

Single Zener diodes

Rev. 4 — 28 November 2011

Product data sheet

1. Product profile

1.1 General description

General-purpose Zener diodes in a SOD27 (SC-40) small hermetically sealed glass package.

1.2 Features and benefits

- Total power dissipation: P_{tot} ≤ 500 mW
- Low differential resistance
- Low leakage current

1.3 Applications

General regulation functions

1.4 Quick reference data

Table 1. Quick reference data

 $T_i = 25$ °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
V_{F}	forward voltage	$I_F = 200 \text{ mA}$	<u>[1]</u> -	-	1.5	V

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

2. Pinning information

Table 2.	Pinning		
Pin	Description	Simplified outline	Graphic symbol
1	cathode	<u>[1]</u>	
2	anode	k a	1 2

^[1] The marking band indicates the cathode.



006aaa152

3. Ordering information

Table 3. Ordering information

Type number	Package							
	Name	Description	Version					
NZX2V1B to NZX36X[1]	SC-40	hermetically sealed glass package; axial leaded; 2 leads	SOD27					

^[1] The series consists of 112 types with nominal working voltages from 2.1 V to 36 V.

4. Marking

Table 4. Marking codes

Type number	Marking code
NZX2V1B to NZX36X	the diodes are type branded

5. Limiting values

Table 5. Limiting values

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

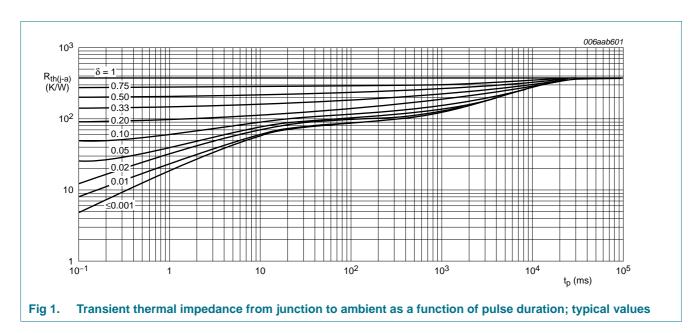
Symbol	Parameter	Conditions	Min	Max	Unit
I_{F}	forward current		-	250	mA
P _{tot}	total power dissipation	$T_{tp} \le 25 ^{\circ}C$	-	500	mW
T _j	junction temperature		-	175	°C
T _{amb}	ambient temperature		–55	+175	°C
T _{stg}	storage temperature		-65	+175	°C

6. 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] -	-	380	K/W
R _{th(j-t)}	thermal resistance from junction to tie-point		[1] -	-	300	K/W

^[1] Device mounted on an FR4 Printed-Circuit Board (PCB) without metallization pad; maximum lead length 8 mm.



7. Characteristics

Table 7. Characteristics

 $T_i = 25 \, ^{\circ}\text{C}$ unless otherwise specified.

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
V_{F}	forward voltage	$I_F = 200 \text{ mA}$	<u>[1]</u> _	-	1.5	V

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

Table 8. Characteristics per type; NZX2V1B to NZX18C

 $T_j = 25$ °C unless otherwise specified.

NZXxxx	Sel	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		Reverse I _R (μA)	current	
		$I_Z = 5 \text{ m/s}$	4	$I_Z = 5 \text{ mA}$		
		Min	Max	Max	Max	V _R (V)
2V1	В	2.0	2.2	100	5	0.5
2V4	Α	2.3	2.5	100	50	1
	В	2.4	2.6			
2V7	Α	2.5	2.7	100	20 1	1
	В	2.6	2.8			
	С	2.7	2.9			
3V0	Α	2.8	3.0	100	10	1
	В	2.9	3.1			
	С	3.0	3.2			
3V3	Α	3.1	3.3	100	5	1
	В	3.2	3.4			
	С	3.3	3.5			

Table 8. Characteristics per type; NZX2V1B to NZX18C ...continued $T_j = 25$ °C unless otherwise specified.

NZXxxx	Sel	V _Z (V)	yoltage	Differential resistance $r_{dif}(\Omega)$	Reverse (I _R (μA)	current
		$I_Z = 5 \text{ m/s}$		$I_Z = 5 \text{ mA}$		
		Min	Max	Max	Max	V _R (V)
3V6	Α	3.4	3.6	100	5	1
	В	3.5	3.7			
	С	3.6	3.8			
3V9	Α	3.7	3.9	100	3	1
	В	3.8	4.0			
	С	3.9	4.1			
4V3	Α	4.0	4.2	100	3	1
	В	4.1	4.3			
	С	4.2	4.4			
	D	4.3	4.5			
4V7	Α	4.4	4.6	100	3	2
	В	4.5	4.7			
	С	4.6	4.8			
	D	4.7	4.9			
5V1	Α	4.8	5.0	100	2	2
	В	4.9	5.1			
	С	5.0	5.2			
	D	5.1	5.3			
5V6	Α	5.2	5.5	40	1	2
	В	5.3	5.6			
	С	5.4	5.7			
	D	5.5	5.8			
	Е	5.6	5.9			
6V2	Α	5.7	6.0	15	3	4
	В	5.8	6.1			
	С	6.0	6.3			
	D	6.1	6.4			
	Е	6.3	6.6			
6V8	Α	6.4	6.7	15	2	4
	В	6.6	6.9			
	С	6.7	7.0			
	D	6.9	7.2			

Table 8. Characteristics per type; NZX2V1B to NZX18C ...continued $T_j = 25$ °C unless otherwise specified.

NZXxxx	Sel	Working V _Z (V)	voltage	Differential resistance	Reverse I _R (μA)	current	
		1 5 4		r _{dif} (Ω)			
		I _Z = 5 mA		$I_Z = 5 \text{ mA}$	NA	V OO	
, ,		Min	Max	Max	Max	V _R (V)	
7V5	A	7.0	7.3	15	15	1	5
	В	7.2	7.6				
	С	7.3	7.7				
	D	7.5	7.9				
	X	7.07	7.45				
8V2	Α	7.7	8.1	20	0.7	5	
	В	7.9	8.3				
	С	8.1	8.5				
	D	8.3	8.7				
9V1		20	0.5	6			
	В	8.7	9.1				
	С	8.9	9.3				
	D	9.1	9.5				
	Е	9.3	9.7				
10	Α	9.5	9.9	25	0.2	7	
	В	9.7	10.1				
	С	9.9	10.3				
	D	10.2	10.6				
11	Α	10.4	10.8	25	0.1	8	
	В	10.7	11.1				
	С	10.9	11.3				
	D	11.1	11.6				
12	Α	11.4	11.9	35	0.1	8	
	В	11.6	12.1				
	С	11.9	12.4				
	D	12.2	12.7				
	X	11.44	12.03				
13	Α	12.4	12.9	35	0.1	8	
	В	12.6	13.1				
	С	12.9	13.4				
14	Α	13.2	13.7	35	0.05	9.8	
	В	13.5	14.0				
	С	13.8	14.3				

 Table 8.
 Characteristics per type; NZX2V1B to NZX18C ...continued

 $T_j = 25$ °C unless otherwise specified.

NZXxxx	Sel	Working V _Z (V)	voltage	Differential resistance $r_{dif}(\Omega)$	stance I _R (μA)	
		$I_Z = 5 \text{ mA}$	$I_Z = 5 \text{ mA}$			
		Min	Max	Max	Max	V _R (V)
15	A 14.1 14.7 40	0.05	10.5			
	В	14.5	15.1			
	С	14.9	15.5			
	X	14.35	15.09			
16	Α	15.3	15.9	45	0.05 11.2	11.2
	В	15.7	16.5			
	С	16.3	17.1			
18	Α	16.9	17.7	55	0.05 12.6	
	В	17.5	18.3			
	С	18.1	19.0			

Table 9. Characteristics per type; NZX20A to NZX36X $T_j = 25 \, ^{\circ}$ C unless otherwise specified. Table 9.

NZXxxx	V _Z (V) resista	Differential resistance $r_{dif}(\Omega)$	Reverse I _R (μA)	current					
		$I_Z = 2 \text{ mA}$		I _Z = 2 mA					
		Min	Max	Max	Max	V _R (V)			
20	Α	18.8	19.7	60	0.05	14			
	В	19.5	20.4						
	С	20.2	21.2						
22	Α	20.9	21.9	65	0.05	15.4			
	В	21.6	22.6						
	С	22.3	23.3						
24	Α	22.9	24.0	70	0.05	16.8			
	В	23.6	24.7						
	С	24.3	25.5						
	X	22.61	23.77						
27	Α	25.2	26.6	80	0.05 1	18.9			
	В	26.2	27.6						
	С	27.2	28.6						
	X	26.99	28.39						
30	Α	28.2	29.6	100	0.05	21			
	В	29.2	30.6						
	С	30.2	31.6						
	X	29.02	30.51						
33	Α	31.2	32.6	120	0.05	23.1			
	В	32.2	33.6						
	С	33.2	34.5						
36	Α	34.2	35.7	140	0.05	25.2			
	В	35.3	36.8						
	С	36.4	38.0						
	Χ	35.36	37.19						

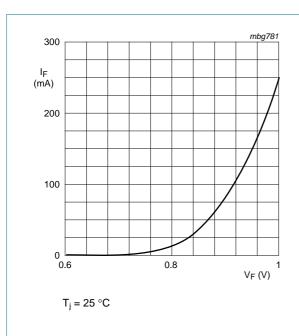
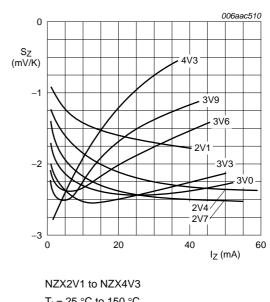
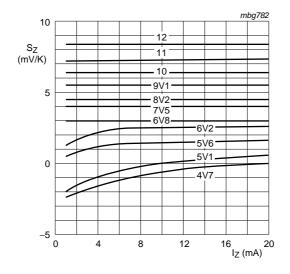


Fig 2. Forward current as a function of forward voltage; typical values



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

Fig 3. Temperature coefficient as a function of working current; typical values

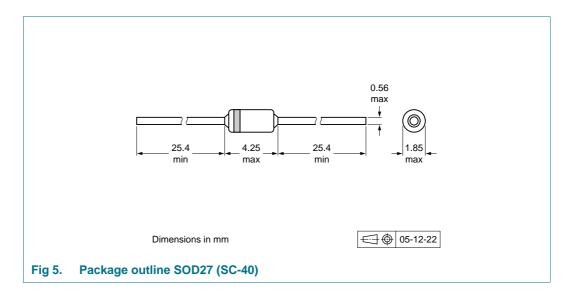


NZX4V7 to NZX12

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

Fig 4. Temperature coefficient as a function of working current; typical values

8. Package outline



9. Packing information

Table 10. Packing methods

The indicated -xxx are the last three digits of the 12NC ordering code.[1]

Type number[2]	Package	Description	Packing	Packing quantity	
			5000	10000	
NZX2V1B to NZX36X	SOD27	26 mm tape ammopack, axial	-143	-	
		52 mm tape ammopack, axial	-	-133	
		52 mm reel pack, axial	-	-113	

^[1] For further information and the availability of packing methods, see <u>Section 12</u>.

^[2] The series consists of 112 types with nominal working voltages from 2.1 V to 36 V.

10. Revision history

Table 11. Revision history

	•			
Document ID	Release date	Data sheet status	Change notice	Supersedes
NZX_SER v.4	20111128	Product data sheet	-	NZX_SER v.3
Modifications:	Section 1.2: corrected.			
	 Section 11 "L 	<u>egal information"</u> : updated.		
NZX_SER v.3	20110121	Product data sheet	-	NZX_SER v.2
NZX_SER v.2	20090603	Product data sheet	-	NZX_SER v.1
NZX_SER v.1	20080724	Product data sheet	-	-

11. Legal information

11.1 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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- [2] The term 'short data sheet' is explained in section "Definitions"
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NZX_SEF

Nexperia NZX series

Single Zener diodes

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