DISCRETE SEMICONDUCTORS



Product specification Supersedes data of 2003 Apr 01 2003 Oct 20



BZA800AVL series

FEATURES

- Low diode capacitance
- Low leakage current
- SOT353 (SC-88A) surface mount package
- Common anode configuration.

APPLICATIONS

- Communication systems
- Computers and peripherals
- Audio and video equipment.

DESCRIPTION

Monolithic transient voltage suppressor diode in a five lead SOT353 (SC-88A) package for 4-bit wide ESD transient suppression.

MARKING

TYPE NUMBER	MARKING CODE
BZA856AVL	R3
BZA862AVL	R2
BZA868AVL	R1

PIN	DESCRIPTION
1	cathode 1
2	common anode
3	cathode 2
4	cathode 3
5	cathode 4



Fig.1 Simplified outline (SOT353; SC-88A) and symbol.

ORDERING INFORMATION

	PACKAGE			
	NAME	DESCRIPTION	VERSION	
BZA856AVL	_	plastic surface mounted package; 5 leads	SOT353	
BZA862AVL	_	plastic surface mounted package; 5 leads	SOT353	
BZA868AVL	_	plastic surface mounted package; 5 leads	SOT353	

PINNING

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LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
Iz	working current	T _{amb} = 25 °C	_	note 1	mA
I _F	continuous forward current	T _{amb} = 25 °C	_	200	mA
I _{FSM}	non-repetitive peak forward current	$t_p = 1 ms;$ square pulse	_	3.5	A
P _{tot}	total power dissipation	T _{amb} = 25 °C; note 2; see Fig.5	_	300	mW
P _{ZSM}	non repetitive peak reverse power dissipation	square pulse; t _p = 1 ms	_	6	W
T _{stg}	storage temperature		-65	+150	°C
Т _ј	junction temperature		_	150	°C
ESD	electrostatic discharge	IEC 61000-4-2 (contact discharge)	15	-	kV
		HBM MIL-Std 883	10	_	kV

Notes

- 1. DC working current limited by P_{tot(max)}.
- 2. Device mounted on standard printed-circuit board.

ESD STANDARDS COMPLIANCE

STANDARD	CONDITIONS
IEC 61000-4-2, level 4 (ESD)	>15 kV (air); >8 kV (contact discharge)
HBM MIL-Std 883, class 3	>4 kV

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th j-a}	thermal resistance from junction to ambient	all diodes loaded	410	K/W
R _{th j-s}	thermal resistance from junction to	one diode loaded	200	K/W
	solder point; note 1	all diodes loaded	185	K/W

Note

1. Solder point of common anode (pin 2).

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ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V _F	forward voltage	I _F = 200 mA	_	-	1.2	V
I _R	reverse current					
	BZA856AVL	V _R = 3 V	_	-	200	nA
	BZA862AVL	$V_R = 4 V$	_	-	100	nA
	BZA868AVL	V _R = 4.3 V	-	-	20	nA
Vz	working voltage	I _Z = 1 mA				
	BZA856AVL		5.32	5.6	5.88	V
	BZA862AVL		5.89	6.2	6.51	V
	BZA868AVL		6.46	6.8	7.14	V
r _{dif}	differential resistance	I _Z = 1 mA				
	BZA856AVL		-	-	200	Ω
	BZA862AVL		-	-	150	Ω
	BZA868AVL		-	-	100	Ω
SZ	temperature coefficient	I _Z = 1 mA				
	BZA856AVL		-	1.3	-	mV/K
	BZA862AVL		-	2.4	-	mV/K
	BZA868AVL		—	2.9	-	mV/K
C _d	diode capacitance	f = 1 MHz; V _R = 0				
	BZA856AVL		-	22	28	pF
	BZA862AVL		-	18	22	pF
	BZA868AVL		-	16	19	pF
	diode capacitance	f = 1 MHz; V _R = 5 V				
	BZA856AVL		-	12	17	pF
	BZA862AVL		-	9	12	pF
	BZA868AVL		_	8	11	pF
I _{ZSM}	non-repetitive peak reverse current	$t_p = 1 \text{ ms}; T_{amb} = 25 ^{\circ}\text{C}$				
	BZA856AVL		-	-	0.90	A
	BZA862AVL		-	-	0.85	A
	BZA868AVL		-	-	0.80	А

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APPLICATION INFORMATION

Typical common anode application

A quadruple transient suppressor in a SOT353 package makes it possible to protect four separate lines using only one package. Two simplified examples are shown in Figs.7 and 8.





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Device placement and printed-circuit board layout

Circuit board layout is of extreme importance in the suppression of transients. The clamping voltage of the BZA800AVL is determined by the peak transient current and the rate of rise of that current (di/dt). Since parasitic inductances can further add to the clamping voltage (V = L di/dt) the series conductor lengths on the printed-circuit board should be kept to a minimum. This includes the lead length of the suppression element.

In addition to minimizing conductor length the following printed-circuit board layout guidelines are recommended:

- 1. Place the suppression element close to the input terminals or connectors
- 2. Keep parallel signal paths to a minimum
- 3. Avoid running protection conductors in parallel with unprotected conductors
- 4. Minimize all printed-circuit board loop areas including power and ground loops
- 5. Minimize the length of the transient return path to ground
- 6. Avoid using shared transient return paths to a common ground point.

Product specification

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PACKAGE OUTLINE



BZA800AVL series

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾⁽³⁾	DEFINITION
1	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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