



RB530S40-Q

40 V, 0.3 A Schottky barrier diode

9 July 2024

Product data sheet

1. General description

Planar Schottky barrier diode with an integrated guard ring for stress protection, encapsulated in a SOD523 (SC-79) ultra small Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Very low forward voltage
- Very low reverse current
- Guard ring protected
- Ultra small SMD package
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- Ultra high-speed switching
- Voltage clamping
- Blocking diodes

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_F	forward current	$\delta = 1$; $T_{sp} \leq 120\text{ °C}$	[1]	-	-	420	mA
$I_{F(AV)}$	average forward current	$\delta = 0.5$; $f = 20\text{ kHz}$; square wave; $T_{amb} \leq 30\text{ °C}$	[1]	-	-	300	mA
		$\delta = 0.5$; $f = 20\text{ kHz}$; square wave; $T_{sp} \leq 125\text{ °C}$	[1]	-	-	300	mA
V_R	reverse voltage			-	-	40	V
V_F	forward voltage	$I_F = 10\text{ mA}$; $T_{amb} = 25\text{ °C}$		-	320	360	mV

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

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode[1]	 SC-79 (SOD523)	 K A 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
RB530S40-Q	SC-79	plastic, surface-mounted package; 2 leads; 1.2 mm x 0.8 mm x 0.6 mm body	SOD523

7. Marking

Table 4. Marking codes

Type number	Marking code
RB530S40-Q	8C

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			-	40	V
I_F	forward current	$\delta = 1$; $T_{sp} \leq 120\text{ }^{\circ}\text{C}$	[1]	-	420	mA
$I_{F(AV)}$	average forward current	$\delta = 0.5$; $f = 20\text{ kHz}$; square wave; $T_{amb} \leq 30\text{ }^{\circ}\text{C}$	[1]	-	300	mA
		$\delta = 0.5$; $f = 20\text{ kHz}$; square wave; $T_{sp} \leq 125\text{ }^{\circ}\text{C}$	[1]	-	300	mA
I_{FRM}	repetitive peak forward current	$t_p \leq 1\text{ s}$; $\delta \leq 0.5$		-	300	mA
I_{FSM}	non-repetitive peak forward current	$t_p = 8.3\text{ ms}$; half sine wave; $T_{j(init)} = 25\text{ }^{\circ}\text{C}$		-	1	A
T_j	junction temperature			-	150	$^{\circ}\text{C}$
T_{amb}	ambient temperature			-65	150	$^{\circ}\text{C}$
T_{stg}	storage temperature			-65	150	$^{\circ}\text{C}$

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

9. Thermal characteristics

Table 6. Thermal characteristics

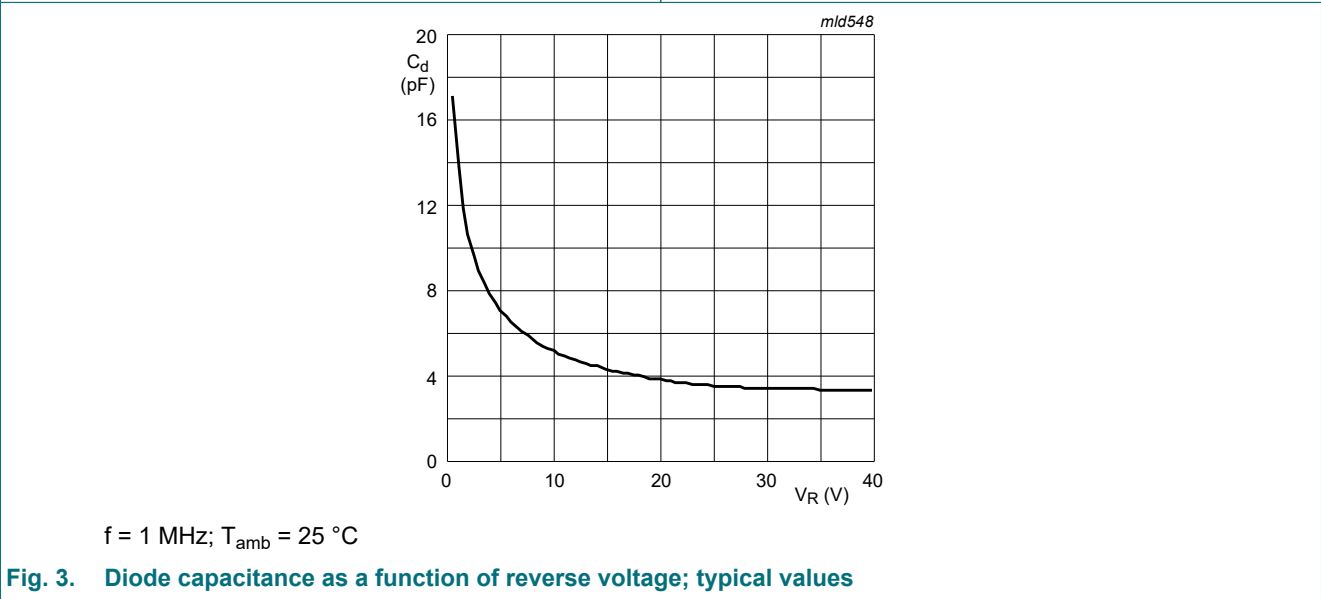
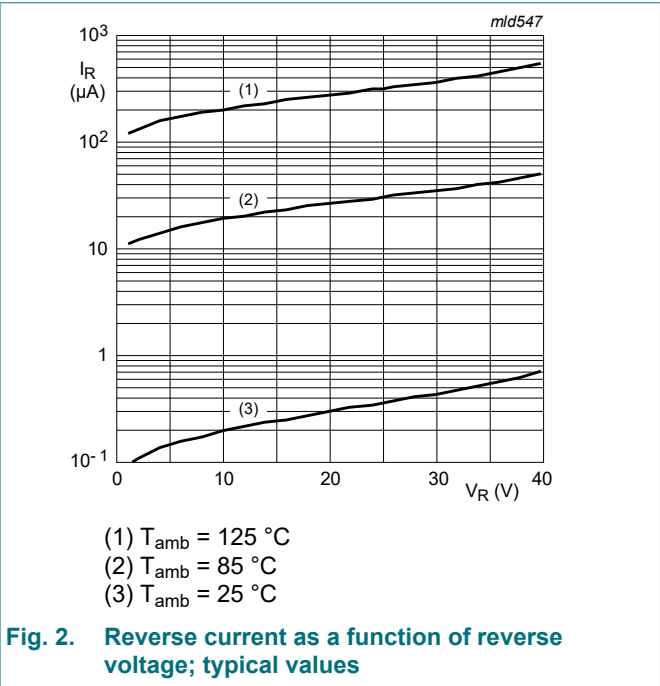
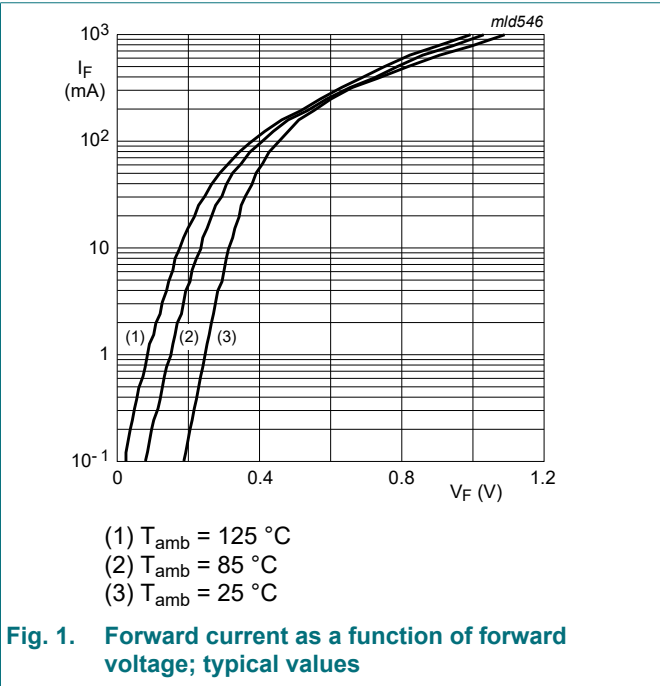
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	450	K/W

[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 = 0.1 mA; T _{amb} = 25 °C		-	190	220	mV
		I _F = 1 mA; T _{amb} = 25 °C		-	250	290	mV
		I _F = 10 mA; T _{amb} = 25 °C		-	320	360	mV
		I _F = 100 mA; T _{amb} = 25 °C		-	440	500	mV
		I _F = 200 mA; T _{amb} = 25 °C		-	520	600	mV
I _R	reverse current	V _R = 25 V; pulsed; t _p = 300 µs; δ = 0.02; T _{amb} = 25 °C		-	-	0.5	µA
C _d	diode capacitance	V _R = 1 V; f = 1 MHz; T _{amb} = 25 °C		-	-	20	pF

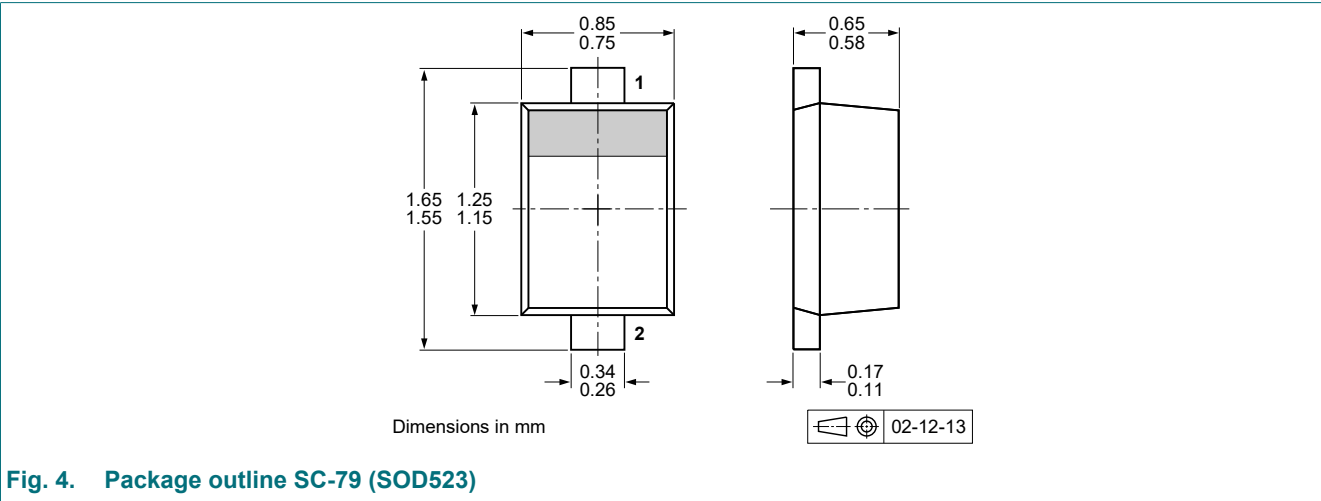


11. Test information

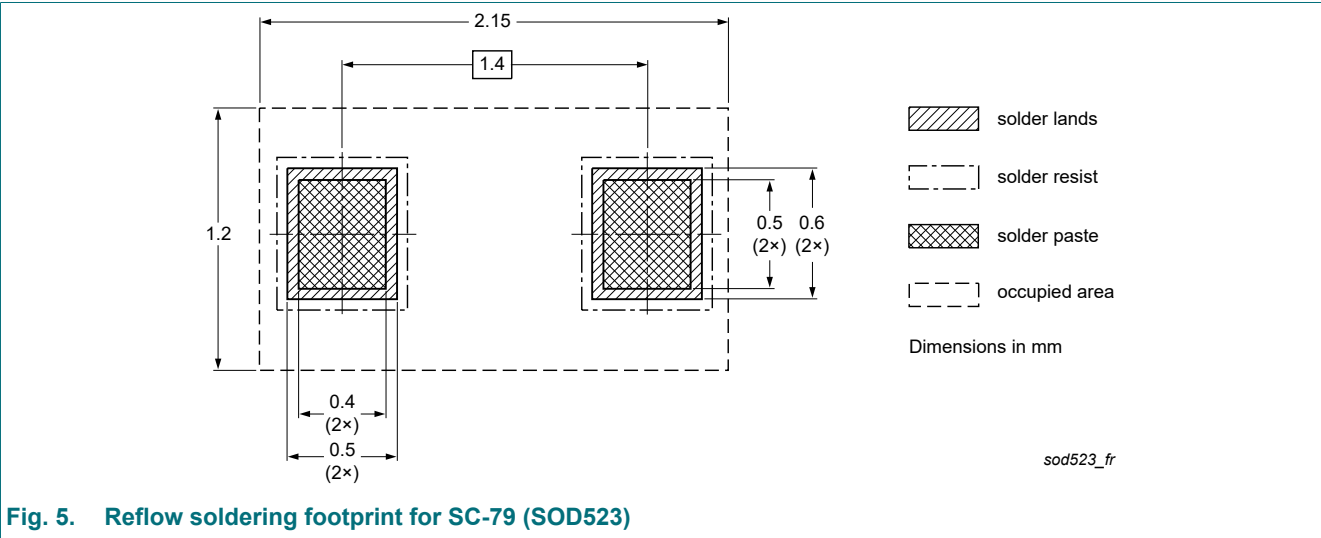
Quality information

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



13. Soldering



14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
RB530S40-Q v.1	20240709	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.

- [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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Date of release: 9 July 2024