

# BAS70 series; 1PS7xSB70 series

General-purpose Schottky diodes

Rev. 07 — 18 July 2005

Product data sheet

## 1. Product profile

### 1.1 General description

General-purpose Schottky diodes in small Surface Mounted Device (SMD) plastic packages.

Table 1: Product overview

Type number	Package		Configuration
	Philips	JEITA	
1PS76SB70	SOD323	SC-76	single diode
1PS79SB70	SOD523	SC-79	single diode
BAS70	SOT23	-	single diode
BAS70H	SOD123F	-	single diode
BAS70L	SOD882	-	single diode
BAS70W	SOT323	SC-70	single diode
BAS70-04	SOT23	-	dual series
BAS70-04W	SOT323	SC-70	dual series
BAS70-05	SOT23	-	dual common cathode
BAS70-05W	SOT323	SC-70	dual common cathode
BAS70-06	SOT23	-	dual common anode
BAS70-06W	SOT323	SC-70	dual common anode
BAS70-07	SOT143B	-	dual isolated
BAS70-07S	SOT363	SC-88	dual isolated
BAS70-07V	SOT666	-	dual isolated
BAS70VV	SOT666	-	triple isolated

### 1.2 Features

- High switching speed
- High breakdown voltage
- Low leakage current
- Low capacitance

### 1.3 Applications

- Ultra high-speed switching
- Voltage clamping

**PHILIPS**

## 1.4 Quick reference data

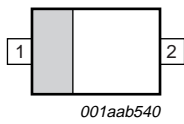

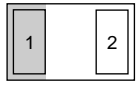

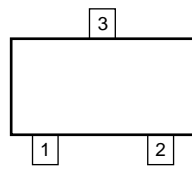
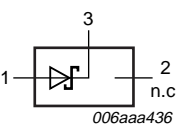
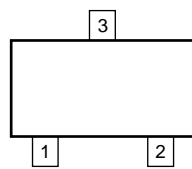
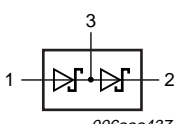
Table 2: Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_F$	forward current		-	-	70	mA
$V_F$	forward voltage	$I_F = 1 \text{ mA}$	[1]	-	410	mV
$V_R$	reverse voltage		-	-	70	V

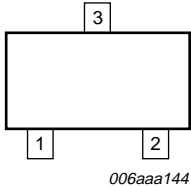
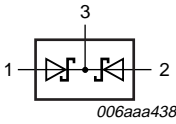
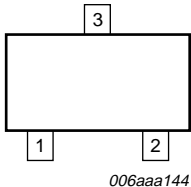
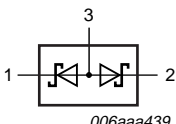
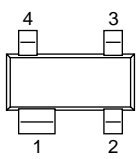
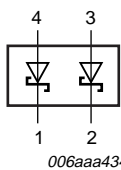
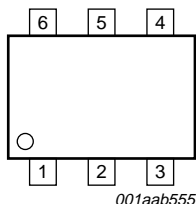
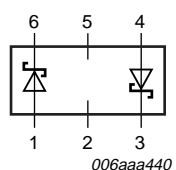
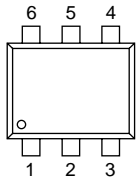
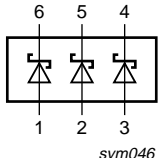
[1] Pulse test:  $t_p \leq 300 \mu\text{s}$ ;  $\delta \leq 0.02$

## 2. Pinning information

Table 3: Pinning

Pin	Description	Conditions	Simplified outline	Symbol
<b>BAS70H, 1PS76SB70, 1PS79SB70</b>				
1	cathode	[1]	 <p>001aab540</p>	 sym001
2	anode			
<b>BAS70L</b>				
1	cathode	[1]	 <p>Transparent top view</p>	 sym001
2	anode			
<b>BAS70, BAS70W</b>				
1	anode		 <p>006aaa144</p>	 006aaa436
2	not connected			
3	cathode			
<b>BAS70-04, BAS70-04W</b>				
1	anode (diode 1)		 <p>006aaa144</p>	 006aaa437
2	cathode (diode 2)			
3	cathode (diode 1), anode (diode 2)			

**Table 3: Pinning (Continued)**

Pin	Description	Simplified outline	Symbol
<b>BAS70-05, BAS70-05W</b>			
1	anode (diode 1)	 <p>006aaa144</p>	 <p>006aaa438</p>
2	anode (diode 2)		
3	cathode (diode 1), cathode (diode 2)		
<b>BAS70-06, BAS70-06W</b>			
1	cathode (diode 1)	 <p>006aaa144</p>	 <p>006aaa439</p>
2	cathode (diode 2)		
3	anode (diode 1), anode (diode 2)		
<b>BAS70-07</b>			
1	cathode (diode 1)		 <p>006aaa434</p>
2	cathode (diode 2)		
3	anode (diode 2)		
4	anode (diode 1)		
<b>BAS70-07S, BAS70-07V</b>			
1	anode (diode 1)	 <p>001aab555</p>	 <p>006aaa440</p>
2	not connected		
3	cathode (diode 2)		
4	anode (diode 2)		
5	not connected		
6	cathode (diode 1)		
<b>BAS70VV</b>			
1	anode (diode 1)		 <p>sym046</p>
2	anode (diode 2)		
3	anode (diode 3)		
4	cathode (diode 3)		
5	cathode (diode 2)		
6	cathode (diode 1)		

[1] The marking bar indicates the cathode.

### 3. Ordering information

Table 4: Ordering information

Type number	Package		
	Name	Description	Version
1PS76SB70	SC-76	plastic surface mounted package, 2 leads	SOD323
1PS79SB70	SC-79	plastic surface mounted package, 2 leads	SOD523
BAS70	-	plastic surface mounted package; 3 leads	SOT23
BAS70H	-	plastic surface mounted package; 2 leads	SOD123F
BAS70L	-	leadless ultra small plastic package; 2 terminals; body 1.0 × 0.6 × 0.5 mm	SOD882
BAS70W	SC-70	plastic surface mounted package; 3 leads	SOT323
BAS70-04	-	plastic surface mounted package; 3 leads	SOT23
BAS70-04W	SC-70	plastic surface mounted package; 3 leads	SOT323
BAS70-05	-	plastic surface mounted package; 3 leads	SOT23
BAS70-05W	SC-70	plastic surface mounted package; 3 leads	SOT323
BAS70-06	-	plastic surface mounted package; 3 leads	SOT23
BAS70-06W	SC-70	plastic surface mounted package; 3 leads	SOT323
BAS70-07	-	plastic surface mounted package; 4 leads	SOT143B
BAS70-07S	SC-88	plastic surface mounted package; 6 leads	SOT363
BAS70-07V	-	plastic surface mounted package; 6 leads	SOT666
BAS70VV	-	plastic surface mounted package; 6 leads	SOT666

### 4. Marking

Table 5: Marking codes

Type number	Marking code [1]	Type number	Marking code [1]
1PS76SB70	S2	BAS70-05	75*
1PS79SB70	G	BAS70-05W	75*
BAS70	73*	BAS70-06	76*
BAS70H	AH	BAS70-06W	76*
BAS70L	S8	BAS70-07	77*
BAS70W	73*	BAS70-07S	77*
BAS70-04	74*	BAS70-07V	77
BAS70-04W	74*	BAS70VV	N1

- [1] \* = -: made in Hong Kong  
 \* = p: made in Hong Kong  
 \* = t: made in Malaysia  
 \* = W: made in China

## 5. Limiting values

**Table 6: Limiting values**

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
<b>Per diode</b>					
$V_R$	reverse voltage		-	70	V
$I_F$	forward current		-	70	mA
$I_{FRM}$	repetitive peak forward current	$t_p \leq 1$ s; $\delta \leq 0.5$	-	70	mA
$I_{FSM}$	non-repetitive peak forward current	$t_p \leq 10$ ms	[1] -	100	mA
$T_j$	junction temperature		-	150	°C
$T_{amb}$	ambient temperature		-65	+150	°C
$T_{stg}$	storage temperature		-65	+150	°C

[1]  $T_j = 25$  °C prior to surge.

## 6. Thermal characteristics

**Table 7: Thermal characteristics**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]			
	SOT23		-	-	500	K/W
	SOT143B		-	-	500	K/W
	SOT363		-	-	416	K/W
	SOT666 (BAS70VV)		[2]	-	700	K/W
	SOT666 (BAS70-07V)		[2]	-	416	K/W
	SOD123F		[2]	-	330	K/W
	SOD323		-	-	450	K/W
	SOD523		[2]	-	450	K/W
	SOD882		[2]	-	500	K/W
	SOT323		-	-	625	K/W

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

[2] Reflow soldering is the only recommended soldering method.

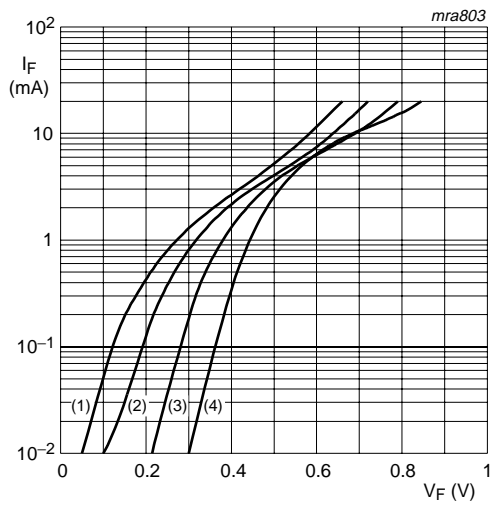
## 7. Characteristics

**Table 8: Characteristics**

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

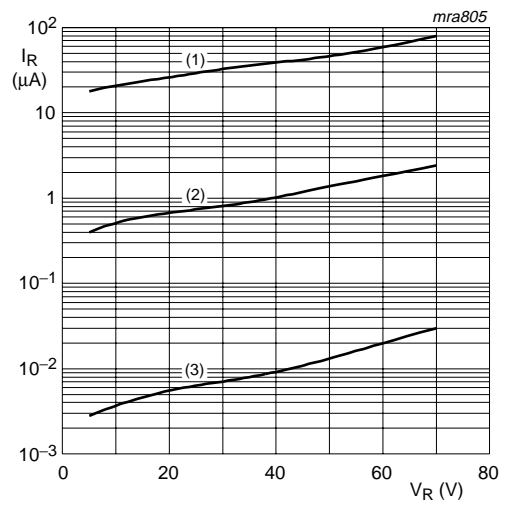
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Per diode</b>						
$V_F$	forward voltage	$I_F = 1\text{ mA}$	[1]	-	410	mV
		$I_F = 10\text{ mA}$	[1]	-	750	mV
		$I_F = 15\text{ mA}$	[1]	-	1	V
$I_R$	reverse current	$V_R = 50\text{ V}$	-	-	100	nA
		$V_R = 70\text{ V}$	-	-	10	$\mu\text{A}$
$C_d$	diode capacitance	$V_R = 0\text{ V}; f = 1\text{ MHz}$	-	-	2	pF

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



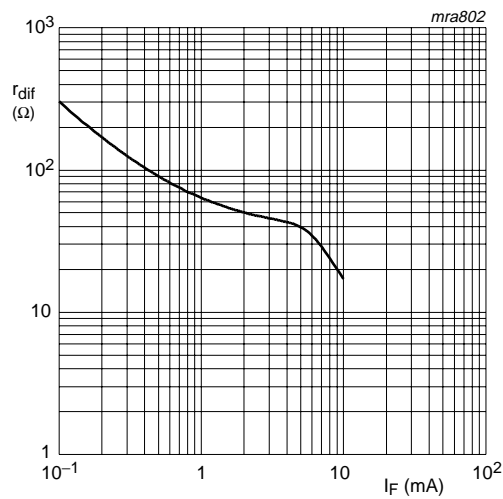
- (1)  $T_{amb} = 125\text{ °C}$
- (2)  $T_{amb} = 85\text{ °C}$
- (3)  $T_{amb} = 25\text{ °C}$
- (4)  $T_{amb} = -40\text{ °C}$

**Fig 1. Forward current as a function of forward voltage; typical values**



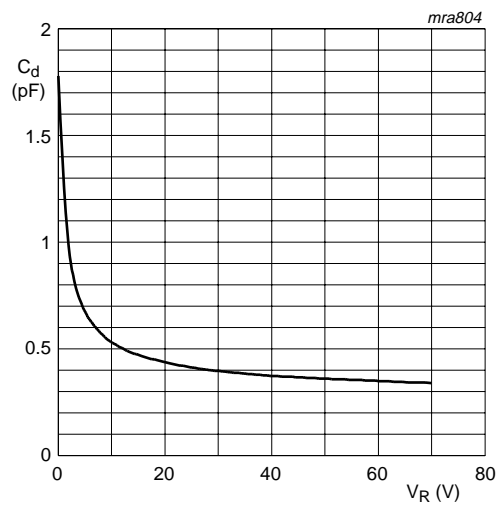
- (1)  $T_{amb} = 125\text{ °C}$
- (2)  $T_{amb} = 85\text{ °C}$
- (3)  $T_{amb} = 25\text{ °C}$

**Fig 2. Reverse current as a function of reverse voltage; typical values**



$f = 10\text{ kHz}$

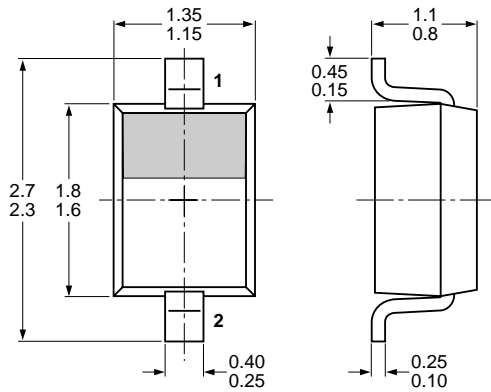
**Fig 3. Differential forward resistance as a function of forward current; typical values**



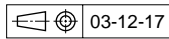
$T_{amb} = 25\text{ °C}; f = 1\text{ MHz}$

**Fig 4. Diode capacitance as a function of reverse voltage; typical values**

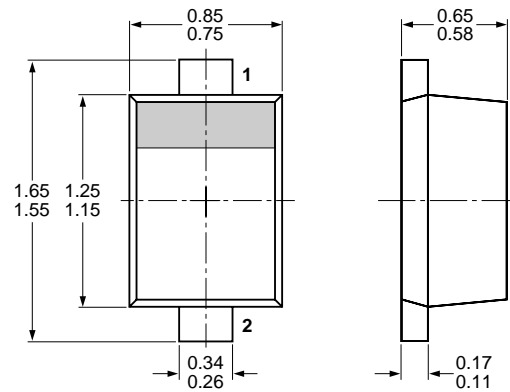
**8. Package outline**



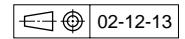
Dimensions in mm



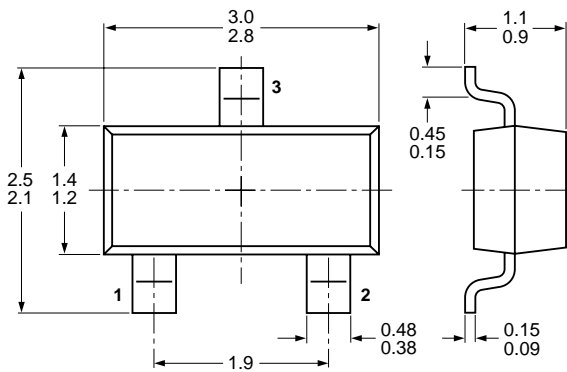
**Fig 5. Package outline SOD323 (SC-76)**



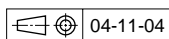
Dimensions in mm



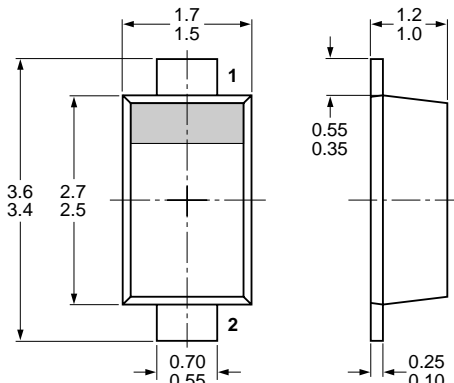
**Fig 6. Package outline SOD523 (SC-79)**



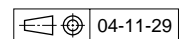
Dimensions in mm



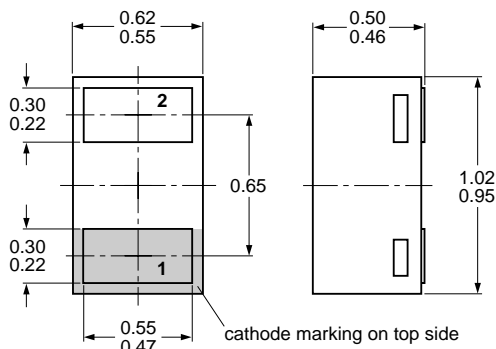
**Fig 7. Package outline SOT23 (TO-236AB)**



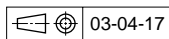
Dimensions in mm



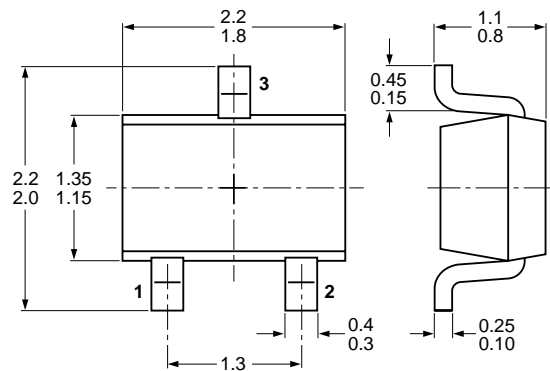
**Fig 8. Package outline SOD123F**



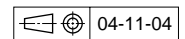
Dimensions in mm



**Fig 9. Package outline SOD882**

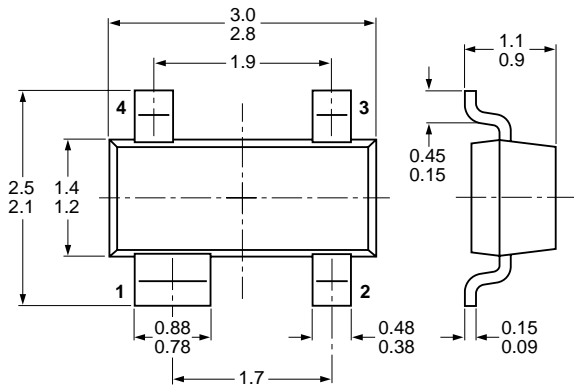


Dimensions in mm

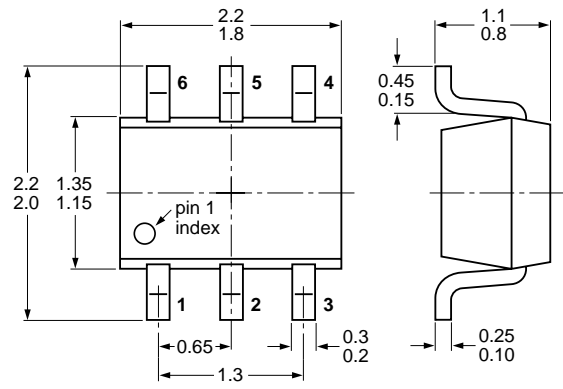


**Fig 10. Package outline SOT323 (SC-70)**

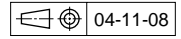




Dimensions in mm

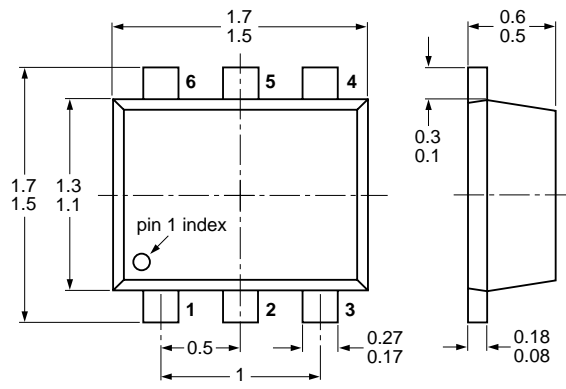


Dimensions in mm

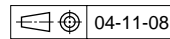


**Fig 11. Package outline SOT143B**

**Fig 12. Package outline SOT363 (SC-88)**



Dimensions in mm



**Fig 13. Package outline SOT666**

## 9. Packing information

**Table 9: Packing methods**

The indicated -xxx are the last three digits of the 12NC ordering code. [\[1\]](#)

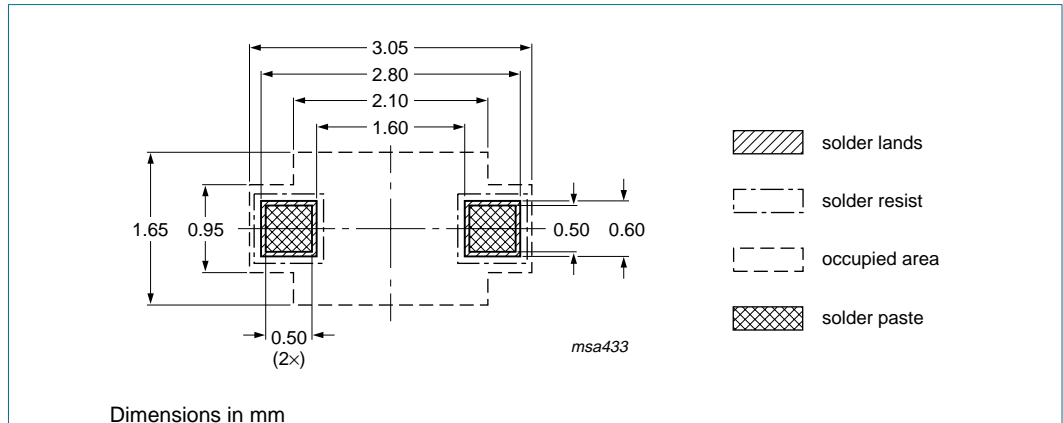
Type number	Package	Description	Packing quantity			
			3000	4000	8000	10000
1PS76SB70	SOD323	4 mm pitch, 8 mm tape and reel	-115	-	-	-135
1PS79SB70	SOD523	4 mm pitch, 8 mm tape and reel	-115	-	-	-135
BAS70	SOT23	4 mm pitch, 8 mm tape and reel	-215	-	-	-235
BAS70H	SOD123F	4 mm pitch, 8 mm tape and reel	-115	-	-	-135
BAS70L	SOD882	2 mm pitch, 8 mm tape and reel	-	-	-	-315
BAS70W	SOT323	4 mm pitch, 8 mm tape and reel	-115	-	-	-135
BAS70-04	SOT23	4 mm pitch, 8 mm tape and reel	-215	-	-	-235
BAS70-04W	SOT323	4 mm pitch, 8 mm tape and reel	-115	-	-	-135
BAS70-05	SOT23	4 mm pitch, 8 mm tape and reel	-215	-	-	-235
BAS70-05W	SOT323	4 mm pitch, 8 mm tape and reel	-115	-	-	-135
BAS70-06	SOT23	4 mm pitch, 8 mm tape and reel	-215	-	-	-235
BAS70-06W	SOT323	4 mm pitch, 8 mm tape and reel	-115	-	-	-135
BAS70-07	SOT143B	4 mm pitch, 8 mm tape and reel	-215	-	-	-235
BAS70-07S	SOT363	4 mm pitch, 8 mm tape and reel; T1	<a href="#">[2]</a> -115	-	-	-135
		4 mm pitch, 8 mm tape and reel; T2	<a href="#">[3]</a> -125	-	-	-165
BAS70-07V	SOT666	4 mm pitch, 8 mm tape and reel	-	-115	-	-
		2 mm pitch, 8 mm tape and reel	-	-	-315	-
BAS70VV	SOT666	4 mm pitch, 8 mm tape and reel	-	-115	-	-
		2 mm pitch, 8 mm tape and reel	-	-	-315	-

[1] For further information and the availability of packing methods, see [Section 16](#).

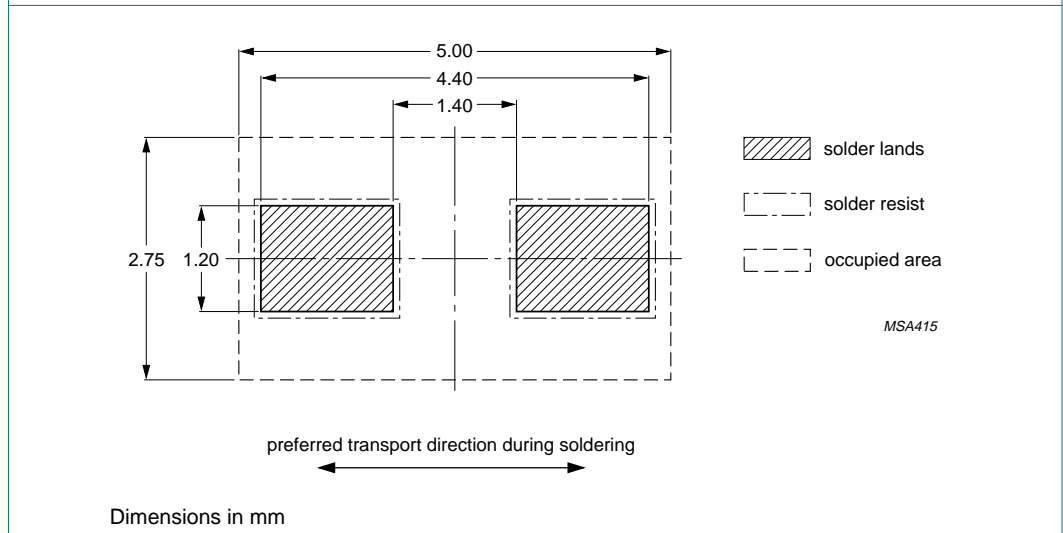
[2] T1: normal taping

[3] T2: reverse taping

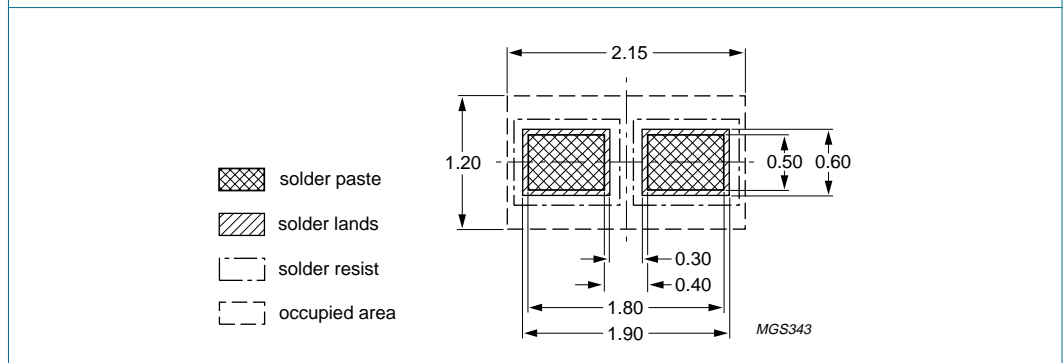
**10. Soldering**



**Fig 14. Reflow soldering footprint SOD323 (SC-76)**



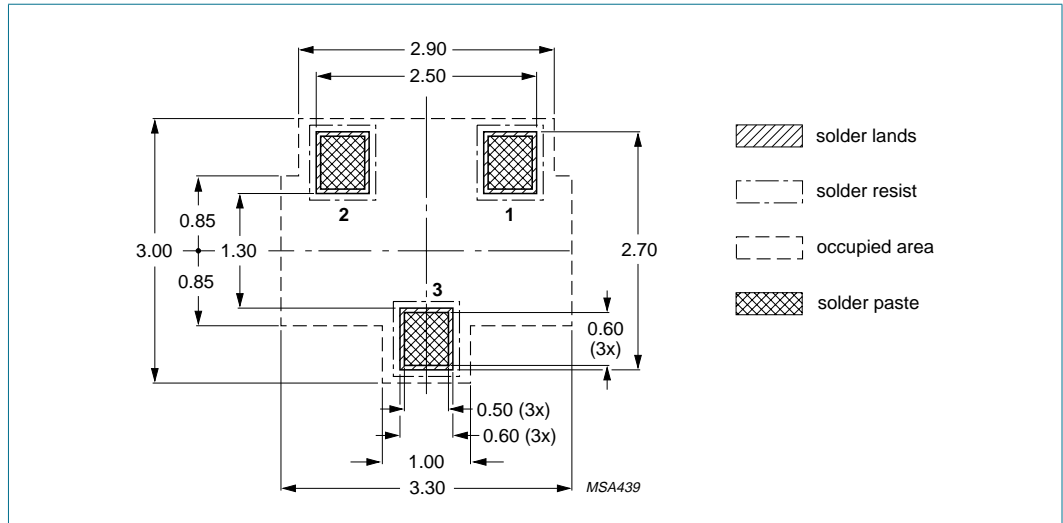
**Fig 15. Wave soldering footprint SOD323 (SC-76)**



Reflow soldering is the only recommended soldering method.

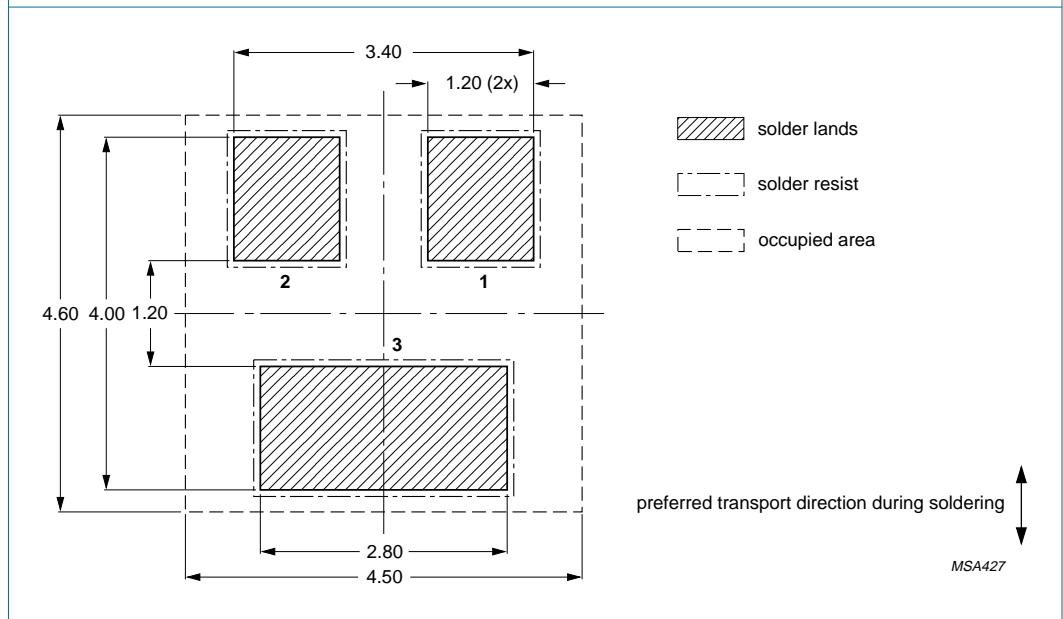
Dimensions in mm

**Fig 16. Reflow soldering footprint SOD523 (SC-79)**



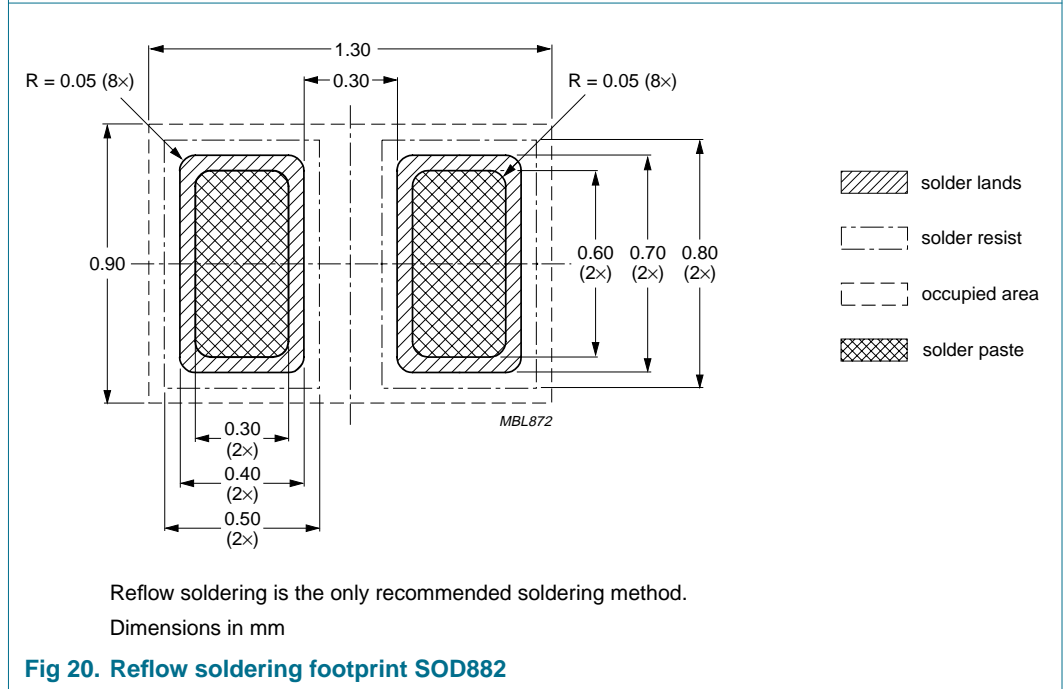
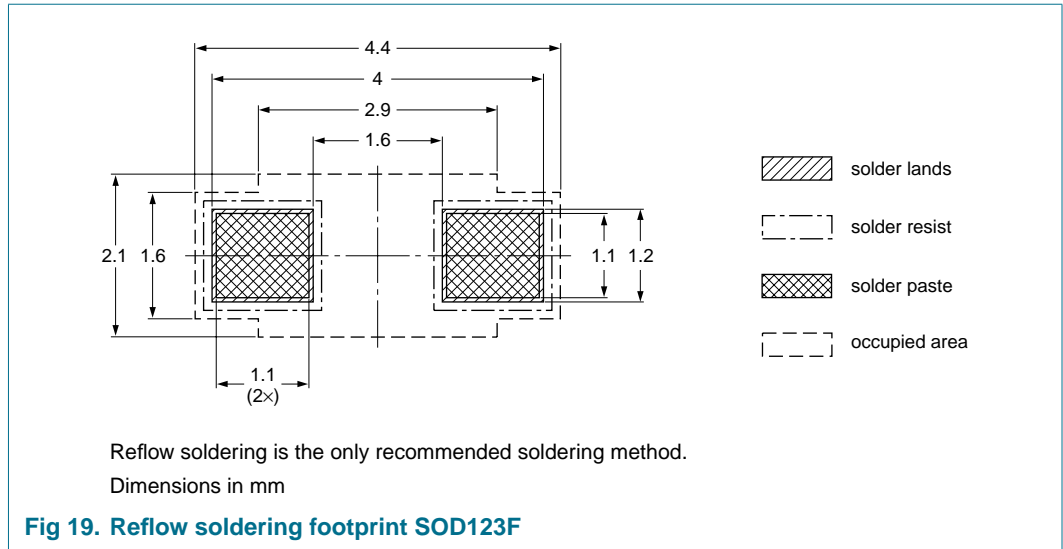
Dimensions in mm

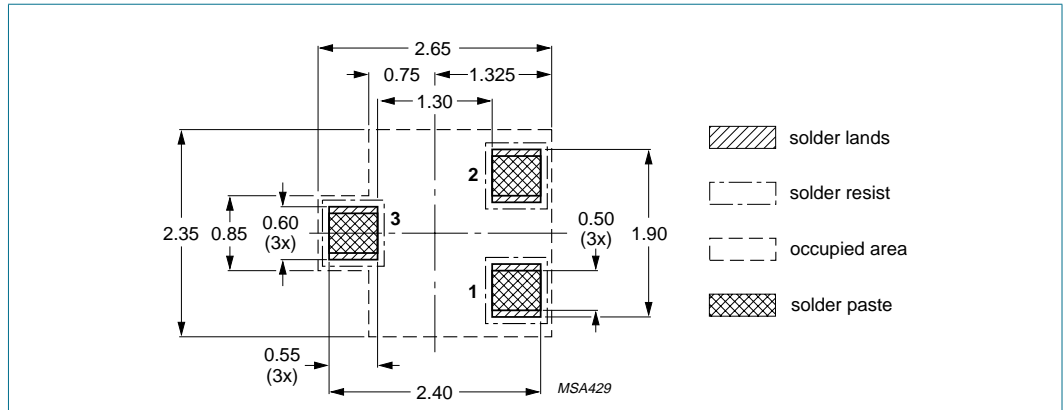
**Fig 17. Reflow soldering footprint SOT23 (TO-236AB)**



Dimensions in mm

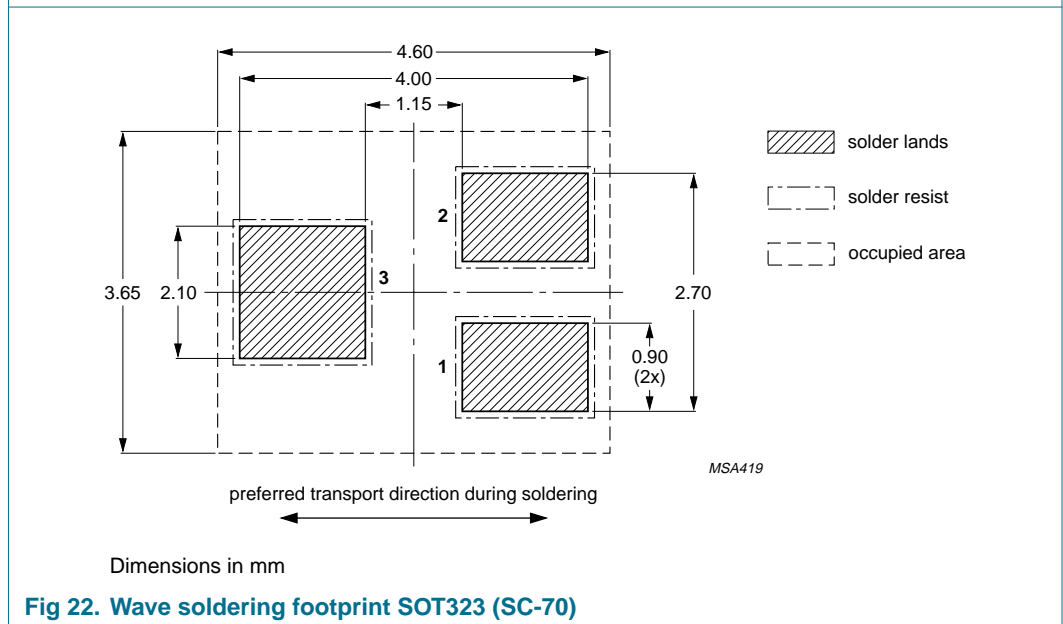
**Fig 18. Wave soldering footprint SOT23 (TO-236AB)**





Dimensions in mm

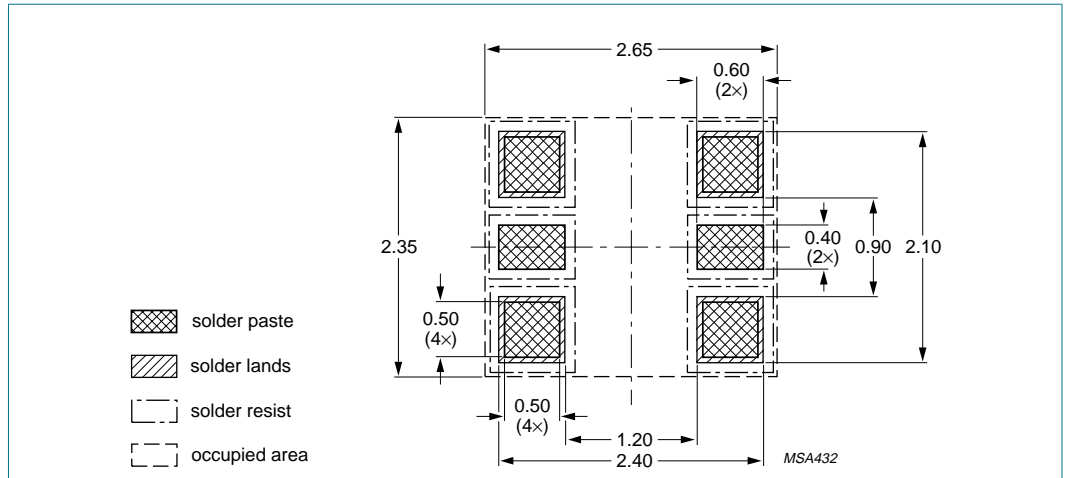
**Fig 21. Reflow soldering footprint SOT323 (SC-70)**



Dimensions in mm

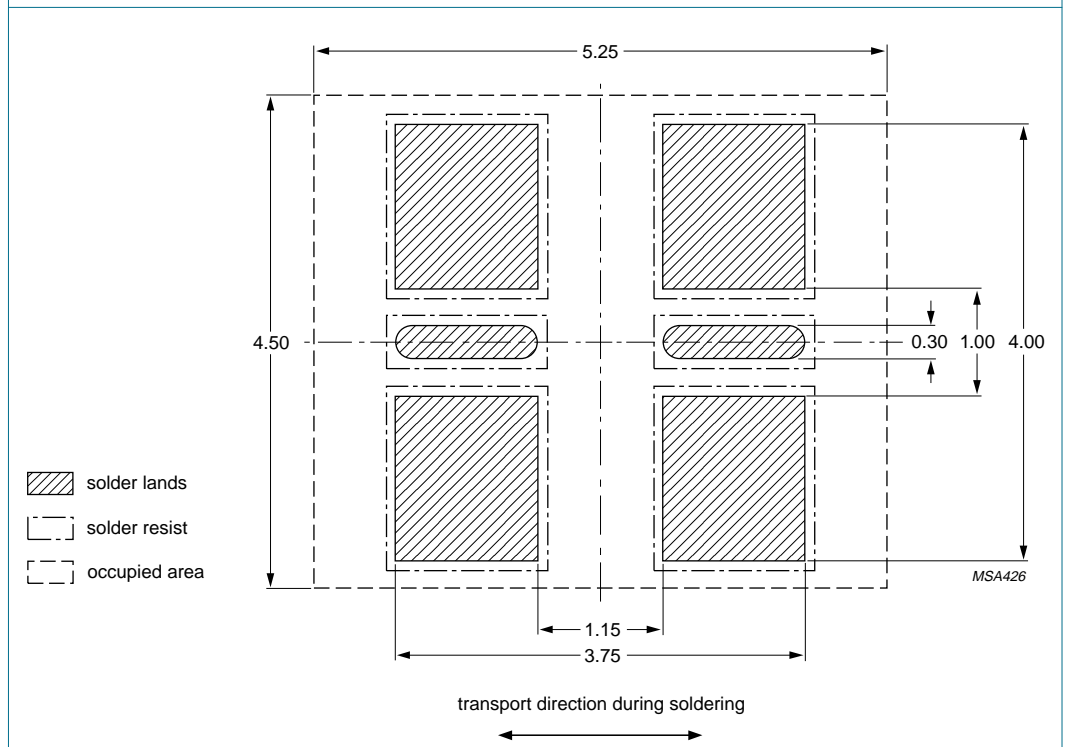
**Fig 22. Wave soldering footprint SOT323 (SC-70)**





Dimensions in mm

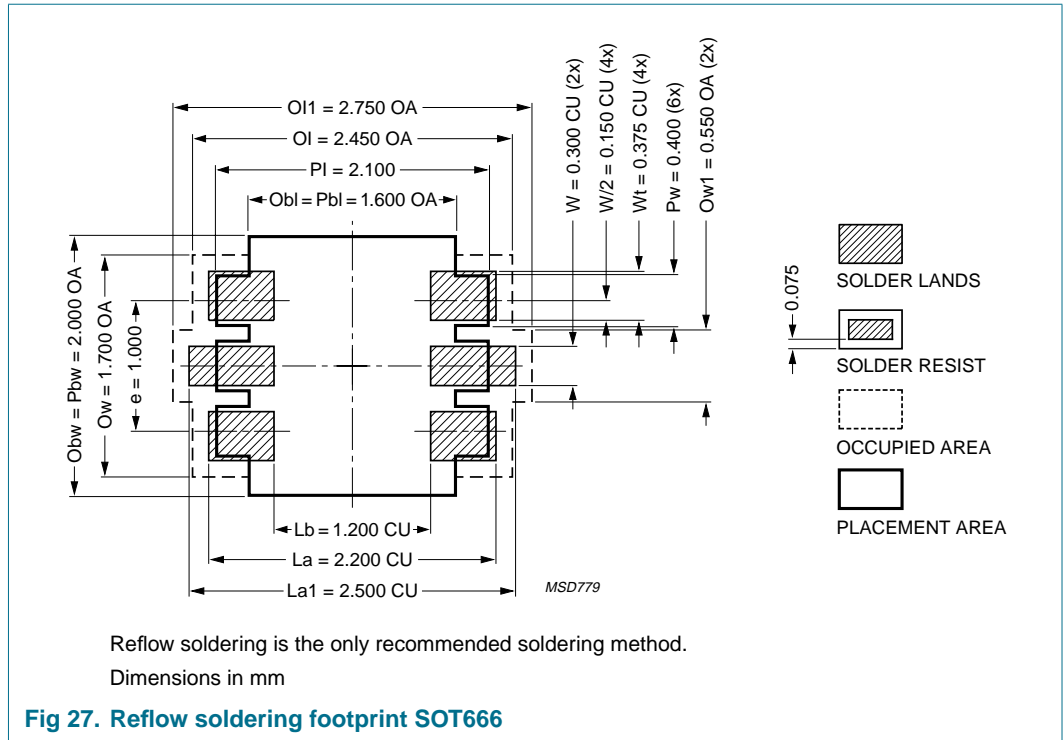
**Fig 25. Reflow soldering footprint SOT363 (SC-88)**



Dimensions in mm

**Fig 26. Wave soldering footprint SOT363 (SC-88)**





## 11. Revision history

Table 10: Revision history

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
BAS70_1PS7XSB70_SER_7	20050718	Product data sheet	-	-	1PS76SB70_2 1PS79SB70_1 BAS70H_1 BAS70L_1 BAS70-07V_1 BAS70VV_1 BAS70W_3 BAS70-07S_4 BAS70_SERIES_6
Modifications:					<ul style="list-style-type: none"> <li>• The format of this data sheet has been redesigned to comply with the new presentation and information standard of Philips Semiconductors.</li> <li>• This data sheet is a combination of data sheets 1PS76SB70_2, 1PS79SB70_1, BAS70H_1, BAS70L_1, BAS70-07V_1, BAS70VV_1, BAS70W_3, BAS70-07S_4 and BAS70_SERIES_6.</li> <li>• <a href="#">Table 1 “Product overview”</a>: added</li> <li>• <a href="#">Figure 5, 6, 7, 9, 10, 11, 12</a> and <a href="#">13</a>: superseded by minimized package outline drawings</li> <li>• <a href="#">Section 9 “Packing information”</a>: added</li> <li>• <a href="#">Section 10 “Soldering”</a>: added</li> <li>• <a href="#">Section 15 “Trademarks”</a>: added</li> </ul>
1PS76SB70_2	20040126	Product specification	-	9397 750 12623	1PS76SB70_1
1PS79SB70_1	19980716	Product specification	-	9397 750 03994	-
BAS70H_1	20050425	Product data sheet	-	9397 750 14967	-
BAS70L_1	20030520	Product specification	-	9397 750 11312	-
BAS70-07V_1	20020117	Product specification	-	9397 750 08971	-
BAS70VV_1	20040910	Product data sheet	-	9397 750 13732	-
BAS70W_3	19990326	Product specification	-	9397 750 05476	BAS70W_2
BAS70-07S_4	20030411	Product specification	-	9397 750 11159	BAS70_07S_3
BAS70_SERIES_6	20011011	Product specification	-	9397 750 08761	BAS70_5

## 12. Data sheet status

Level	Data sheet status <sup>[1]</sup>	Product status <sup>[2] [3]</sup>	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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[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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