Product data sheet

1. General description

General-purpose Zener diodes in an SOD523 (SC-79) ultra small flat lead Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Non-repetitive peak reverse power disspation: ≤ 40 W
- Total power dissipation: ≤ 300 mW
- Tolerance series: ± 2 %
- Wide working voltage range: nominal 2.4 V to 36 V
- Low differential resistance
- AEC-Q101 qualified

3. Applications

General regulation functions

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
V _F	forward voltage	I _F = 100 mA [1]	-	-	1.1	V
P _{ZSM}	non-repetitive peak reverse power dissipation	[2]	-	-	40	W

- [1] Pulse test: $t_p \le 300 \ \mu s; \ \delta \le 0.02$
- [2] $t_p = 100 \mu s$; square wave; $T_i = 25 \degree C$ before surge

5. Pinning information

Table 2. Pinning

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode[1]		K []
2	Α	anode	1 2	006aaa152

[1] The marking bar indicates the cathode.



6. Ordering information

Table 3. Ordering information

Type number	Package					
	Name	Description	Version			
SZMM5Z2V4T5G to SZMM5Z36VT5G[1]	SC-79	plastic surface-mounted package; 2 leads	SOD523			

^[1] The series consists of 29 types with nominal working voltages from 2.4 V to 36 V.

7. Marking

Table 4. Marking Codes

Type number	Marking Code	Type number	Marking Code
SZMM5Z2V4T5G	C1	SZMM5Z10VT5G	E6
SZMM5Z2V7T5G	C2	SZMM5Z11VT5G	E7
SZMM5Z3V0T5G	C3	SZMM5Z12VT5G	E8
SZMM5Z3V3T5G	C4	SZMM5Z13VT5G	E9
SZMM5Z3V6T5G	C5	SZMM5Z15VT5G	E0
SZMM5Z3V9T5G	C6	SZMM5Z16VT5G	EA
SZMM5Z4V3T5G	C7	SZMM5Z18VT5G	ЕВ
SZMM5Z4V7T5G	C8	SZMM5Z20VT5G	EC
SZMM5Z5V1T5G	C9	SZMM5Z22VT5G	ED
SZMM5Z5V6T5G	C0	SZMM5Z24VT5G	EE
SZMM5Z6V2T5G	E1	SZMM5Z27VT5G	EF
SZMM5Z6V8T5G	E2	SZMM5Z30VT5G	EG
SZMM5Z7V5T5G	E3	SZMM5Z33VT5G	EH
SZMM5Z8V2T5G	E4	SZMM5Z36VT5G	EK
SZMM5Z9V1T5G	E5	-	-

8. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions		Min	Max	Unit
I _F	forward current			-	200	mA
P _{ZSM}	non-repetitive peak reverse power dissipation	t _p = 100 μs; square wave; T _{amb} = 25 °C; prior to surge	-	-	40	W
P _{tot}	total power dissipation	T _{amb} = 25 °C	[1]	-	300	mW
Tj	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) with aproximately 35 mm² Cu area at cathode tab

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
R _{th(j-a)}	thermal resistance from junction to ambient	in free air [1]	-	-	350	K/W
R _{th(j-sp)}	thermal resistance from junction to solder point	[2]	-	_	65	K/W

^[1] Device mounted on an FR4 Printed-Circuit Board (PCB) with approximately 35 mm² Cu area at cathode tab

10. Characteristics

Table 7. Electrical characteristics

 T_i = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		Max	Unit
V _F	forward voltage	I _F = 10 mA	[1]	0.9	V
		I _F = 100 mA	[1]	1.1	V

[1] Pulse test: $t_p \le 300 \ \mu s$; $\delta \le 0.02$

^[2] Soldering point of cathode tab

Table 8. Electrical characteristics per type: SZMM5Z2V4T5G to SZMM5Z24VT5G

 T_i = 25 °C unless otherwise specified.

SZMM5ZxxxT5G		Working voltage V _Z (V) I _Z = 5 mA		Reverse current I _R (μA)		Differential resistance r _{diff} (Ω)		perature efficient (mV/K)	Diode capacitance C _d (pF)[1]	
	I _Z = 5 m					I _Z = 1 I _Z = 5 mA		= 5 mA		
	Min	Max	Max	V _R (V)	Max	Max	Min	Max	Max	
2V4	2.35	2.45	50.0	1.0	400	100	-3.5	0	450	
2V7	2.65	2.75	20.0	1.0	450	100	-3.5	0	440	
3V0	2.94	3.06	10.0	1.0	500	95	-3.5	0	425	
3V3	3.23	3.37	5.0	1.0	500	95	-3.5	0	410	
3V6	3.53	3.67	5.0	1.0	500	90	-3.5	0	390	
3V9	3.82	3.98	3.0	1.0	500	90	-3.5	0	370	
4V3	4.21	4.39	3.0	1.0	600	90	-3.5	0	350	
4V7	4.61	4.79	3.0	2.0	500	80	-3.5	0.2	325	
5V1	5.00	5.20	2.0	2.0	480	60	-2.7	1.2	300	
5V6	5.49	5.71	1.0	2.0	400	40	-2.0	2.5	275	
6V2	6.08	6.32	3.0	4.0	150	10	0.4	3.7	250	
6V8	6.66	6.94	2.0	4.0	80	15	1.2	4.5	215	
7V5	7.35	7.65	1.0	5.0	80	10	2.5	5.3	170	
8V2	8.04	8.36	0.7	5.0	80	10	3.2	6.2	150	
9V1	8.92	9.28	0.5	6.0	100	10	3.8	7.0	120	
10V	9.80	10.20	0.2	7.0	150	10	4.5	8.0	110	
11V	10.78	11.22	0.1	8.0	150	10	5.4	9.0	110	
12V	11.76	12.24	0.1	8.0	150	10	6.0	10.0	105	
13V	12.74	13.26	0.1	8.0	170	10	7.0	11.0	105	
15V	14.70	15.30	0.05	10.5	200	15	9.2	13.0	100	
16V	15.68	16.32	0.05	11.2	200	40	10.4	14.0	90	
18V	17.64	18.36	0.05	12.6	225	45	12.4	16.0	80	
20V	19.60	20.40	0.05	14.0	225	55	14.4	18.0	70	
22V	21.56	22.44	0.05	15.4	250	55	16.4	20.0	60	
24V	23.52	24.48	0.05	16.8	250	70	18.4	22.0	55	

^[1] $f = 1 \text{ MHz}; V_R = 0 \text{ V}$

Table 9. Electrical characteristics per type: SZMM5Z27VT5G to SZMM5Z36VT5G

 T_i = 25 °C unless otherwise specified.

SZMM5ZxxxT5G		g voltage Z (V)	Reverse current I _R (µA)		Differential resistance r _{diff} (Ω)		Temperature coefficient S _Z (mV/K)		Diode capacitance C _d (pF)[1]	
	I _Z =2 m	I _Z =2 mA				I _Z = 0.5 I _Z = 2 mA		2 mA		
	Min	Max	Max	V _R (V)	Max	Max	Min	Max	Max	
27V	26.46	27.54	0.05	18.9	300	80	21.4	25.3	50	
30V	29.40	30.60	0.05	21.0	300	80	24.4	29.4	50	
33V	32.34	33.66	0.05	23.1	325	80	27.4	33.4	45	
36V	35.28	36.72	0.05	25.2	350	90	30.4	37.4	45	

[1] $f = 1 \text{ MHz}; V_R = 0 \text{ V}$

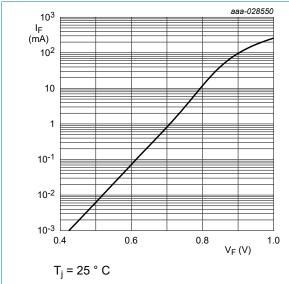


Fig. 1. Forward current as a function of forward voltage; typical values (SZMM5Z2V4T5G)

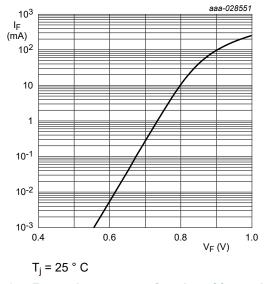


Fig. 2. Forward current as a function of forward voltage; typical values (SZMM5Z6V8T5G)

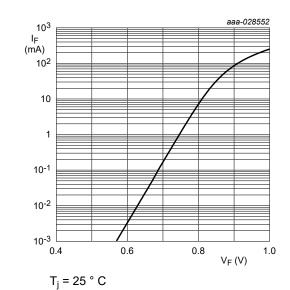
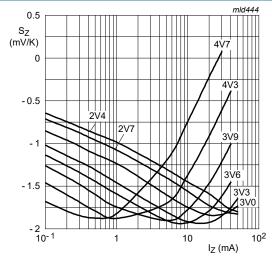


Fig. 3. Forward current as a function of forward voltage; typical values (SZMM5Z7V5T5G)



 T_i = 25 °C to 150 °C

Fig. 4. Temperature coefficient as a function of working current; typical values (SZMM5Z2V4T5G to 4V7T5G)

Nexperia SZMM5Z series

Voltage regulator diodes

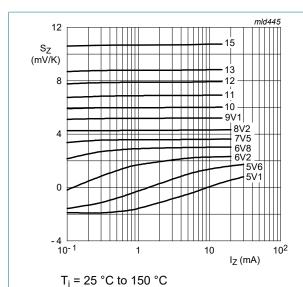


Fig. 5. Temperature coefficient as a function of working current; typical values (SZMM5Z5V1T5G to 15VT5G)

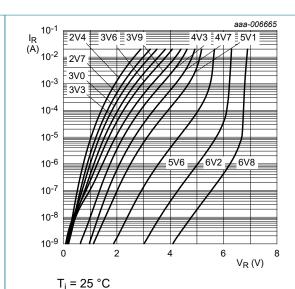


Fig. 6. Reverse current as a function of reverse voltage; typical values (SZMM5Z2V4T5G to 6V8T5G)

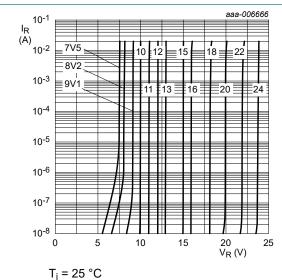


Fig. 7. Reverse current as a function of reverse voltage; typical values (SZMM5Z7V5T5G to 24VT5G)

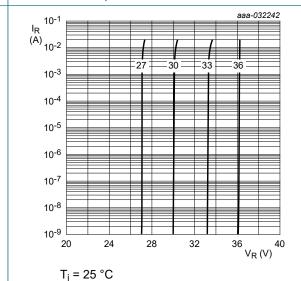


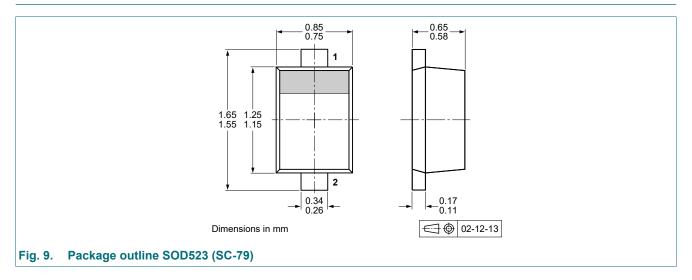
Fig. 8. Reverse current as a function of reverse voltage; typical values (SZMM5Z27VT5G to 36VT5G)

11. Test information

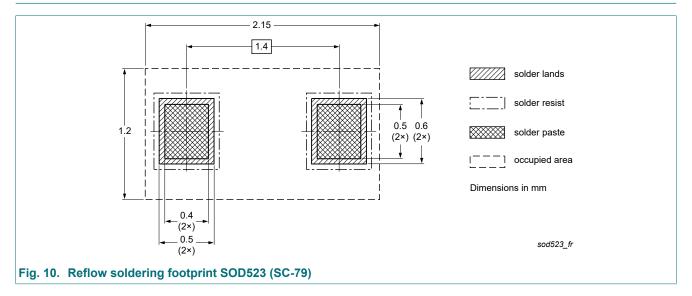
Quality information

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



Nexperia SZMM5Z series

Voltage regulator diodes

14. Revision history

Table 10. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
SZMM5Z_SER v.1	20201210	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.
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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	1
6.	Ordering information	2
7.	Marking	. 2
8.	Limiting values	. 3
9.	Thermal characteristics	. 3
10.	Characteristics	. 3
11.	Test information	. 6
12.	Package outline	. 7
13.	Soldering	. 7
14.	Revision history	8
15.	Legal information	9

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