



BZX384-A series

Voltage regulator diodes

Rev. 1 — 3 February 2022

Product data sheet

1. General description

Low-power voltage regulator diodes in a small SOD323 (SC-76) Surface-Mounted Device (SMD) plastic package.

The diodes are available in the normalized E24 $\pm 1\%$ (BZX384-A) tolerance range. The series includes 37 breakdown voltages with nominal working voltages from 2.4 V to 75 V.

2. Features and benefits

- Total power dissipation: ≤ 300 mW
- Very tight tolerance series: $\pm 1\%$
- Working voltage range: nominal 2.4 V to 75 V (E24 range)
- Non-repetitive peak reverse power dissipation: ≤ 40 W

3. Applications

- General regulation functions

4. Quick reference data

Table 1. Quick reference data


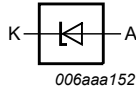
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	$I_F = 10$ mA	[1] -	-	0.9	V
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[2] -	-	300	mW

[1] Pulse test: $t_p \leq 100$ μ s; $\delta \leq 0.02$.

[2] 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	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
BZX384-A series	SC-76	plastic surface-mounted package; 2 leads	SOD323

7. Marking

Table 4. Marking codes

Type number	Marking code	Type number	Marking code	Type number	Marking code
BZX384-A2V4	2B	BZX384-A8V2	28	BZX384-A30	5F
BZX384-A2V7	2U	BZX384-A9V1	29	BZX384-A33	4R
BZX384-A3V0	2V	BZX384-A10	3X	BZX384-A36	4S
BZX384-A3V3	2W	BZX384-A11	32	BZX384-A39	4T
BZX384-A3V6	2X	BZX384-A12	33	BZX384-A43	4U
BZX384-A3V9	2Y	BZX384-A13	34	BZX384-A47	4V
BZX384-A4V3	2Z	BZX384-A15	35	BZX384-A51	4W
BZX384-A4V7	22	BZX384-A16	36	BZX384-A56	4X
BZX384-A5V1	23	BZX384-A18	37	BZX384-A62	4Y
BZX384-A5V6	24	BZX384-A20	38	BZX384-A68	4Z
BZX384-A6V2	25	BZX384-A22	39	BZX384-A75	42
BZX384-A6V8	26	BZX384-A24	4N	-	-
BZX384-A7V5	27	BZX384-A27	4P	-	-

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		-	250	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
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$	[2] -	300	mW
T_j	junction temperature		-	150	°C
T_{amb}	ambient temperature		-65	+150	°C
T_{stg}	storage temperature		-65	+150	°C

[1] $t_p = 100\text{ }\mu\text{s}$; square wave; $T_j = 25\text{ °C}$ prior to surge.

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

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] -	-	415	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[2] -	-	110	K/W

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

[2] Soldering point of cathode tab.

10. Characteristics

Table 7. Characteristics
 $T_j = 25\text{ °C}$ unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	$I_F = 10\text{ mA}$	[1] -	-	0.9	V
		$I_F = 100\text{ mA}$	[1] -	-	1.1	V

[1] Pulse test: $t_p \leq 100\text{ }\mu\text{s}$; $\delta \leq 0.02$.

Table 8. Characteristics per type; BZX384-A2V4 to BZX384-A24
 $T_j = 25\text{ °C}$ unless otherwise specified.

BZX384 -xxx	Sel	Working voltage V_Z (V) $I_Z = 5\text{ mA}$		Maximum differential resistance r_{dif} (Ω)		Reverse current I_R (μA)		Temperature coefficient S_Z (mV/K) $I_Z = 5\text{ mA}$		Diode capacitance C_d (pF) [1]	Non-repetitive peak reverse current I_{ZSM} (A) [2]
		Min	Max	$I_Z = 1\text{ mA}$	$I_Z = 5\text{ mA}$	Max	V_R (V)	Min	Max	Max	Max
2V4	A	2.37	2.43	600	100	50	1	-3.5	0.0	450	6
2V7	A	2.67	2.73	600	100	20	1	-3.5	0.0	450	6
3V0	A	2.97	3.03	600	95	10	1	-3.5	0.0	450	6
3V3	A	3.26	3.34	600	95	5	1	-3.5	0.0	450	6
3V6	A	3.56	3.64	600	90	5	1	-3.5	0.0	450	6
3V9	A	3.86	3.94	600	90	3	1	-3.5	0.0	450	6
4V3	A	4.25	4.35	600	90	3	1	-3.5	0.0	450	6
4V7	A	4.65	4.75	500	80	3	2	-3.5	0.2	300	6
5V1	A	5.04	5.16	480	60	2	2	-2.7	1.2	300	6
5V6	A	5.54	5.66	400	40	1	2	-2.0	2.5	300	6
6V2	A	6.13	6.27	150	10	3	4	0.4	3.7	200	6
6V8	A	6.73	6.87	80	15	2	4	1.2	4.5	200	6
7V5	A	7.42	7.58	80	15	1	5	2.5	5.3	150	4
8V2	A	8.11	8.29	80	15	0.7	5	3.2	6.2	150	4
9V1	A	9.00	9.20	100	15	0.5	6	3.8	7.0	150	3
10	A	9.90	10.10	150	20	0.2	7	4.5	8.0	90	3
11	A	10.89	11.11	150	20	0.1	8	5.4	9.0	85	2.5
12	A	11.88	12.12	150	25	0.1	8	6.0	10.0	85	2.5
13	A	12.87	13.13	170	30	0.1	8	7.0	11.0	80	2.5
15	A	14.85	15.15	200	30	0.05	10.5	9.2	13.0	75	2.0
16	A	15.84	16.16	200	40	0.05	11.2	10.4	14.0	75	1.5
18	A	17.82	18.18	225	45	0.05	12.6	12.4	16.0	70	1.5
20	A	19.80	20.20	225	55	0.05	14.0	14.4	18.0	60	1.5
22	A	21.78	22.22	250	55	0.05	15.4	16.4	20.0	60	1.25
24	A	23.76	24.24	250	70	0.05	16.8	18.4	22.0	55	1.25

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

[2] $t_p = 100\text{ }\mu\text{s}$; square wave; $T_j = 25\text{ °C}$

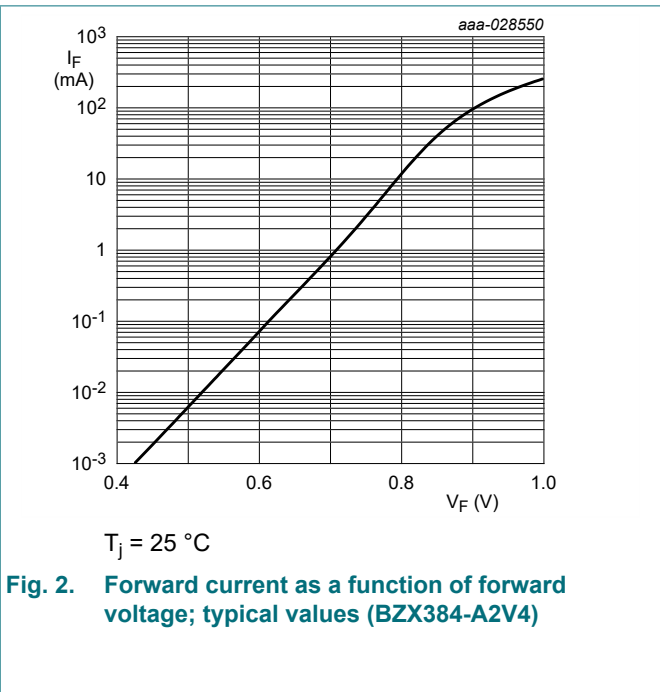
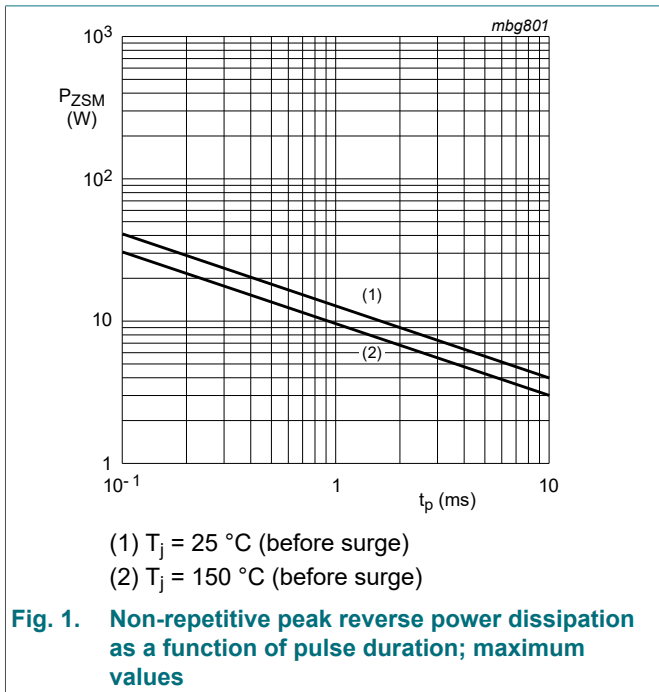
Table 9. Characteristics per type; BZX384-A27 to BZX384-A75

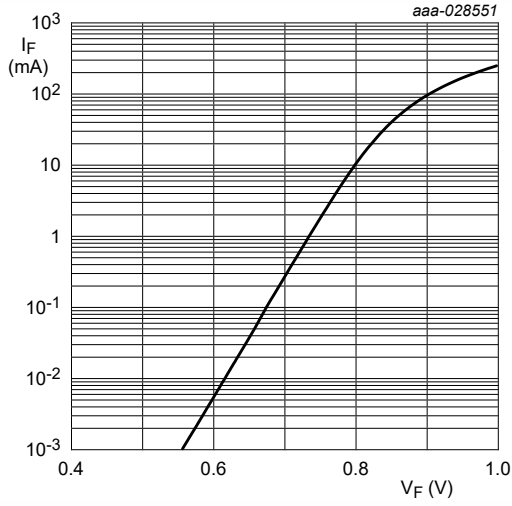
$T_j = 25\text{ °C}$ unless otherwise specified.

BZX384 -xxx	Sel	Working voltage V_Z (V) $I_Z = 2\text{ mA}$		Maximum differential resistance r_{dif} (Ω)		Reverse current I_R (μA)		Temperature coefficient S_Z (mV/K) $I_Z = 2\text{ mA}$		Diode capacitance C_d (pF) [1]	Non-repetitive peak reverse current I_{ZSM} (A) [2]
		Min	Max	$I_Z = 0.5\text{ mA}$	$I_Z = 2\text{ mA}$	Max	V_R (V)	Min	Max	Max	Max
27	A	26.73	27.27	300	80	0.05	18.9	21.4	25.3	50	1
30	A	29.70	30.30	300	80	0.05	21.0	24.4	29.4	50	1
33	A	32.67	33.33	325	80	0.05	23.1	27.4	33.4	45	0.9
36	A	35.64	36.36	350	90	0.05	25.2	30.4	37.4	45	0.8
39	A	38.61	39.39	350	130	0.05	27.3	33.4	41.2	45	0.7
43	A	42.57	43.43	375	150	0.05	30.1	37.6	46.6	40	0.6
47	A	46.53	47.47	375	170	0.05	32.9	42.0	51.8	40	0.5
51	A	50.49	51.51	400	180	0.05	35.7	46.6	57.2	40	0.4
56	A	55.44	56.56	425	200	0.05	39.2	52.2	63.8	40	0.3
62	A	61.38	62.62	450	215	0.05	43.4	58.8	71.6	35	0.3
68	A	67.32	68.68	475	240	0.05	47.6	65.6	79.8	35	0.25
75	A	74.25	75.75	500	255	0.05	52.5	73.4	88.6	35	0.20

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

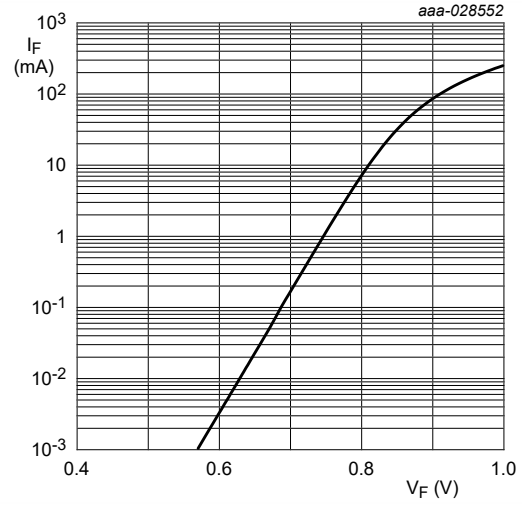
[2] $t_p = 100\text{ }\mu\text{s}$; square wave; $T_j = 25\text{ °C}$





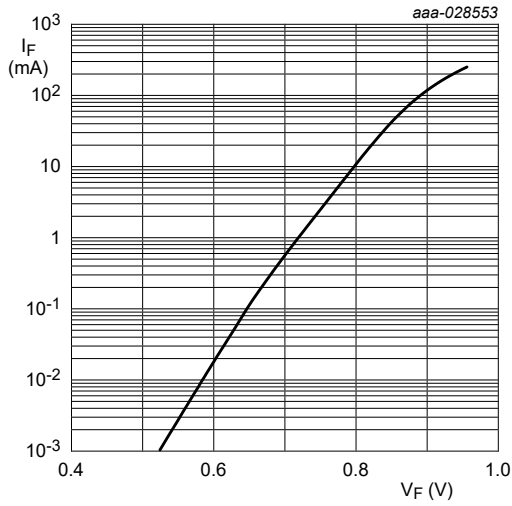
$T_j = 25\text{ }^\circ\text{C}$

Fig. 3. Forward current as a function of forward voltage; typical values (BZX384-A6V8)



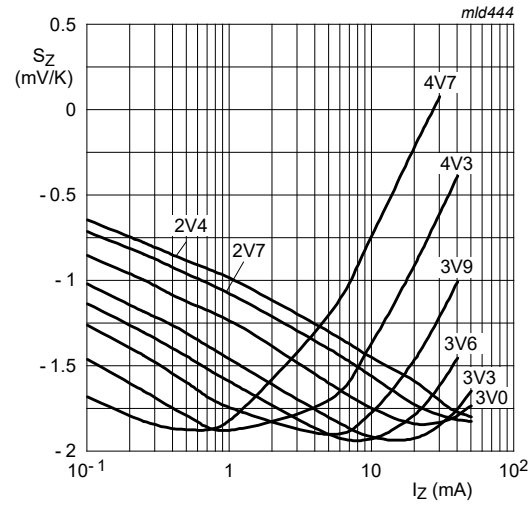
$T_j = 25\text{ }^\circ\text{C}$

Fig. 4. Forward current as a function of forward voltage; typical values (BZX384-A7V5)



$T_j = 25\text{ }^\circ\text{C}$

Fig. 5. Forward current as a function of forward voltage; typical values (BZX384-A75)



$T_j = 25\text{ }^\circ\text{C to } 150\text{ }^\circ\text{C}$

Fig. 6. Temperature coefficient as a function of working current; typical values (BZX384-A2V4 to BZX384-A4V7)

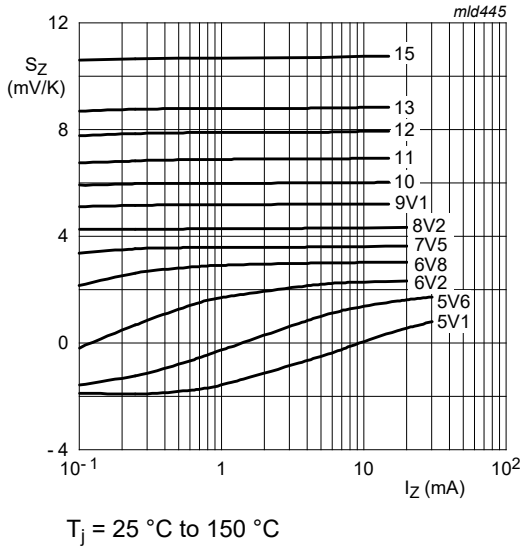


Fig. 7. Temperature coefficient as a function of working current; typical values (BZX384-A5V1 to BZX384-A15)

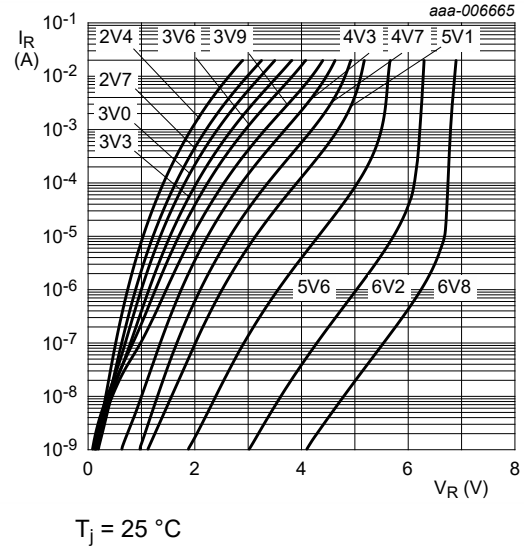


Fig. 8. Reverse current as a function of reverse voltage; typical values (BZX384-A2V4 to BZX384-A6V8)

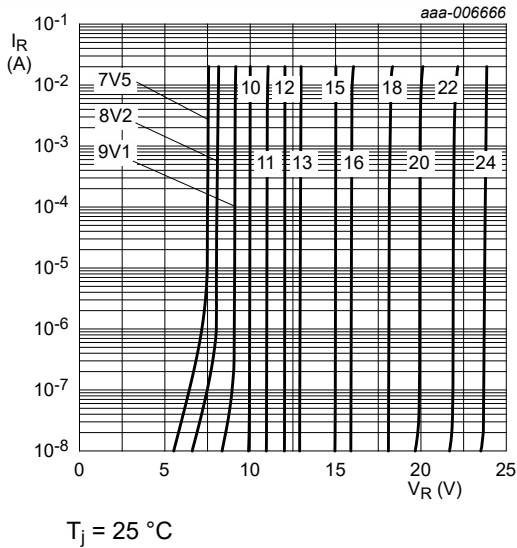


Fig. 9. Reverse current as a function of reverse voltage; typical values (BZX384-A7V5 to BZX384-A24)

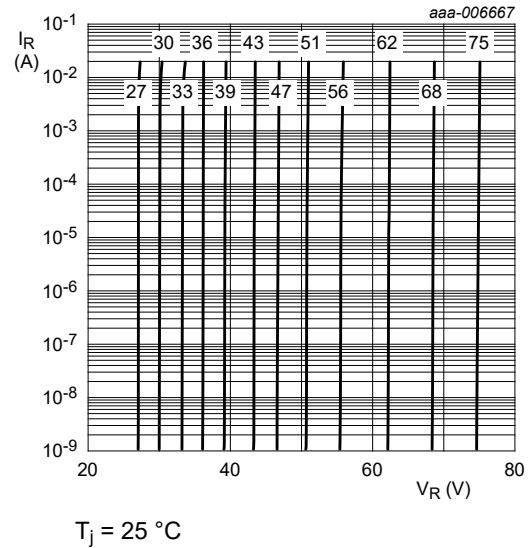
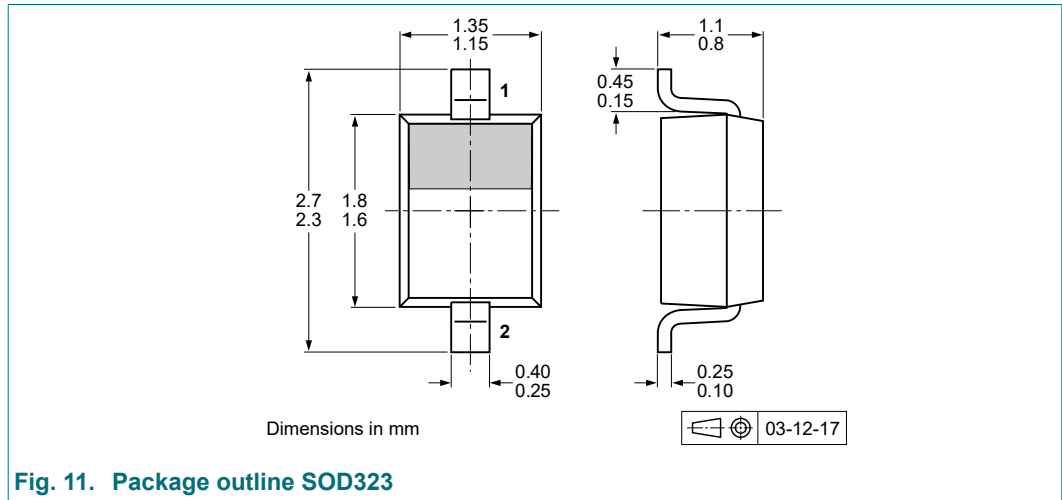
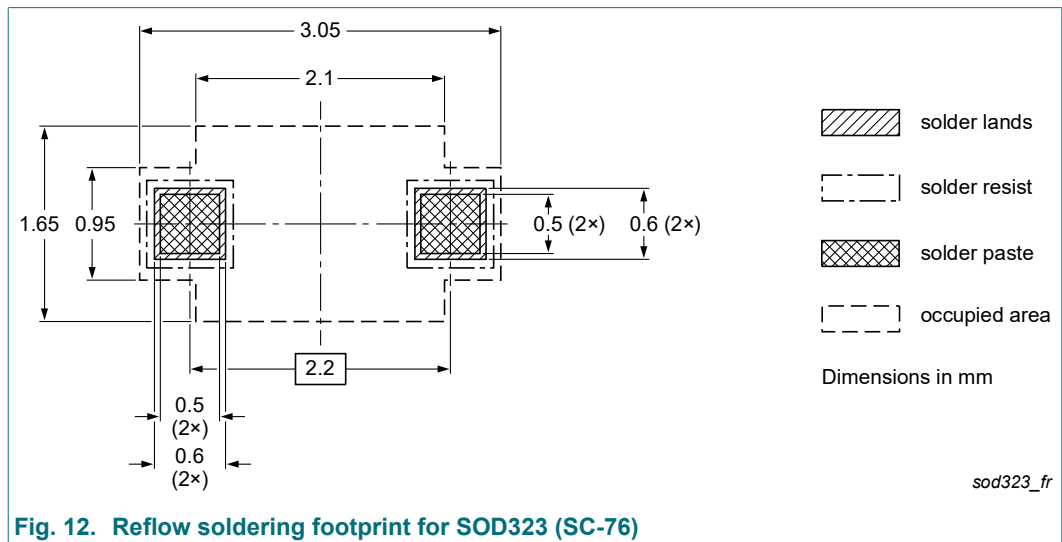


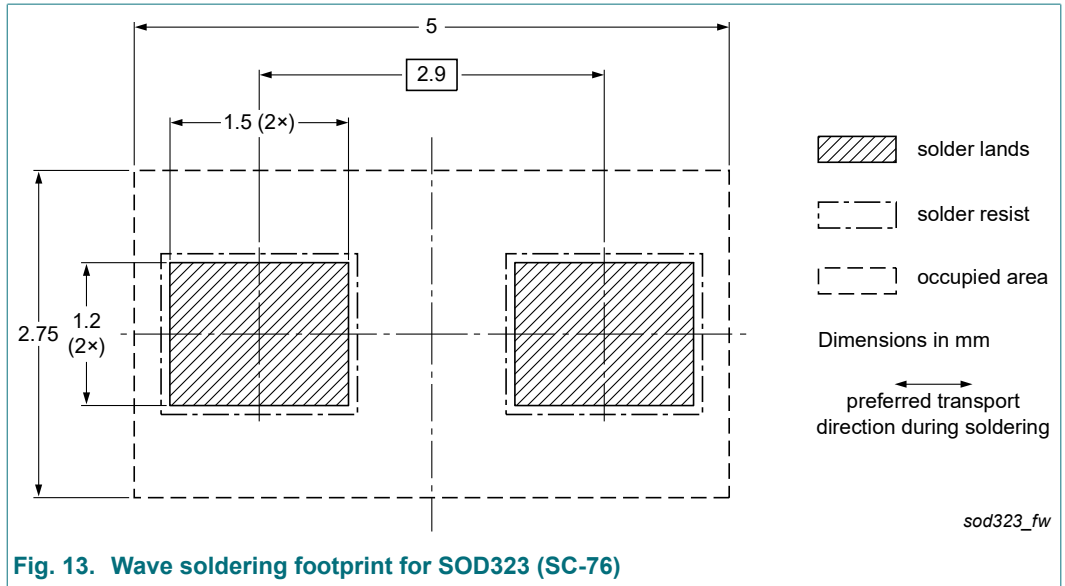
Fig. 10. Reverse current as a function of reverse voltage; typical values (BZX384-A27 to BZX384-A75)

11. Package outline



12. Soldering





13. Revision history

Table 10. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BZX384-A_SER v.1	20220203	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.

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