



BAS40H-Q

General-purpose Schottky diode

2 March 2023

Product data sheet

1. General description

General-purpose Schottky diode in a small and flat lead SOD123F 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

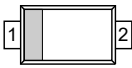

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_F	forward current		-	-	120	mA
V_F	forward voltage	$I_F = 1 \text{ mA}$; pulsed; $t_p \leq 300 \mu\text{s}$; $\delta \leq 0.02$; $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	-	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	K	cathode[1]	 SOD123F	 aaa-003679
2	A	anode		

[1] The marking bar indicates the cathode.

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAS40H-Q	SOD123F	plastic, surface-mounted package; 2 leads; 2.6 mm x 1.6 mm x 1.1 mm body	SOD123F

7. Marking

Table 4. Marking codes

Type number	Marking code
BAS40H-Q	AJ

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_{amb}	ambient temperature			-65	150	$^{\circ}\text{C}$
T_{stg}	storage temperature			-65	150	$^{\circ}\text{C}$

9. Thermal characteristics

Table 6. Thermal characteristics

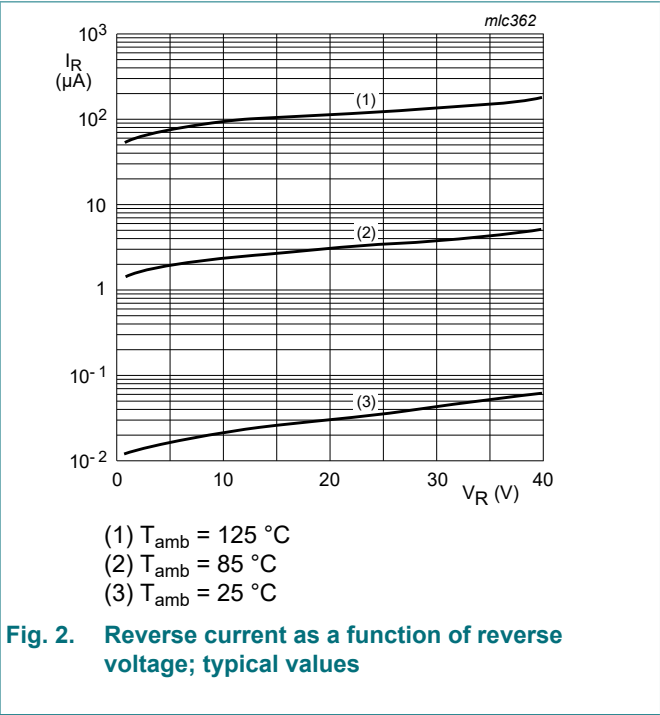
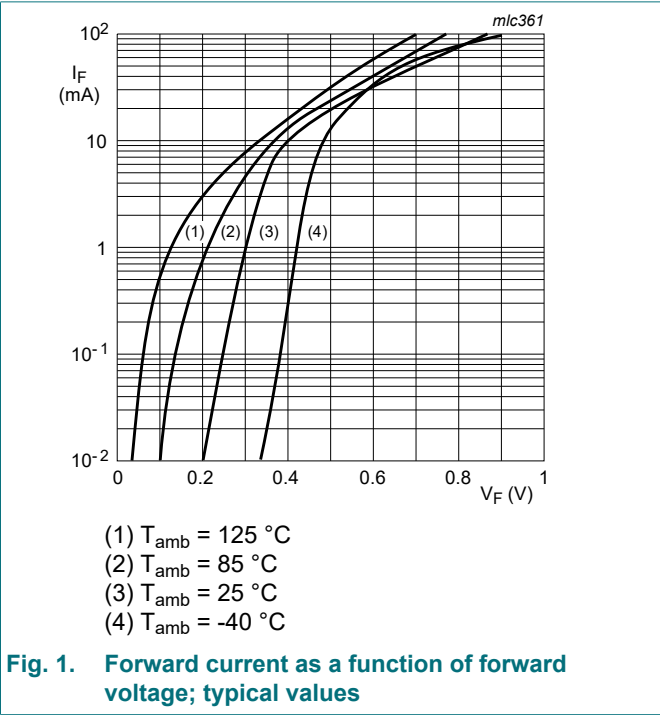
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{\text{th}(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	330	K/W

[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	μA
		$V_R = 40\text{ V}$; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	-	10	μA
C_d	diode capacitance	$V_R = 0\text{ V}$; $f = 1\text{ MHz}$; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$	-	-	5	pF



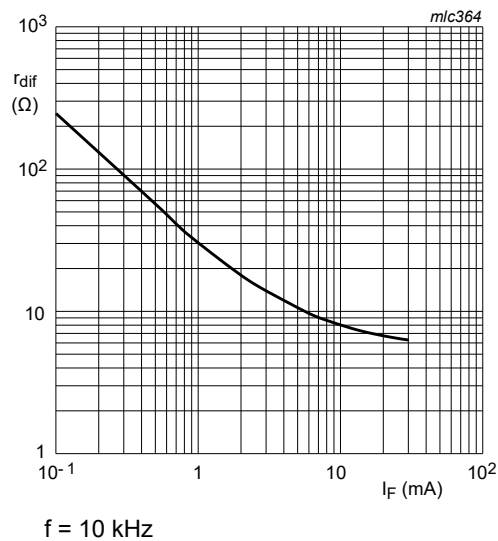


Fig. 3. Differential resistance as a function of forward current; typical values

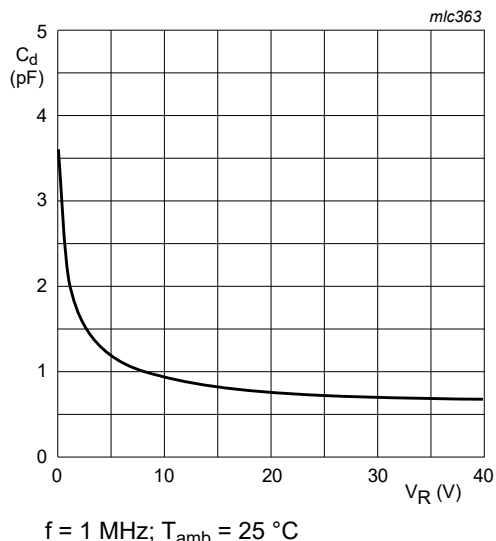


Fig. 4. Diode capacitance as a function of reverse voltage; typical values

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

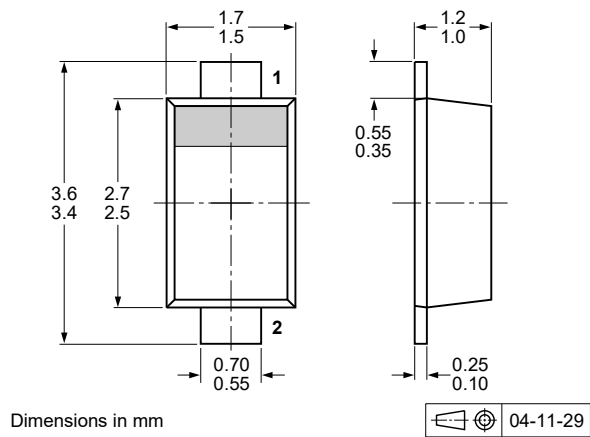
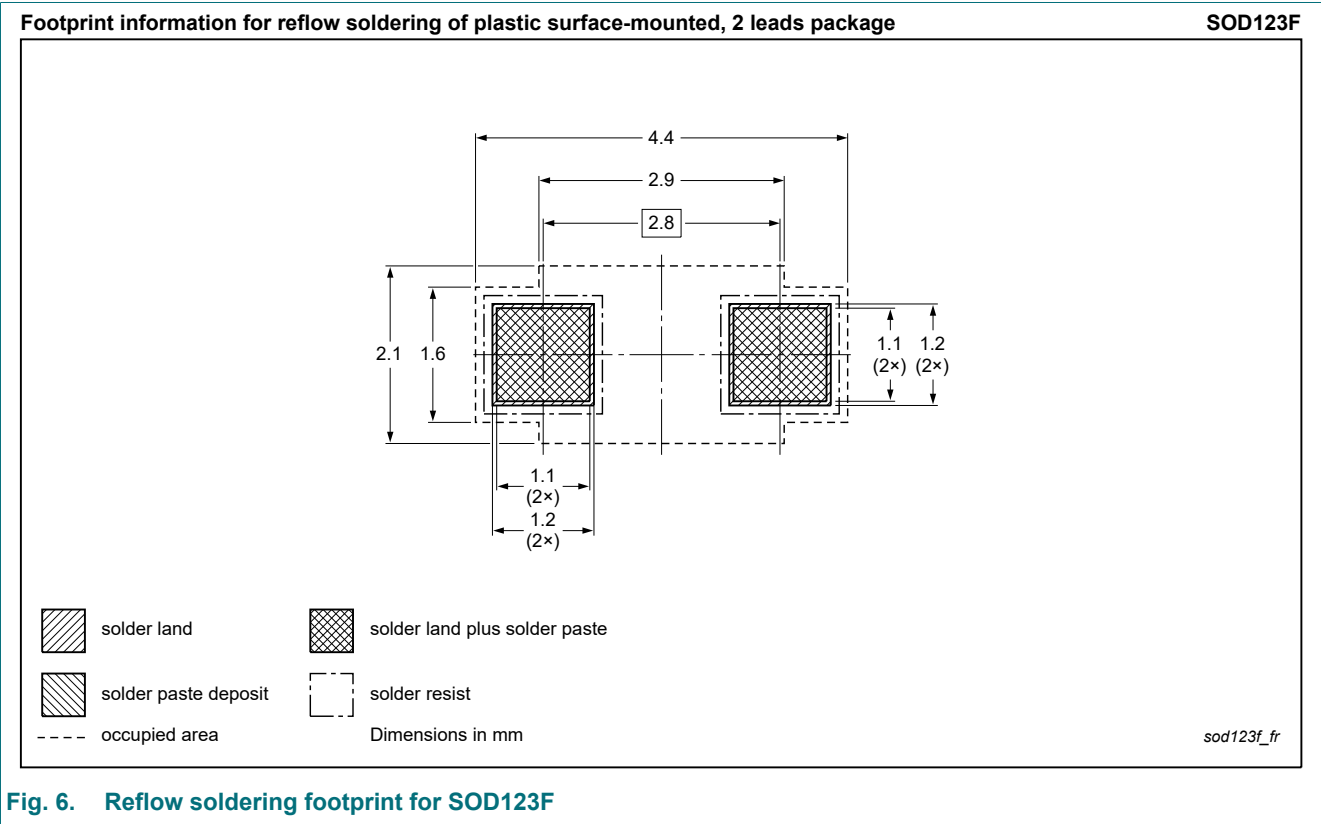


Fig. 5. Package outline SOD123F

13. Soldering



14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAS40H-Q v.2	20230302	Product data sheet	-	BAS40H-Q v.1
Modifications:	• Limiting values: I _{FSM} unit corrected to mA			
BAS40H-Q v.1	20230120	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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- [2] The term 'short data sheet' is explained in section "Definitions".
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