



# BAS40W

## General-purpose Schottky diode

2 March 2023

Product data sheet

### 1. General description

General-purpose Schottky diode in a small SOT323 Surface-Mounted Device (SMD) plastic package.

### 2. Features and benefits

- High switching speed
- Low leakage current
- High breakdown voltage
- Low capacitance
- AEC-Q101 qualified

### 3. Applications

- Ultra high-speed switching
- Voltage clamping

### 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_F$	forward current		-	-	120	mA
$V_F$	forward voltage	$I_F = 1 \text{ mA}$ ; pulsed; $t_p \leq 300 \mu\text{s}$ ; $\delta \leq 0.02$ ; $T_{\text{amb}} = 25^\circ\text{C}$	-	-	380	mV
$V_R$	reverse voltage	$T_j = 25^\circ\text{C}$	-	-	40	V

### 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A	anode	 SC-70 (SOT323)	 006aaa436
2	n.c.	not connected		
3	K	cathode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
<a href="#">BAS40W</a>	SC-70	plastic, surface-mounted package; 3 leads; 1.3 mm pitch; 2 mm x 1.25 mm x 0.95 mm body	<a href="#">SOT323</a>

7. Marking

Table 4. Marking codes

Type number	Marking code[1]
BAS40W	63%

[1] % = placeholder for manufacturing site code

8. Limiting values

Table 5. Limiting values

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

Symbol	Parameter	Conditions		Min	Max	Unit
$V_R$	reverse voltage	$T_j = 25\text{ }^{\circ}\text{C}$		-	40	V
$I_F$	forward current			-	120	mA
$I_{FRM}$	repetitive peak forward current	$t_p \leq 1\text{ s}; \delta \leq 0.5$		-	120	mA
$I_{FSM}$	non-repetitive peak forward current	$t_p \leq 10\text{ ms}; T_{j(\text{init})} = 25\text{ }^{\circ}\text{C}$		-	200	mA
$T_j$	junction temperature			-	150	$^{\circ}\text{C}$
$T_{\text{amb}}$	ambient temperature			-65	150	$^{\circ}\text{C}$
$T_{\text{stg}}$	storage temperature			-65	150	$^{\circ}\text{C}$

9. Thermal characteristics

Table 6. Thermal characteristics

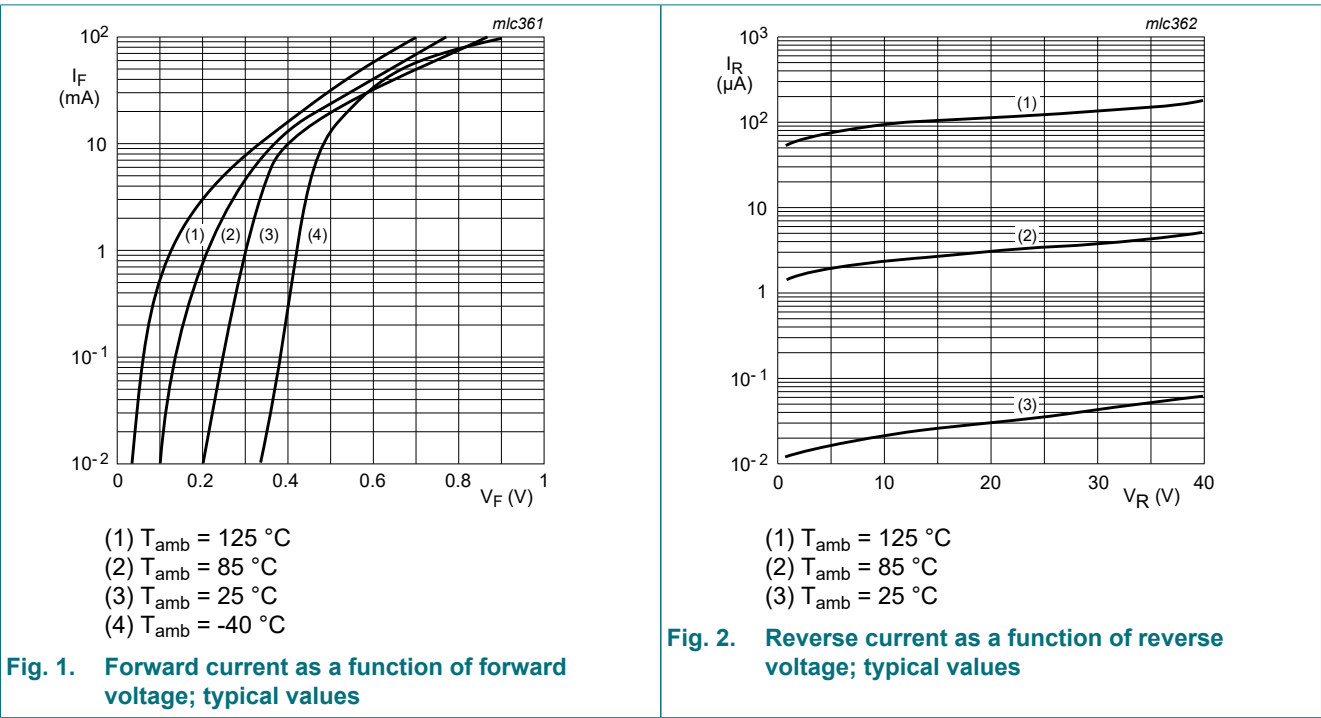
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{\text{th}(j-a)}$	thermal resistance from junction to ambient	in free air	<a href="#">[1]</a>	-	-	625	K/W

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

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	forward voltage	$I_F = 1\text{ mA}$ ; pulsed; $t_p \leq 300\text{ }\mu\text{s}$ ; $\delta \leq 0.02$ ; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	-	380	mV
		$I_F = 10\text{ mA}$ ; pulsed; $t_p \leq 300\text{ }\mu\text{s}$ ; $\delta \leq 0.02$ ; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	-	500	mV
		$I_F = 40\text{ mA}$ ; pulsed; $t_p \leq 300\text{ }\mu\text{s}$ ; $\delta \leq 0.02$ ; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	-	1	V
$I_R$	reverse current	$V_R = 30\text{ V}$ ; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	-	1	$\mu\text{A}$
		$V_R = 40\text{ V}$ ; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	-	10	$\mu\text{A}$
$C_d$	diode capacitance	$V_R = 0\text{ V}$ ; $f = 1\text{ MHz}$ ; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	-	5	pF



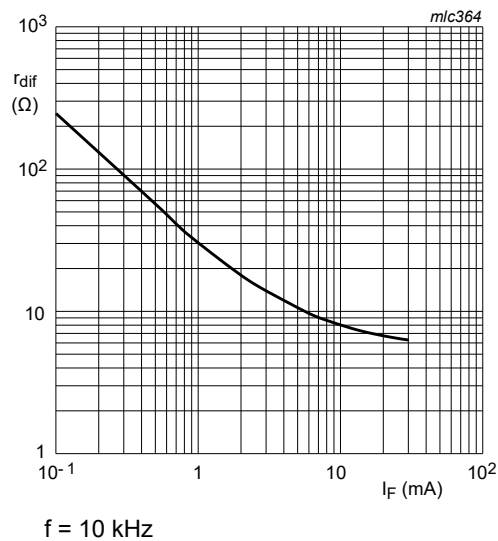


Fig. 3. Differential resistance as a function of forward current; typical values

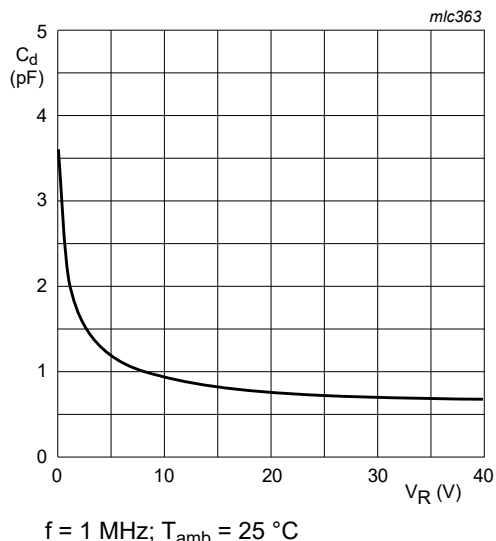


Fig. 4. Diode capacitance as a function of reverse voltage; typical values

11. Test information

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.

12. Package outline

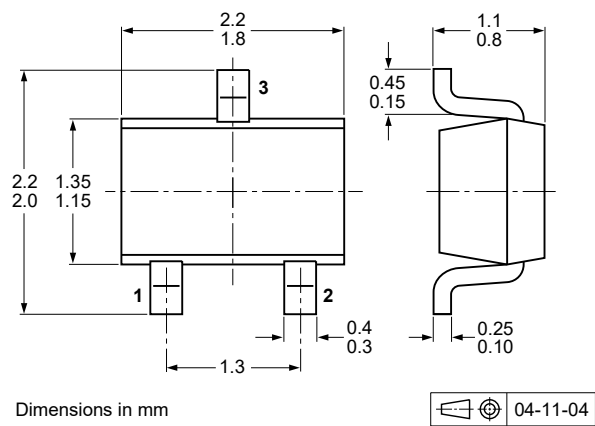


Fig. 5. Package outline SC-70 (SOT323)

13. Soldering

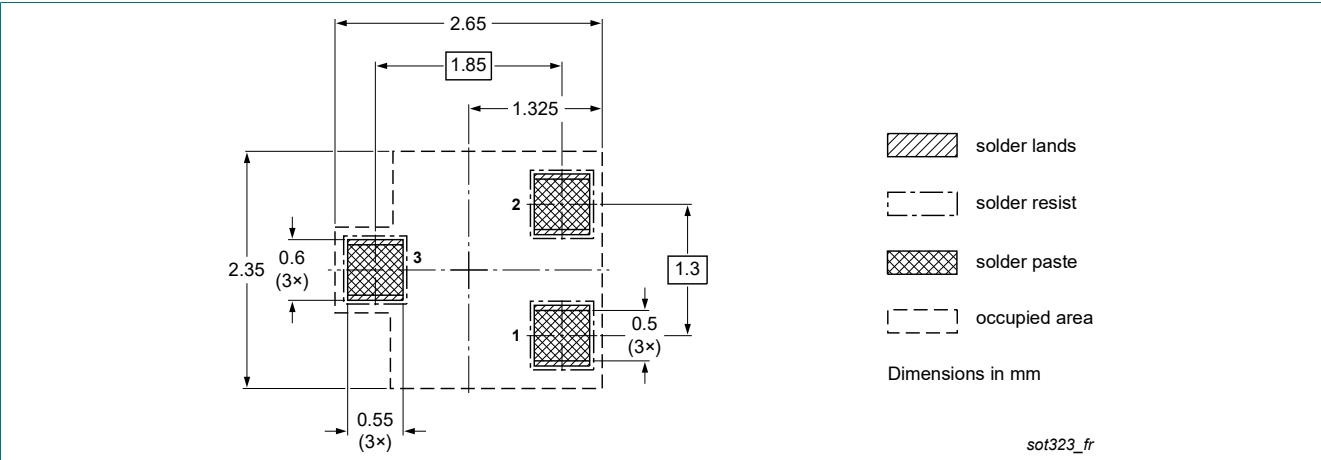


Fig. 6. Reflow soldering footprint for SC-70 (SOT323)

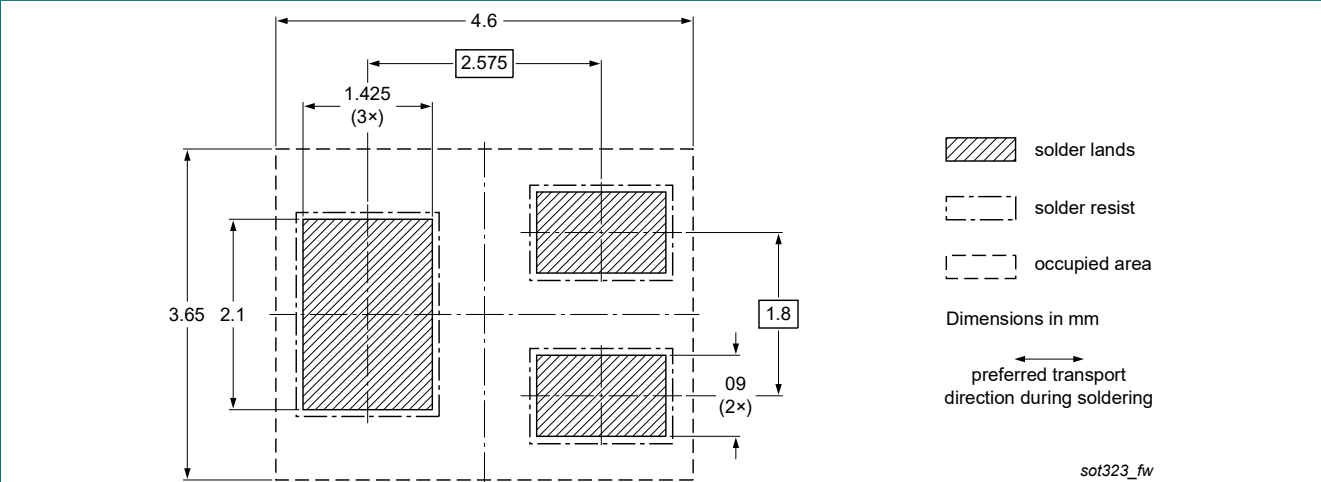


Fig. 7. Wave soldering footprint for SC-70 (SOT323)

## 14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAS40W v.12	20220302	Product data sheet	-	BAS40W v.11
Modifications:	<ul style="list-style-type: none"> <li>Limiting values: <math>I_{FSM}</math> unit corrected to mA</li> </ul>			
BAS40W v.11	20220307	Product data sheet	-	BAS40_1PSXXSB4X_SER_10
BAS40_1PSXXSB4X_SER_10	20210407	Product data sheet	-	BAS40_1PSXXSB4X_SER_9
BAS40_1PSXXSB4X_SER_9	20150318	Product data sheet	-	BAS40_1PSXXSB4X_SER_8
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

## 15. Legal information

### 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.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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Date of release: 2 March 2023



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