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Team Nexperia

General-purpose Schottky diodes

Rev. 9 — 18 March 2015

Product data sheet

1. Product profile

1.1 General description

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

Type number	Package		Configuration
	NXP	JEITA	
1PS70SB40	SOT323	SC-70	single diode
1PS76SB40	SOD323	SC-76	single diode
1PS79SB40	SOD523	SC-79	single diode
BAS40	SOT23	-	single diode
BAS40H	SOD123F	-	single diode
BAS40L	SOD882	-	single diode
BAS40W	SOT323	SC-70	single diode
1PS70SB44	SOT323	SC-70	dual series
BAS40-04	SOT23	-	dual series
BAS40-04W	SOT323	SC-70	dual series
1PS70SB45	SOT323	SC-70	dual common cathode
1PS75SB45	SOT416	SC-75	dual common cathode
BAS40-05	SOT23	-	dual common cathode
BAS40-05W	SOT323	SC-70	dual common cathode
1PS70SB46	SOT323	SC-70	dual common anode
BAS40-06	SOT23	-	dual common anode
BAS40-06W	SOT323	SC-70	dual common anode
BAS40-07	SOT143B	-	dual isolated
BAS40-07V	SOT666	-	dual isolated
BAS40-05V	SOT666	-	quadruple common cathode/ common cathode
1PS88SB48	SOT363	SC-88	quadruple common cathode/ common cathode
BAS40XY	SOT363	SC-88	quadruple; 2 series

Table 1 Product overview



General-purpose Schottky diodes

1.2 Features and benefits

- High switching speed
- High breakdown voltage
- AEC-Q101 qualified

1.3 Applications

Ultra high-speed switching

Low leakage current

- Low capacitance
- Voltage clamping

1.4 Quick reference data

Symbol	Parameter	Conditions	Conditions I		Тур	Max	Unit
Per diode		I					
I _F	forward current			-	-	120	mA
V _F	forward voltage	I _F = 1 mA	[1]	-	-	380	mV
V _R	reverse voltage			-	-	40	V

 $\label{eq:point} \begin{tabular}{ll} \end{tabular} \end{tabular} \begin{tabular}{ll} \end{tabular} 1 \end{tabular} \end{tabular} \end{tabular} \begin{tabular}{ll} \end{tabular} \end{tabular} \end{tabular} \end{tabular} \begin{tabular}{ll} \end{tabular} \end{tabular}$

2. Pinning information

Pin	Description	Simplified outlin	e Symbol
BAS40H;	1PS76SB40; 1PS79SB40		
1	cathode	[1]	
2	anode	1 001aab540	1 <u>1</u> 2 2 sym001
BAS40L			
1	cathode	[1]	
2	anode	1 2 Transparent top view	1 <u></u> 1 − 2 sym001
BAS40; B	AS40W; 1PS70SB40		
1	anode		
2	not connected	3	
3	cathode	1 2 006aaa1	1 2 006aaa436

General-purpose Schottky diodes

Table 3. Pir	nningcontinued		
Pin	Description	Simplified outline	Symbol
BAS40-04; BA	AS40-04W; 1PS70SB44		
1	anode (diode 1)		
2	cathode (diode 2)	3	3
3	cathode (diode 1),		1 1 2
	anode (diode 2)		006aaa437
		1 2	
		006aaa144	
BAS40-05; BA	AS40-05W; 1PS70SB45; 1PS75SB45		
1	anode (diode 1)	_	3
2	anode (diode 2)	3	
3	cathode (diode 1),		
	cathode (diode 2)		本 本
		1 2	
		006aaa144	006aaa438
BAS40-06; BA	AS40-06W; 1PS70SB46		
1	cathode (diode 1)		
2	cathode (diode 2)	3	3
3	anode (diode 1),		1 3 1 2
	anode (diode 2)		006aaa439
		1 2	
		006aaa144	
BAS40-07		1	T
1	cathode (diode 1)	4 2	4 2
2	cathode (diode 2)		
3	anode (diode 2)	_	本本
4	anode (diode 1)		
		1 2	006aaa434
BAS40-07V		1	
1	anode (diode 1)		
2	not connected		6 5 4
3	cathode (diode 2)		
4	anode (diode 2)		
5	not connected		1 2 3 <i>006aaa440</i>
6	cathode (diode 1)	123	

General-purpose Schottky diodes

Pin	Description	Simplified outline	Symbol		
BAS40-05	V; 1PS88SB48				
1	anode (diode 1)				
2	anode (diode 2)	6 5 4			
3	cathode (diode 3), cathode (diode 4)				
4	anode (diode 3)	0			
5	anode (diode 4)	1 2 3 001aab555			
6	cathode (diode 1), cathode (diode 2)		<i>006aaa446</i>		
BAS40XY	· · ·				
1	anode (diode 1)				
2	cathode (diode 2)				
3	anode (diode 3), cathode (diode 4)	0			
4	anode (diode 4)				
5	cathode (diode 3)				
6	cathode (diode 1), anode (diode 2)		1 2 3 006aaa256		

[1] The marking bar indicates the cathode.

General-purpose Schottky diodes

3. Ordering information

Table 4. Orde	ering inform	nation	
Type number	Package		
	Name	Description	Version
1PS70SB40	SC-70	plastic surface-mounted package; 3 leads	SOT323
1PS76SB40	SC-76	plastic surface-mounted package; 2 leads	SOD323
1PS79SB40	SC-79	plastic surface-mounted package; 2 leads	SOD523
BAS40	-	plastic surface-mounted package; 3 leads	SOT23
BAS40H	-	plastic surface-mounted package; 2 leads	SOD123F
BAS40L	-	leadless ultra small plastic package; 2 terminals; body 1.0 \times 0.6 \times 0.5 mm	SOD882
BAS40W	SC-70	plastic surface-mounted package; 3 leads	SOT323
1PS70SB44	SC-70	plastic surface-mounted package; 3 leads	SOT323
BAS40-04	-	plastic surface-mounted package; 3 leads	SOT23
BAS40-04W	SC-70	plastic surface-mounted package; 3 leads	SOT323
1PS70SB45	SC-70	plastic surface-mounted package; 3 leads	SOT323
1PS75SB45	SC-75	plastic surface-mounted package; 3 leads	SOT416
BAS40-05	-	plastic surface-mounted package; 3 leads	SOT23
BAS40-05W	SC-70	plastic surface-mounted package; 3 leads	SOT323
1PS70SB46	SC-70	plastic surface-mounted package; 3 leads	SOT323
BAS40-06	-	plastic surface-mounted package; 3 leads	SOT23
BAS40-06W	SC-70	plastic surface-mounted package; 3 leads	SOT323
BAS40-07	-	plastic surface-mounted package; 4 leads	SOT143B
BAS40-07V	-	plastic surface-mounted package; 6 leads	SOT666
BAS40-05V	-	plastic surface-mounted package; 6 leads	SOT666
1PS88SB48	SC-88	plastic surface-mounted package; 6 leads	SOT363
BAS40XY	SC-88	plastic surface-mounted package; 6 leads	SOT363

General-purpose Schottky diodes

4. Marking

Table 5. Marking codes							
Type number	Marking code ^[1]	Type number	Marking code ^[1]				
1PS70SB40	6*3	1PS75SB45	45				
1PS76SB40	S4	BAS40-05	45*				
1PS79SB40	Т	BAS40-05W	65*				
BAS40	43*	1PS70SB46	6*6				
BAS40H	AJ	BAS40-06	46*				
BAS40L	S6	BAS40-06W	66*				
BAS40W	63*	BAS40-07	47*				
1PS70SB44	6*4	BAS40-07V	67				
BAS40-04	44*	BAS40-05V	65				
BAS40-04W	64*	1PS88SB48	8*5				
1PS70SB45	6*5	BAS40XY	40*				

[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					I
V _R	reverse voltage		-	40	V
l _F	forward current		-	120	mA
I _{FRM}	repetitive peak forward current	$t_p \le 1 \text{ s}; \delta \le 0.5$	-	120	mA
I _{FSM}	non-repetitive peak forward current	$t_p \le 10 \text{ ms}$	<u>[1]</u> -	200	mA
Tj	junction temperature		-	150	°C
T _{amb}	ambient temperature		-65	+150	°C
T _{stg}	storage temperature		-65	+150	°C

[1] $T_j = 25 \circ C$ prior to surge.

General-purpose Schottky diodes

6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Тур	Max	Unit
Per devic	e						
R _{th(j-a)}	thermal resistance from junction to ambient	in free air	<u>[1]</u>				
	SOT23			-	-	500	K/W
	SOT143B			-	-	500	K/W
	SOT363 (1PS88SB48)			-	-	416	K/W
	SOT416			-	-	833	K/W
	SOT666 (BAS40-05V)		[2]	-	-	225	K/W
	SOT666 (BAS40-07V)		[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 (BAS40XY)		[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.

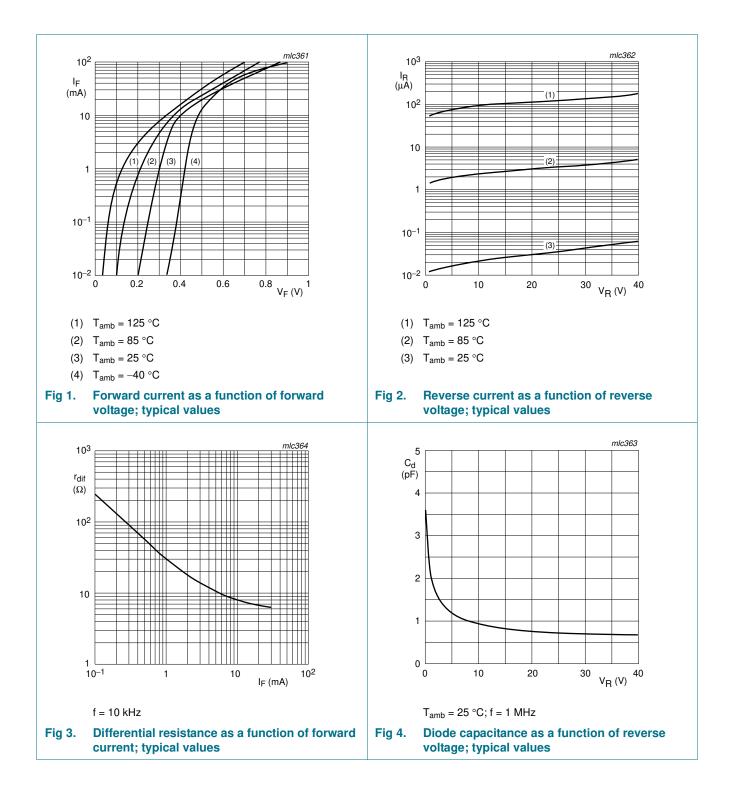
7. Characteristics

Table 8.Characteristics

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

Symbol	Parameter	Conditions		Min	Тур	Max	Unit	
Per diode		·				·		
V _F	forward voltage		[1]					
		I _F = 1 mA		-	-	380	mV	
		I _F = 10 mA		-	-	500	mV	
		I _F = 40 mA		-	-	1	V	
I _R	reverse current	V _R = 30 V		-	-	1	μA	
		V _R = 40 V		-	-	10	μA	
C _d	diode capacitance	V _R = 0 V; f = 1 MHz		-	-	5	pF	

General-purpose Schottky diodes



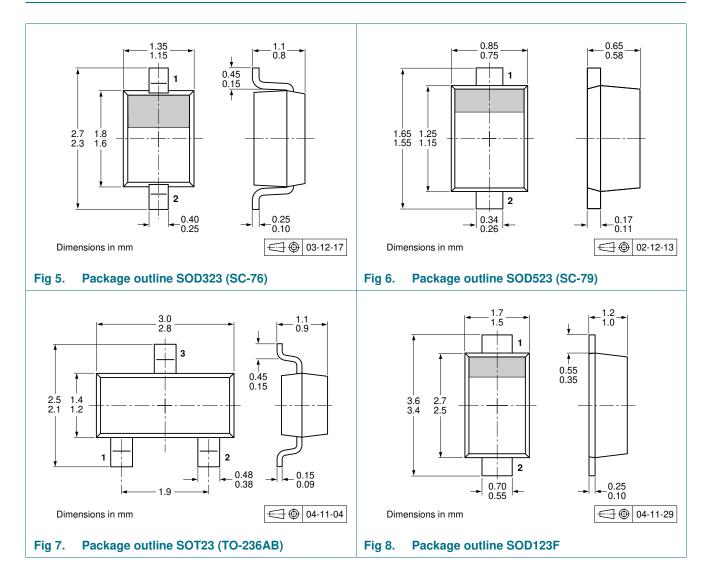
General-purpose Schottky diodes

8. Test information

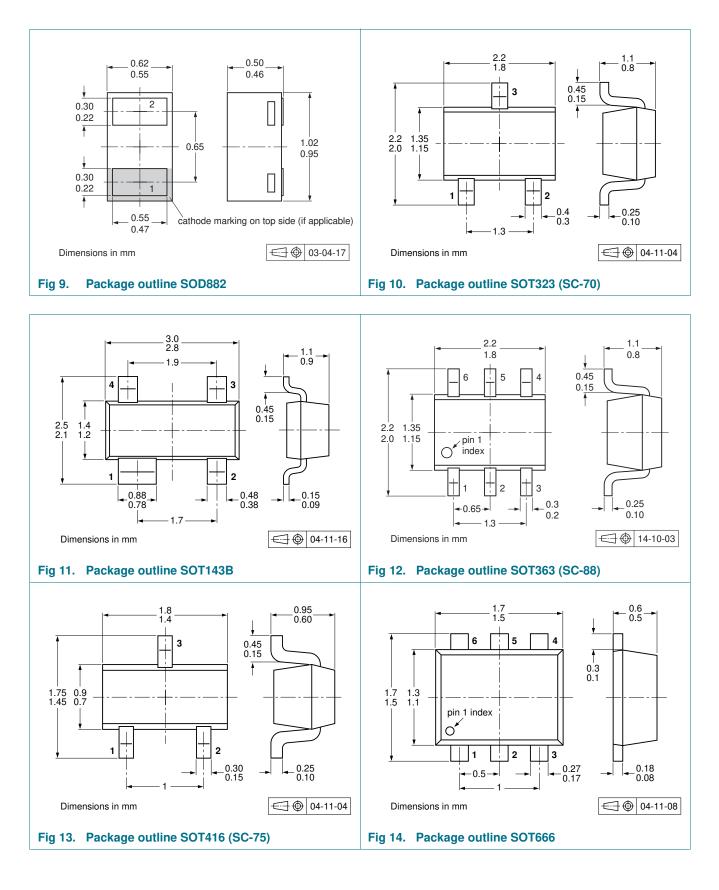
8.1 Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard *Q101* - *Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

9. Package outline



General-purpose Schottky diodes



General-purpose Schottky diodes

10. 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
1PS70SB40	SOT323	4 mm pitch, 8 mm tape and reel		-115	-	-	-135
1PS76SB40	SOD323	4 mm pitch, 8 mm tape and reel		-115	-	-	-135
1PS79SB40	SOD523	2 mm pitch, 8 mm tape and reel		-	-	-315	-
		4 mm pitch, 8 mm tape and reel		-115	-	-	-135
BAS40	SOT23	4 mm pitch, 8 mm tape and reel		-215	-	-	-235
BAS40H	SOD123F	4 mm pitch, 8 mm tape and reel		-115	-	-	-135
BAS40L	SOD882	2 mm pitch, 8 mm tape and reel		-	-	-	-315
BAS40W	SOT323	4 mm pitch, 8 mm tape and reel		-115	-	-	-135
1PS70SB44	SOT323	4 mm pitch, 8 mm tape and reel		-115	-	-	-135
BAS40-04	SOT23	4 mm pitch, 8 mm tape and reel		-215	-	-	-235
BAS40-04W	SOT323	4 mm pitch, 8 mm tape and reel		-115	-	-	-135
1PS70SB45	SOT323	4 mm pitch, 8 mm tape and reel		-115	-	-	-135
1PS75SB45	SOT416	4 mm pitch, 8 mm tape and reel		-115	-	-	-135
BAS40-05	SOT23	4 mm pitch, 8 mm tape and reel		-215	-	-	-235
BAS40-05W	SOT323	4 mm pitch, 8 mm tape and reel		-115	-	-	-135
1PS70SB46	SOT323	4 mm pitch, 8 mm tape and reel		-115	-	-	-135
BAS40-06	SOT23	4 mm pitch, 8 mm tape and reel		-215	-	-	-235
BAS40-06W	SOT323	4 mm pitch, 8 mm tape and reel		-115	-	-	-135
BAS40-07	SOT143B	4 mm pitch, 8 mm tape and reel		-215	-	-	-235
BAS40-07V	SOT666	2 mm pitch, 8 mm tape and reel		-	-	-315	-
		4 mm pitch, 8 mm tape and reel		-	-115	-	-
BAS40-05V	SOT666	2 mm pitch, 8 mm tape and reel		-	-	-315	-
		4 mm pitch, 8 mm tape and reel		-	-115	-	-
1PS88SB48	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
BAS40XY	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

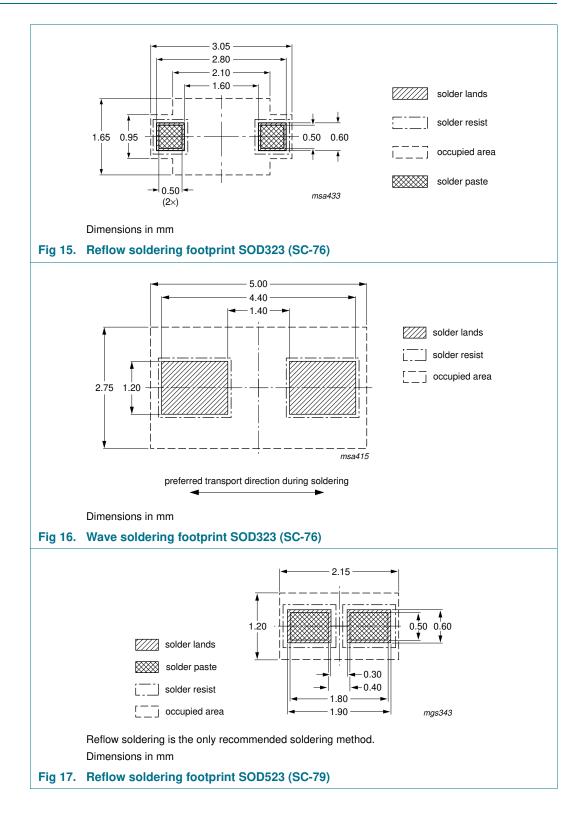
[1] For further information and the availability of packing methods, see Section 14.

[2] T1: normal taping

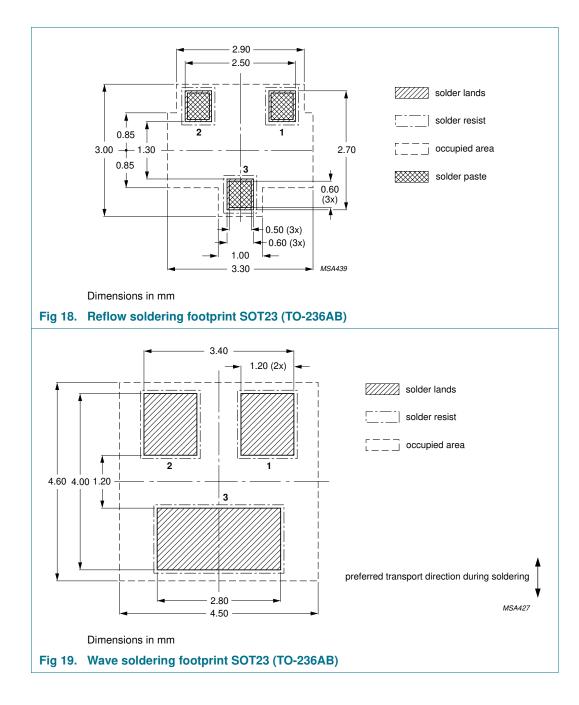
[3] T2: reverse taping

General-purpose Schottky diodes

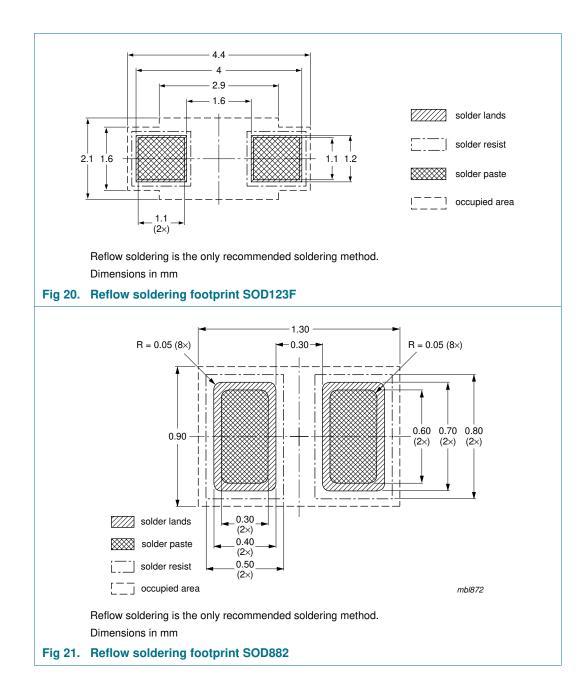
11. Soldering



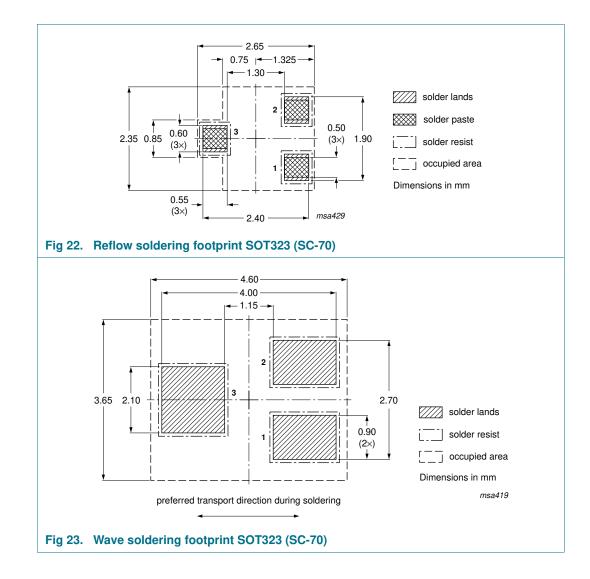
General-purpose Schottky diodes



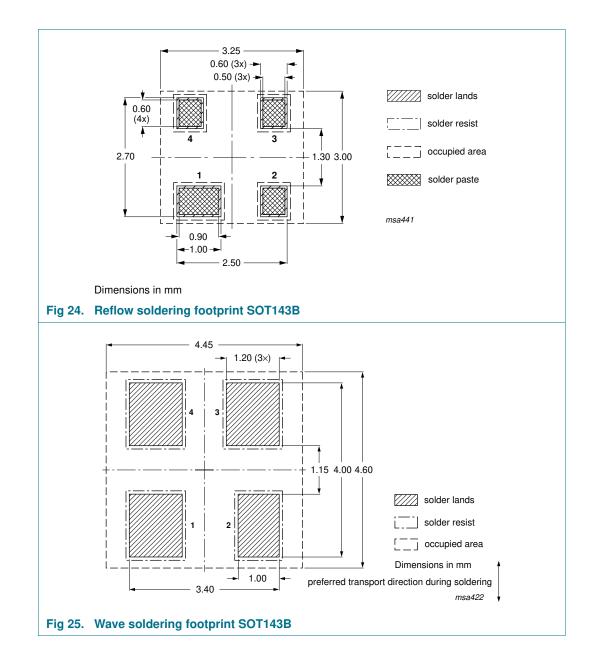
General-purpose Schottky diodes



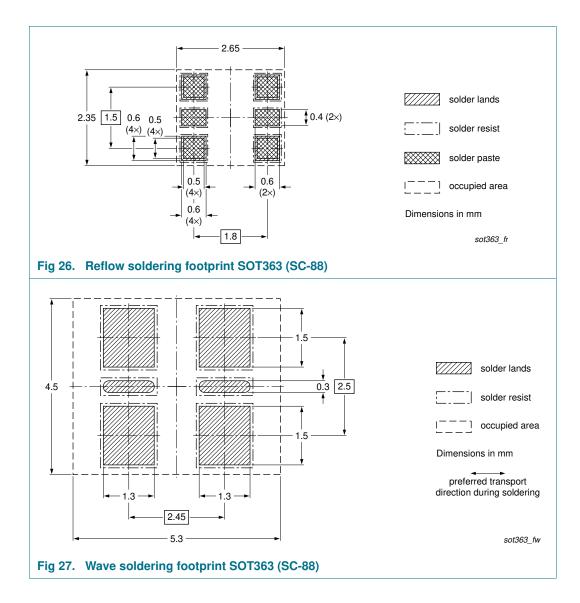
General-purpose Schottky diodes



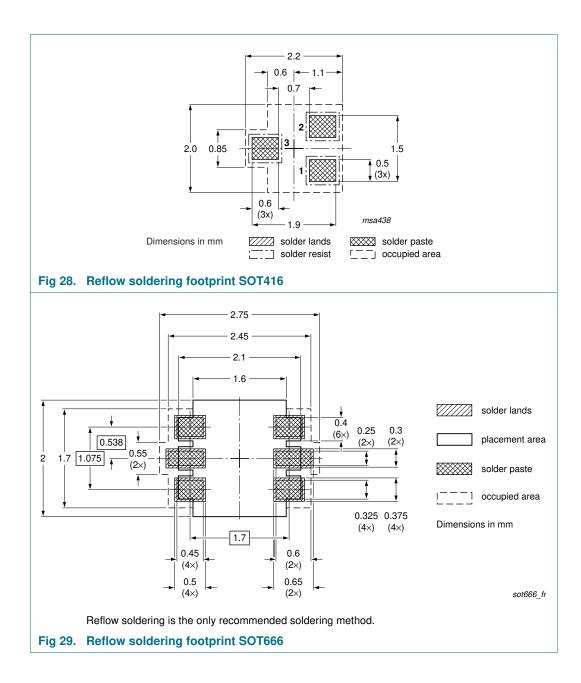
General-purpose Schottky diodes



General-purpose Schottky diodes



General-purpose Schottky diodes



General-purpose Schottky diodes

12. Revision history

Table 10. Revision history				-
Document ID	Release date	Data sheet status	Change notice	Supersedes
BAS40_1PSXXSB4X_SER v.9	20150318	Product data sheet	-	BAS40_1PSXXSB4X_SER_8
Modifications:	guidelines of	NXP Semiconductors.	C C	mply with the new identity
	 Legal texts have 	ave been adapted to the	new company nar	ne where appropriate.
BAS40_1PSXXSB4X_SER_8	20100113	Product data sheet	-	BAS40_1PSXXSB4X_SER_7
BAS40_1PSXXSB4X_SER_7	20060512	Product data sheet	-	BAS40_1PSXXSB4X_SER_6
BAS40_1PSXXSB4X_SER_6	20050809	Product data sheet	-	1PS70SB40_3 1PS75SB45_2 1PS76SB40_3 1PS79SB40_2 1PS88SB48_3 BAS40H_1 BAS40L_1 BAS40-05V_1 BAS40-07V_1 BAS40W_3 BAS40_SERIES_5
1PS70SB40_3	19990426	Product specification	-	1PS70SB40_2
1PS75SB45_2	19990426	Product specification	-	1PS75SB45_1
1PS76SB40_3	20040126	Product specification	-	1PS76SB40_2
1PS79SB40_2	19990426	Product specification	-	1PS79SB40_1
1PS88SB48_3	20021107	Product specification	-	1PS88SB48_2
BAS40H_1	20050425	Product data sheet	-	-
BAS40L_1	20030520	Product specification	-	-
BAS40-05V_1	20021121	Product specification	-	-
BAS40-07V_1	20020327	Product specification	-	-
BAS40W_3	19990426	Product specification	-	BAS40W_2
BAS40_SERIES_5	20011010	Product specification	-	BAS40_4

Table 10. Revision history

13. Legal information

13.1 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".

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General-purpose Schottky diodes

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14. Contact information

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General-purpose Schottky diodes

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