# BAS70 series; 1PS7xSB70 series

## General-purpose Schottky diodes

Rev. 09 — 13 January 2010 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 |
|---|---|---|---|
| | Nexperia | 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 |
| BAS70XY | SOT363 | SC-88 | quadruple; 2 series |

### 1.2 Features

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

### 1.3 Applications

- Ultra high-speed switching
- Voltage clamping

### 1.4 Quick reference data

**Table 2. Quick reference data**

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| **Per diode** | | | | | | | |
| $I_F$ | forward current | | | - | - | 70 | mA |
| $V_F$ | forward voltage | $I_F$ = 1 mA | [1] | - | - | 410 | mV |
| $V_R$ | reverse voltage | | | - | - | 70 | V |

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

## 2. Pinning information

**Table 3. Pinning**

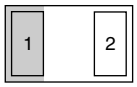
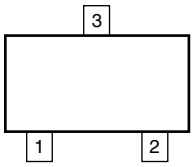
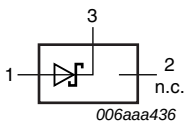
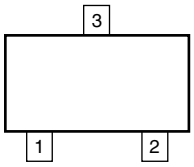
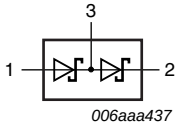
| Pin | Description | | Simplified outline | Symbol |
|---|---|---|---|---|
| **BAS70H; 1PS76SB70; 1PS79SB70** | | | | |
| 1 | cathode | [1] | 001aab540 | sym001 |
| 2 | anode | | | |
| **BAS70L** | | | | |
| 1 | cathode | [1] |  Transparent top view | sym001 |
| 2 | anode | | | |
| **BAS70; BAS70W**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


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**Table 3. Pinning** *...continued*

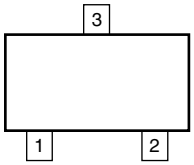
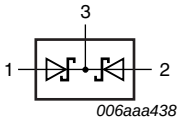
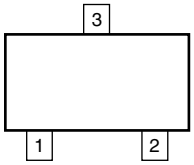
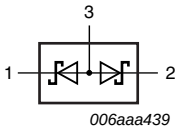
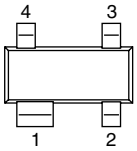
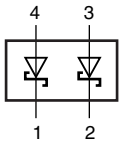
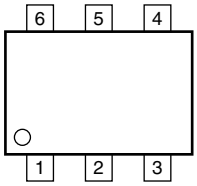
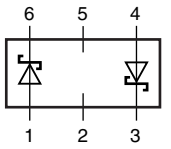
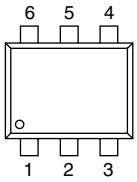
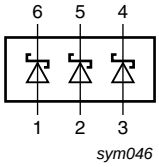
| Pin | Description | Simplified outline | Symbol |
|---|---|---|---|
| **BAS70-05; BAS70-05W** | | | |
| 1 | anode (diode 1) |  006aaa144 |  006aaa438 |
| 2 | anode (diode 2) | | |
| 3 | cathode (diode 1), cathode (diode 2) | | |
| **BAS70-06; BAS70-06W** | | | |
| 1 | cathode (diode 1) |  006aaa144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


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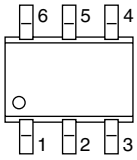
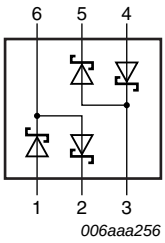
**Table 3. Pinning** *...continued*

| Pin | Description | Simplified outline | Symbol |
|---|---|---|---|
| **BAS70XY** | | | |
| 1 | anode (diode 1) |  |  |
| 2 | cathode (diode 2) | | |
| 3 | anode (diode 3), cathode (diode 4) | | |
| 4 | anode (diode 4) | | |
| 5 | cathode (diode 3) | | |
| 6 | cathode (diode 1), anode (diode 2) | | |



[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 |
| BAS70XY | SC-88 | plastic surface-mounted package; 6 leads | SOT363 |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## 4. Marking

**Table 5. Marking codes**

| Type number | Marking code[1] | Type number | Marking code[1] |
|---|---|---|---|
| 1PS76SB70 | S2 | BAS70-05W | 75* |
| 1PS79SB70 | G | BAS70-06 | 76* |
| BAS70 | 73* | BAS70-06W | 76* |
| BAS70H | AH | BAS70-07 | 77* |
| BAS70L | S8 | BAS70-07S | 77* |
| BAS70W | 73* | BAS70-07V | 77 |
| BAS70-04 | 74* | BAS70VV | N1 |
| BAS70-04W | 74* | BAS70XY | 70* |
| BAS70-05 | 75* | - | - |

[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 |
|---|---|---|---|---|---|---|
| **Per diode** | | | | | | |
| $V_R$ | 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.


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# 6. Thermal characteristics

**Table 7. Thermal characteristics**

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| **Per device** | | | | | | | |
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air | [1] | | | | |
| | SOT23 | | | - | - | 500 | K/W |
| | SOT143B | | | - | - | 500 | K/W |
| | SOT363 (BAS70-07S) | | | - | - | 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 |
| $R_{th(j-sp)}$ | thermal resistance from junction to solder point | | | | | | |
| | SOT363 (BAS70XY) | | [3] | - | - | 260 | 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.

[3] Soldering point at pins 2, 3, 5 and 6.

# 7. Characteristics

**Table 8. Characteristics**

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

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| **Per diode** | | | | | | | |
| $V_F$ | forward voltage | | [1] | | | | |
| | | $I_F$ = 1 mA | | - | - | 410 | mV |
| | | $I_F$ = 10 mA | | - | - | 750 | mV |
| | | $I_F$ = 15 mA | | - | - | 1 | V |
| $I_R$ | reverse current | $V_R$ = 50 V | | - | - | 100 | nA |
| | | $V_R$ = 70 V | | - | - | 10 | µA |
| $C_d$ | diode capacitance | $V_R$ = 0 V; f = 1 MHz | | - | - | 2 | pF |

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


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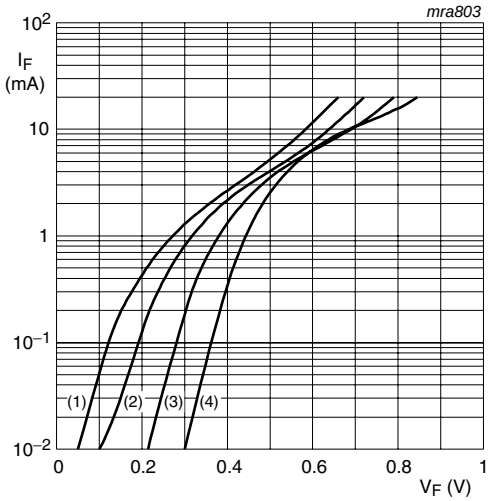
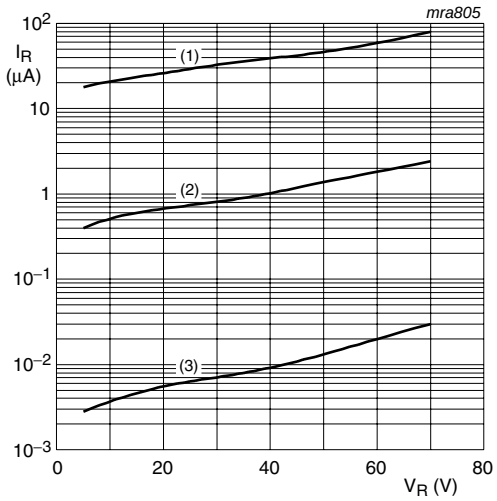


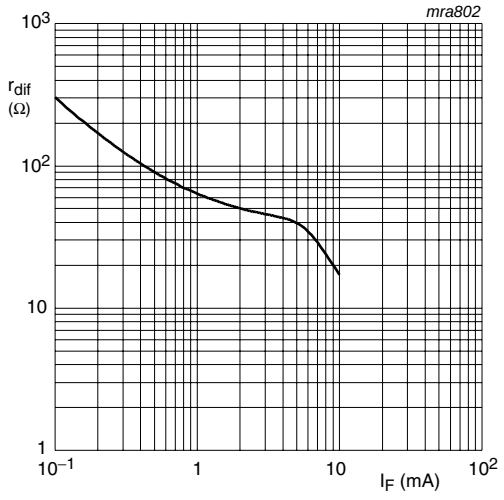

(1) $T_{amb}$ = 125 °C
(2) $T_{amb}$ = 85 °C
(3) $T_{amb}$ = 25 °C
(4) $T_{amb}$ = −40 °C

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



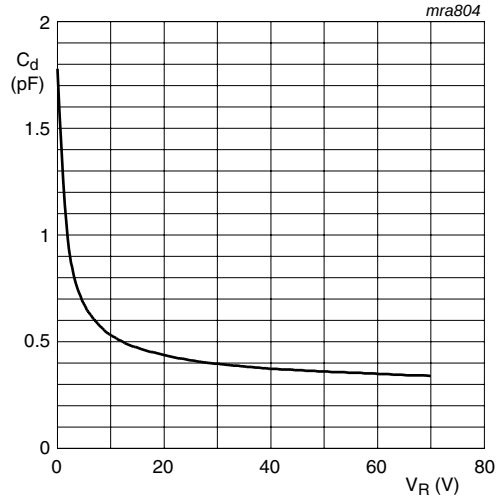

(1) $T_{amb}$ = 125 °C
(2) $T_{amb}$ = 85 °C
(3) $T_{amb}$ = 25 °C

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




f = 10 kHz

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




$T_{amb}$ = 25 °C; f = 1 MHz

**Fig 4. Diode capacitance as a function of reverse voltage; typical values**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## 8. Package outline

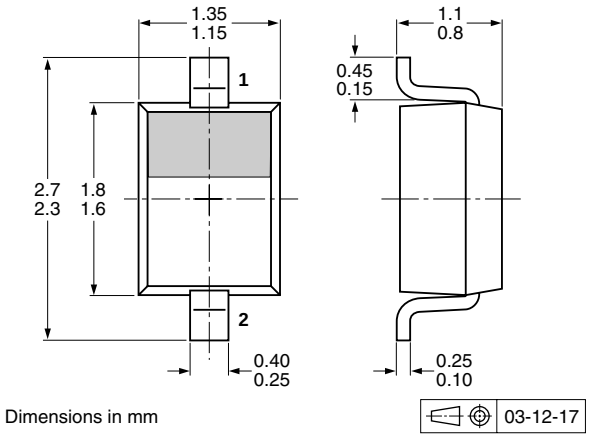


Fig 5. Package outline SOD323 (SC-76)

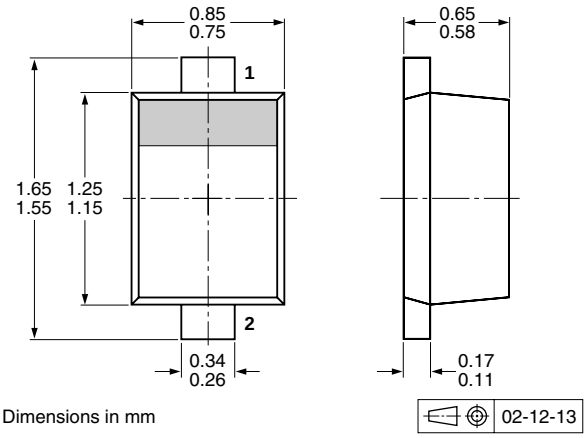


Fig 6. Package outline SOD523 (SC-79)

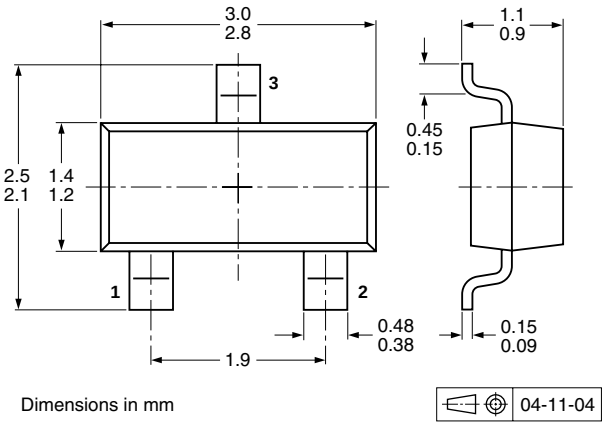


Fig 7. Package outline SOT23 (TO-236AB)

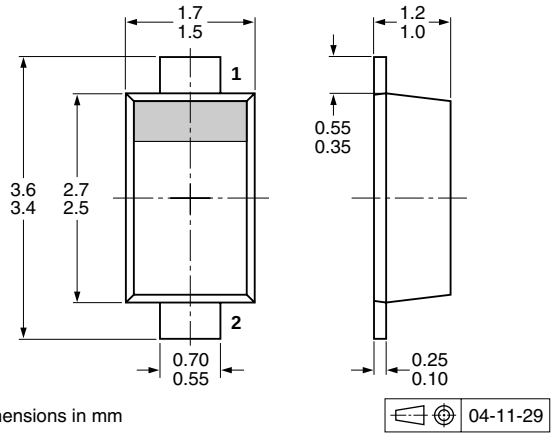


Fig 8. Package outline SOD123F

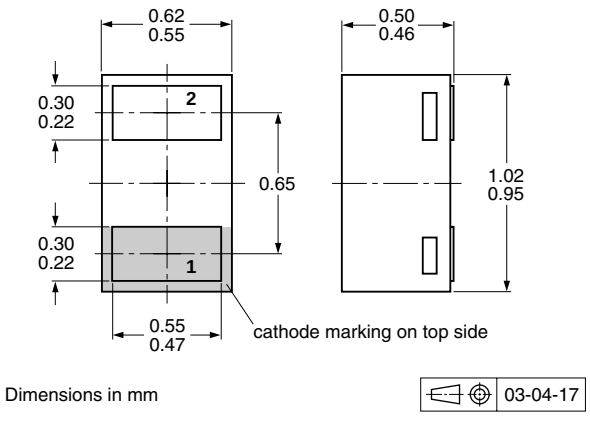


Fig 9. Package outline SOD882

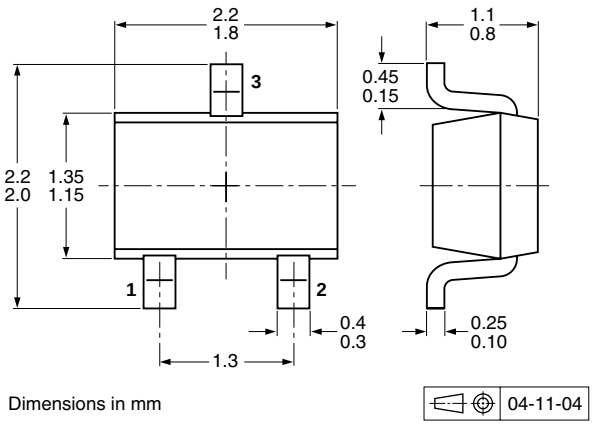


Fig 10. Package outline SOT323 (SC-70)


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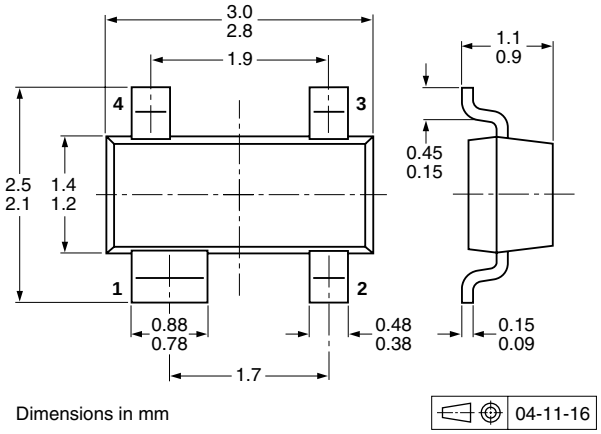


Fig 11. Package outline SOT143B

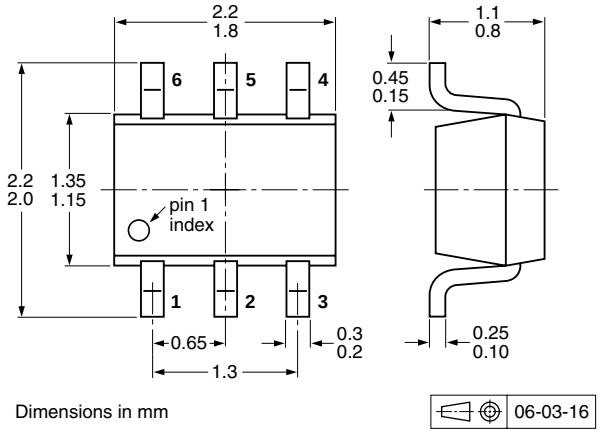


Fig 12. Package outline SOT363 (SC-88)

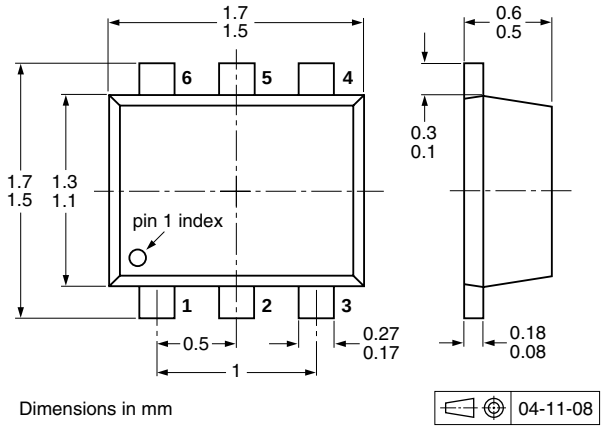


Fig 13. Package outline SOT666


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# 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 | 2 mm pitch, 8 mm tape and reel | - | - | -315 | - |
| | | 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 [2] | -115 | - | - | -135 |
| | | 4 mm pitch, 8 mm tape and reel; T2 [3] | -125 | - | - | -165 |
| BAS70-07V | SOT666 | 2 mm pitch, 8 mm tape and reel | - | - | -315 | - |
| | | 4 mm pitch, 8 mm tape and reel | - | -115 | - | - |
| BAS70VV | SOT666 | 2 mm pitch, 8 mm tape and reel | - | - | -315 | - |
| | | 4 mm pitch, 8 mm tape and reel | - | -115 | - | - |
| BAS70XY | SOT363 | 4 mm pitch, 8 mm tape and reel; T1 [2] | -115 | - | - | -135 |
| | | 4 mm pitch, 8 mm tape and reel; T2 [3] | -125 | - | - | -165 |

[1] For further information and the availability of packing methods, see Section 13.

[2] T1: normal taping

[3] T2: reverse taping



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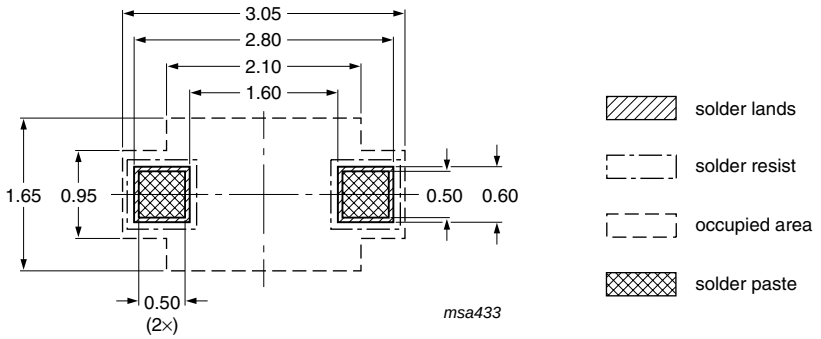
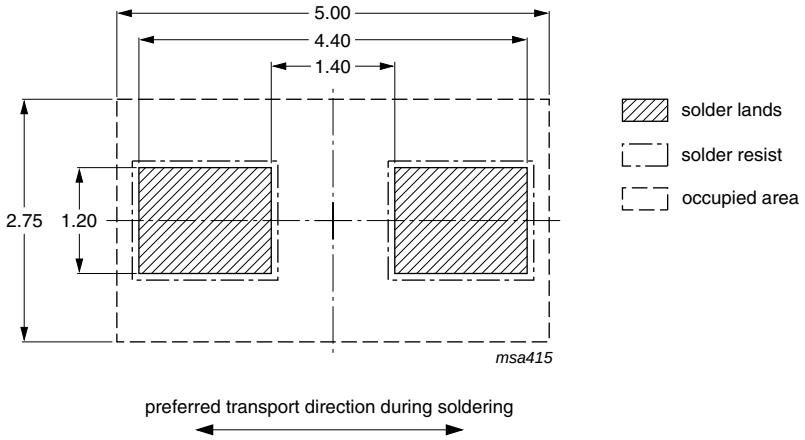
## 10. Soldering



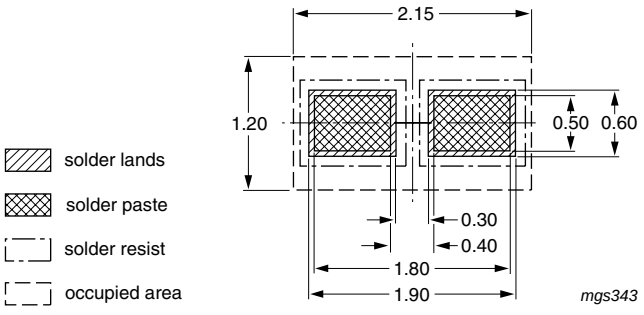

Dimensions in mm

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




Dimensions in mm

**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)**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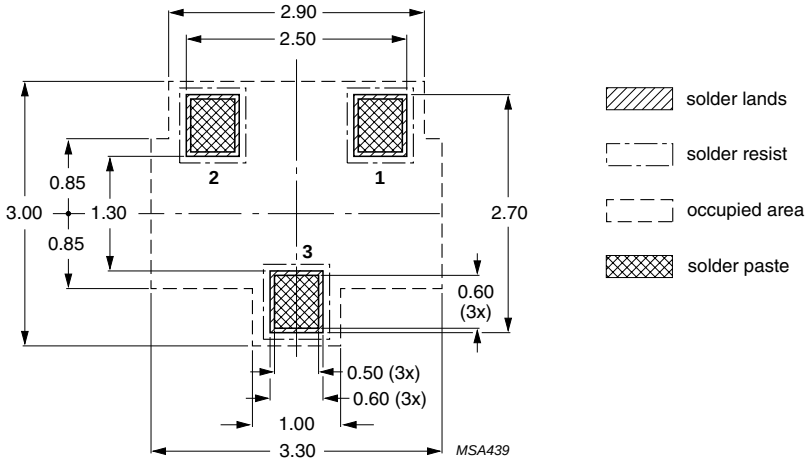
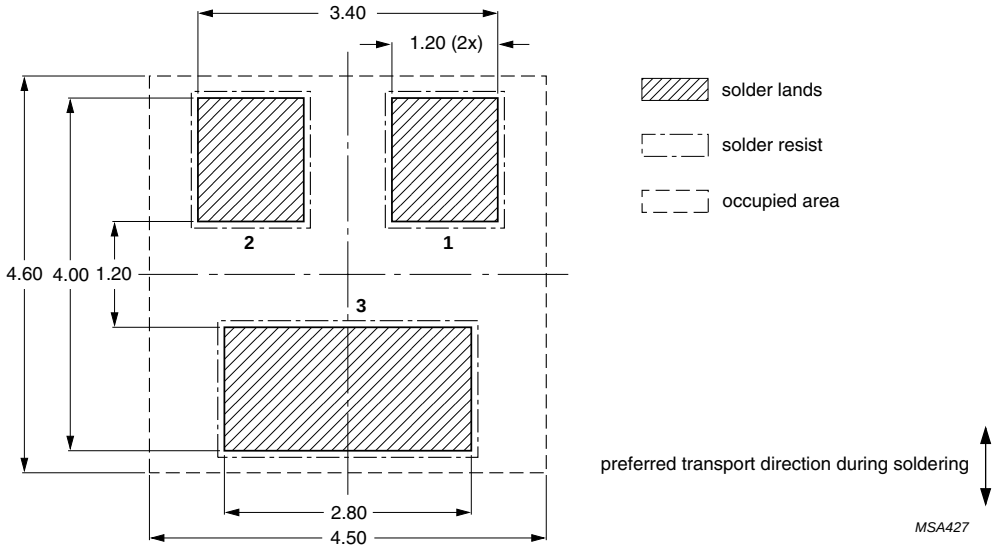



Dimensions in mm

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




Dimensions in mm

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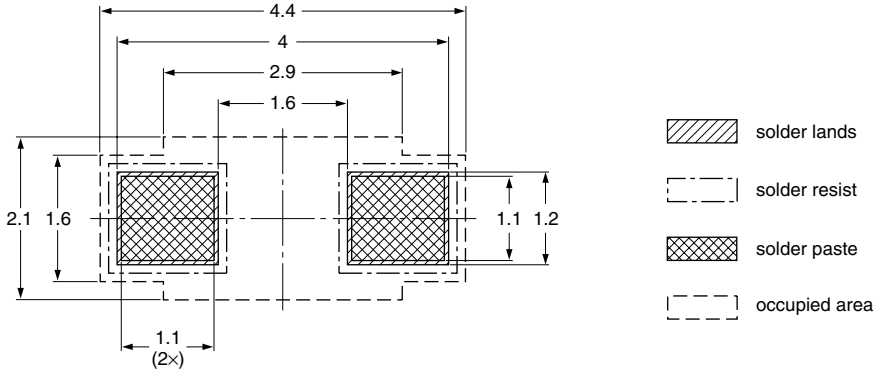
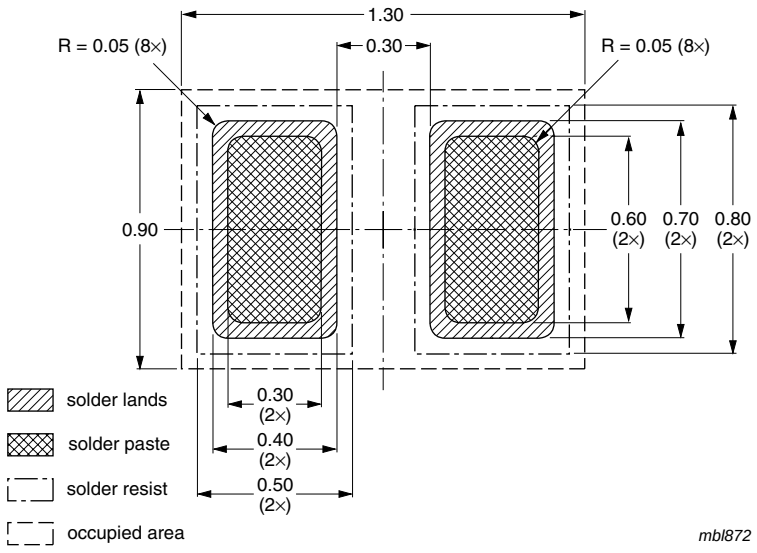



Reflow soldering is the only recommended soldering method.

Dimensions in mm

**Fig 19. Reflow soldering footprint SOD123F**




Reflow soldering is the only recommended soldering method.

Dimensions in mm

**Fig 20. Reflow soldering footprint SOD882**



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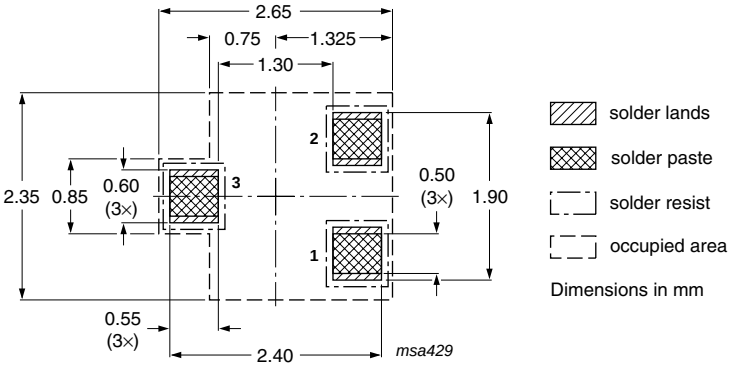
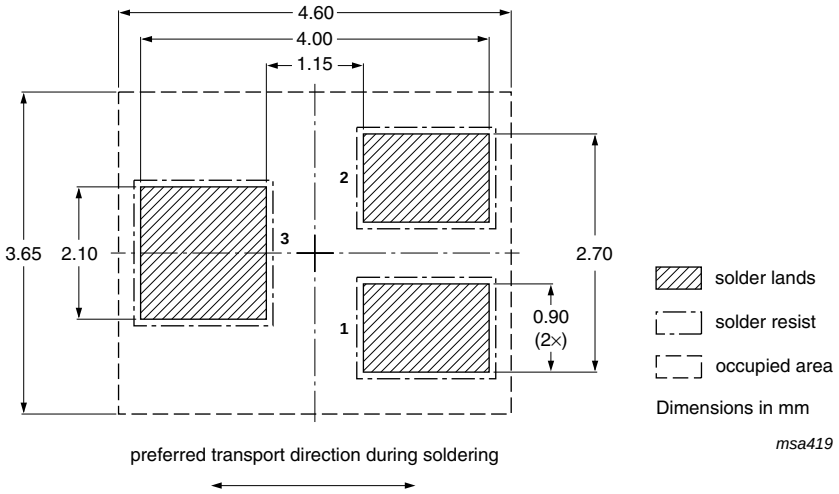



Dimensions in mm

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




Dimensions in mm

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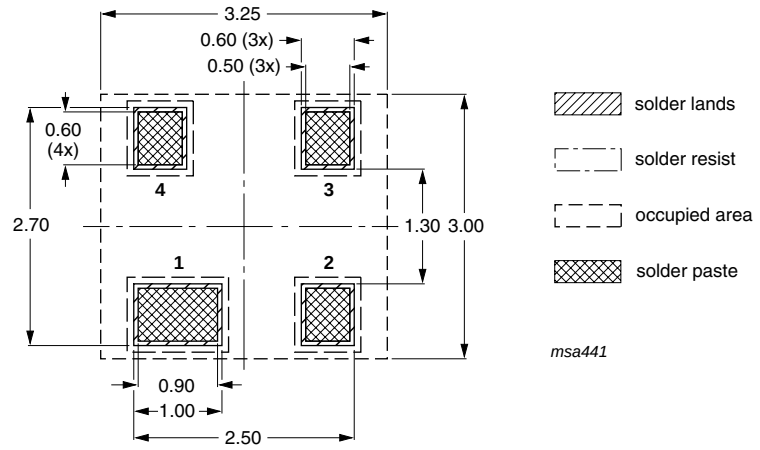
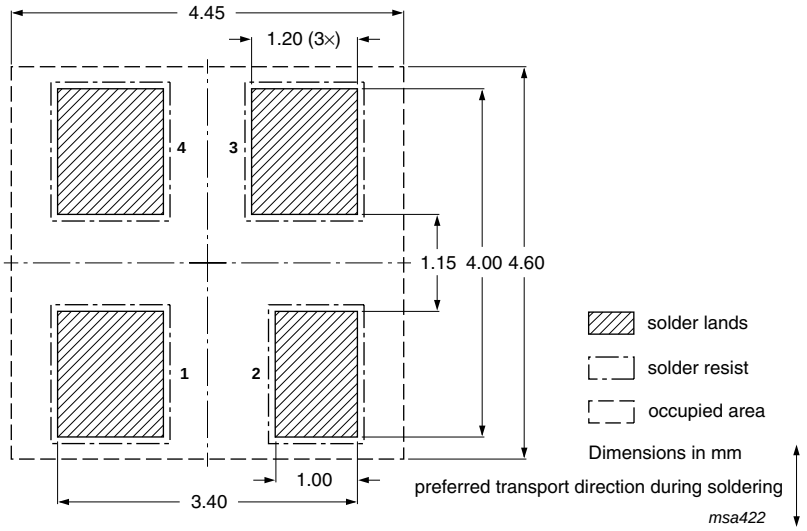



Dimensions in mm

**Fig 23. Reflow soldering footprint SOT143B**




Dimensions in mm

**Fig 24. Wave soldering footprint SOT143B**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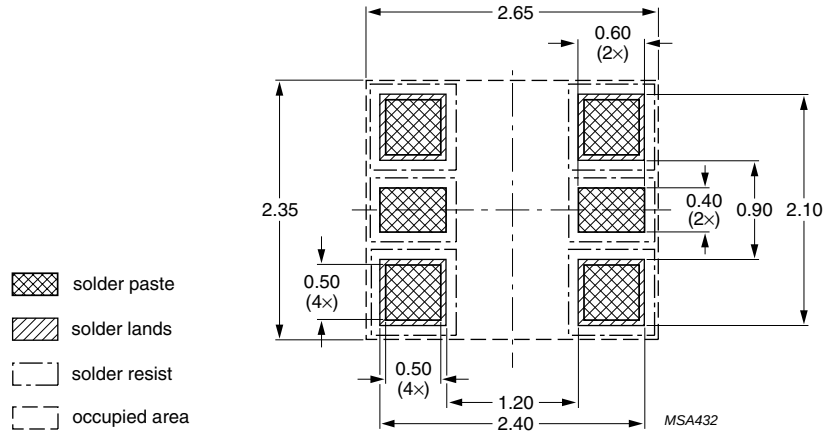


**Fig 25. Reflow soldering footprint SOT363 (SC-88)**

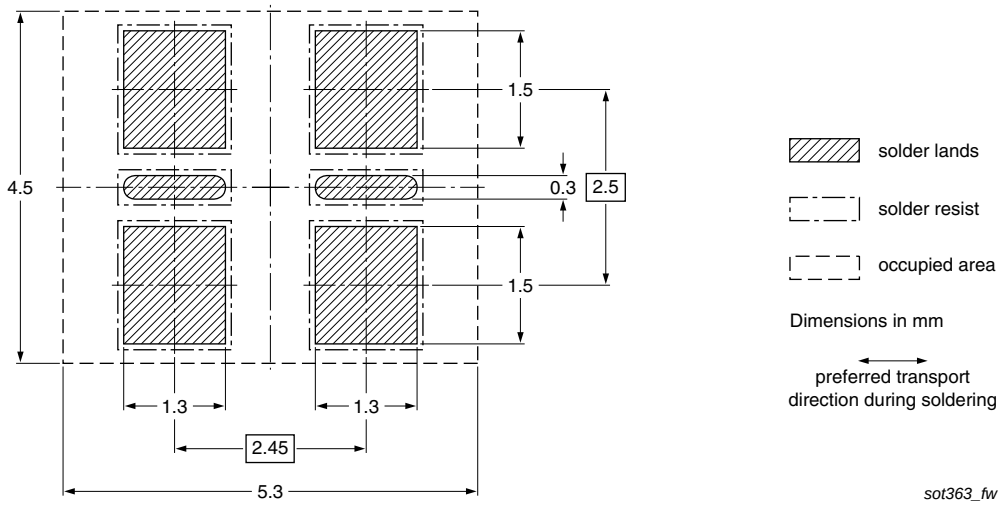


**Fig 26. Wave soldering footprint SOT363 (SC-88)**


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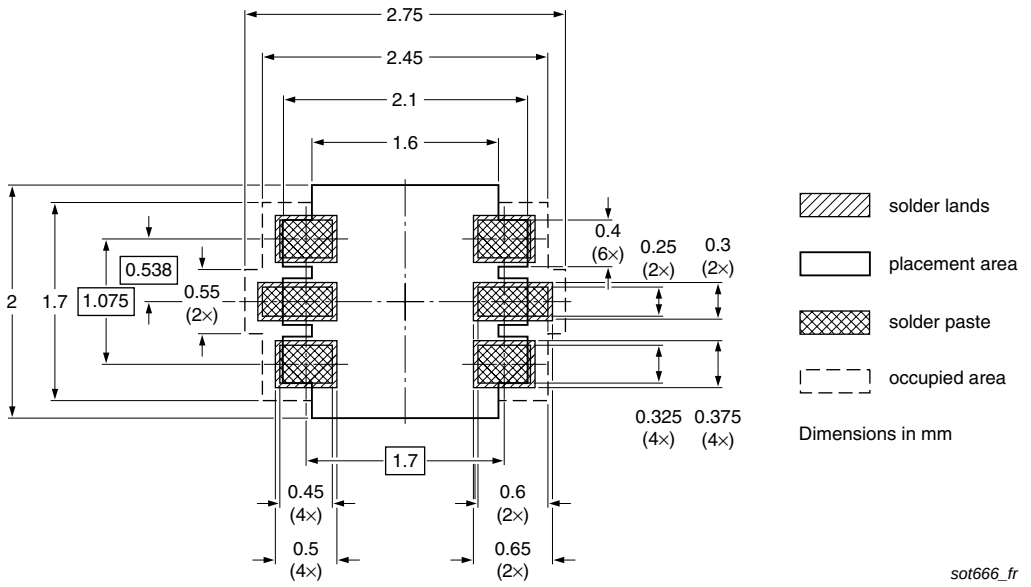


Reflow soldering is the only recommended soldering method.

**Fig 27. Reflow soldering footprint SOT666**


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## 11. Revision history

**Table 10. Revision history**

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|---|---|---|---|---|
| BAS70_1PS7XSB70_SER_9 | 20100113 | Product data sheet | - | BAS70_1PS7XSB70_SER_8 |
| Modifications: | • This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content. | | | |
| BAS70_1PS7XSB70_SER_8 | 20060504 | Product data sheet | - | BAS70_1PS7XSB70_SER_7 |
| 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 |
| 1PS76SB70_2 | 20040126 | Product specification | - | 1PS76SB70_1 |
| 1PS79SB70_1 | 19980716 | Product specification | - | - |
| BAS70H_1 | 20050425 | Product data sheet | - | - |
| BAS70L_1 | 20030520 | Product specification | - | - |
| BAS70-07V_1 | 20020117 | Product specification | - | - |
| BAS70VV_1 | 20040910 | Product data sheet | - | - |
| BAS70W_3 | 19990326 | Product specification | - | BAS70W_2 |
| BAS70-07S_4 | 20030411 | Product specification | - | BAS70_07S_3 |
| BAS70_SERIES_6 | 20011011 | Product specification | - | BAS70_5 |


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# 12. Legal information

## 12.1 Data sheet status

| Document status[1][2] | Product status[3] | Definition |
|---|---|---|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification | This document contains data from the preliminary specification. |
| Product [short] data sheet | Production | This document contains the product specification. |

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nexperia.com.

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# 13. Contact information

For more information, please visit: **http://www.nexperia.com**

For sales office addresses, please send an email to: **salesaddresses@nexperia.com**


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**Date of release: 13 January 2010**

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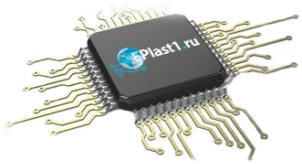
- Защита от снятия компонента с производства.

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