DATA SHEET

2PD601A series
NPN general purpose transistors;
50 V, 100 mA

Product specification
Supersedes data of 2002 Jun 26

2004 Feb 12

Philips
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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_{CEO}	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	

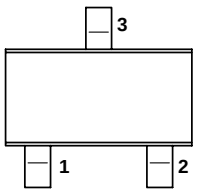
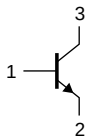
PRODUCT OVERVIEW

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

1. * = 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	 Top view  MAM321	1 2 3	base emitter collector

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	$T_{amb} \leq 25$ °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.

CHARACTERISTICS

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

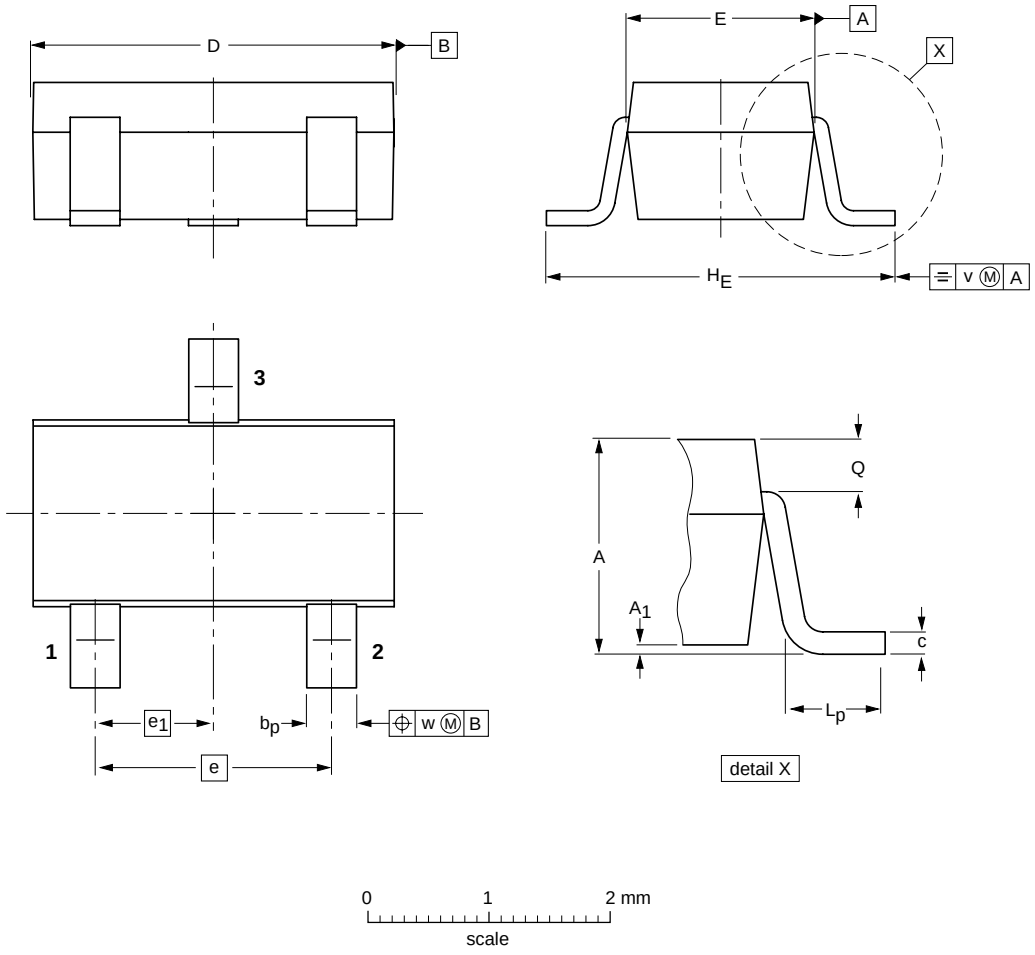
SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	I_E = 0; V_{CB} = 60 V	–	10	nA
		I_E = 0; V_{CB} = 60 V; T_j = 150 °C	–	5	µA
I_{EBO}	emitter-base cut-off current	I_C = 0; V_{EB} = 5 V	–	10	nA
h_{FE}	DC current gain	I_C = 100 mA; V_{CE} = 2 V; note 1	90	–	
h_{FE}	DC current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

Note

1. Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

PACKAGE OUTLINES

Plastic surface mounted package; 3 leads **SOT346**

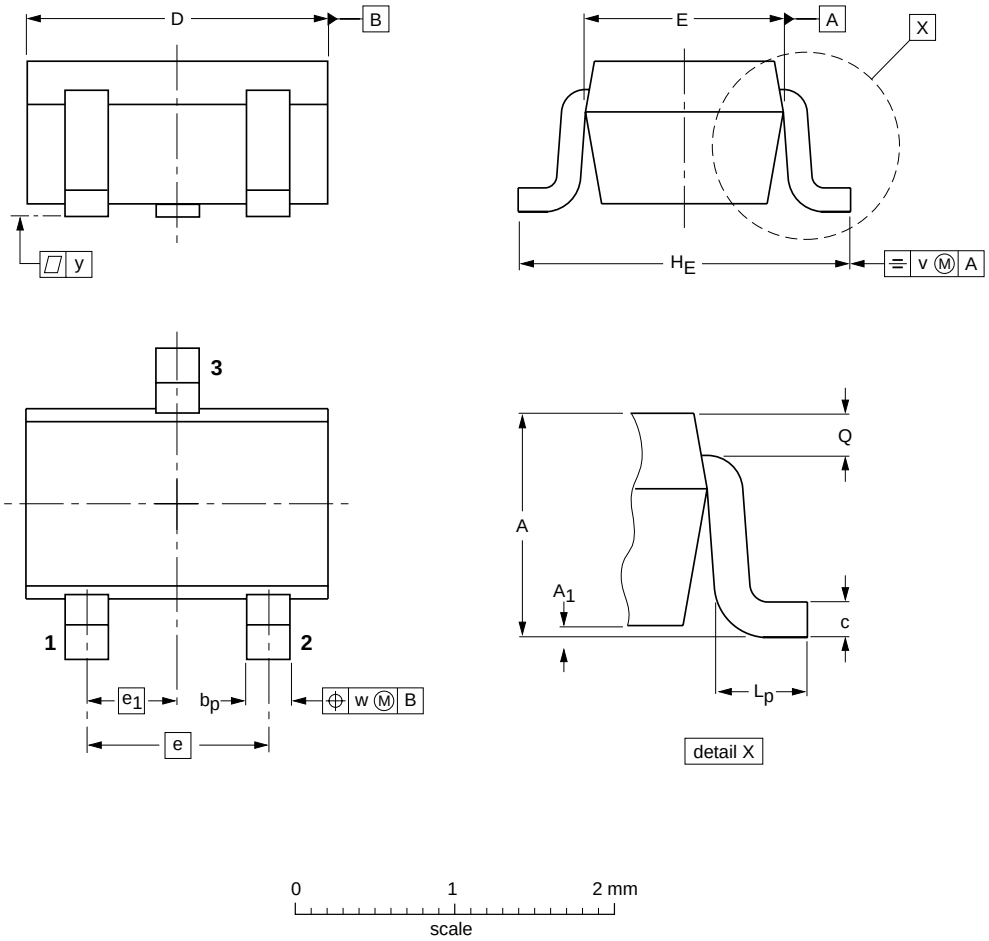


DIMENSIONS (mm are the original dimensions)

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

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

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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Notes

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3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

DEFINITIONS

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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