22 k Ω

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