



1PS301-Q

Dual high-speed switching diode

12 May 2025

Product data sheet

1. General description

Dual high-speed switching diode, encapsulated in a very small SOT323 (SC-70) Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- High switching speed: $t_{rr} \leq 4$ ns
- Low capacitance: $C_d \leq 1.5$ pF
- Repetitive peak reverse voltage: $V_{RRM} \leq 85$ V
- Repetitive peak forward current: $I_{FRM} \leq 500$ mA
- Reverse voltage: $V_R \leq 80$ V
- Very small SMD plastic package
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- High-speed switching
- General-purpose switching

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
I_F	forward current		[1] [2]	-	-	250	mA
			[1] [3]	-	-	160	mA
I_R	reverse current	$V_R = 80$ V; $T_{amb} = 25$ °C		-	-	0.5	µA
V_R	reverse voltage			-	-	80	V
t_{rr}	reverse recovery time	$I_F = 10$ mA; $I_R = 10$ mA; $I_{R(meas)} = 1$ mA; $R_L = 100$ Ω		-	-	4	ns

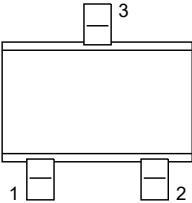
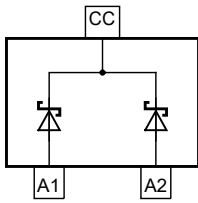
[1] Device mounted on an FR4 Printed-Circuit-Board (PCB), single-sided copper, tin-plated and standard footprint.

[2] Single diode loaded.

[3] Double diode loaded.

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode (diode 1)	 SC-70 (SOT323)	 006aab034
2	A2	anode (diode 2)		
3	CC	common cathode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
1PS301-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]
1PS301-Q	B%3

[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
Per diode						
V _R	reverse voltage			-	80	V
V _{RRM}	repetitive peak reverse voltage			-	85	V
I _F	forward current		[1] [2]	-	250	mA
			[1] [3]	-	160	mA
I _{FRM}	repetitive peak forward current	t _p ≤ 0.5 μs; δ ≤ 0.25		-	500	mA
I _{FSM}	non-repetitive peak forward current	t _p = 1 μs; square wave, T _j = 25 °C before surge.		-	4	A
		t _p = 1 s; square wave, T _j = 25 °C before surge.		-	0.5	A
Per device						
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	[1]	-	300	mW
T _j	junction temperature			-	150	°C

Symbol	Parameter	Conditions		Min	Max	Unit
T _{amb}	ambient temperature			-55	150	°C
T _{stg}	storage temperature			-65	150	°C

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

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per device							
R _{th(j-a)}	thermal resistance from junction to ambient	in free air	[1]	-	-	415	K/W
R _{th(j-sp)}	thermal resistance from junction to solder point			-	-	200	K/W

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

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
V _F	forward voltage	I _F = 1 mA; T _{amb} = 25 °C		-	610	-	mV
		I _F = 10 mA; T _{amb} = 25 °C		-	740	-	mV
		I _F = 50 mA; T _{amb} = 25 °C		-	-	1	V
		I _F = 100 mA; T _{amb} = 25 °C		-	-	1.2	V
I _R	reverse current	V _R = 25 V; T _{amb} = 25 °C		-	-	30	nA
		V _R = 80 V; T _{amb} = 25 °C		-	-	0.5	µA
		V _R = 25 V; T _j = 150 °C		-	-	30	µA
		V _R = 80 V; T _j = 150 °C		-	-	100	µA
C _d	diode capacitance	V _R = 0 V; f = 1 MHz; T _{amb} = 25 °C		-	-	1.5	pF
t _{rr}	reverse recovery time	I _F = 10 mA; I _R = 10 mA; I _{R(meas)} = 1 mA; R _L = 100 Ω		-	-	4	ns
V _{FRM}	peak forward recovery voltage	I _F = 10 mA; t _r = 20 ns		-	-	1.75	V

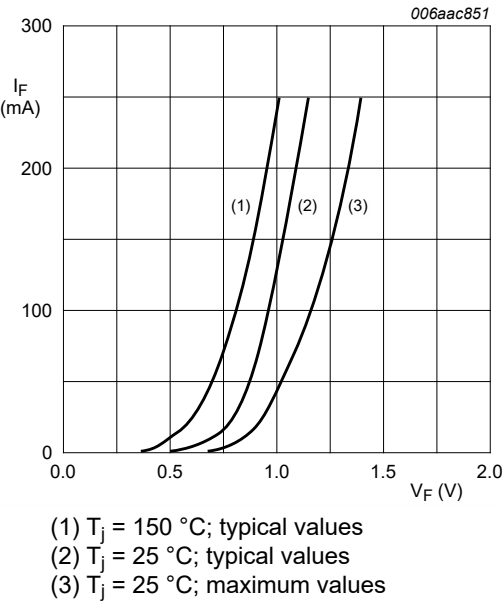


Fig. 1. Forward current as a function of forward voltage

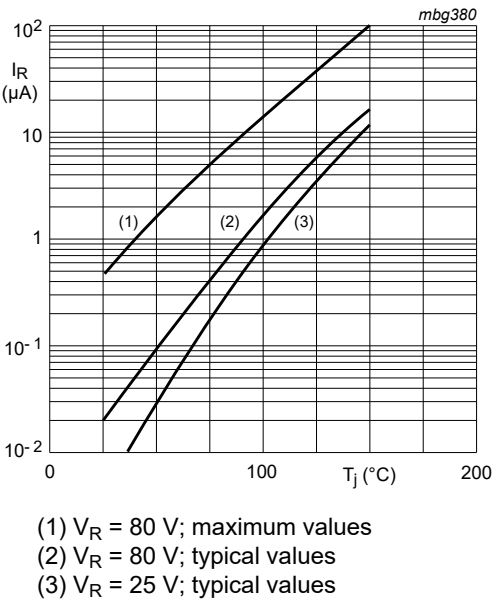


Fig. 2. Reverse current as a function of junction temperature

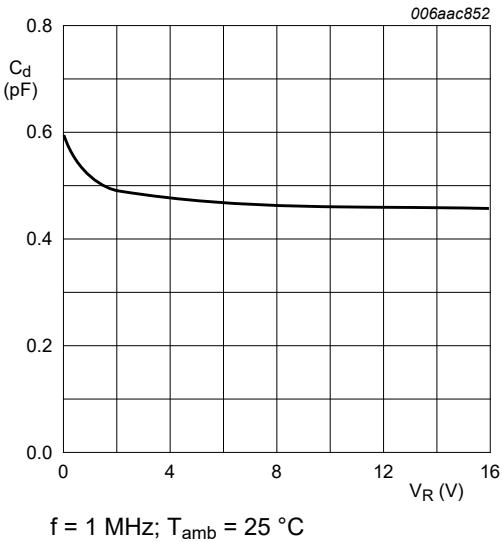


Fig. 3. Diode capacitance as a function of reverse voltage; typical values

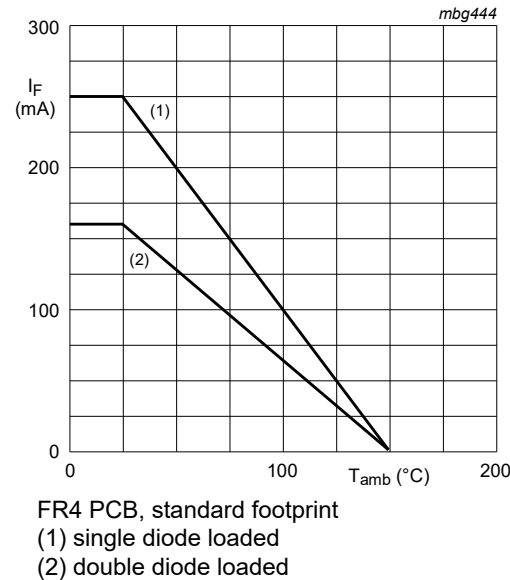
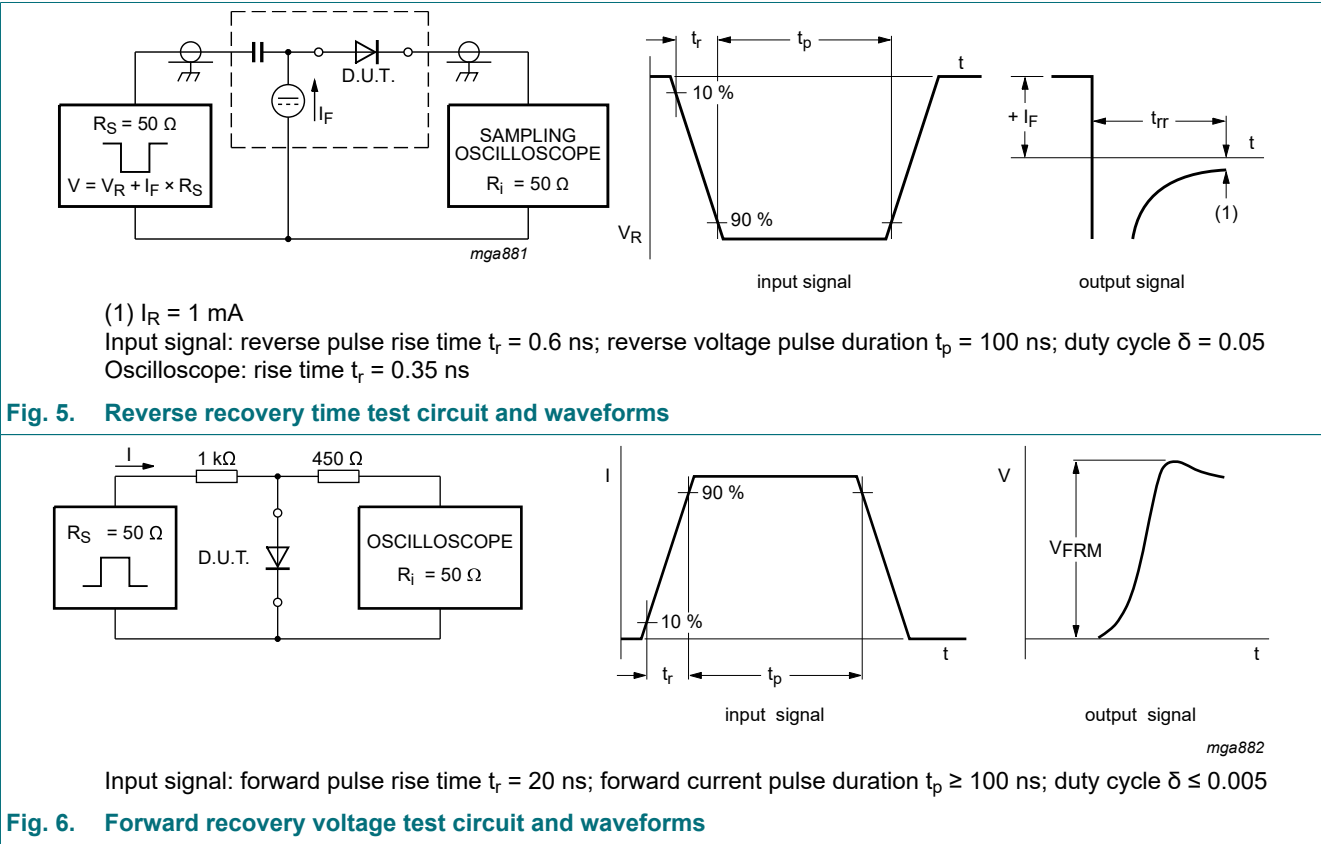


Fig. 4. Forward current as a function of ambient temperature; derating curves

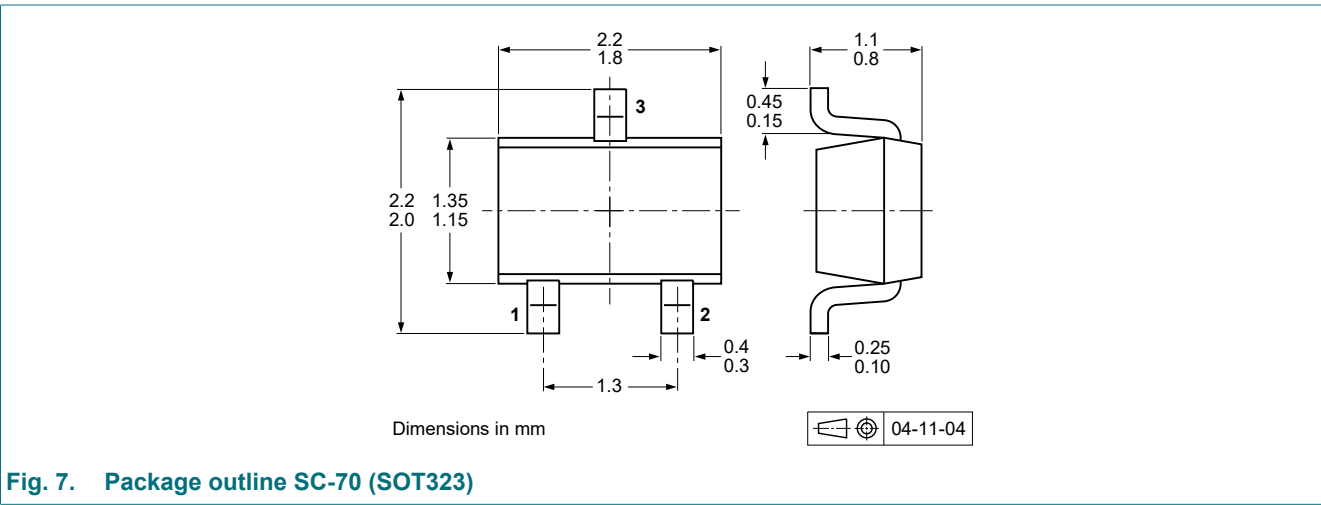
11. Test information



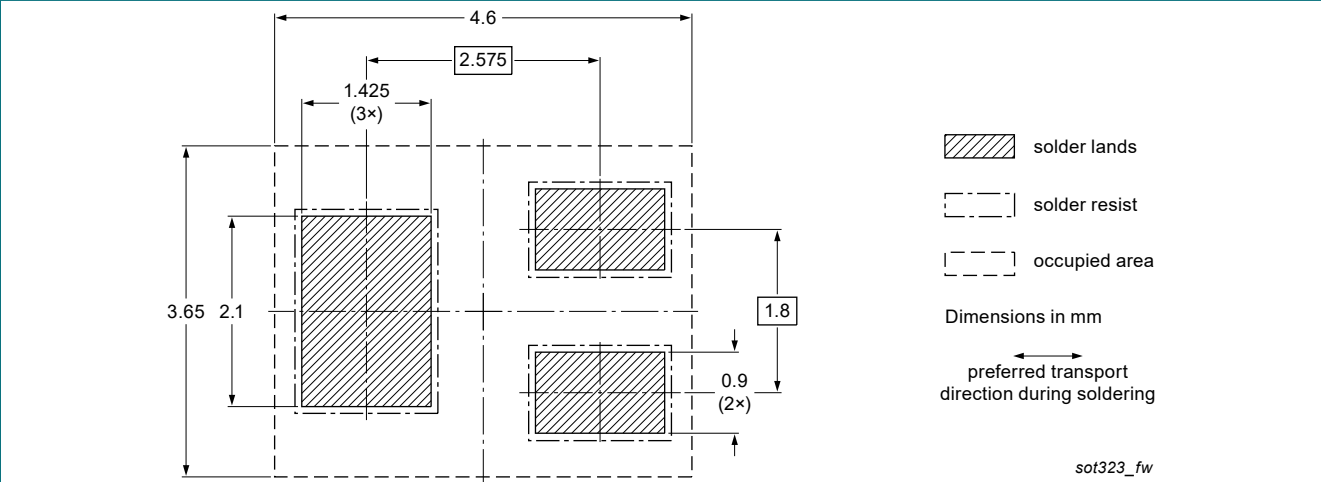
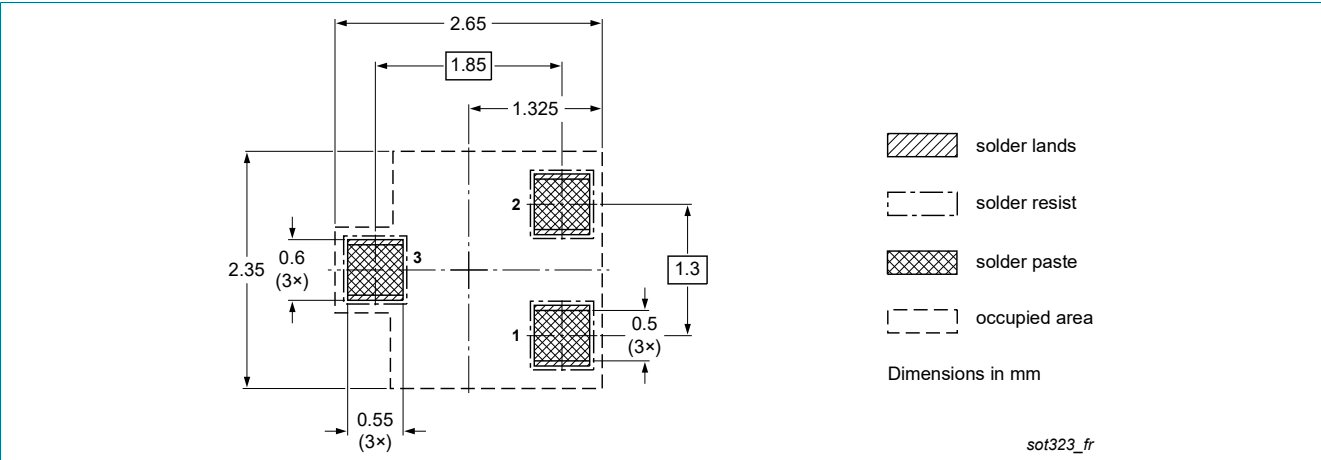
Quality information

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
1PS301 -Q v.1	20250512	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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