BZX58550 series

Low-current voltage regulator diodes

Rev. 1 — 24 August 2021 Product data sheet

1. General description

Low-current voltage regulator diodes in an SOD523 (SC-79) ultra small and flat lead Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Total power dissipation: ≤ 300 mW
- Tolerance series: approximately ± 5 %
- Working voltage range: nominal 1.8 V to 75 V
- Specified at a low test current (50 µA), ideal for low bias and portable battery-powered applications

3. Applications

- Low-current general regulation functions

4. Quick reference data

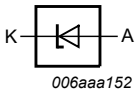
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 10 mA	[1]	-	-	0.9	V
P_{tot}	total power dissipation	T_{amb} ≤ 25 °C	[2]	-	-	300	mW

[1] Pulse test: t_p ≤ 300 µs; δ ≤ 0.02
[2] Device mounted on an FR4 Printed-Circuit Board (PCB), with approximately 35 mm^2 Cu area at cathode tab.

5. Pinning information

Table 2. Pinning

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode [1]		
2	A	anode		

[1] The marking bar indicates the cathode.

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BZX58550 series	SC-79	plastic surface-mounted package; 2 leads	SOD523

7. Marking

Table 4. Marking Codes

Type number	Marking Code	Type number	Marking Code	Type number	Marking Code	Type number	Marking Code
BZX58550-C1V8	1C	BZX58550-C4V7	1X	BZX58550-C12	2S	BZX58550-C33	3L
BZX58550-C2V0	1E	BZX58550-C5V1	1Y	BZX58550-C13	2T	BZX58550-C36	3N
BZX58550-C2V2	1F	BZX58550-C5V6	1Z	BZX58550-C15	2U	BZX58550-C39	3S
BZX58550-C2V4	1H	BZX58550-C6V2	2C	BZX58550-C16	2X	BZX58550-C43	3T
BZX58550-C2V7	1K	BZX58550-C6V8	2E	BZX58550-C18	2Y	BZX58550-C47	3U
BZX58550-C3V0	1L	BZX58550-C7V5	2F	BZX58550-C20	3C	BZX58550-C51	3X
BZX58550-C3V3	1N	BZX58550-C8V2	2H	BZX58550-C22	3E	BZX58550-C56	3Y
BZX58550-C3V6	1S	BZX58550-C9V1	2K	BZX58550-C24	3F	BZX58550-C62	3Z
BZX58550-C3V9	1T	BZX58550-C10	2L	BZX58550-C27	3H	BZX58550-C68	4C
BZX58550-C4V3	1U	BZX58550-C11	2N	BZX58550-C30	3K	BZX58550-C75	4E

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_j = 25 °C; prior to surge		-	40	W
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °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), with approximately 35 mm^2 Cu area at cathode tab.

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]	-	-	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 mm^2 Cu area at cathode tab.
[2] Soldering point of cathode tab

10. Characteristics

Table 7. Electrical characteristics

T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		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. Electrical characteristics per type: BZX58550-C1V8 to BZX58550-C24

T_j = 25 °C unless otherwise specified.

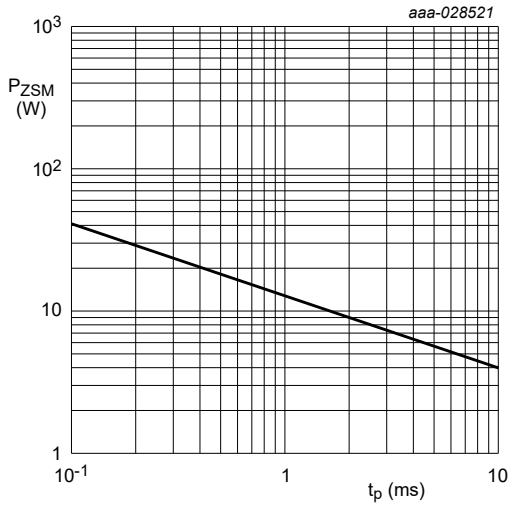
BZX58550-C	Working voltage V_Z (V)		Differential resistance r_{diff} (Ω)		Reverse current I_R (µA)		Temperature coefficient S_Z (mV/K)		Diode capacit. C_d (pF)[1]
	I_Z = 50 µA		I_Z = 1 mA	I_Z = 5 mA			I_Z = 5 mA		
	Min	Max	Max	Max	Max	V_R (V)	Min	Max	Max
1V8	1.71	1.89	600	100	7.5	1.0	-3.5	0	220
2V0	1.88	2.12	600	100	7	1.0	-3.5	0	220
2V2	2.09	2.31	600	100	4	1.0	-3.5	0	210
2V4	2.28	2.52	600	100	2	1.0	-3.5	0	200
2V7	2.565	2.835	600	100	1	1.0	-3.5	0	190
3V0	2.85	3.15	600	100	0.8	1.0	-3.5	0.2	170
3V3	3.13	3.47	600	100	7.5	1.5	-3.5	1.2	160
3V6	3.42	3.78	600	95	7.5	2.0	-3.5	1.2	160
3V9	3.70	4.10	600	95	5.0	2.0	-2.7	2.5	150
4V3	4.09	4.52	600	95	4.0	2.0	-2.7	2.5	150
4V7	4.47	4.94	600	80	5.0	3.0	-2.7	2.5	140
5V1	4.85	5.36	500	60	5.0	3.0	-2.0	3.7	130
5V6	5.32	5.88	400	40	2.0	4.0	-2.0	3.7	120
6V2	5.89	6.51	160	10	1.0	5.0	0.4	4.5	110
6V8	6.46	7.14	80	15	0.1	5.1	1.2	4.5	100
7V5	7.13	7.88	80	15	0.1	5.7	2.5	5.3	150
8V2	7.79	8.61	80	15	0.1	6.2	3.2	6.2	150
9V1	8.65	9.56	100	15	0.1	6.9	3.8	7.0	150
10	9.50	10.50	150	20	0.1	7.6	4.5	8.0	90
11	10.45	11.55	150	20	0.05	8.4	5.4	9.0	85
12	11.40	12.60	150	25	0.05	9.1	6.0	10.0	85
13	12.35	13.65	170	30	0.05	9.8	7.0	11.0	80
15	14.25	15.75	200	30	0.05	11.4	9.2	13.0	75
16	15.20	16.80	200	40	0.05	12.1	10.4	14.0	75
18	17.10	18.90	225	45	0.05	13.6	12.4	16.0	70
20	19.00	21.00	225	55	0.05	15.2	14.4	18.0	60
22	20.90	23.10	250	55	0.05	16.7	16.4	20.0	60
24	22.80	25.20	250	70	0.05	18.2	18.4	22.0	55

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

Table 9. Electrical characteristics per type: BZX58550-C27 to BZX58550-C75

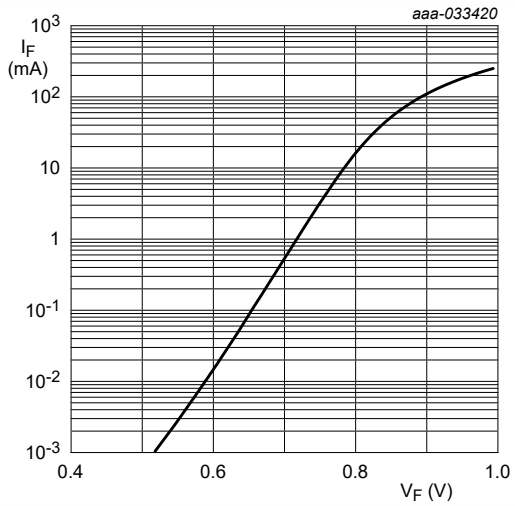
BZX58550-C	Working voltage V_Z (V)		Differential resistance r_{diff} (Ω)		Reverse current I_R (μA)		Temperature coefficient S_Z (mV/K)		Diode capacit. C_d (pF)[1]
	I_Z = 50 μA		I_Z = 0.5 mA	I_Z = 2 mA			I_Z = 2 mA		
	Min	Max	Max	Max	Max	V_R (V)	Min	Max	Max
27	25.65	28.35	300	80	0.05	20.4	21.4	25.3	50
30	28.50	31.50	300	80	0.05	22.8	24.4	29.4	50
33	31.35	34.65	325	80	0.05	25.0	27.4	33.4	45
36	34.20	37.80	350	90	0.05	27.3	30.4	37.4	45
39	37.05	40.95	350	130	0.05	29.6	33.4	41.2	45
43	40.85	45.15	375	150	0.05	32.6	37.6	46.6	40
47	44.00	50.00	375	170	0.05	32.9	42.0	51.8	40
51	48.00	54.00	400	180	0.05	35.7	46.6	57.2	40
56	52.00	60.00	425	200	0.05	39.2	52.2	63.8	40
62	58.00	66.00	450	215	0.05	43.4	58.8	71.6	35
68	64.00	72.00	475	240	0.05	47.6	65.6	79.8	35
75	70.00	79.00	500	255	0.05	52.5	73.4	88.6	35

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



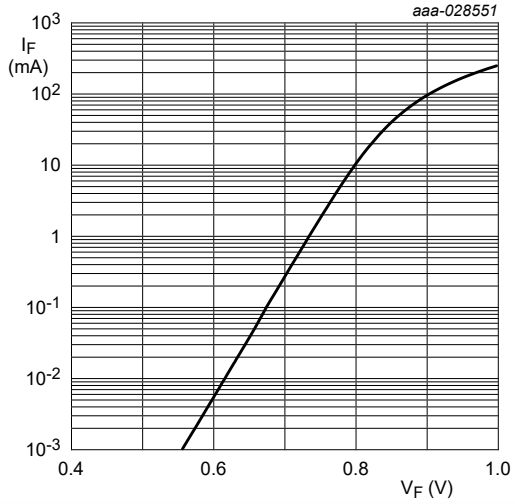
(1) T_j = 25 °C (before surge)

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



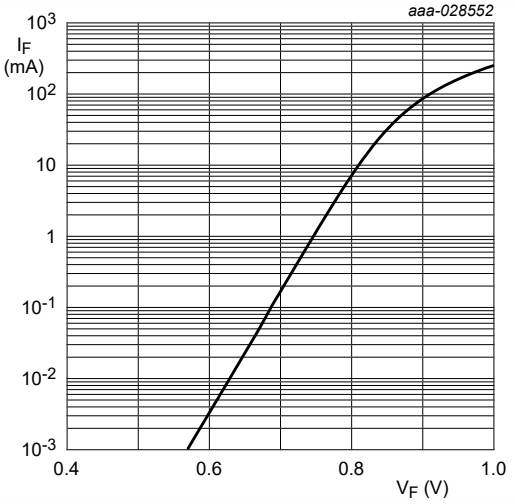
T_j = 25 °C

Fig. 2. Forward current as a function of forward voltage; typical values (BZX58550-C1V8)



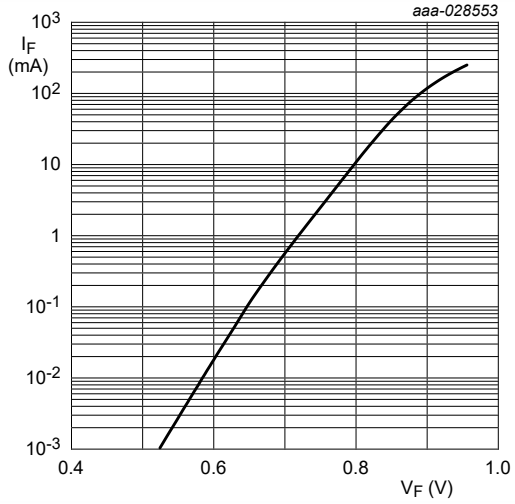
T_j = 25 °C

Fig. 3. Forward current as a function of forward voltage; typical values (BZX58550-C6V8)



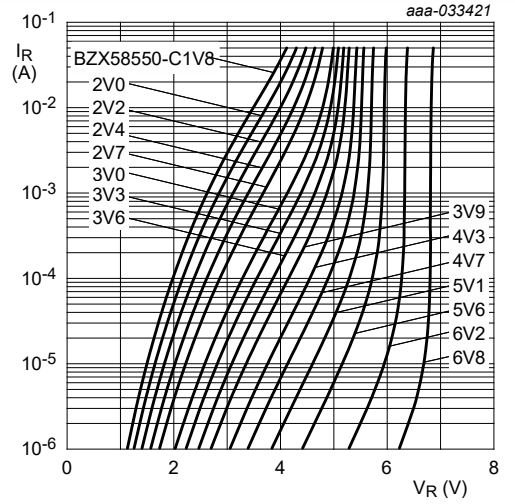
T_j = 25 °C

Fig. 4. Forward current as a function of forward voltage; typical values (BZX58550-C7V5)



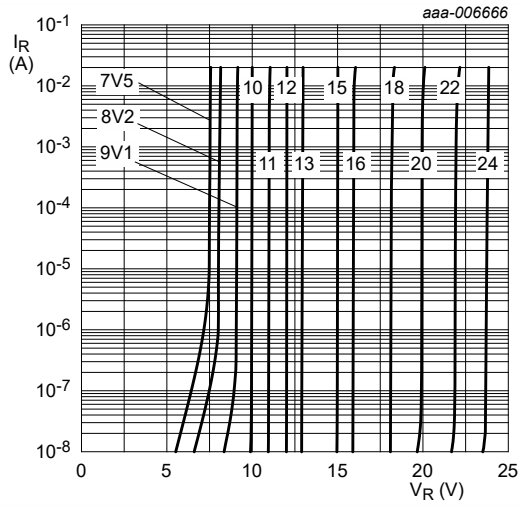
T_j = 25 °C

Fig. 5. Forward current as a function of forward voltage; typical values (BZX58550-C75)



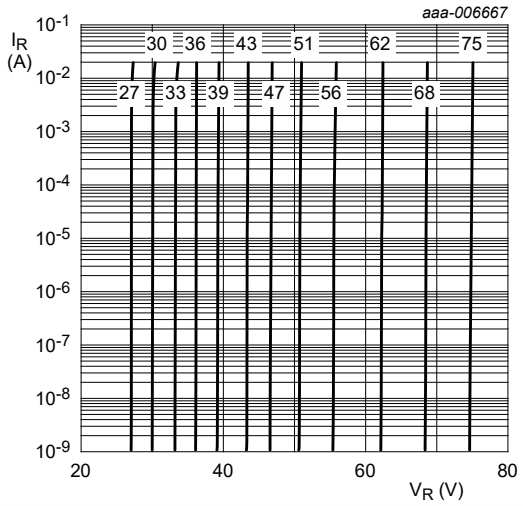
T_{amb} = 25 °C

Fig. 6. Reverse current as a function of reverse voltage; typical values (BZX58550-C1V8 to BZX58550-C6V8)



T_{amb} = 25 °C

Fig. 7. Reverse current as a function of reverse voltage; typical values (BZX58550-C7V5 to BZX58550-C24)



T_{amb} = 25 °C

Fig. 8. Reverse current as a function of reverse voltage; typical values (BZX58550-C27 to BZX58550-C75)

11. Package outline

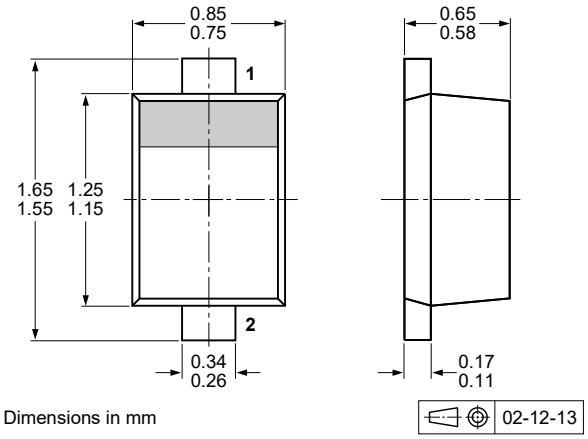


Fig. 9. Package outline SOD523 (SC-79)

12. Soldering

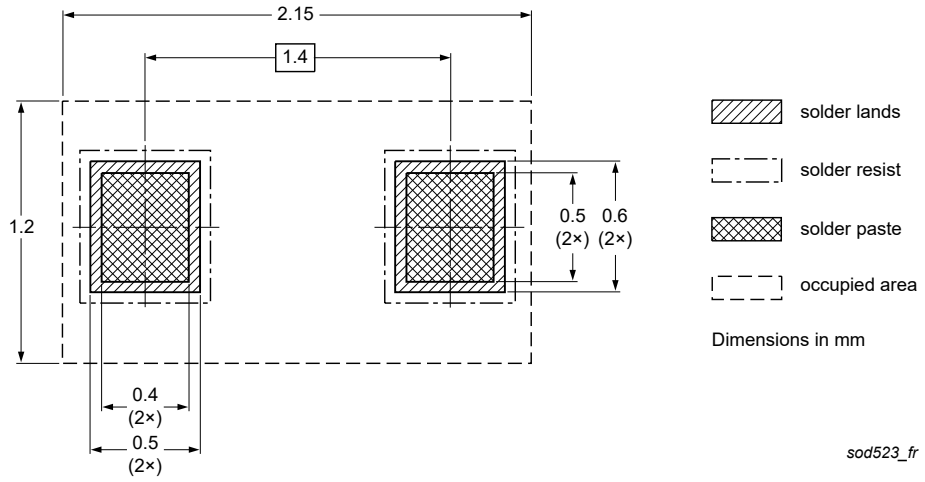


Fig. 10. Reflow soldering footprint SOD523 (SC-79)

13. Revision history

Table 10. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BZX58550_SER v.1	20210824	Product data sheet	-	-

14. 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.
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Date of release: 24 August 2021