

DATA SHEET

PDTC124T series

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

Product data sheet
Supersedes data of 2004 Apr 06

2004 Aug 13

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FEATURES

- Built-in bias resistors
- Simplified circuit design
- Reduction of component count
- Reduced pick and place costs.

APPLICATIONS

- General purpose switching and amplification
- Inverter and interface circuits
- Circuit driver.

QUICK REFERENCE DATA

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

DESCRIPTION

NPN resistor-equipped transistor (see “Simplified outline, symbol and pinning” for package details).

PRODUCT OVERVIEW

TYPE NUMBER	PACKAGE		MARKING CODE	PNP COMPLEMENT
	PHILIPS	EIAJ		
PDTC124TE	SOT416	SC-75	41	PDTA124TE
PDTC124TEF	SOT490	SC-89	35	PDTA124TEF
PDTC124TK	SOT346	SC-59	50	PDTA124TK
PDTC124TM	SOT883	SC-101	DY	PDTA124TM
PDTC124TS	SOT54 (TO-92)	SC-43	TC124T	PDTA124TS
PDTC124TT	SOT23	–	*45 ⁽¹⁾	PDTA124TT
PDTC124TU	SOT323	SC-70	*50 ⁽¹⁾	PDTA124TU

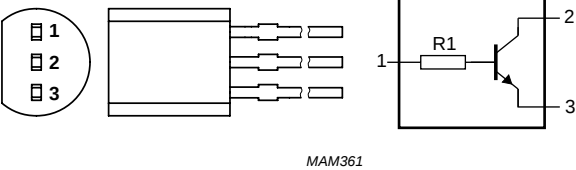
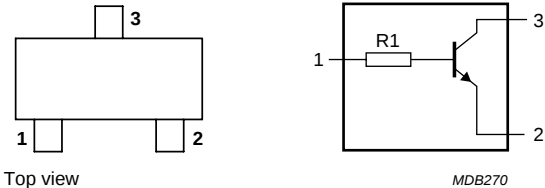
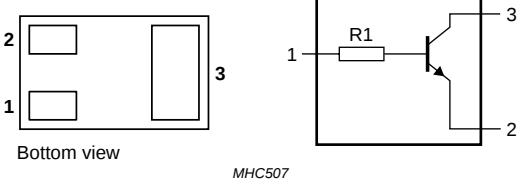
Note

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

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SIMPLIFIED OUTLINE, SYMBOL AND PINNING

TYPE NUMBER	SIMPLIFIED OUTLINE AND SYMBOL	PINNING	
		PIN	DESCRIPTION
PDTC124TS	 MAM361	1 2 3	base collector emitter
PDTC124TE PDTC124TEF PDTC124TK PDTC124TT PDTC124TU	 Top view MDB270	1 2 3	base emitter collector
PDTC124TM	 Bottom view MHC507	1 2 3	base emitter collector

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ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PDTC124TE	–	plastic surface mounted package; 3 leads	SOT416
PDTC124TEF	–	plastic surface mounted package; 3 leads	SOT490
PDTC124TK	–	plastic surface mounted package; 3 leads	SOT346
PDTC124TM	–	leadless ultra small plastic package; 3 solder lands; body 1.0 × 0.6 × 0.5 mm	SOT883
PDTC124TS	–	plastic single-ended leaded (through hole) package; 3 leads	SOT54
PDTC124TT	–	plastic surface mounted package; 3 leads	SOT23
PDTC124TU	–	plastic surface mounted package; 3 leads	SOT323

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	–	5	V
I _O	output current (DC)		–	100	mA
I _{CM}	peak collector current		–	100	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C			
	SOT54	note 1	–	500	mW
	SOT23	note 1	–	250	mW
	SOT346	note 1	–	250	mW
	SOT323	note 1	–	200	mW
	SOT490	notes 1 and 2	–	250	mW
	SOT883	notes 2 and 3	–	250	mW
	SOT416	note 1	–	150	mW
T _{stg}	storage temperature		–65	+150	°C
T _j	junction temperature		–	150	°C
T _{amb}	operating ambient temperature		–65	+150	°C

Notes

1. Refer to standard mounting conditions.
2. Reflow soldering is the only recommended soldering method.
3. Refer to SOT883 standard mounting conditions; FR4 with 60 μ m copper strip line.

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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th(j-a)}	thermal resistance from junction to ambient	in free air		
	SOT54	note 1	250	K/W
	SOT23	note 1	500	K/W
	SOT346	note 1	500	K/W
	SOT323	note 1	625	K/W
	SOT490	notes 1 and 2	500	K/W
	SOT883	notes 2 and 3	500	K/W
	SOT416	note 1	833	K/W

Notes

1. Refer to standard mounting conditions.
2. Reflow soldering is the only recommended soldering method.
3. Refer to SOT883 standard mounting conditions; FR4 with 60 μ m copper strip line.

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 A	–	–	100	nA
I _{CEO}	collector-emitter cut-off current	V _{CE} = 30 V; I _B = 0 A	–	–	1	μ A
		V _{CE} = 30 V; I _B = 0 A; T _j = 150 °C	–	–	50	μ A
I _{EBO}	emitter-base cut-off current	V _{EB} = 5 V; I _C = 0 A	–	–	100	nA
h _{FE}	DC current gain	V _{CE} = 5 V; I _C = 1 mA	100	–	–	
V _{CEsat}	collector-emitter saturation voltage	I _C = 10 mA; I _B = 0.5 mA	–	–	150	mV
R1	input resistor		15.4	22	28.6	k Ω
C _c	collector capacitance	I _E = I _e = 0 A; V _{CB} = 10 V; f = 1 MHz	–	–	2.5	pF

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PACKAGE OUTLINES

Plastic surface-mounted package; 3 leads

SOT490

0 1 2 mm
scale

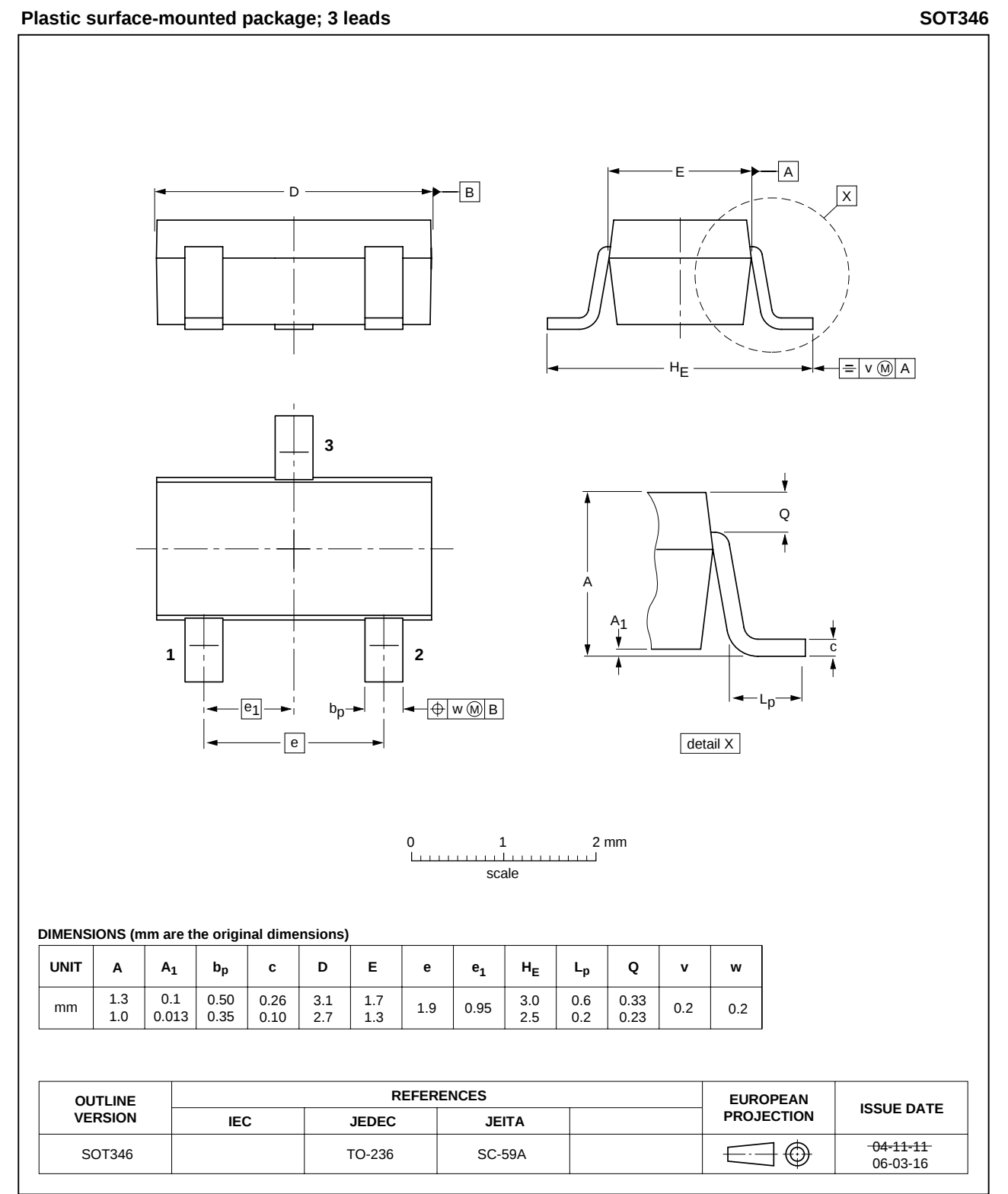
DIMENSIONS (mm are the original dimensions)

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	JEITA			
SOT490			SC-89			05-07-28 06-03-16

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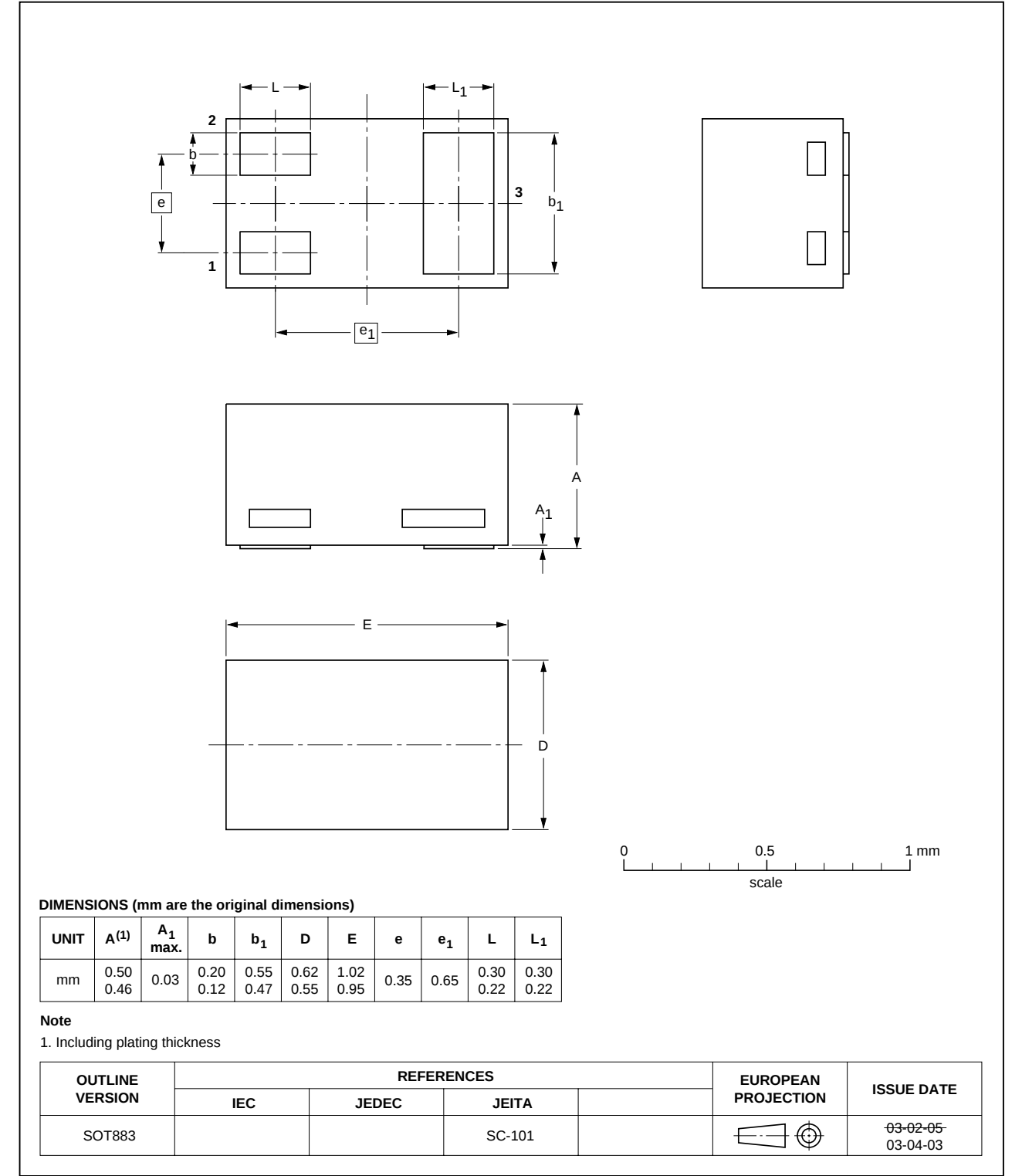


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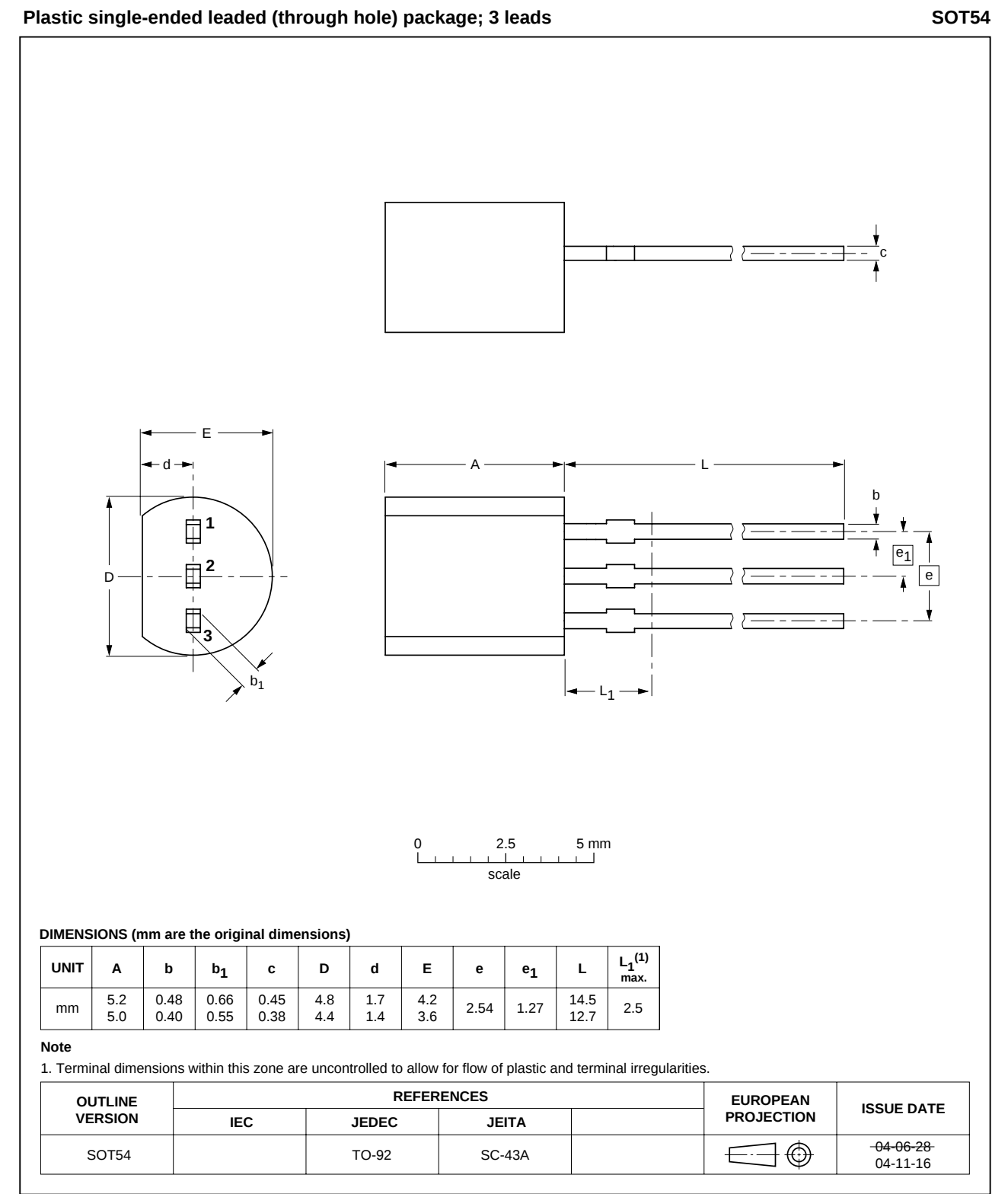
Leadless ultra small plastic package; 3 solder lands; body 1.0 x 0.6 x 0.5 mm

SOT883



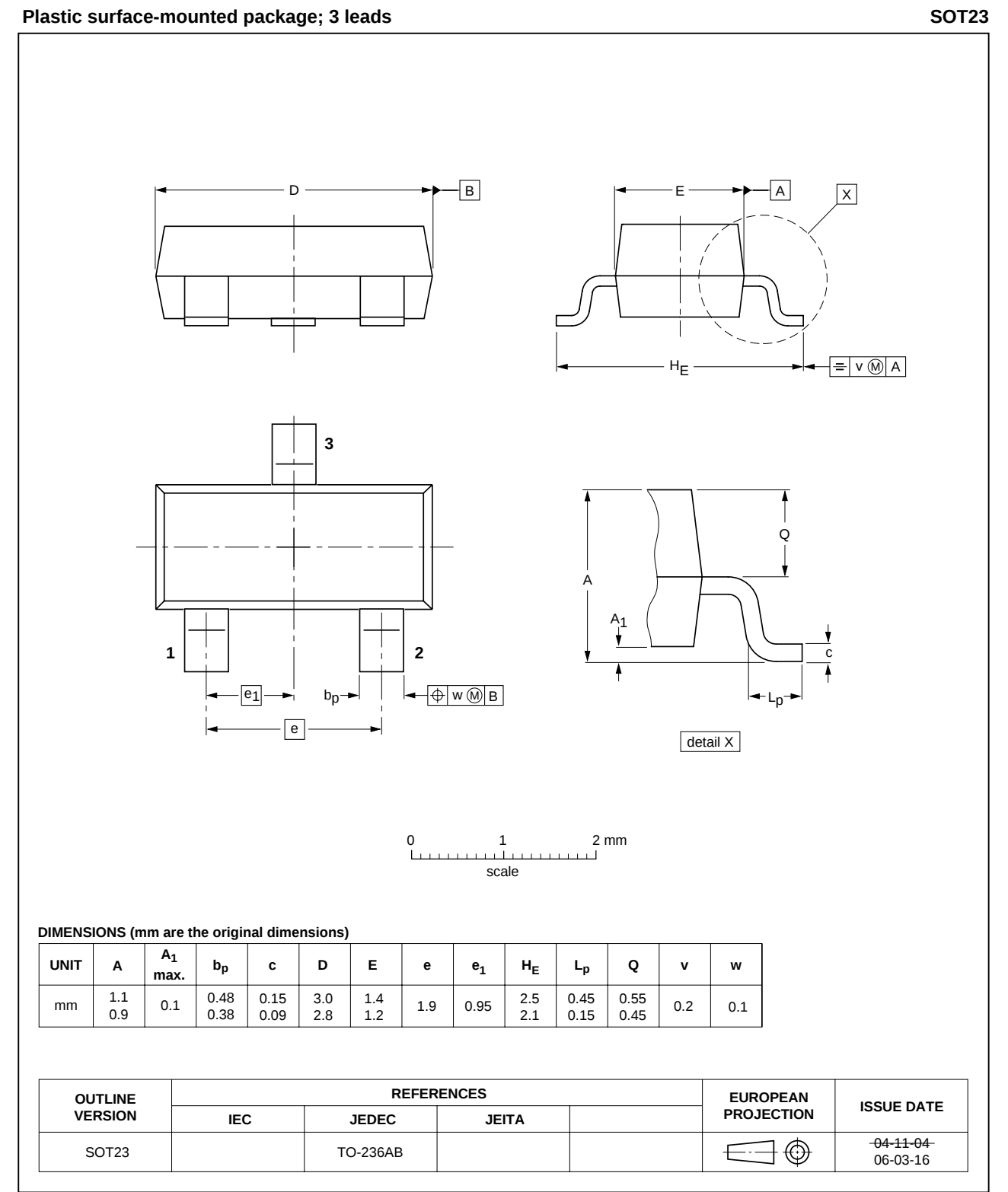
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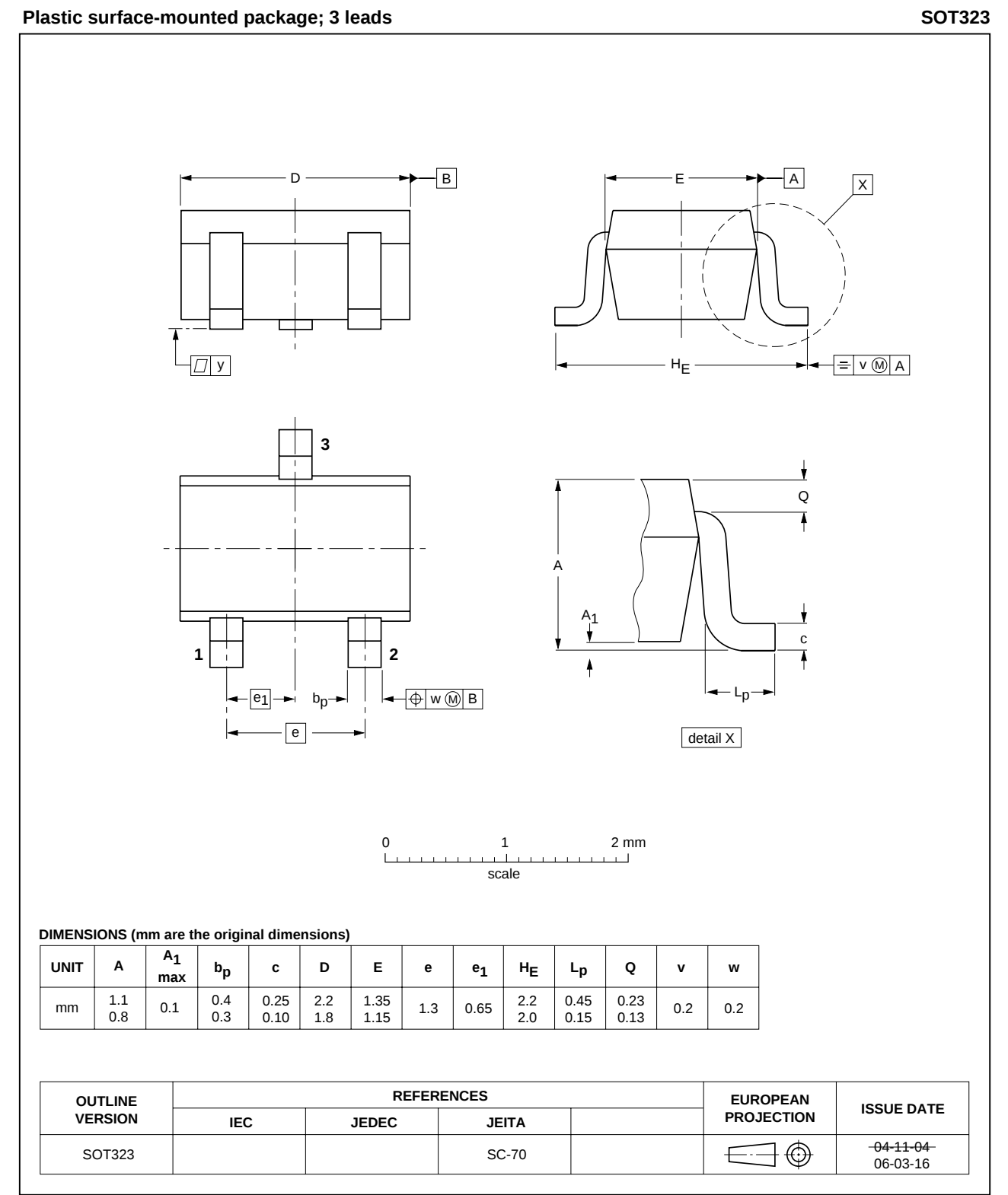
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