



BAS40-05W-Q

General-purpose dual Schottky diode

2 December 2021

Product data sheet

1. General description

General-purpose dual 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
- Qualified according to AEC-Q101 and recommended for use in automotive applications

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	$I_F = 1 \text{ mA}$; $t_p \leq 300 \text{ } \mu\text{s}$; $\delta \leq 0.02$; pulsed; $T_{\text{amb}} = 25 \text{ } ^\circ\text{C}$	-	-	380	mV
V_R	reverse voltage	$T_j = 25 \text{ } ^\circ\text{C}$	-	-	40	V

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode (diode 1)	<p>SC-70 (SOT323)</p>	<p>006aaa438</p>
2	A2	anode (diode 2)		
3	K1, K2	common cathode (diode 1 and diode 2)		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAS40-05W-Q	SC-70	plastic, surface-mounted package; 3 leads; 1.3 mm pitch; 2 mm x 1.25 mm x 0.95 mm body	SOT323

7. Marking

Table 4. Marking codes

Type number	Marking code[1]
BAS40-05W-Q	65%

[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	$T_j = 25\text{ °C}$	-	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	$t_p \leq 10\text{ ms}$; $T_{j(\text{init})} = 25\text{ °C}$	-	200	mA
T_j	junction temperature		-	150	°C
T_{amb}	ambient temperature		-65	150	°C
T_{stg}	storage temperature		-65	150	°C

9. Thermal characteristics

Table 6. Thermal characteristics

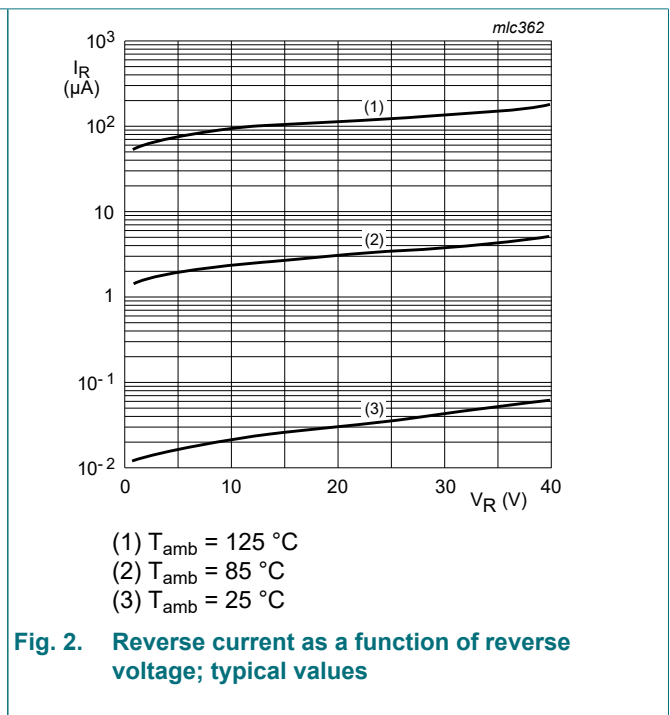
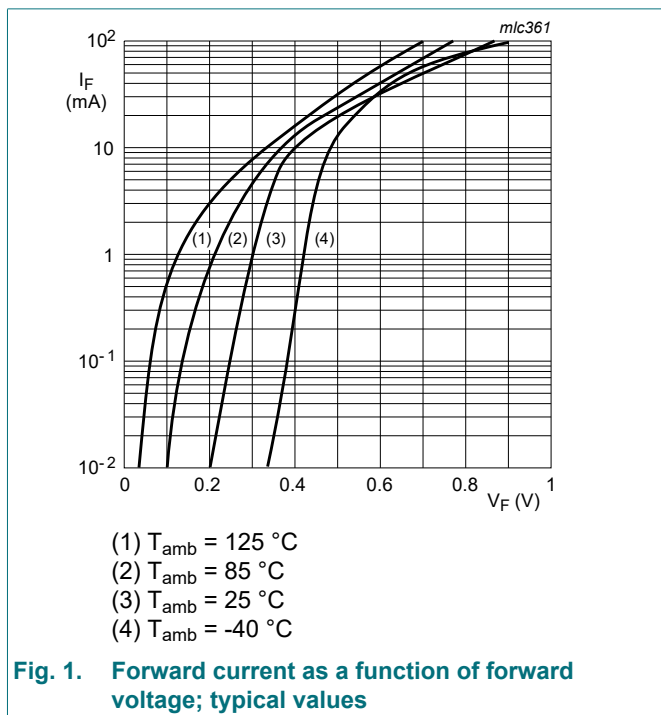
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{\text{th}(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	625	K/W

[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 mA; t _p ≤ 300 μs; δ ≤ 0.02; pulsed; T _{amb} = 25 °C	-	-	380	mV
		I _F = 10 mA; t _p ≤ 300 μs; δ ≤ 0.02; pulsed; T _{amb} = 25 °C	-	-	500	mV
		I _F = 40 mA; t _p ≤ 300 μs; δ ≤ 0.02; pulsed; T _{amb} = 25 °C	-	-	1	V
I _R	reverse current	V _R = 30 V; T _{amb} = 25 °C	-	-	1	μA
		V _R = 40 V; T _{amb} = 25 °C	-	-	10	μA
C _d	diode capacitance	V _R = 0 V; f = 1 MHz; T _{amb} = 25 °C	-	-	5	pF



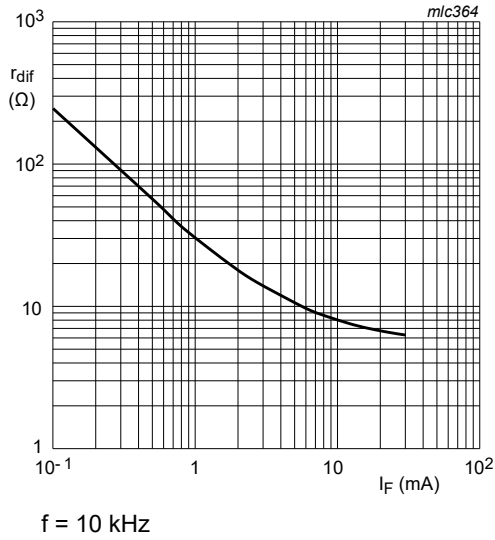


Fig. 3. Differential resistance as a function of forward current; typical values

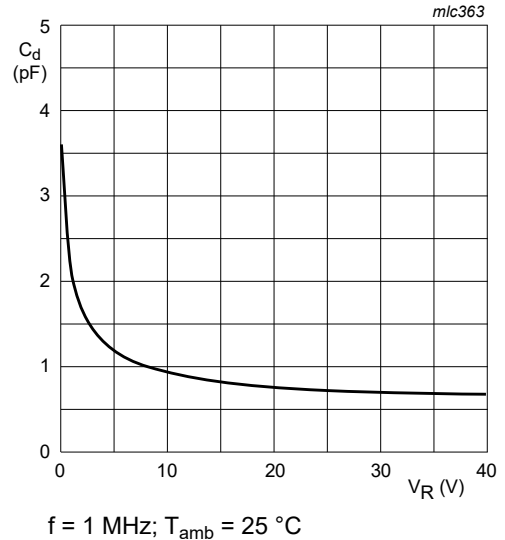


Fig. 4. Diode capacitance as a function of reverse voltage; typical values

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

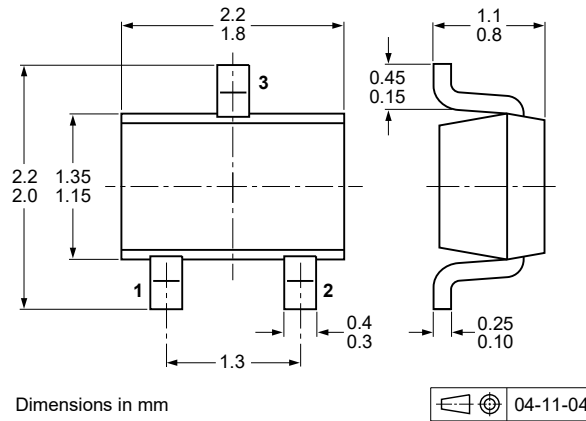


Fig. 5. Package outline SC-70 (SOT323)

13. Soldering

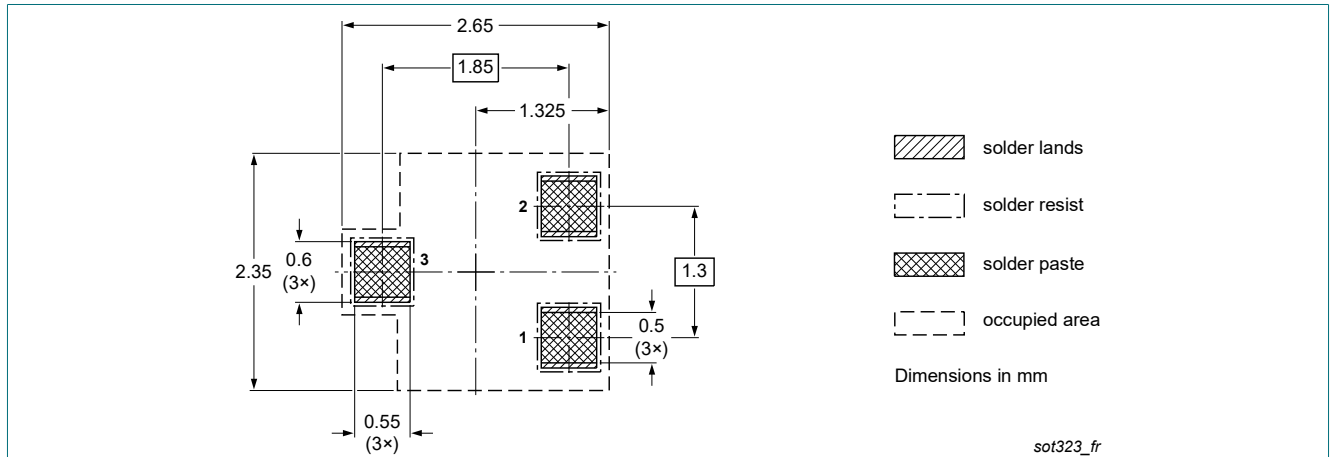


Fig. 6. Reflow soldering footprint for SC-70 (SOT323)

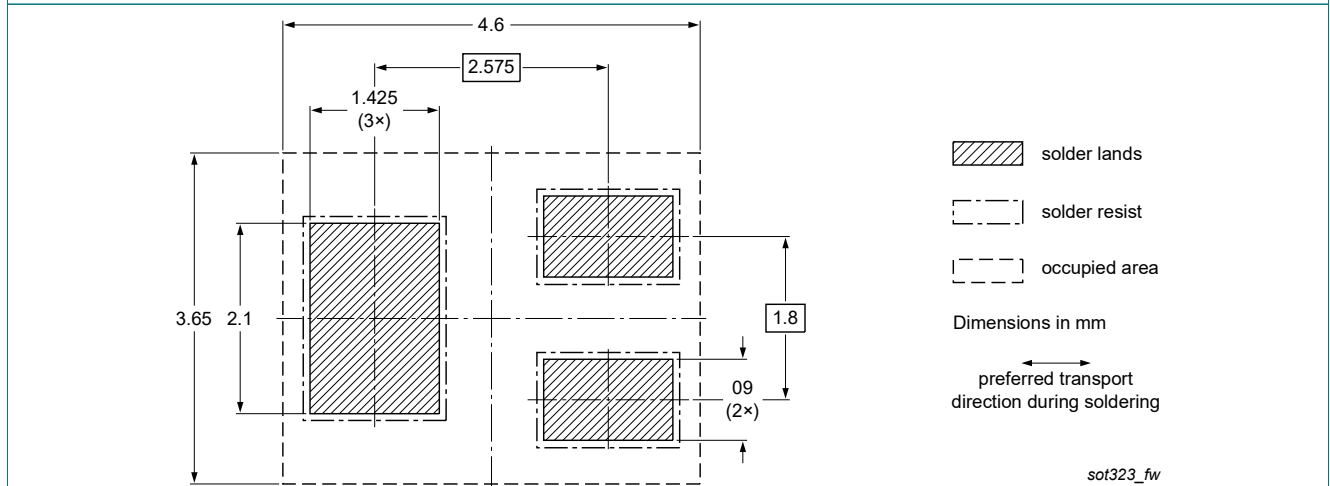


Fig. 7. Wave soldering footprint for SC-70 (SOT323)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAS40-05W-Q v.1	20211202	Product data sheet	-	-

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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