

DATA SHEET

PDTC114Y series

NPN resistor-equipped transistors;

$R1 = 10\text{ k}\Omega$, $R2 = 47\text{ k}\Omega$

Product specification
Supersedes data of 2003 Sep 10

2004 Aug 17

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PDTC114Y series

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	10	–	k Ω
R2	bias resistor	47	–	k Ω

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		
PDTC114YE	SOT416	SC-75	33	PDTA114YE
PDTC114YEF	SOT490	SC-89	12	PDTA114YEF
PDTC114YK	SOT346	SC-59	47	PDTA114YK
PDTC114YM	SOT883	SC-101	DU	PDTA114YM
PDTC114YS	SOT54 (TO-92)	SC-43	TC114Y	PDTA114YS
PDTC114YT	SOT23	–	*27 ⁽¹⁾	PDTA114YT
PDTC114YU	SOT323	SC-70	*30 ⁽¹⁾	PDTA114YU

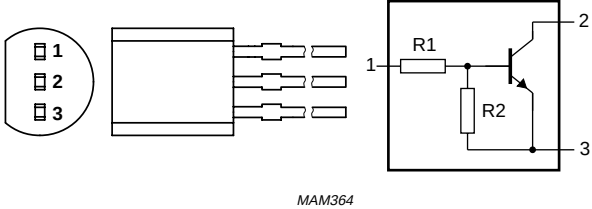
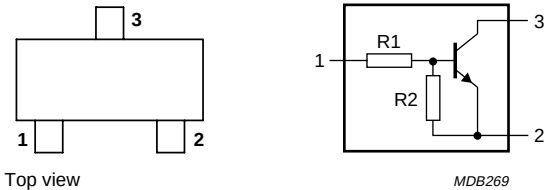
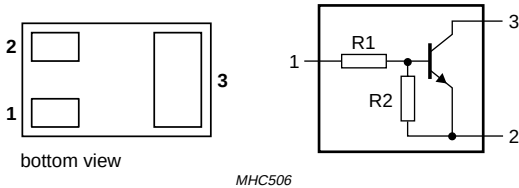
Note

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

NPN resistor-equipped transistors;
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SIMPLIFIED OUTLINE, SYMBOL AND PINNING

TYPE NUMBER	SIMPLIFIED OUTLINE AND SYMBOL	PINNING	
		PIN	DESCRIPTION
PDTC114YS	 MAM364	1 2 3	base collector emitter
PDTC114YE PDTC114YEF PDTC114YK PDTC114YT PDTC114YU	 Top view MDB269	1 2 3	base emitter collector
PDTC114YM	 bottom view MHC506	1 2 3	base emitter collector

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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		–	–6	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
	SOT416	note 1	–	150	mW
	SOT883	notes 2 and 3	–	250	mW
	SOT490	notes 1 and 2	–	250	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.

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
	SOT416	note 1	833	K/W
	SOT883	notes 2 and 3	500	K/W
	SOT490	notes 1 and 2	500	K/W

Notes

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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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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	μ A
		V _{CE} = 30 V; I _B = 0; T _j = 150 °C	–	–	50	μ A
I _{EBO}	emitter-base cut-off current	V _{EB} = 5 V; I _C = 0	–	–	150	μ A
h _{FE}	DC current gain	V _{CE} = 5 V; I _C = 5 mA	100	–	–	
V _{CEsat}	collector-emitter saturation voltage	I _C = 5 mA; I _B = 0.25 mA	–	–	100	mV
V _{i(off)}	input-off voltage	I _C = 100 μ A; V _{CE} = 5 V	–	0.7	0.5	V
V _{i(on)}	input-on voltage	I _C = 1 mA; V _{CE} = 0.3 V	1.4	0.8	–	V
R1	input resistor		7	10	13	k Ω
$\frac{R2}{R1}$	resistor ratio		3.7	4.7	5.7	
C _c	collector capacitance	I _E = i _e = 0; V _{CB} = 10 V; f = 1 MHz	–	–	2.5	pF

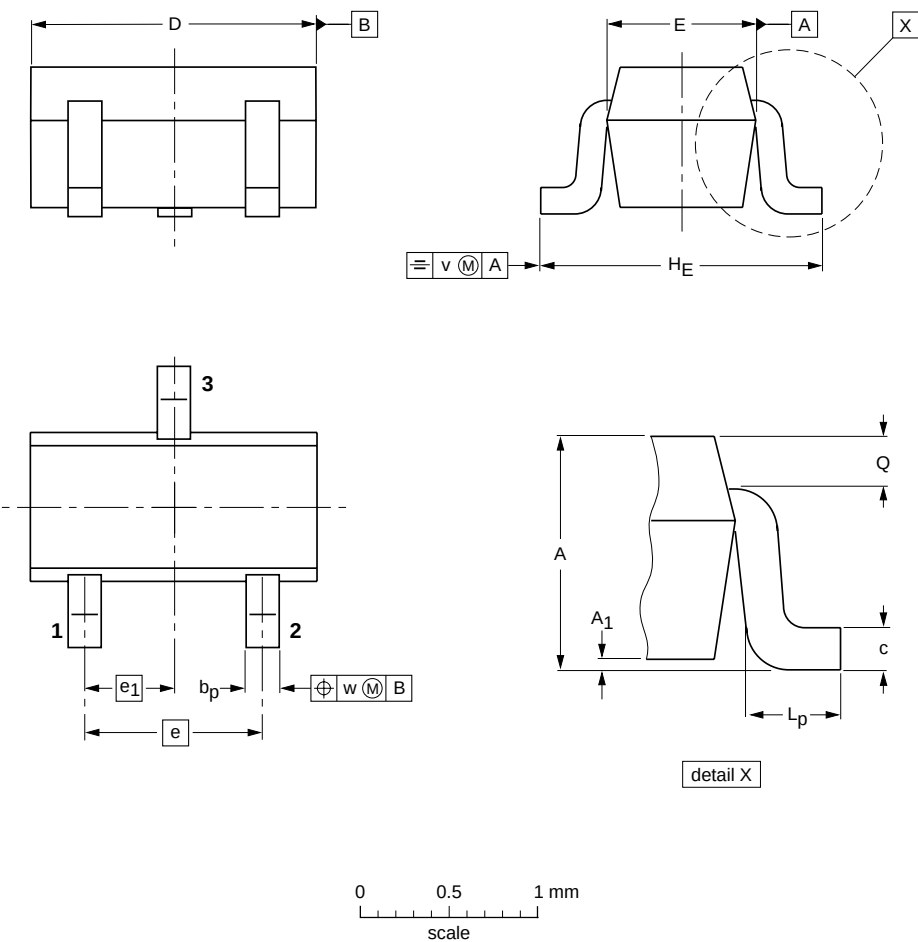
NPN resistor-equipped transistors;
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PDTC114Y series

PACKAGE OUTLINES

Plastic surface mounted package; 3 leads

SOT416



DIMENSIONS (mm are the original dimensions)

UNIT	A	A1 max	bp	c	D	E	e	e1	HE	Lp	Q	v	w
mm	0.95 0.60	0.1	0.30 0.15	0.25 0.10	1.8 1.4	0.9 0.7	1	0.5	1.75 1.45	0.45 0.15	0.23 0.13	0.2	0.2

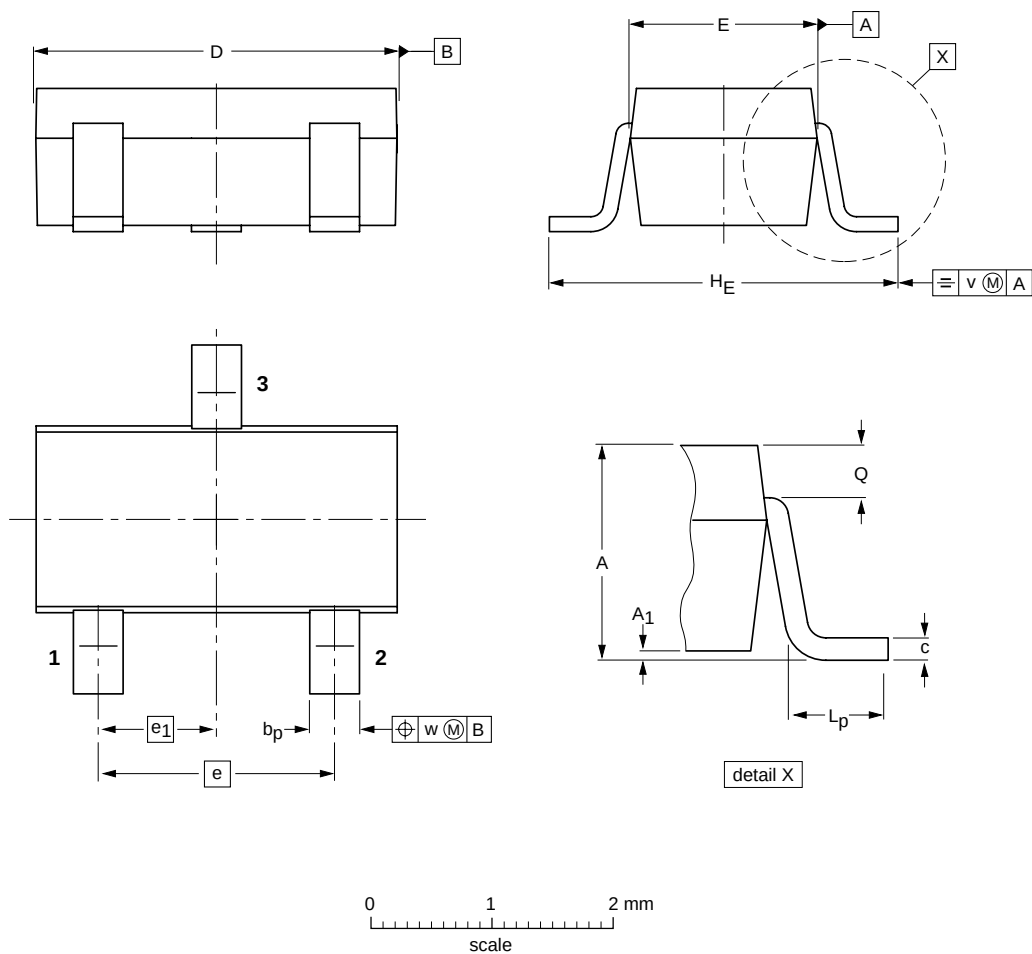
OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT416			SC-75			97-02-28

NPN resistor-equipped transistors;
R1 = 10 kΩ, R2 = 47 kΩ

PDTC114Y series

Plastic surface mounted package; 3 leads

SOT346



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	1.3 1.0	0.1 0.013	0.50 0.35	0.26 0.10	3.1 2.7	1.7 1.3	1.9	0.95	3.0 2.5	0.6 0.2	0.33 0.23	0.2	0.2

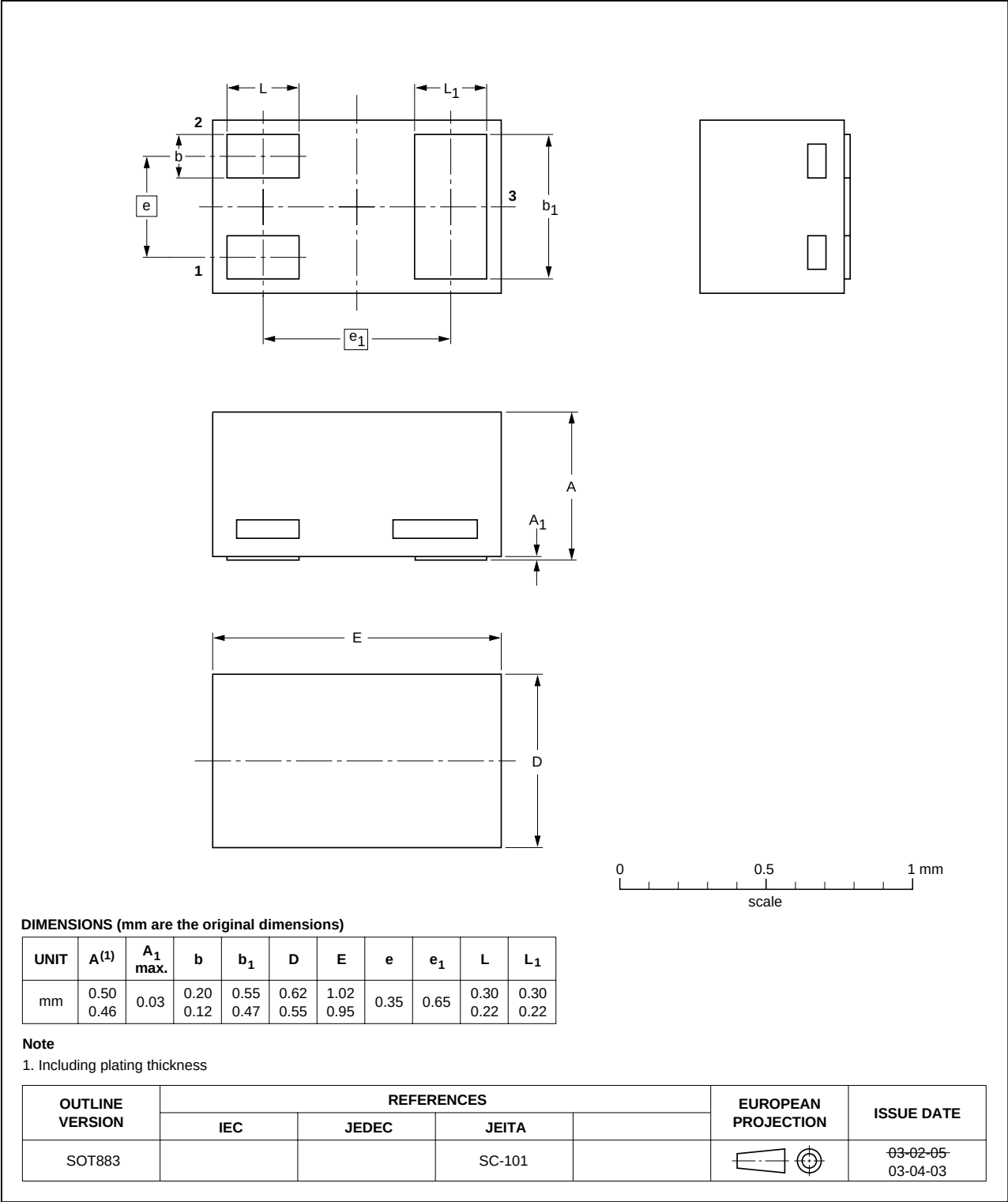
OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT346		TO-236	SC-59			98-07-17

NPN resistor-equipped transistors;
R1 = 10 kΩ, R2 = 47 kΩ

PDTC114Y series

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

SOT883

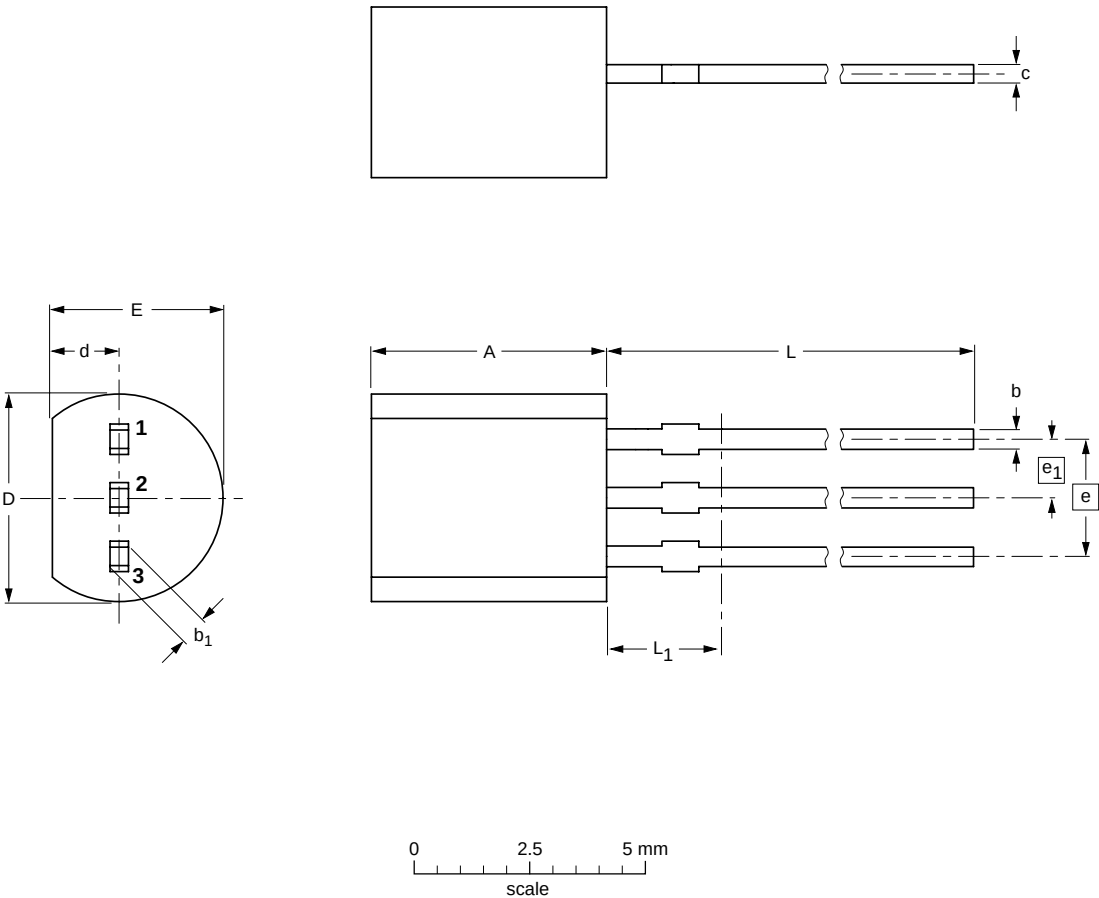


NPN resistor-equipped transistors;
R1 = 10 kΩ, R2 = 47 kΩ

PDTC114Y series

Plastic single-ended leaded (through hole) package; 3 leads

SOT54



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	b ₁	c	D	d	E	e	e ₁	L	L ₁ ⁽¹⁾ max.
mm	5.2 5.0	0.48 0.40	0.66 0.55	0.45 0.38	4.8 4.4	1.7 1.4	4.2 3.6	2.54	1.27	14.5 12.7	2.5

Note

1. Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

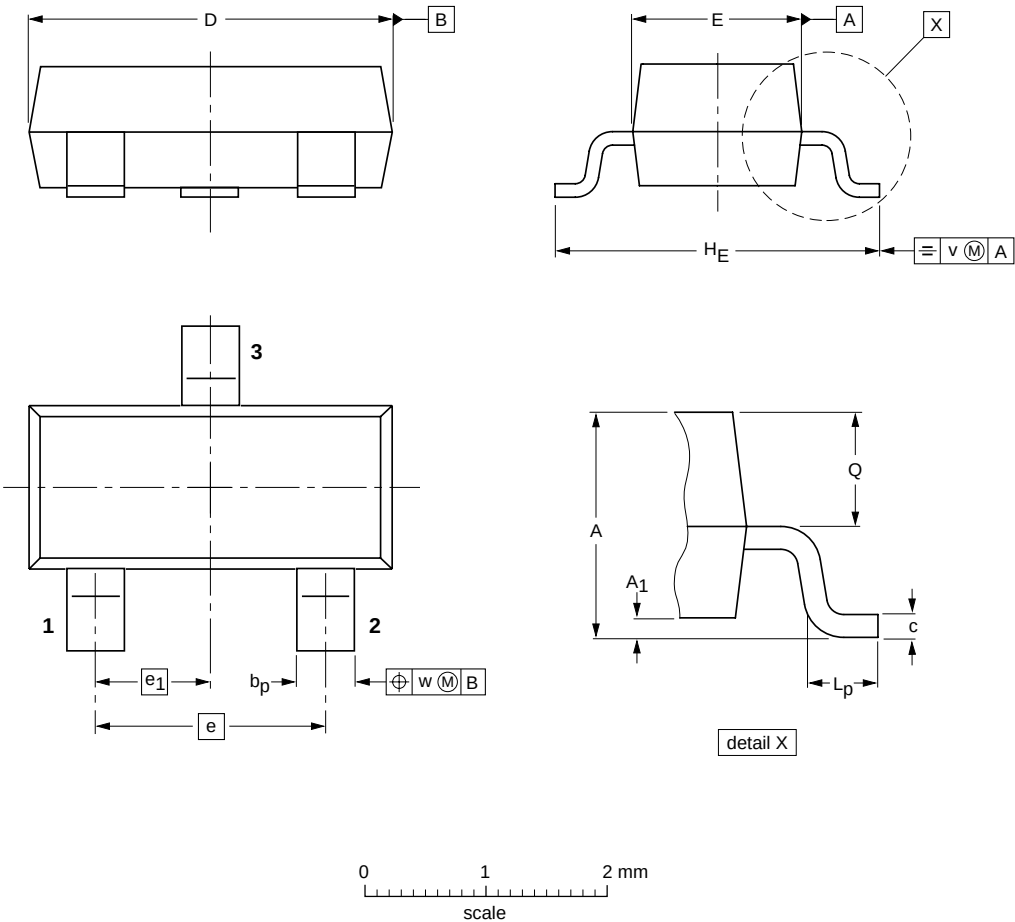
OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT54		TO-92	SC-43A			-97-02-28 04-06-28

NPN resistor-equipped transistors;
R1 = 10 kΩ, R2 = 47 kΩ

PDTC114Y series

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

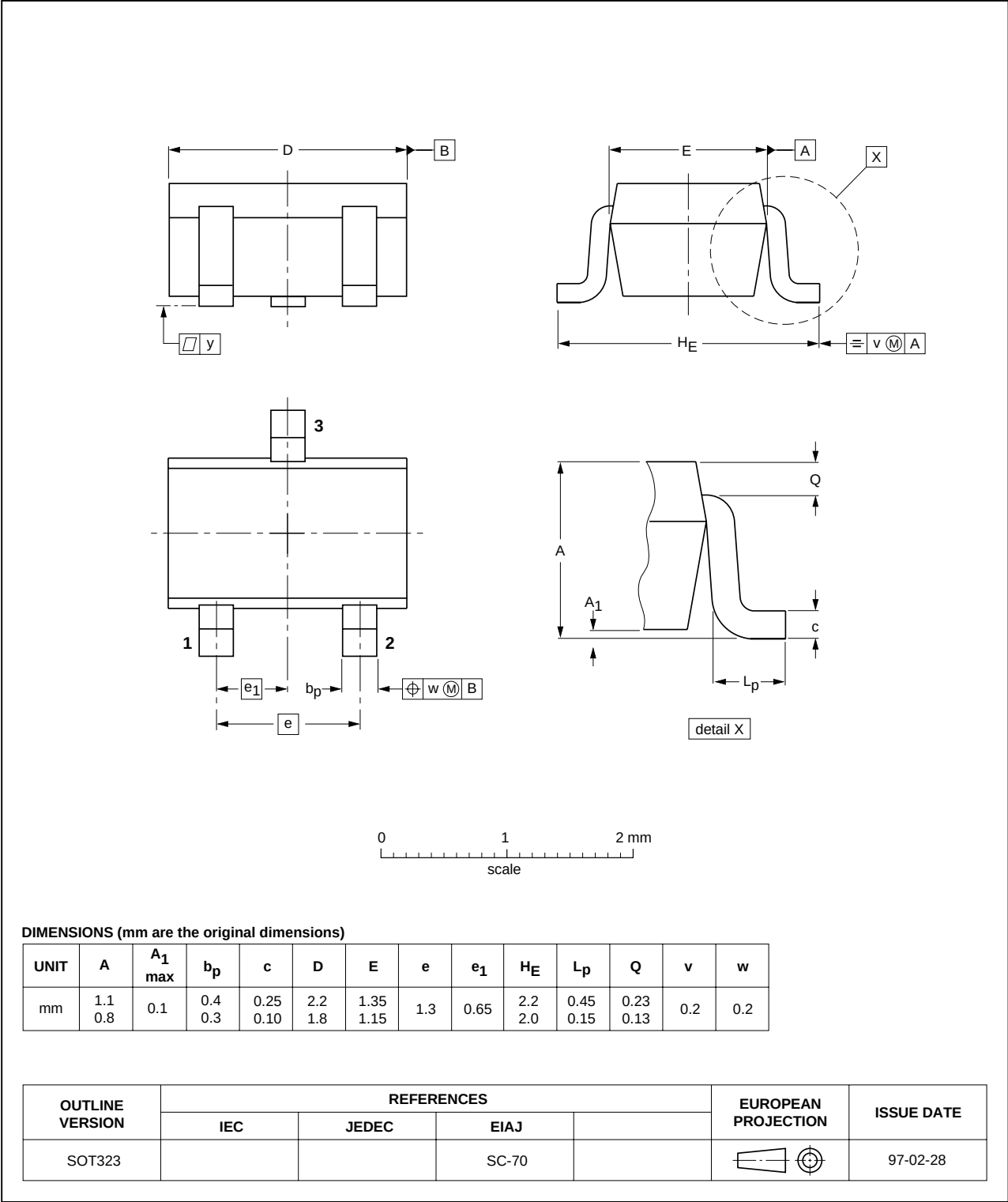
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	IEC	JEDEC	EIAJ			
SOT23		TO-236AB				97-02-28 99-09-13

NPN resistor-equipped transistors;
R1 = 10 kΩ, R2 = 47 kΩ

PDTC114Y series

Plastic surface mounted package; 3 leads

SOT323

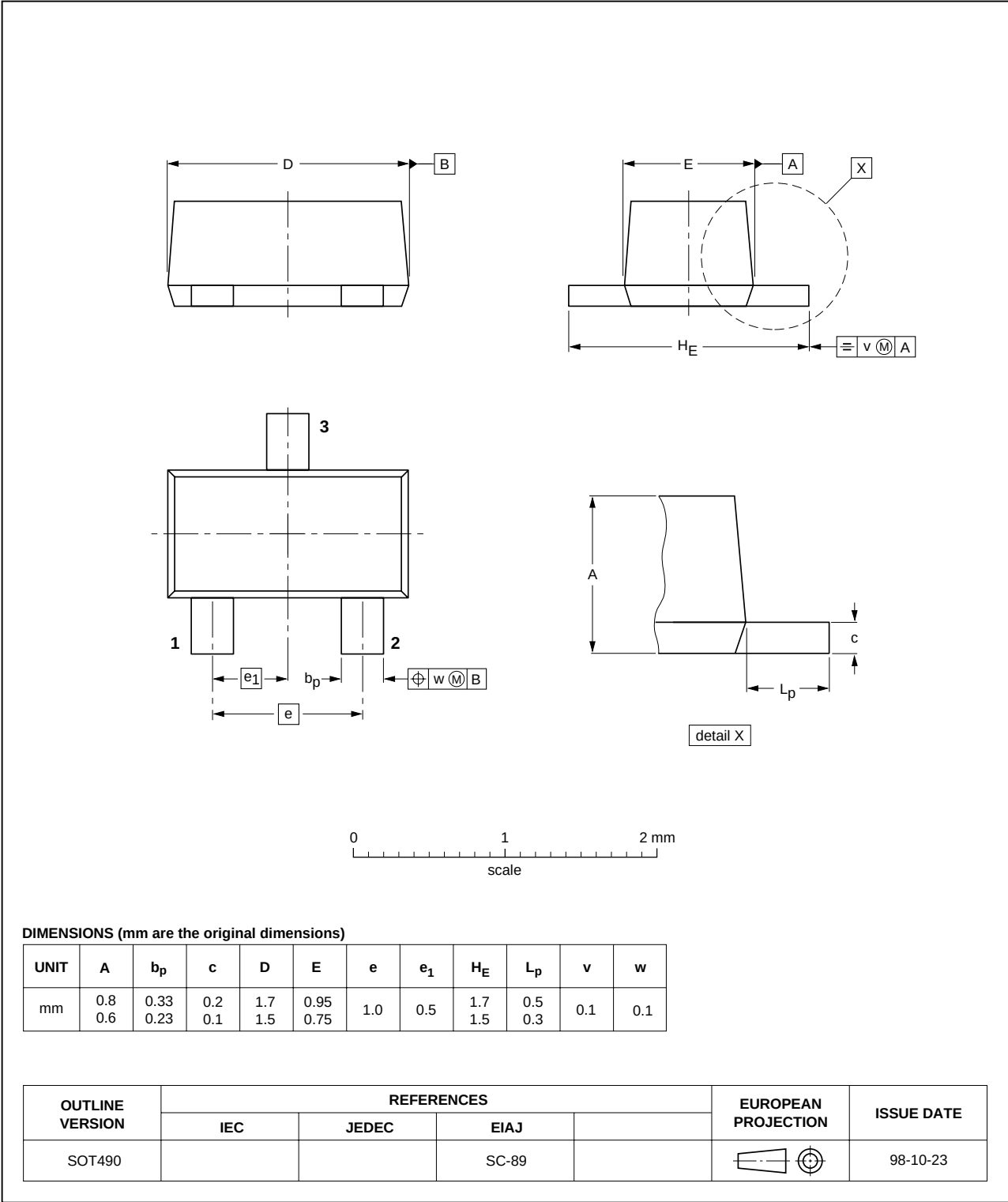


NPN resistor-equipped transistors;
R1 = 10 kΩ, R2 = 47 kΩ

PDTC114Y series

Plastic surface mounted package; 3 leads

SOT490



NPN resistor-equipped transistors;
R1 = 10 kΩ, R2 = 47 kΩ

PDTC114Y series

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾⁽³⁾	DEFINITION
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