

DATA SHEET

2PD601A series

**NPN general purpose transistors;
50 V, 100 mA**

Product specification
Supersedes data of 2002 Jun 26

2004 Feb 12

NPN general purpose transistors; 50 V, 100 mA

2PD601A series

FEATURES

- Available in SOT323 (SC-70) and SOT346 (SC-59) packages
- Available in three different DC current gain versions (Q, R, S).

APPLICATIONS

- General purpose switching and amplification.

DESCRIPTION

NPN general purpose transistors (see “Simplified outline, symbol and pinning” for package details).

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
V_{CE0}	collector-emitter voltage	–	50	V
I_C	collector current (DC)	–	100	mA
h_{FE}	DC current gain			
	group Q	160	260	
	group R	210	340	
	group S	290	460	

PRODUCT OVERVIEW

TYPE NUMBER	PACKAGE		MARKING CODE	h_{FE} GROUP
	PHILIPS	EIAJ		
2PD601AQ	SOT346	SC-59	ZQ	Q
2PD601AR	SOT346	SC-59	ZR	R
2PD601AS	SOT346	SC-59	ZS	S
2PD601AQW	SOT323	SC-70	*6D	Q
2PD601ARW	SOT323	SC-70	*6E	R
2PD601ASW	SOT323	SC-70	*6F	S

Note

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

SIMPLIFIED OUTLINE, SYMBOL AND PINNING

TYPE NUMBER	SIMPLIFIED OUTLINE AND SYMBOL	PINNING	
		PIN	DESCRIPTION
2PD601AQ 2PD601AR 2PD601AS 2PD601AQW 2PD601ARW 2PD601ASW	<p>Top view</p> <p>MAM321</p>	1 2 3	base emitter collector

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ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
2PD601AQ	–	plastic surface mounted package; 3 leads	SOT346
2PD601AR			
2PD601AS			
2PD601AQW	–	plastic surface mounted package; 3 leads	SOT323
2PD601ARW			
2PD601ASW			

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	–	60	V
V_{CEO}	collector-emitter voltage	open base	–	50	V
V_{EBO}	emitter-base voltage	open collector	–	6	V
I_C	collector current (DC)		–	100	mA
I_{CM}	peak collector current		–	200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$; note 1			
	SOT346		–	250	mW
	SOT323		–	200	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

Note

1. Refer to SOT346 (SC-59) and SOT323 (SC-70) standard mounting conditions.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient	note 1		
	SOT346		500	K/W
	SOT323		625	K/W

Note

1. Refer to SOT346 (SC-59) and SOT323 (SC-70) standard mounting conditions.

Soldering

Reflow soldering is the only recommended soldering method.

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CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	$I_E = 0; V_{CB} = 60\text{ V}$	–	10	nA
		$I_E = 0; V_{CB} = 60\text{ V}; T_j = 150\text{ °C}$	–	5	μA
I_{EBO}	emitter-base cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	–	10	nA
h_{FE}	DC current gain	$I_C = 100\text{ mA}; V_{CE} = 2\text{ V};$ note 1	90	–	
h_{FE}	DC current gain group Q group R group S	$I_C = 2\text{ mA}; V_{CE} = 10\text{ V}$	160	260	
			210	340	
			290	460	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 100\text{ mA}; I_B = 10\text{ mA};$ note 1	–	250	mV
C_c	collector capacitance	$I_E = i_e = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	–	3	pF
f_T	transition frequency	$I_C = 2\text{ mA}; V_{CE} = 10\text{ V};$ $f = 100\text{ MHz}$	100	–	MHz

Note

1. Pulse test: $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$.

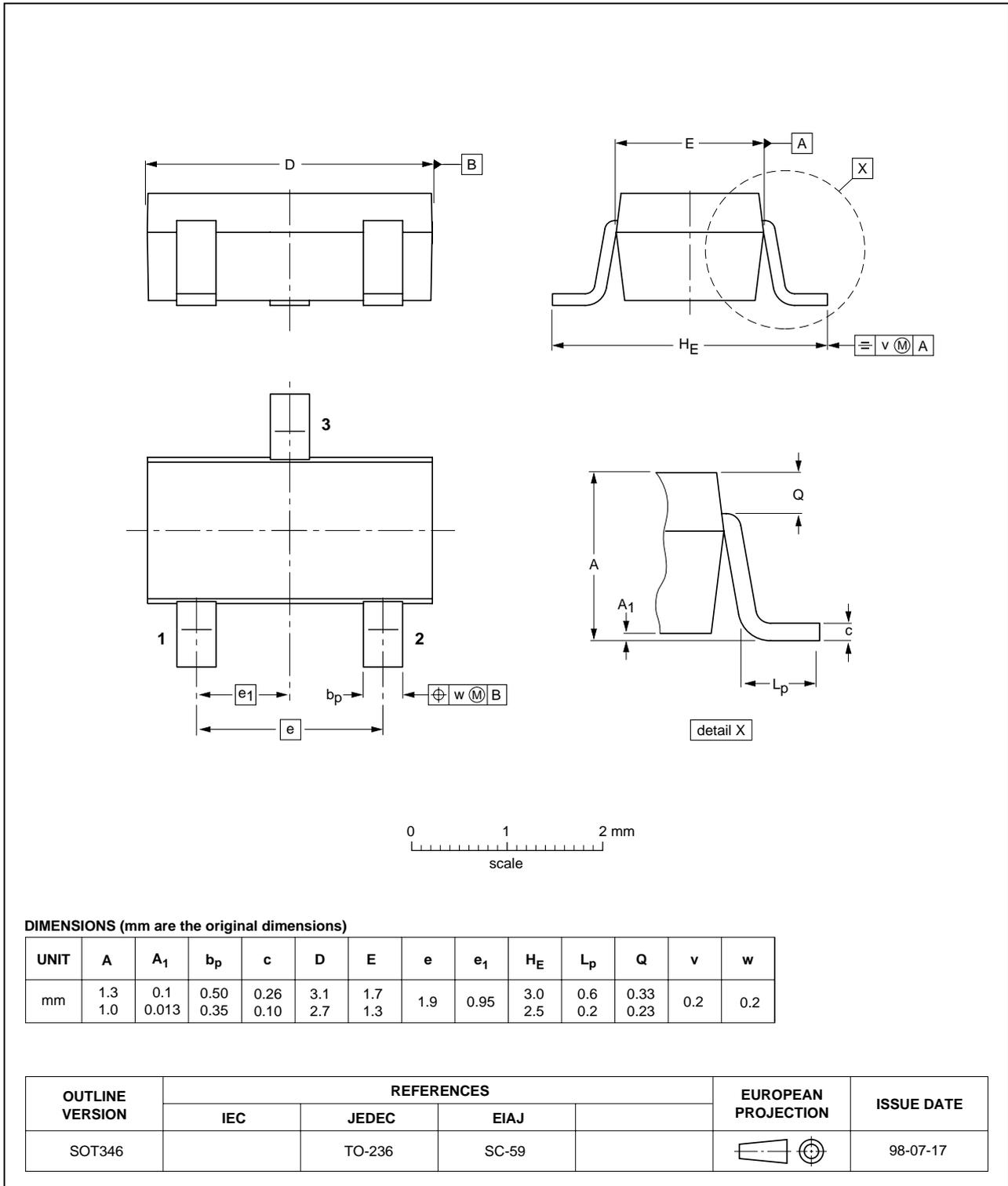
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PACKAGE OUTLINES

Plastic surface mounted package; 3 leads

SOT346

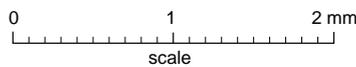
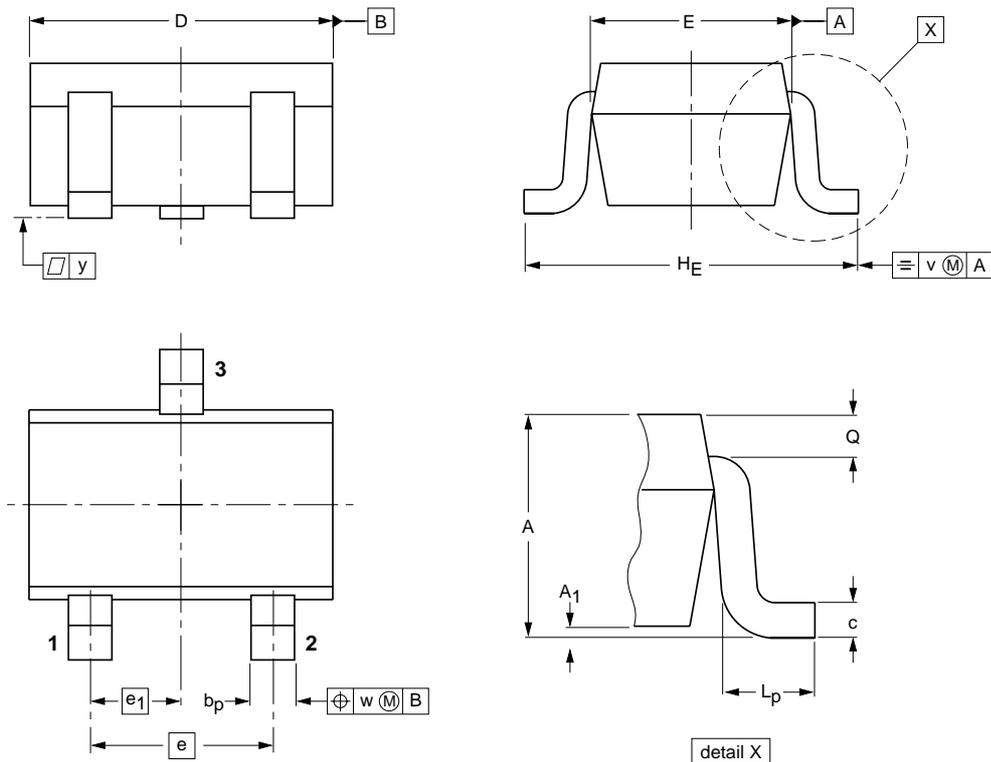


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Plastic surface mounted package; 3 leads

SOT323



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 0.8	0.1	0.4 0.3	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.23 0.13	0.2	0.2

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT323			SC-70			97-02-28

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DATA SHEET STATUS

LEVEL	DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾⁽³⁾	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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