DZ23-Q series

Common cathode Zener diodes

Rev. 1 — 30 September 2025 Product data sheet

1. General description

Common cathode Zener diodes diodes in a SOT23 small Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Non-repetitive peak reverse power dissipation: ≤ 40 W
- Total power dissipation: ≤ 250 mW
- One tolerance series: C = ±5 %
- Wide working voltage range: nominal 2.4 V to 75 V (E24 range)
- Small plastic package suitable for surface-mounted design
- Dual common cathode configuration
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- General regulation functions

4. Quick reference data

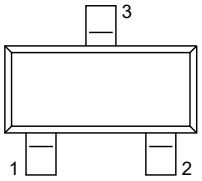
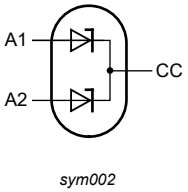
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 10 mA	[1]	-	-	0.9	V
P_{ZSM}	non-repetitive peak reverse power dissipation		[2]	-	-	40	W
P_{tot}	total power dissipation	T_{amb} ≤ 25 °C	[3]	-	-	250	mW

[1] Pulse test: t_p ≤ 300 µs; δ ≤ 0.02.
[2] t_p = 100 µs; square wave; T_j = 25 °C prior to surge.
[3] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

5. Pinning information

Table 2. Pinning

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode (diode 1)		
2	A2	anode (diode 2)		
3	CC	common cathode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
DZ23-C2V4-Q to DZ23-C75-Q [1]	SOT23	plastic, surface-mounted package; 3 terminals; 1.9 mm pitch; 2.9 mm x 1.3 mm x 1 mm body	SOT23

[1] The series consists of 37 types with nominal working voltages from 2.4 V to 75 V.

7. Marking

Table 4. Marking codes

Type number	Marking code [1]	Type number	Marking code [1]
DZ23-C2V4-Q	SY%	DZ23-C15-Q	GZ%
DZ23-C2V7-Q	SZ%	DZ23-C16-Q	SR%
DZ23-C3V0-Q	TM%	DZ23-C18-Q	SS%
DZ23-C3V3-Q	TN%	DZ23-C20-Q	ST%
DZ23-C3V6-Q	TP%	DZ23-C22-Q	SU%
DZ23-C3V9-Q	TQ%	DZ23-C24-Q	SV%
DZ23-C4V3-Q	TT%	DZ23-C27-Q	SX%
DZ23-C4V7-Q	TU%	DZ23-C30-Q	TH%
DZ23-C5V1-Q	X5%	DZ23-C33-Q	TJ%
DZ23-C5V6-Q	X6%	DZ23-C36-Q	TK%
DZ23-C6V2-Q	X9%	DZ23-C39-Q	TL%
DZ23-C6V8-Q	YD%	DZ23-C43-Q	TR%
DZ23-C7V5-Q	YF%	DZ23-C47-Q	TS%
DZ23-C8V2-Q	YG%	DZ23-C51-Q	UY%
DZ23-C9V1-Q	YH%	DZ23-C56-Q	X4%
DZ23-C10-Q	GA%	DZ23-C62-Q	X7%
DZ23-C11-Q	GB%	DZ23-C68-Q	X8%
DZ23-C12-Q	GF%	DZ23-C75-Q	YE%
DZ23-C13-Q	GT%	-	-

[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					
I_F	forward current		-	200	mA
I_{ZSM}	non-repetitive peak reverse current	[1]	-	see tables 8 and 9	
P_{ZSM}	non-repetitive peak reverse power dissipation	[1]	-	40	W
Per device					
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C [2]	-	250	mW
T_j	junction temperature		-	150	°C
T_{amb}	ambient temperature		-55	+150	°C
T_{stg}	storage temperature		-65	+150	°C

[1] t_p = 100 µs; square wave; T_j = 25 °C prior to surge.
[2] 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
Per device; single diode loaded						
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air [1]	-	-	500	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point	[2]	-	-	100	K/W

[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.
[2] Soldering point at pins 1 and 2.

10. Characteristics

Table 7. Characteristics

T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	I_F = 10 mA [1]	-	-	0.9	V

[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$

Table 8. Characteristics per type; DZ23-C2V4-Q to DZ23-C24-Q

T_j = 25 °C unless otherwise specified.

DZ23 -xxx-Q	Sel	Working voltage V_Z (V)		Differential resistance r_{dif} (Ω)		Reverse current I_R (µA)		Temperature coefficient S_Z (mV/K)		Diode capacitance C_d (pF) [1]	Non-repetitive peak reverse current I_{ZSM} (A) [2]
		I_Z = 5 mA		I_Z = 1 mA	I_Z = 5 mA			I_Z = 5 mA			
		Min	Max	Max	Max	Max	V_R (V)	Min	Max	Max	Max
2V4	C	2.20	2.60	600	100	50	1	-3.5	0.0	450	6.0
2V7	C	2.50	2.90	600	100	20	1	-3.5	0.0	450	6.0
3V0	C	2.80	3.20	600	95	10	1	-3.5	0.0	450	6.0
3V3	C	3.10	3.50	600	95	5	1	-3.5	0.0	450	6.0
3V6	C	3.40	3.80	600	90	5	1	-3.5	0.0	450	6.0
3V9	C	3.70	4.10	600	90	3	1	-3.5	0.0	450	6.0
4V3	C	4.00	4.60	600	90	3	1	-3.5	0.0	450	6.0
4V7	C	4.40	5.00	500	80	3	2	-3.5	0.2	300	6.0
5V1	C	4.80	5.40	480	60	2	2	-2.7	1.2	300	6.0
5V6	C	5.20	6.00	400	40	1	2	-2.0	2.5	300	6.0
6V2	C	5.80	6.60	150	10	3	4	0.4	3.7	200	6.0
6V8	C	6.40	7.20	80	15	2	4	1.2	4.5	200	6.0
7V5	C	7.00	7.90	80	15	1	5	2.5	5.3	150	4.0
8V2	C	7.70	8.70	80	15	0.7	5	3.2	6.2	150	4.0
9V1	C	8.50	9.60	100	15	0.5	6	3.8	7.0	150	3.0
10	C	9.40	10.60	150	20	0.2	7	4.5	8.0	90	3.0
11	C	10.40	11.60	150	20	0.1	8	5.4	9.0	85	2.5
12	C	11.40	12.70	150	25	0.1	8	6.0	10.0	85	2.5
13	C	12.40	14.10	170	30	0.1	8	7.0	11.0	80	2.5
15	C	13.80	15.60	200	30	0.05	10.5	9.2	13.0	75	2.0
16	C	15.30	17.10	200	40	0.05	11.2	10.4	14.0	75	1.5
18	C	16.80	19.10	225	45	0.05	12.6	12.4	16.0	70	1.5
20	C	18.80	21.20	225	55	0.05	14	14.4	18.0	60	1.5
22	C	20.80	23.30	250	55	0.05	15.4	16.4	20.0	60	1.25
24	C	22.80	25.60	250	70	0.05	16.8	18.4	22.0	55	1.25

[1] f = 1 MHz; V_R = 0 V

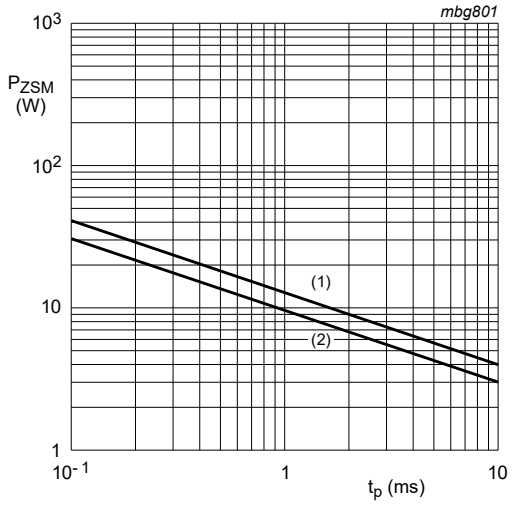
[2] t_p = 100 µs; square wave; T_j = 25 °C prior to surge

Table 9. Characteristics per type; DZ23-C27-Q to DZ23-C75-Q

T_j = 25 °C unless otherwise specified.

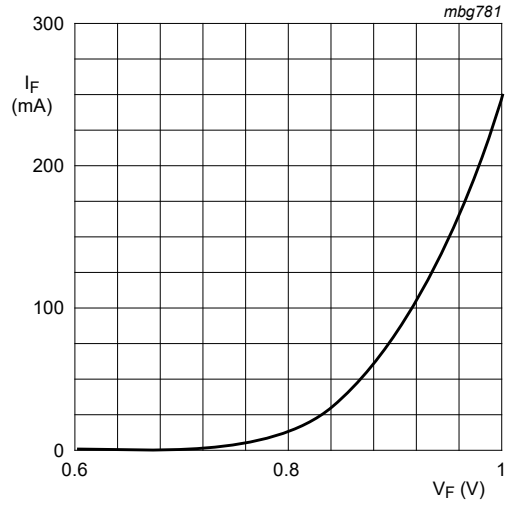
DZ23 -xxx-Q	Sel	Working voltage V_Z (V)		Differential resistance r_{dif} (Ω)		Reverse current I_R (µA)		Temperature coefficient S_Z (mV/K)		Diode capacitance C_d (pF) [1]	Non-repetitive peak reverse current I_{ZSM} (A) [2]
		I_Z = 2 mA		I_Z = 0.5 mA	I_Z = 2 mA			I_Z = 2 mA			
		Min	Max	Max	Max	Max	V_R (V)	Min	Max	Max	Max
27	C	25.10	28.90	300	80	0.05	18.9	21.4	25.3	50	1.0
30	C	28.00	32.00	300	80	0.05	21.0	24.4	29.4	50	1.0
33	C	31.00	35.00	325	80	0.05	23.1	27.4	33.4	45	0.9
36	C	34.00	38.00	350	90	0.05	25.2	30.4	37.4	45	0.8
39	C	37.00	41.00	350	130	0.05	27.3	33.4	41.2	45	0.7
43	C	40.00	46.00	375	150	0.05	30.1	37.6	46.6	40	0.6
47	C	44.00	50.00	375	170	0.05	32.9	42.0	51.8	40	0.5
51	C	48.00	54.00	400	180	0.05	35.7	46.6	57.2	40	0.4
56	C	52.00	60.00	425	200	0.05	39.2	52.2	63.8	40	0.3
62	C	58.00	66.00	450	215	0.05	43.4	58.8	71.6	35	0.3
68	C	64.00	72.00	475	240	0.05	47.6	65.6	79.8	35	0.25
75	C	70.00	79.00	500	255	0.05	52.5	73.4	88.6	35	0.20

[1] f = 1 MHz; V_R = 0 V
[2] t_p = 100 µs; square wave; T_j = 25 °C prior to surge



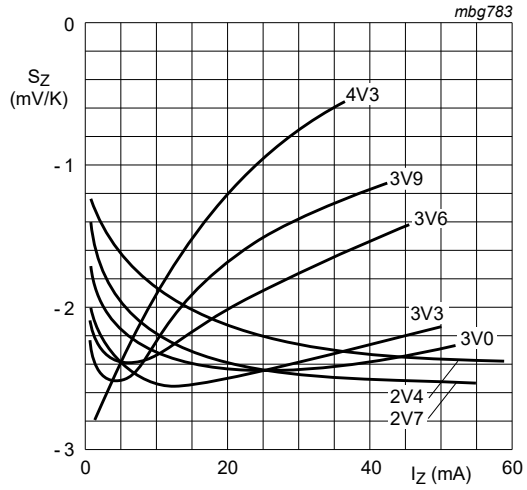
(1) T_j = 25 °C (before surge)
(2) T_j = 150 °C (before surge)

Fig. 1. Per diode: Non-repetitive peak reverse power dissipation as a function of pulse duration; maximum values



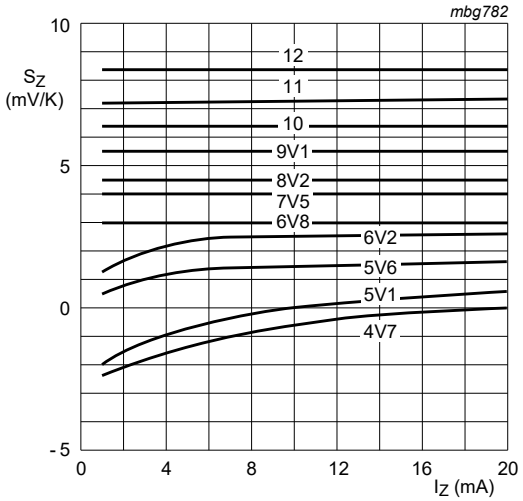
T_j = 25 °C

Fig. 2. Per diode: Forward current as a function of forward voltage; typical values



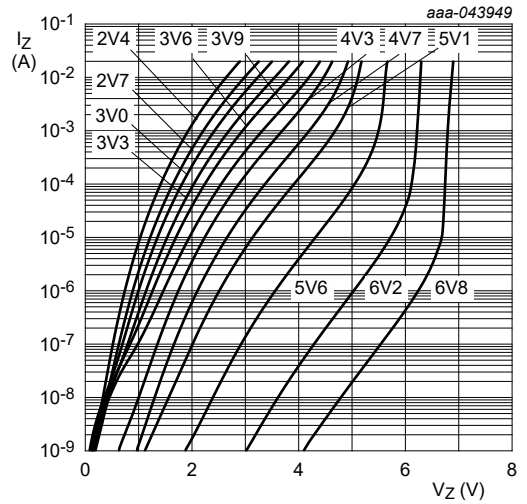
T_j = 25 °C to 150 °C

Fig. 3. Per diode: Temperature coefficient as a function of working current; typical values (DZ23-C2V4-Q to DZ23-C4V3-Q)



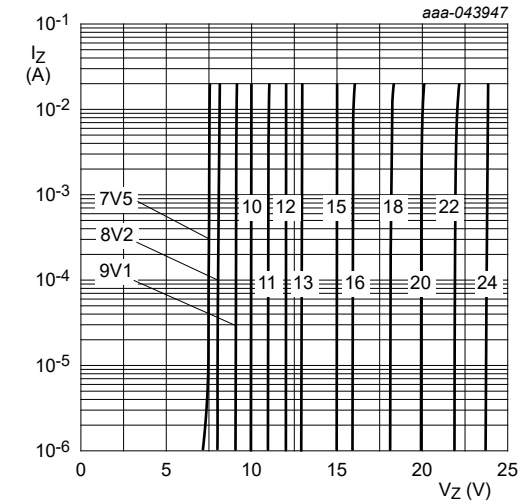
T_j = 25 °C to 150 °C

Fig. 4. Per diode: Temperature coefficient as a function of working current; typical values (DZ23-C4V7-Q to DZ23-C12-Q)



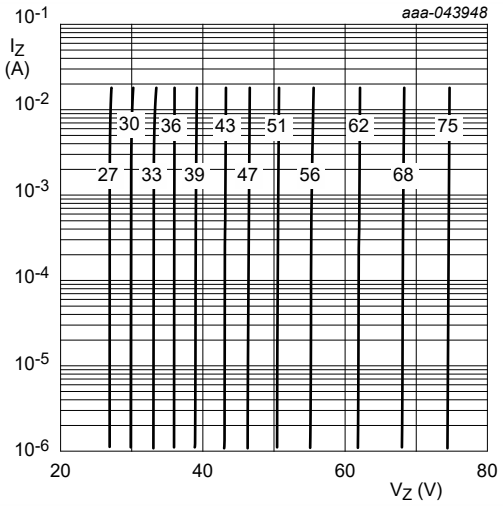
T_j = 25 °C

Fig. 5. Reverse current as a function of reverse voltage; typical values (DZ23-C2V4-Q to C6V8-Q)



T_j = 25 °C

Fig. 6. Reverse current as a function of reverse voltage; typical values (DZ23-C7V5-Q to DZ23-C24-Q)



T_j = 25 °C

Fig. 7. Reverse current as a function of reverse voltage; typical values (DZ23-C27-Q to DZ23-C75-Q)

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

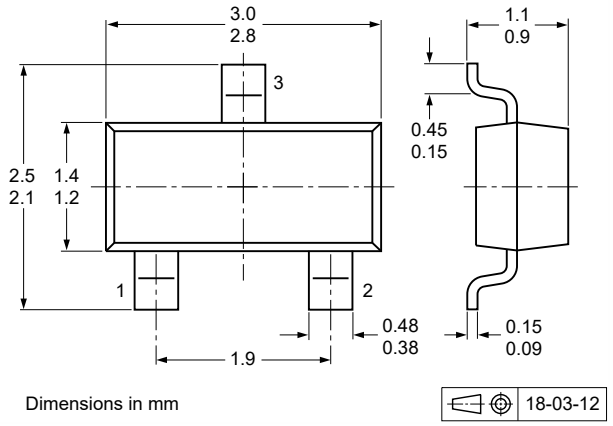


Fig. 8. Package outline SOT23

13. Soldering

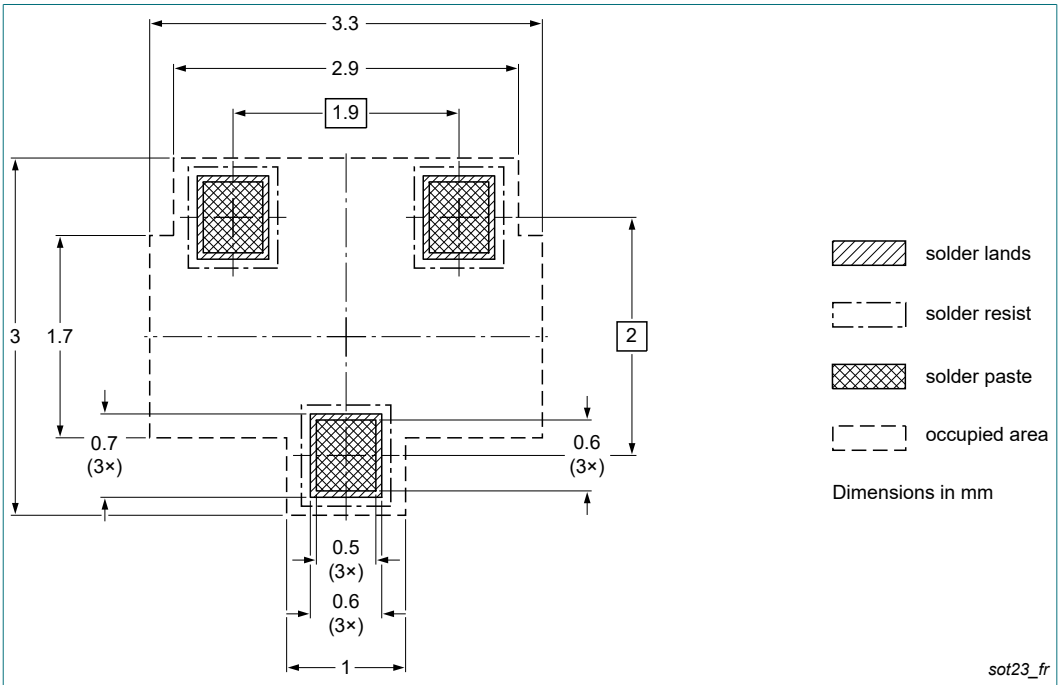


Fig. 9. Reflow soldering footprint for SOT23

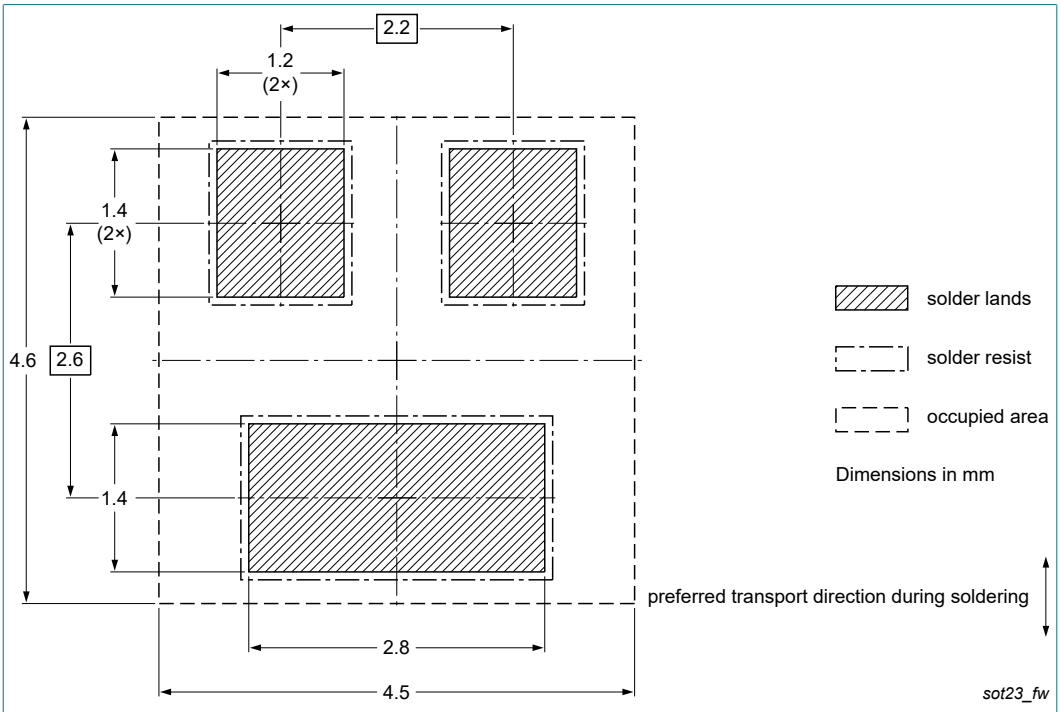


Fig. 10. Wave soldering footprint for SOT23

14. Revision history

Table 10. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
DZ23-Q_SER v.1	20250930	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: 30 September 2025