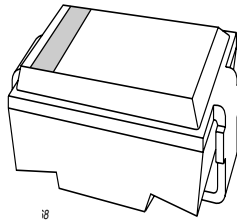


# DATA SHEET



## **BZG03 series** Voltage regulator diodes

Preliminary specification  
Supersedes data of October 1993

1996 Jun 07

## Voltage regulator diodes

## BZG03 series

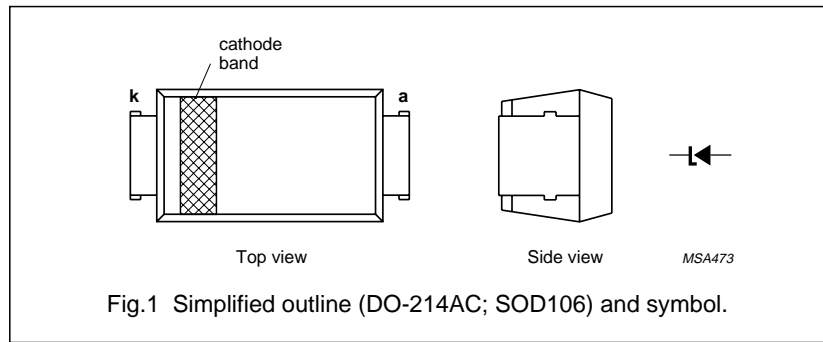
### FEATURES

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- UL 94V-O classified plastic package
- Zener working voltage range: 10 to 270 V for 35 types
- Supplied in 12 mm embossed tape.

### DESCRIPTION

DO-214AC surface mountable package with glass passivated chip.

The well-defined void-free case is of a transfer-moulded thermo-setting plastic.



### LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$P_{tot}$	total power dissipation	$T_{tp} = 100\text{ °C}$ ; see Fig.2	–	3.00	W
$P_{tot}$	total power dissipation	$T_{amb} = 50\text{ °C}$ ; see Fig.2; device mounted on an $Al_2O_3$ PCB (see Fig.5)	–	1.25	W
$P_{ZSM}$	non-repetitive peak reverse power dissipation	$t_p = 100\text{ }\mu\text{s}$ ; square pulse; $T_j = 25\text{ °C}$ prior to surge; see Fig.3	–	600	W
$T_{stg}$	storage temperature		–65	+175	°C
$T_j$	junction temperature		–65	+175	°C

## Voltage regulator diodes

## BZG03 series

**ELECTRICAL CHARACTERISTICS****Total series**T<sub>j</sub> = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 0.5 A; see Fig.4	1.2	V

**Per type**T<sub>j</sub> = 25 °C unless otherwise specified.

TYPE No. SUFFIX (1)	WORKING VOLTAGE			DIFFERENTIAL RESISTANCE		TEMPERATURE COEFFICIENT		TEST CURRENT  I <sub>Z</sub> (mA)	REVERSE CURRENT at REVERSE VOLTAGE	
	V <sub>Z</sub> (V) at I <sub>Z</sub>			r <sub>dif</sub> (Ω) at I <sub>Z</sub>		S <sub>Z</sub> (%/K) at I <sub>Z</sub>			I <sub>R</sub> (μA)	V <sub>R</sub> (V)
	MIN.	NOM.	MAX.	TYP.	MAX.	MIN.	MAX.		MAX.	
C10	9.4	10	10.6	2	4	0.05	0.09	50	7	7.5
C11	10.4	11	11.6	4	7	0.05	0.10	50	4	8.2
C12	11.4	12	12.7	4	7	0.05	0.10	50	3	9.1
C13	12.4	13	14.1	5	10	0.05	0.10	50	2	10
C15	13.8	15	15.6	5	10	0.05	0.10	50	1	11
C16	15.3	16	17.1	6	15	0.06	0.11	25	1	12
C18	16.8	18	19.1	6	15	0.06	0.11	25	1	13
C20	18.8	20	21.2	6	15	0.06	0.11	25	1	15
C22	20.8	22	23.3	6	15	0.06	0.11	25	1	16
C24	22.8	24	25.6	7	15	0.06	0.11	25	1	18
C27	25.1	27	28.9	7	15	0.06	0.11	25	1	20
C30	28	30	32	8	15	0.06	0.11	25	1	22
C33	31	33	35	8	15	0.06	0.11	25	1	24
C36	34	36	38	21	40	0.06	0.11	10	1	27
C39	37	39	41	21	40	0.06	0.11	10	1	30
C43	40	43	46	24	45	0.07	0.12	10	1	33
C47	44	47	50	24	45	0.07	0.12	10	1	36
C51	48	51	54	25	60	0.07	0.12	10	1	39
C56	52	56	60	25	60	0.07	0.12	10	1	43
C62	58	62	66	25	80	0.08	0.13	10	1	47
C68	64	68	72	25	80	0.08	0.13	10	1	51
C75	70	75	79	30	100	0.08	0.13	10	1	56
C82	77	82	87	30	100	0.08	0.13	10	1	62
C91	85	91	96	60	200	0.09	0.13	5	1	68
C100	94	100	106	60	200	0.09	0.13	5	1	75
C110	104	110	116	80	250	0.09	0.13	5	1	82
C120	114	120	127	80	250	0.09	0.13	5	1	91

## Voltage regulator diodes

## BZG03 series

TYPE No. SUFFIX (1)	WORKING VOLTAGE			DIFFERENTIAL RESISTANCE		TEMPERATURE COEFFICIENT		TEST CURRENT $I_Z$ (mA)	REVERSE CURRENT at REVERSE VOLTAGE	
	$V_Z$ (V) at $I_Z$			$r_{dif}$ ( $\Omega$ ) at $I_Z$		$S_Z$ (%/K) at $I_Z$			$I_R$ ( $\mu$ A)	$V_R$ (V)
	MIN.	NOM.	MAX.	TYP.	MAX.	MIN.	MAX.	MAX.		
C130	124	130	141	110	300	0.09	0.13	5	1	100
C150	138	150	156	130	300	0.09	0.13	5	1	110
C160	153	160	171	150	350	0.09	0.13	5	1	120
C180	168	180	191	180	400	0.09	0.13	5	1	130
C200	188	200	212	200	500	0.09	0.13	5	1	150
C220	208	220	233	350	750	0.09	0.13	2	1	160
C240	228	240	256	400	850	0.09	0.13	2	1	180
C270	251	270	289	450	1000	0.09	0.13	2	1	200

**Note**

- To complete the type number the suffix is added to the basic type number, e.g. BZG03-C130.

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point		25	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	100	K/W
		note 2	150	K/W

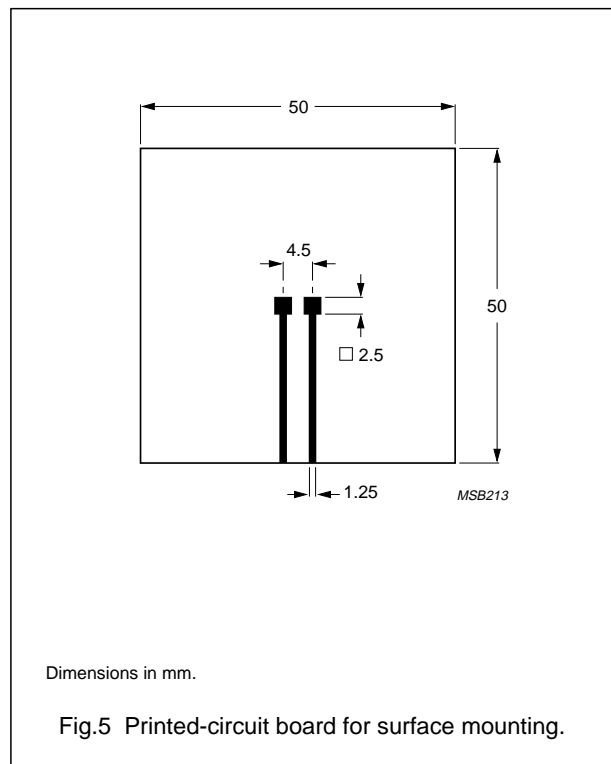
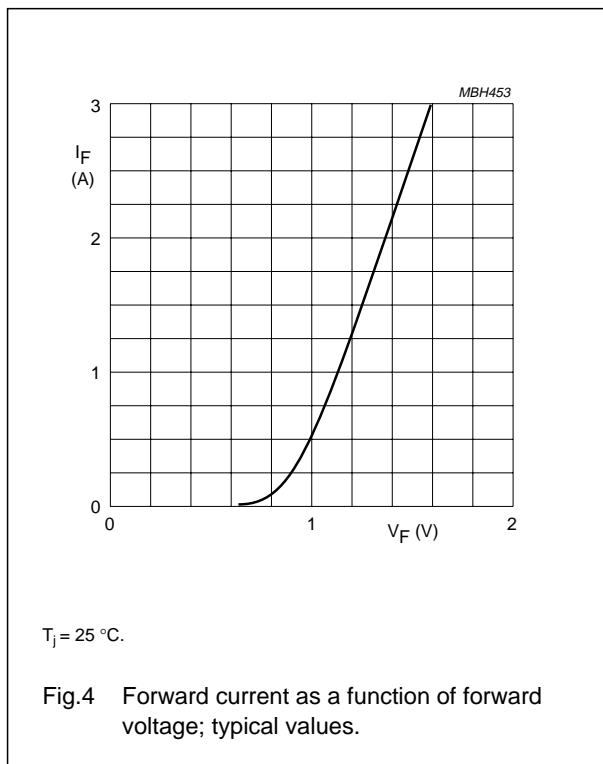
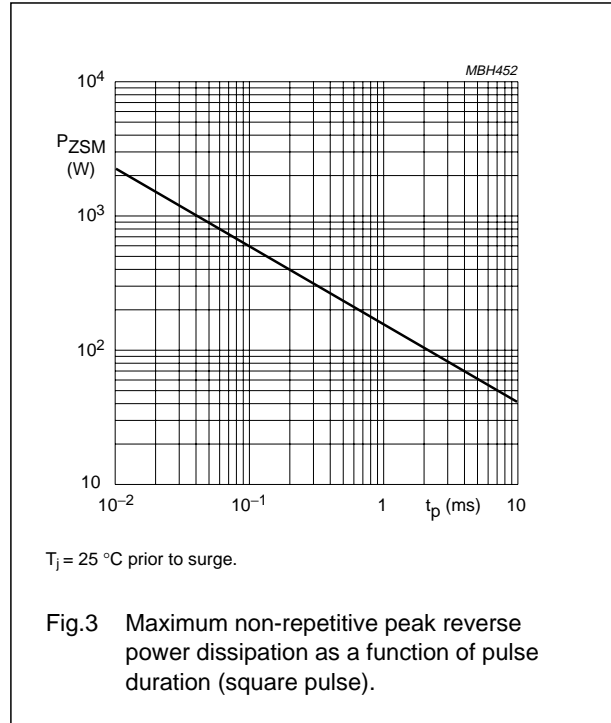
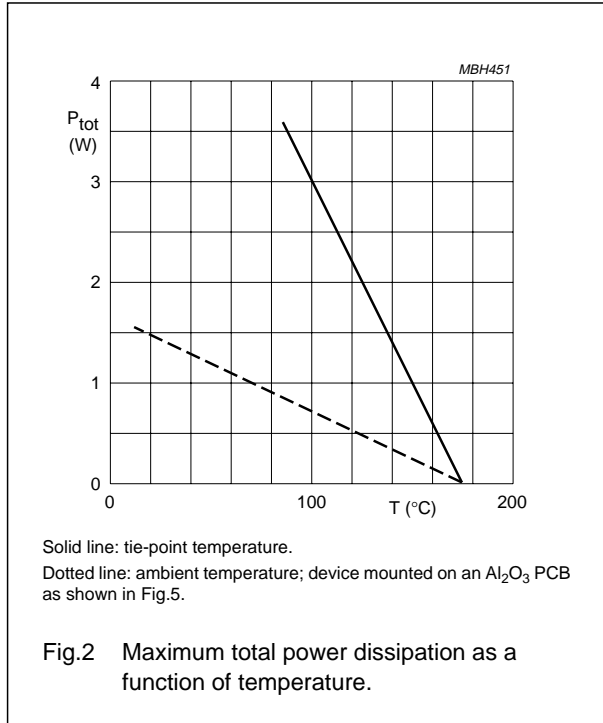
**Notes**

- Device mounted on an  $Al_2O_3$  printed-circuit board, 0.7 mm thick; thickness of Cu-layer  $\geq 35\ \mu\text{m}$ , see Fig.5.
- Device mounted on an epoxy-glass printed-circuit board, 1.5 mm thick; thickness of Cu-layer  $\geq 40\ \mu\text{m}$ , see Fig.5.  
For more information please refer to the "General Part of associated Handbook".

Voltage regulator diodes

BZG03 series

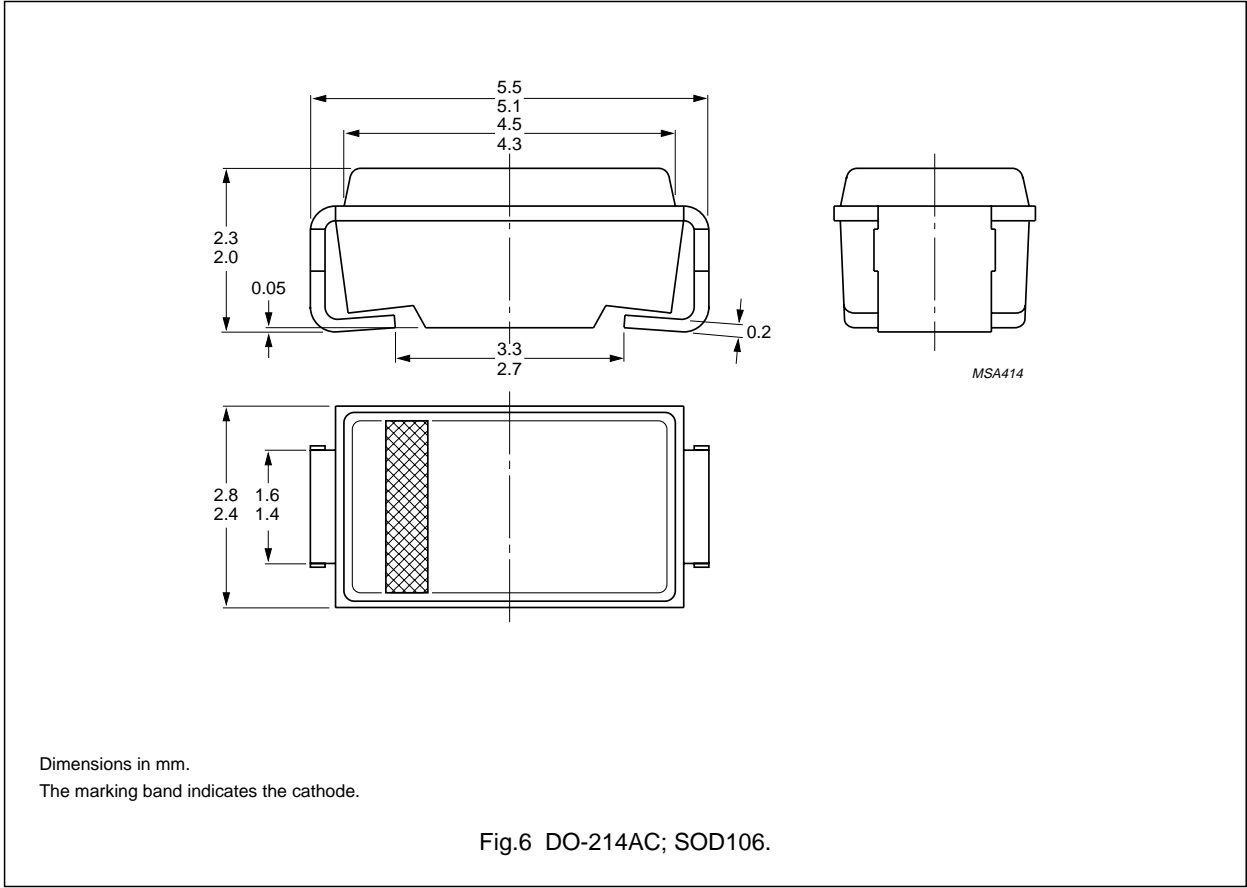
GRAPHICAL DATA



Voltage regulator diodes

BZG03 series

PACKAGE OUTLINE



## Voltage regulator diodes

## BZG03 series

**DEFINITIONS**

<b>Data sheet status</b>	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

**LIFE SUPPORT APPLICATIONS**

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.