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 dissipation: ≤ 40 W
- Total power dissipation: ≤ 300 mW
- Wide working voltage range: nominal 2.4 V to 75 V (E24 range)
- Two tolerance series: ± 2 % and ± 5 %
- · 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	2	006aaa152

[1] The marking bar indicates the cathode.



Voltage regulator diodes

6. Ordering information

Table 3. Ordering information

Type number	Package						
	Name	Description	Version				
BZX585-B2V4 to BZX585-C75[1]	SC-79	plastic surface-mounted package; 2 leads	SOD523				

^[1] The series consists of 74 types with nominal working voltages from 2.4 V to 75 V.

7. Marking

Table 4. Marking Codes

7 F · · · · · · · · · · · · · · · · · ·	Marking Code	Type number	Marking Code	Type number	Marking Code	Type number	Marking Code
BZX585-B2V4	C1	BZX585-B15	E0	BZX585-C2V4	F1	BZX585-C15	H0
BZX585-B2V7	C2	BZX585-B16	EA	BZX585-C2V7	F2	BZX585-C16	НА
BZX585-B3V0	C3	BZX585-B18	EB	BZX585-C3V0	F3	BZX585-C18	НВ
BZX585-B3V3	C4	BZX585-B20	EC	BZX585-C3V3	F4	BZX585-C20	НС
BZX585-B3V6	C5	BZX585-B22	ED	BZX585-C3V6	F5	BZX585-C22	HD
BZX585-B3V9	C6	BZX585-B24	EE	BZX585-C3V9	F6	BZX585-C24	HE
BZX585-B4V3	C7	BZX585-B27	EF	BZX585-C4V3	F7	BZX585-C27	HF
BZX585-B4V7	C8	BZX585-B30	EG	BZX585-C4V7	F8	BZX585-C30	HG
BZX585-B5V1	C9	BZX585-B33	EH	BZX585-C5V1	F9	BZX585-C33	HH
BZX585-B5V6	C0	BZX585-B36	EK	BZX585-C5V6	F0	BZX585-C36	HK
BZX585-B6V2	E1	BZX585-B39	EL	BZX585-C6V2	H1	BZX585-C39	HL
BZX585-B6V8	E2	BZX585-B43	EM	BZX585-C6V8	H2	BZX585-C43	НМ
BZX585-B7V5	E3	BZX585-B47	EN	BZX585-C7V5	H3	BZX585-C47	HN
BZX585-B8V2	E4	BZX585-B51	EP	BZX585-C8V2	H4	BZX585-C51	HP
BZX585-B9V1	E5	BZX585-B56	ER	BZX585-C9V1	H5	BZX585-C56	HR
BZX585-B10	E6	BZX585-B62	ES	BZX585-C10	H6	BZX585-C62	HS
BZX585-B11	E7	BZX585-B68	ET	BZX585-C11	H7	BZX585-C68	HT
BZX585-B12	E8	BZX585-B75	EU	BZX585-C12	H8	BZX585-C75	HU
BZX585-B13	E9	-	-	BZX585-C13	H9	-	-

Voltage regulator diodes

8. Limiting values

Table 5. Limiting values

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

Symbol	Parameter	Conditions		Min	Max	Unit
l _F	forward current			-	200	mA
I _{ZSM}	non-repetitive peak reverse current	t _p = 100 μs; square wave; T _{amb} = 25 °C; prior to surge	-	see Tab	le 8 and	9
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			-65	150	°C
T _{amb}	ambient temperature			-65	+150	°C
T _{stg}	storage temperature			-65	+150	°C

^[1] Device mounted on an FR4 Printed-Circuit Board (PCB) with approximately 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

^[2] Soldering point of cathode tab

Voltage regulator diodes

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: $t_p \le 300 \mu s$; $\delta \le 0.02$

Table 8. Electrical characteristics per type: BZX585-B2V4 to BZX585-C24

 T_i = 25 °C unless otherwise specified.

BZX585- Sel		VC	orking oltage Z (V)	Diffe	erential ^r dif	resist f (Ω)	tance	cur	rent (µA)	C	empera coeffic SZ (m\	ient	Diode capacit. C _d	Non-repeti. peak reverse current
		I _Z = 5 mA		I _Z = 1	I _Z = 1 mA				I	I _Z = 5 i	mA	(pF)[1]	I _{ZSM} (A)	
		Min	Max	Тур	Max	Тур	Max	Max	V _R (V)	Min	Тур	Max	Max	Max
2V4	В	2.35	2.45	275	400	70	100	50.0	1.0	-3.5	-1.3	0	450	6.0
	С	2.28	2.52											
2V7	В	2.65	2.75	300	450	75	100	20.0	1.0	-3.5	-1.4	0	440	6.0
	С	2.57	2.84											
3V0	В	2.94	3.06	325	500	80	95	10.0	1.0	-3.5	-1.6	0	425	6.0
	С	2.85	3.15											
3V3	В	3.23	3.37	350	500	85	95	5.0	1.0	-3.5	-1.8	0	410	6.0
	С	3.14	3.47											
3V6	В	3.53	3.67	375	500	85	90	5.0	1.0	-3.5	-1.9	0	390	6.0
	С	3.42	3.78											
3V9	В	3.82	3.98	400	500	85	90	3.0	1.0	-3.5	-1.9	0	370	6.0
	С	3.71	4.10											
4V3	В	4.21	4.39	410	600	80	90	3.0	1.0	-3.5	-1.7	0	350	6.0
	С	4.09	4.52											
4V7	В	4.61	4.79	425	500	50	80	3.0	2.0	-3.5	-1.2	0.2	325	6.0
	С	4.47	4.94											
5V1	В	5.00	5.20	400	480	40	60	2.0	2.0	-2.7	-0.5	1.2	300	6.0
	С	4.85	5.36											
5V6	В	5.49	5.71	80	400	15	40	1.0	2.0	-2.0	1.0	2.5	275	6.0
	С	5.32	5.88											
6V2	В	6.08	6.32	40	150	6	10	3.0	4.0	0.4	2.2	3.7	250	6.0
	С	5.89	6.51											
6V8	В	6.66	6.94	30	80	6	15	2.0	4.0	1.2	3.0	4.5	215	6.0
	С	6.46	7.14											
7V5	В	7.35	7.65	15	80	2	10	1.0	5.0	2.5	3.6	5.3	170	4.0
	С	7.13	7.88								. 0.0			
8V2	В	8.04	8.36	20	80	2	10	0.7	5.0	3.2	4.3	6.2	150	4.0
	С	7.79	8.61	1										

Voltage regulator diodes

BZX585-	Sel	vol	Working voltage V _Z (V) I _Z = 5 mA		erential ^r diff	resist _f (Ω)	ance	cur	rerse rent (µA)	С	mpera oeffici SZ (mV	ent	Diode capacit. C _d	Non-repeti. peak reverse current
		I _Z = 5 r			$I_Z = 1 \text{ mA}$ $I_Z = 5 \text{ mA}$				I _Z = 5 mA			(pF)[1]	I _{ZSM} (A)	
		Min	Max	Тур	Max	Тур	Max	Max	V _R (V)	Min	Тур	Max	Max	Max
9V1	В	8.92	9.28	20	100	2	10	0.5	6.0	3.8	5.2	7.0	120	3.0
	С	8.65	9.56											
10	В	9.80	10.20	20	150	2	10	0.2	7.0	4.5	6.0	8.0	110	3.0
	С	9.50	10.50											
11	В	10.78	11.22	25	150	2	10	0.1	8.0	5.4	6.9	9.0	110	2.5
	С	10.45	11.55											
12	В	11.76	12.24	25	150	2	10	0.1	8.0	6.0	7.9	10.0	105	2.5
	С	11.40	12.60											
13	В	12.74	13.26	25	170	2	10	0.1	8.0	7.0	8.8	11.0	105	2.5
	С	12.35	13.65											
15	В	14.70	15.30	25	200	3	15	0.05	10.5	9.2	10.7	13.0	100	2.0
	С	14.25	15.75											
16	В	15.68	16.32	50	200	10	40	0.05	11.2	10.4	12.4	14.0	90	1.5
	С	15.20	16.80											
18	В	17.64	18.36	50	225	10	45	0.05	12.6	12.4	14.4	16.0	80	1.5
	С	17.10	18.90											
20	В	19.60	20.40	60	225	15	55	0.05	14.0	14.4	16.4	18.0	70	1.5
	С	19.00	21.00											
22	В	21.56	22.44	60	250	20	55	0.05	15.4	16.4	18.4	20.0	60	1.25
	С	20.90	23.10											
24	В	23.52	24.48	60	250	25	70	0.05	16.8	18.4	20.4	22.0	55	1.25
	С	22.80	25.20											

^[1] f = 1 MHz; V_R = 0 V [2] t_p = 100 μ s; square wave; t_j = 25 °C before surge

Voltage regulator diodes

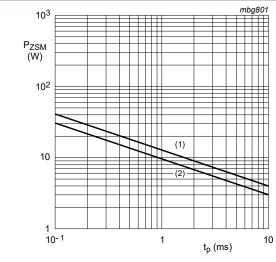
Table 9. Electrical characteristics per type: BZX585-B27 to BZX585-C75

BZX585-	Sel	Wo vol	rking Itage (V)		rential ^r diff	resist		Rev cur	rerse rent (µA)	coeff	peratur icient nV/K)	'e	Diode capacit. C _d	Non-repeti. peak reverse current
		IZ = 2 r	I _Z = 2 mA		$I_Z = 0.5 \text{ mA}$ $I_Z = 2 \text{ mA}$				I _Z = 2 mA			(pF)[1]	I _{ZSM} (A)	
		Min	Max	Тур	Max	Тур	Max	Max	V _R (V)	Min	Тур	Max	Max	Max
27	В	26.46	27.54	65	300	25	80	0.05	18.9	21.4	23.4	25.3	50	1.0
	С	25.65	28.35											
30	В	29.40	30.60	70	300	30	80	0.05	21.0	24.4	26.6	29.4	50	1.0
	С	28.50	31.50											
33	В	32.34	33.66	75	325	35	80	0.05	23.1	27.4	29.7	33.4	45	0.9
	С	31.35	34.65											
36	В	35.28	36.72	80	350	35	90	0.05	25.2	30.4	33.0	37.4	45	0.8
	С	34.20	37.80											
39	В	38.22	39.78	80	350	40	130	0.05	27.3	33.4	36.4	41.2	45	0.7
	С	37.05	40.95											
43	В	42.14	43.86	85	375	45	150	0.05	30.1	37.6	41.2	46.6	40	0.6
	С	40.85	45.15											
47	В	46.06	47.94	85	375	50	170	0.05	32.9	42.0	46.1	51.8	40	0.5
	С	44.65	49.35											
51	В	49.98	52.02	90	400	60	180	0.05	35.7	46.6	51.0	57.2	40	0.4
	С	48.45	53.55											
56	В	54.88	57.12	100	425	70	200	0.05	39.2	52.2	57.0	63.8	40	0.3
	С	53.20	58.80											
62	В	60.76	63.24	120	450	80	215	0.05	43.4	58.8	64.4	71.6	35	0.3
	С	58.90	65.10											
68	В	66.64	69.36	150	475	90	240	0.05	47.6	65.6	71.7	79.8	35	0.25
	С	64.60	71.40											
75	В	73.50	76.50	170	500	95	255	0.05	52.5	73.4	80.2	88.6	35	0.2
	С	71.25	78.75											

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

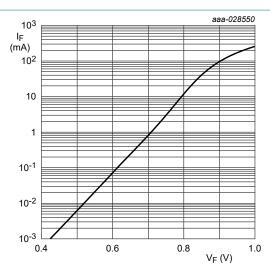
^[2] $t_p = 100 \mu s$; square wave; $t_j = 25 \degree C$ before surge

Voltage regulator diodes



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

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



 $T_i = 25 \, ^{\circ}C$

Fig. 2. Forward current as a function of forward voltage; typical values (BZX585-B/C2V4)

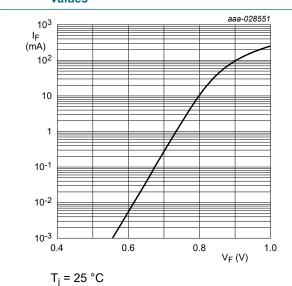
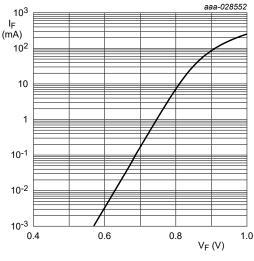


Fig. 3. Forward current as a function of forward voltage; typical values (BZX585-B/C6V8)



T_i = 25 °C

Fig. 4. Forward current as a function of forward voltage; typical values (BZX585-B/C7V5)

Voltage regulator diodes

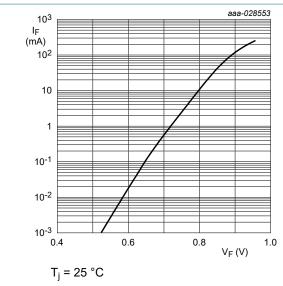


Fig. 5. Forward current as a function of forward voltage; typical values (BZX585-B/C75)

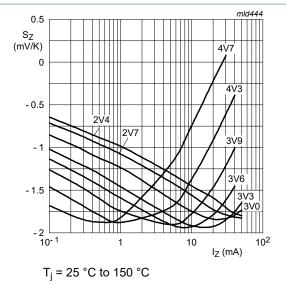


Fig. 6. Temperature coefficient as a function of working current; typical values (BZX585-B/C2V4 to B/C4V7)

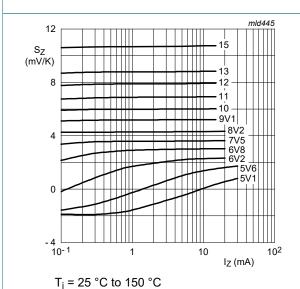


Fig. 7. Temperature coefficient as a function of working current; typical values (BZX585-B/C5V1 to B/C15)

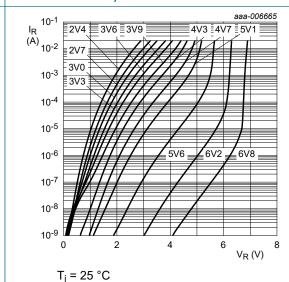
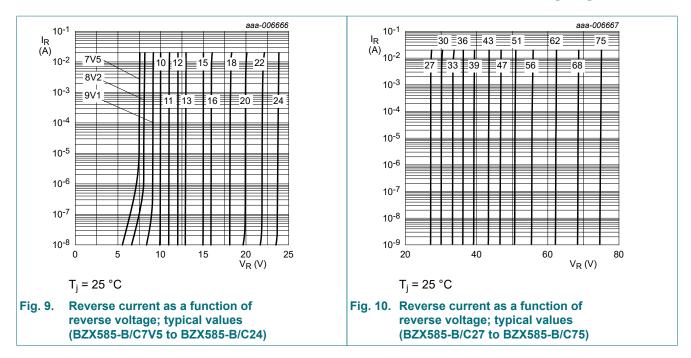


Fig. 8. Reverse current as a function of reverse voltage; typical values (BZX585-B/C2V4 to BZX585-B/C6V8)

8 / 13

Voltage regulator diodes

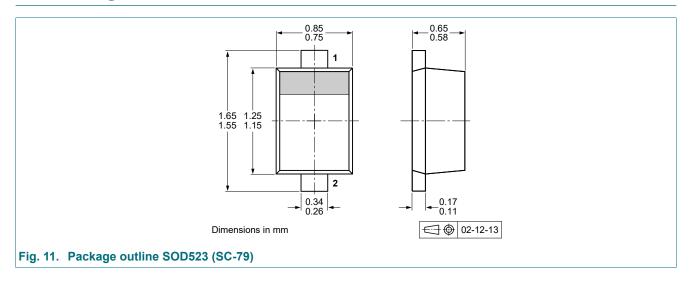


11. Test information

Quality information

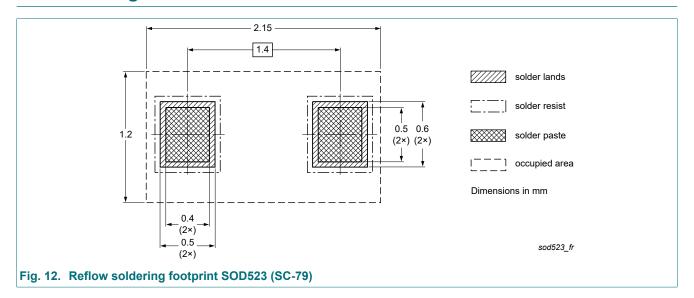
This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard Q101 - Stress test qualification for discrete semiconductors, and is suitable for use in automotive applications.

12. Package outline



Voltage regulator diodes

13. Soldering



Voltage regulator diodes

14. Revision history

Table 10. Revision history

Tubic To: Ite vicion iniciony				
Document ID	Release date	Data sheet status	Change notice	Supersedes
BZX585_SER v.6	20201204	Product data sheet	-	BZX585_SER v.5
Modifications:	Characteristics:	Figures added		
BZX585_SER v.5	20161011	Product data sheet	-	BZX585_SER v.4
BZX585_SER v.4	20040622	Product data sheet	-	BZX585_SER v.3
BZX585_SER v.3	20040326	Product data sheet	-	BZX585_SER v.2
BZX585_SER v.2	20001020	Product data sheet	-	BZX585_SER v.1
BZX585_SER v.1	20000606	Product data sheet	-	-

Voltage regulator diodes

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.

- 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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Voltage regulator diodes

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	4
11.	Test information	9
12.	Package outline	9
13.	Soldering	10
14.	Revision history	11
	Legal information	

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BZX585-B10,135 BZX585-B10,115 BZX585-B11,135 BZX585-B11,115 BZX585-B12,135 BZX585-B12,115 BZX585-B13,135 BZX585-B13,115 BZX585-B15,135 BZX585-B15,115 BZX585-B16,115 BZX585-B18,115 BZX585-B20,115 BZX585-B22,115 BZX585-B24,115 BZX585-B27,115 BZX585-B2V4,135 BZX585-B2V4,115 BZX585-B2V7,135 BZX585-B2V7,115 BZX585-B30,115 BZX585-B33,115 BZX585-B36,115 BZX585-B39,115 BZX585-B3V0,135 BZX585-B3V0,115 BZX585-B3V3,135 BZX585-B3V3,115 BZX585-B3V6,135 BZX585-B3V6,115 BZX585-B3V9,135 BZX585-B3V9,115 BZX585-B43,115 BZX585-B47,115 BZX585-B4V3,135 BZX585-B4V3,115 BZX585-B4V7,135 BZX585-B4V7,115 BZX585-B51,115 BZX585-B56,115 BZX585-B5V1,135 BZX585-B5V1,115 BZX585-B5V6,135 BZX585-B5V6,115 BZX585-B62,115 BZX585-B68,115 BZX585-B6V2,135 BZX585-B6V2,115 BZX585-B6V8,135 BZX585-B6V8,115 BZX585-B75,115 BZX585-B7V5,135 BZX585-B7V5,115 BZX585-B8V2,135 BZX585-B8V2,115 BZX585-B9V1,135 BZX585-B9V1,115 BZX585-C10,135 BZX585-C10,115 BZX585-C11,135 BZX585-C11,115 BZX585-C12,135 BZX585-C12,115 BZX585-C13,135 BZX585-C13,115 BZX585-C15,135 BZX585-C15,115 BZX585-C16,115 BZX585-C18,115 BZX585-C20,115 BZX585-C22,115 BZX585-C24,115 BZX585-C27,115 BZX585-C2V4,135 BZX585-C2V4,115 BZX585-C2V7,135 BZX585-C2V7,115 BZX585-C30,115 BZX585-C33,115 BZX585-C36,115 BZX585-C39,115 BZX585-C3V0,135 BZX585-C3V0,115 BZX585-C3V3,135 BZX585-C3V3,115 BZX585-C3V6,135 BZX585-C3V6,115 BZX585-C3V9,135 BZX585-C3V9,115 BZX585-C43,115 BZX585-C47,115 BZX585-C4V3,135 BZX585-C4V3,115 BZX585-C4V7,135 BZX585-C4V7,115 BZX585-C51,115 BZX585-C56,115 BZX585-C5V1,135 BZX585-C5V1,115 BZX585-C5V6,135