



1PS300-Q

Dual high-speed switching diode

23 April 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: $C_d \leq 2$ 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]	-	-	200	mA
			[1] [3]	-	-	170	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; $T_{amb} = 25$ °C		-	-	4	ns

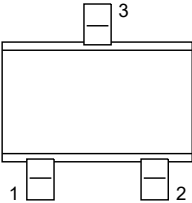
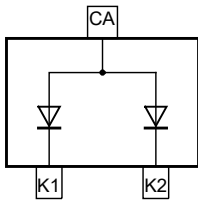
[1] Device mounted on an FR4 Printed-Circuit-Board (PCB), single-sided copper, tin-plated and standard footprint.

[2] Single diode loaded.

[3] Double diode loaded.

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K1	cathode (diode 1)	 SC-70 (SOT323)	 006aab099
2	K2	cathode (diode 2)		
3	CA	common anode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
1PS300-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]
1PS300-Q	A%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]	-	200	mA
			[1] [3]	-	170	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(init)} = 25 °C		-	4	A
		t _p = 1 s; square wave; T _{j(init)} = 25 °C		-	0.5	A
Per device						
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	[1]	-	300	mW
T _j	junction temperature			-	150	°C
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

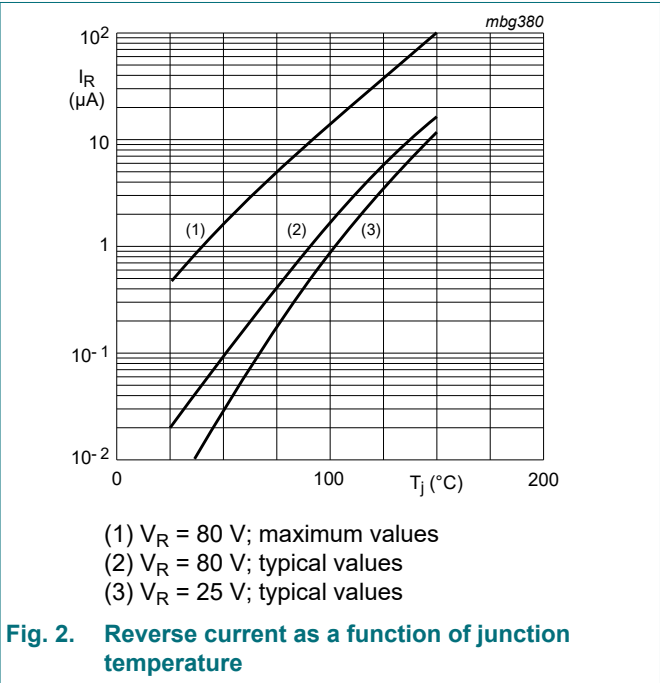
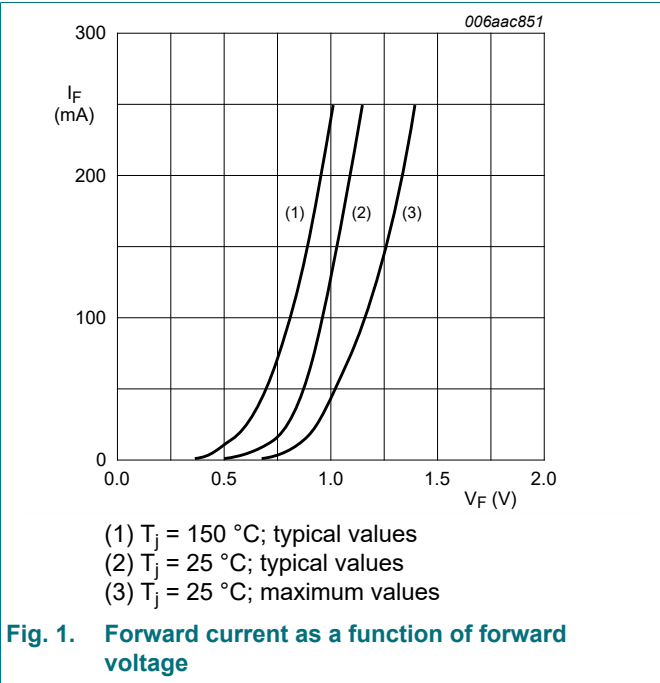
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per device							
R _{th(j-a)}	thermal resistance from junction to ambient	in free air	[1]	-	-	415	K/W
R _{th(j-sp)}	thermal resistance from junction to solder point			-	-	200	K/W

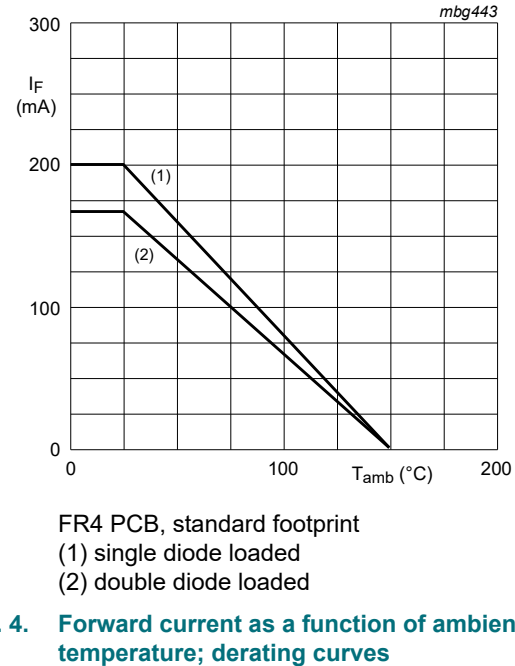
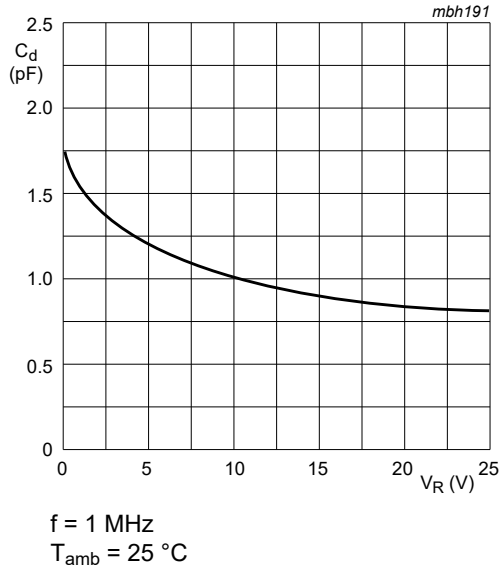
- [1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

10. Characteristics

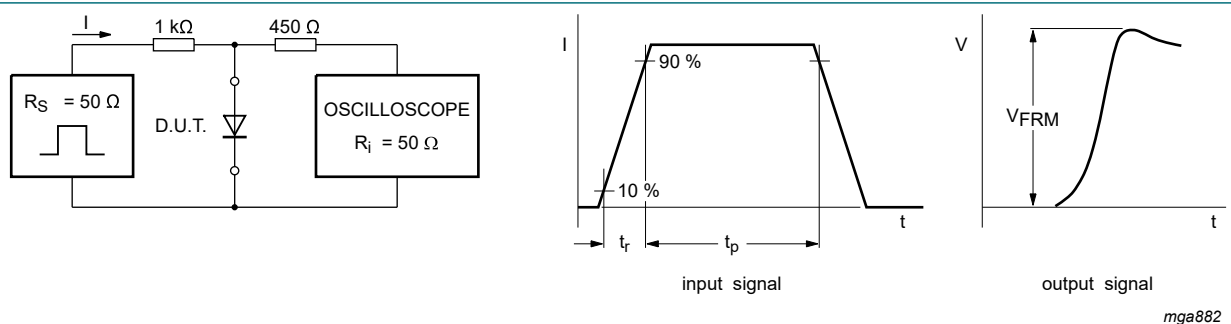
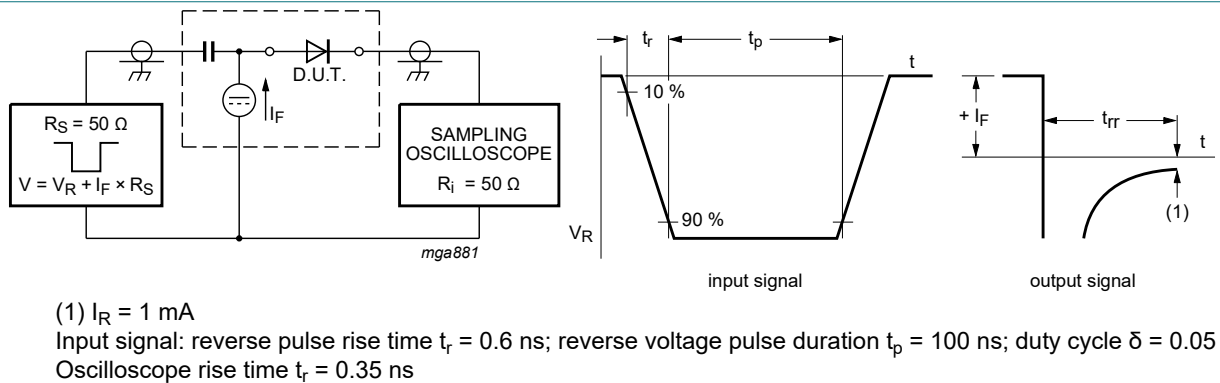
Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
V_F	forward voltage	$I_F = 1\text{ mA}$; $T_{\text{amb}} = 25\text{ }^{\circ}\text{C}$	-	610	-	mV
		$I_F = 10\text{ mA}$; $T_{\text{amb}} = 25\text{ }^{\circ}\text{C}$	-	740	-	mV
		$I_F = 50\text{ mA}$; $T_{\text{amb}} = 25\text{ }^{\circ}\text{C}$	-	-	1	V
		$I_F = 100\text{ mA}$; $T_{\text{amb}} = 25\text{ }^{\circ}\text{C}$	-	-	1.2	V
I_R	reverse current	$V_R = 25\text{ V}$; $T_{\text{amb}} = 25\text{ }^{\circ}\text{C}$	-	-	30	nA
		$V_R = 80\text{ V}$; $T_{\text{amb}} = 25\text{ }^{\circ}\text{C}$	-	-	0.5	μA
		$V_R = 25\text{ V}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	-	30	μA
		$V_R = 80\text{ V}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	-	100	μA
C_d	diode capacitance	$V_R = 0\text{ V}$; $f = 1\text{ MHz}$; $T_{\text{amb}} = 25\text{ }^{\circ}\text{C}$	-	-	2	pF
t_{rr}	reverse recovery time	$I_F = 10\text{ mA}$; $I_R = 10\text{ mA}$; $I_{R(\text{meas})} = 1\text{ mA}$; $R_L = 100\text{ }\Omega$; $T_{\text{amb}} = 25\text{ }^{\circ}\text{C}$	-	-	4	ns
V_{FRM}	peak forward recovery voltage	$I_F = 10\text{ mA}$; $t_r = 20\text{ ns}$; $T_{\text{amb}} = 25\text{ }^{\circ}\text{C}$	-	-	1.75	V





11. Test information



Input signal: forward pulse rise time $t_r = 20 \text{ ns}$; forward current pulse duration $t_p \geq 100 \text{ ns}$; duty cycle $\delta \leq 0.005$

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

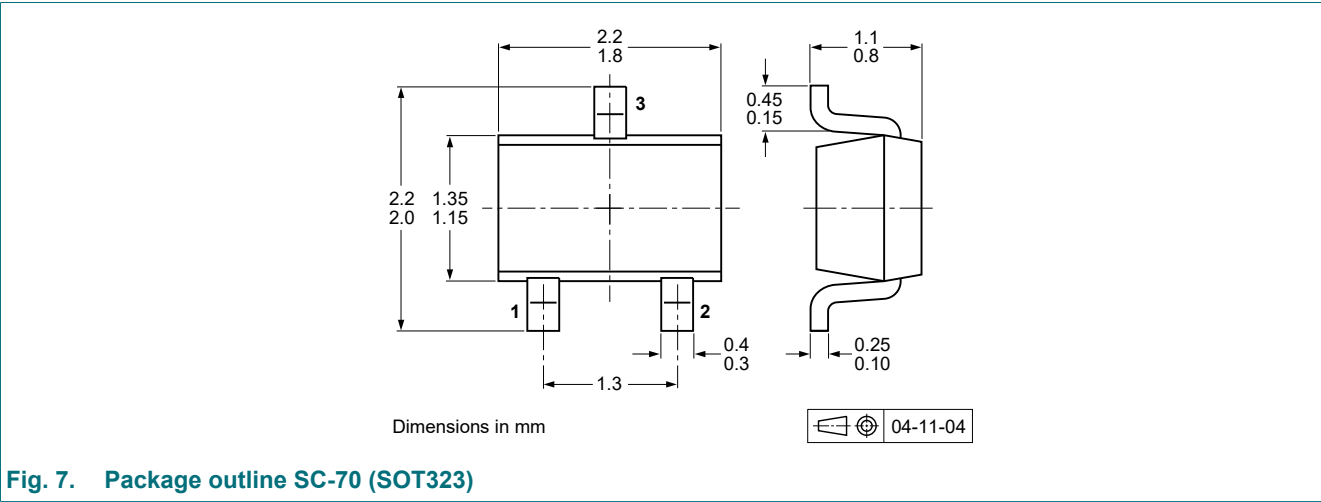


Fig. 7. Package outline SC-70 (SOT323)

13. Soldering

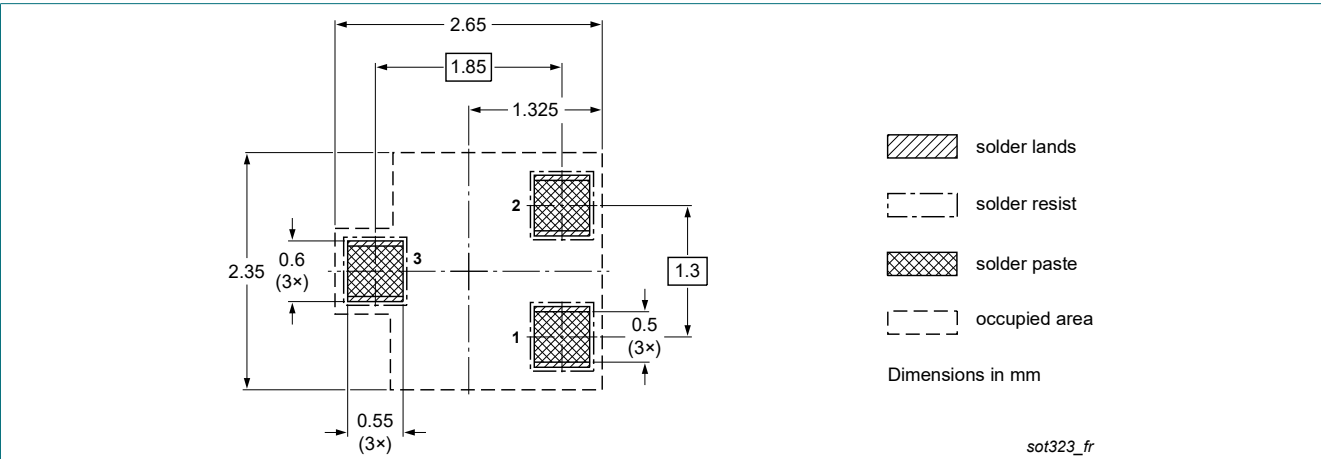


Fig. 8. Reflow soldering footprint for SC-70 (SOT323)

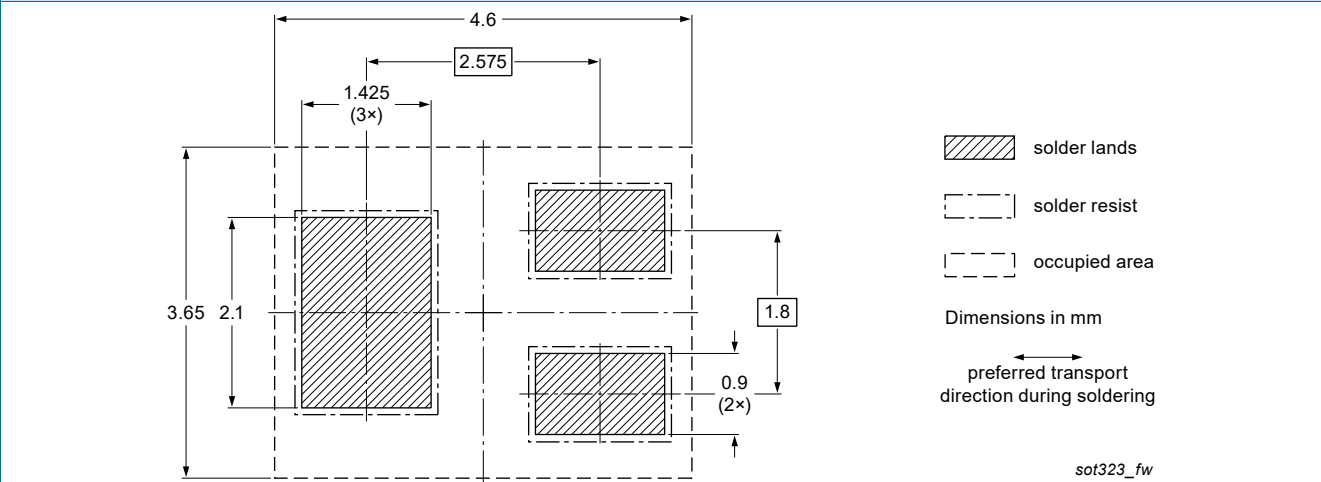


Fig. 9. Wave soldering footprint for SC-70 (SOT323)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
1PS300-Q v.1	20250423	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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Contents

1. General description..... 1

2. Features and benefits..... 1

3. Applications..... 1

4. Quick reference data..... 1

5. Pinning information.....2

6. Ordering information.....2

7. Marking.....2

8. Limiting values..... 3

9. Thermal characteristics..... 3

10. Characteristics..... 4

11. Test information..... 5

12. Package outline..... 6

13. Soldering..... 6

14. Revision history.....7

15. Legal information.....8

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Date of release: 23 April 2025