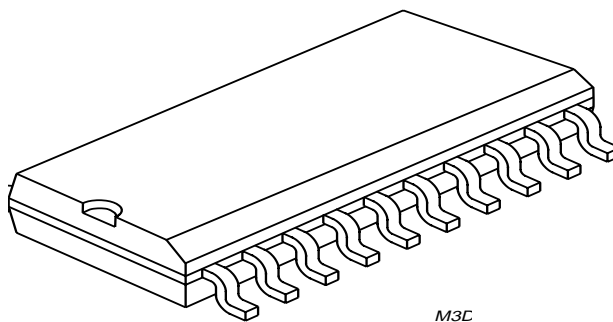


# DATA SHEET



## **BZA100** 18-fold ESD transient voltage suppressor

Product specification  
Supersedes data of 1996 Mar 21

1997 Dec 02

# 18-fold ESD transient voltage suppressor

# BZA100

### FEATURES

- SO20 SMD package allows 18 separate voltage regulator diodes in a common anode configuration
- Working voltage: typ. 6.8 V
- Forward voltage: max. 1.3 V
- Maximum reverse peak power dissipation: 27.5 W at  $t_p = 1$  ms
- Maximum clamping voltage at peak pulse current: 11 V at 2.5 A
- Low leakage current: max. 2  $\mu$ A
- ESD rating >8 kV, according IEC 801-2.

### APPLICATIONS

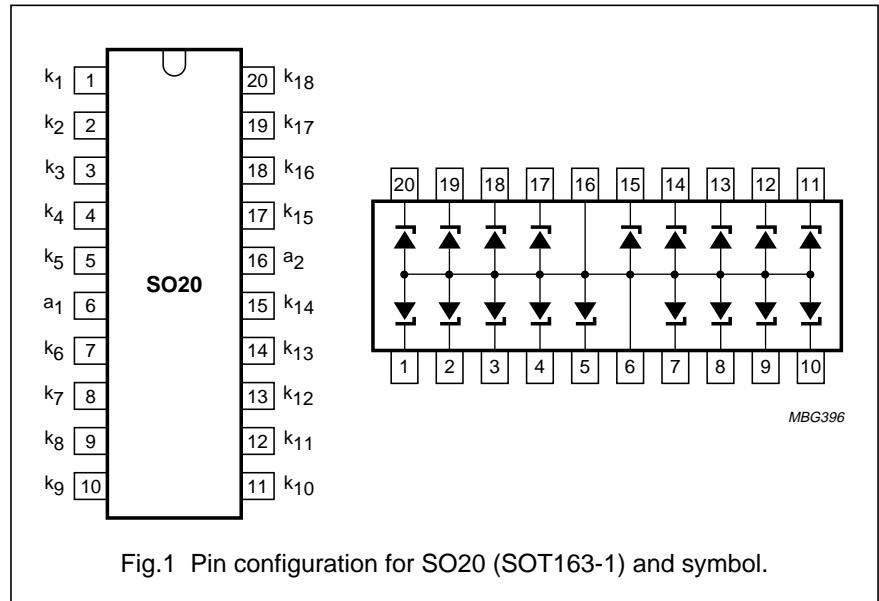
- Where transient overvoltage protection in voltage and ESD sensitive equipment is required such as:
  - Computers
  - Printers
  - Business machines
  - Communication systems
  - Medical equipment.

### DESCRIPTION

18-fold monolithic transient voltage suppressor. Its 18-fold junction common anode design protects 18 separate lines using only one package. This device is ideal for situations where board space is a premium.

### PINNING

PIN	DESCRIPTION
1 to 5	cathode ( $k_1$ to $k_5$ )
6 and 16	common anode ( $a_1$ ; $a_2$ )
7 to 15	cathode ( $k_6$ to $k_{14}$ )
17 to 20	cathode ( $k_{15}$ to $k_{18}$ )



### LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_z$	working current		–	note 1	mA
$I_F$	continuous forward current		–	200	mA
$I_{FSM}$	non-repetitive peak forward current	$t_p = 1$ ms; square pulse	–	4	A
$I_{ZSM}$	non-repetitive peak reverse current	$t_p = 1$ ms; square pulse; see Fig.2	–	2.5	A
$P_{tot}$	total power dissipation	see Fig.3 up to $T_s = 60$ °C; note 2 up to $T_{amb} = 25$ °C; note 3	–	1.6 1.25	W W
$P_{ZSM}$	non-repetitive peak reverse power dissipation	$t_p = 1$ ms; square pulse; see Fig.4	–	27.5	W
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	operating junction temperature		–	150	°C

### Notes

1. DC working current limited by  $P_{tot\ max}$ .
2. One or more diodes loaded;  $T_s$  is the temperature at the soldering point.
3. One or more diodes loaded; device mounted on a printed-circuit board with  $R_{th\ a-s} = 43.5$  K/W.

## 18-fold ESD transient voltage suppressor

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## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-s}$	thermal resistance from junction to soldering point	one or more diodes loaded	56.5	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient		100	K/W

## ELECTRICAL CHARACTERISTICS

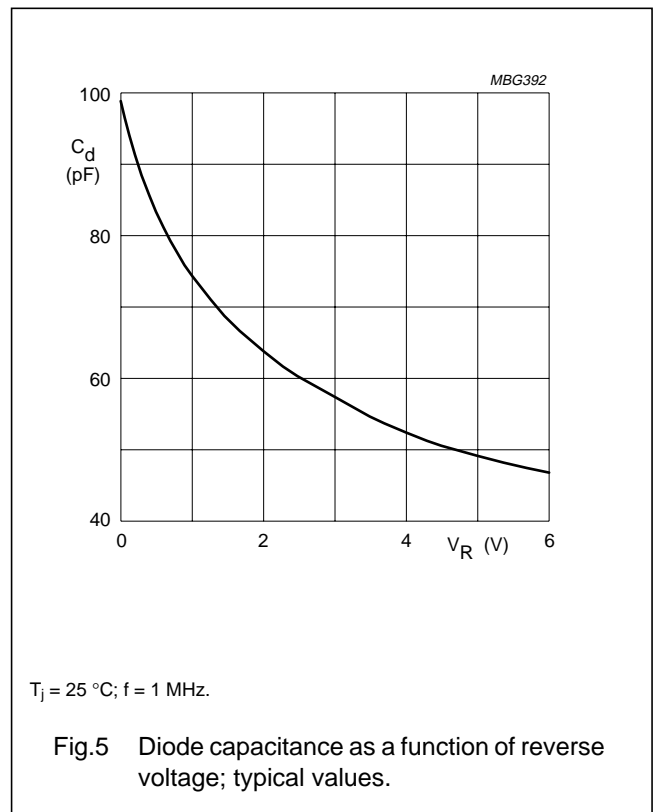
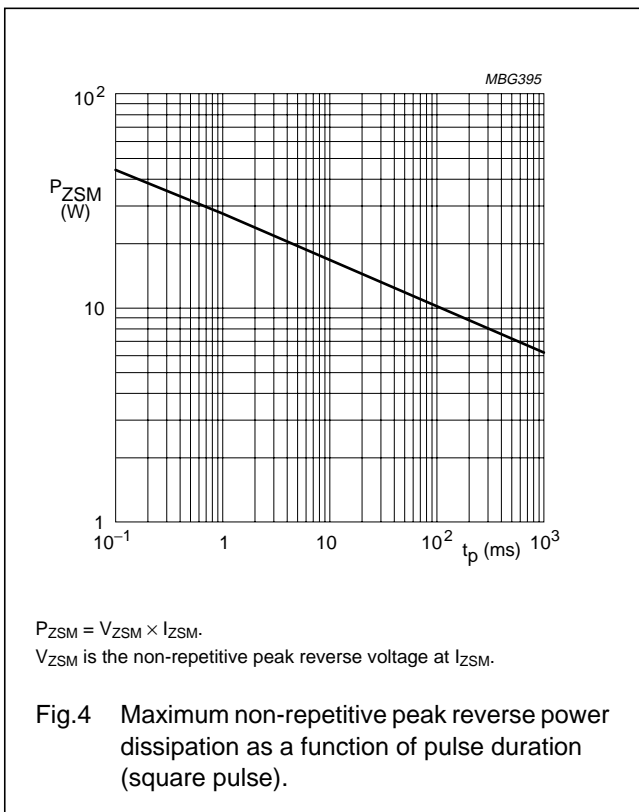
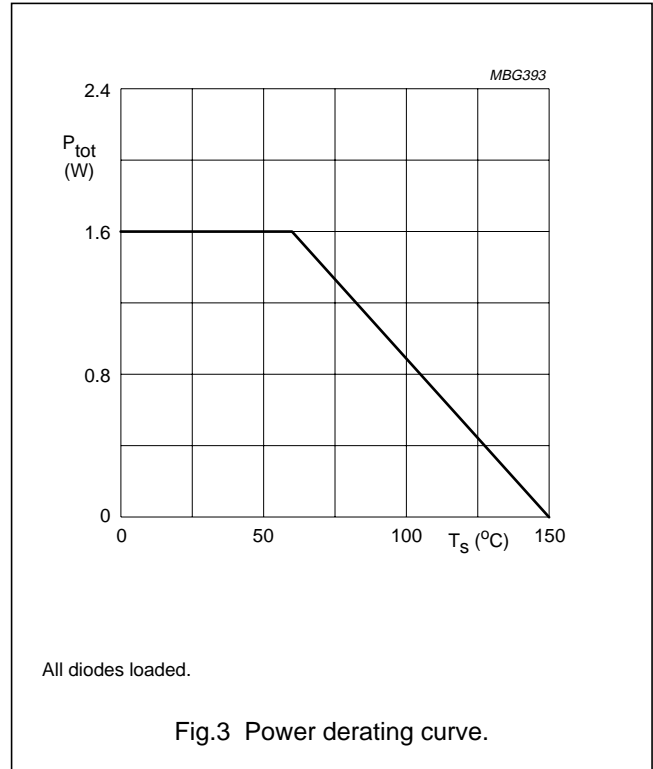
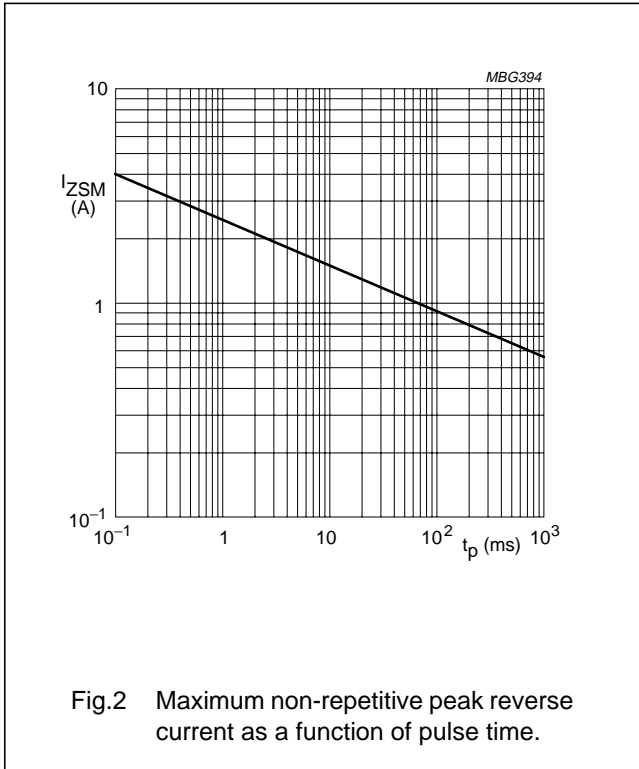
 $T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
<b>Per diode</b>						
$V_Z$	working voltage	$I_Z = 5\text{ mA}$	6.4	6.8	7.2	V
$V_F$	forward voltage	$I_F = 200\text{ mA}$	–	–	1.3	V
$V_{ZSM}$	non-repetitive peak reverse voltage	$t_p = 1\text{ ms}; I_{ZSM} = 2.5\text{ A}$	–	–	11	V
$I_R$	reverse current	$V_R = 5.25\text{ V}$	–	–	2	$\mu\text{A}$
$r_{dif}$	differential resistance	$I_Z = 1\text{ mA}$	–	–	40	$\Omega$
		$I_Z = 5\text{ mA}$	–	–	8	$\Omega$
$S_Z$	temperature coefficient of working voltage	$I_Z = 5\text{ mA}$	–	3	–	mV/K
$C_d$	diode capacitance	see Fig.5 $V_R = 0; f = 1\text{ MHz}$	–	–	120	pF
		$V_R = 5.25\text{ V}; f = 1\text{ MHz}$	–	–	60	pF

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GRAPHICAL DATA



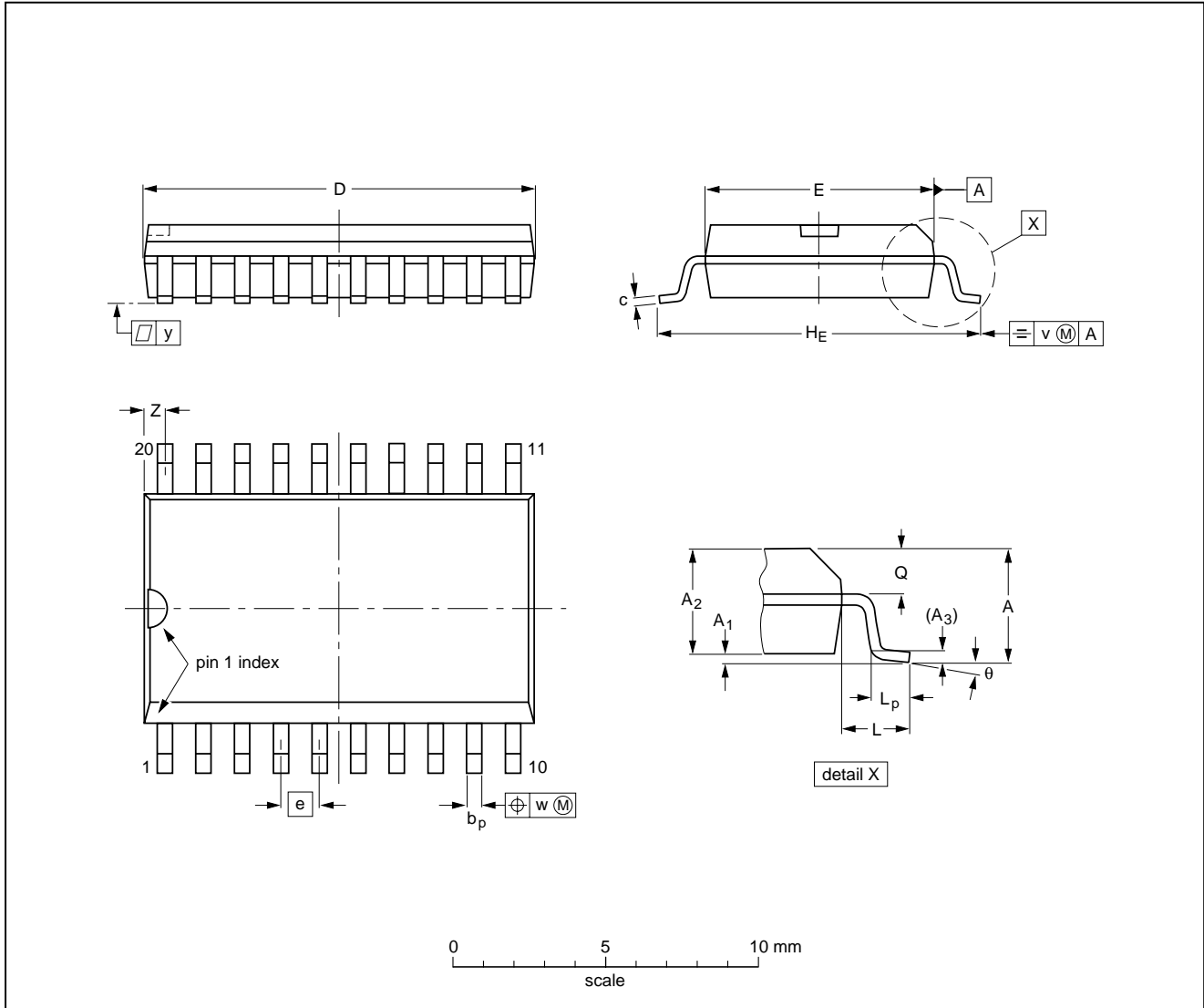
18-fold ESD transient voltage suppressor

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PACKAGE OUTLINE

SO20: plastic small outline package; 20 leads; body width 7.5 mm

SOT163-1



DIMENSIONS (inch dimensions are derived from the original mm dimensions)

UNIT	A max.	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	b <sub>p</sub>	c	D <sup>(1)</sup>	E <sup>(1)</sup>	e	H <sub>E</sub>	L	L <sub>p</sub>	Q	v	w	y	z <sup>(1)</sup>	θ
mm	2.65	0.30 0.10	2.45 2.25	0.25	0.49 0.36	0.32 0.23	13.0 12.6	7.6 7.4	1.27	10.65 10.00	1.4	1.1 0.4	1.1 1.0	0.25	0.25	0.1	0.9 0.4	8° 0°
inches	0.10	0.012 0.004	0.096 0.089	0.01	0.019 0.014	0.013 0.009	0.51 0.49	0.30 0.29	0.050	0.419 0.394	0.055	0.043 0.016	0.043 0.039	0.01	0.01	0.004	0.035 0.016	

Note

1. Plastic or metal protrusions of 0.15 mm maximum per side are not included.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT163-1	075E04	MS-013AC				95-01-24 97-05-22

## 18-fold ESD transient voltage suppressor

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**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.

18-fold ESD transient voltage suppressor

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