

Low-voltage avalanche regulator diodes

PLVA400A series

FEATURES

- Very low dynamic impedance at low currents: approximately $\frac{1}{20}$ of conventional series
- Hard breakdown knee
- Low noise: approximately $\frac{1}{10}$ of conventional series
- Total power dissipation: max. 400 mW
- Small tolerances of V_Z
- Working voltage range: nom. 5.0 to 6.8 V
- Non-repetitive peak reverse power dissipation: max. 30 W.

APPLICATIONS

- Low current, low power, low noise applications
- CMOS RAM back-up circuits
- Voltage stabilizers
- Voltage limiters
- Smoke detector relays.

DESCRIPTION

High performance voltage regulator diodes in hermetically sealed leaded glass SOD27 (DO-35) packages.

The series consists of PLVA450A to PLVA468A.

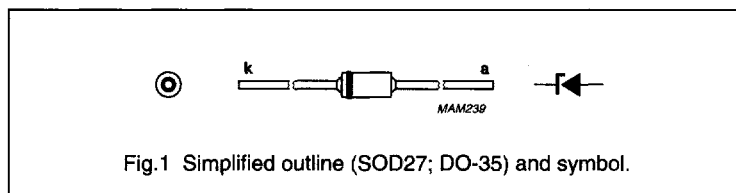


Fig.1 Simplified outline (SOD27; DO-35) and symbol.

MARKING

TYPE NUMBER	MARKING CODE
PLVA450A	450APH
PLVA453A	453APH
PLVA456A	456APH
PLVA459A	459APH
PLVA462A	462APH
PLVA465A	465APH
PLVA468A	468APH

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_F	continuous forward current		–	250	mA
I_{ZRM}	repetitive peak working current	$t_p = 100 \mu s; \delta = 10\%$		250	mA
P_{tot}	total power dissipation	$T_{tp} \leq 55 \text{ }^\circ\text{C}; \text{ note 1}$	–	400	mW
P_{ZSM}	non-repetitive peak reverse power dissipation	$t_p = 100 \mu s; T_j = 150 \text{ }^\circ\text{C}$		30	W
T_{stg}	storage temperature		–65	+200	$^\circ\text{C}$
T_j	junction temperature		–	175	$^\circ\text{C}$

Note

1. Lead length 8 mm.

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	forward voltage	$I_F = 10\text{ mA}$	–	–	0.9	V
V_Z	working voltage	$I_Z = 250\text{ }\mu\text{A}$				
	PLVA450A		4.80	5.00	5.20	V
	PLVA453A		5.10	5.30	5.50	V
	PLVA456A		5.40	5.60	5.80	V
	PLVA459A		5.70	5.90	6.10	V
	PLVA462A		6.00	6.20	6.40	V
	PLVA465A		6.30	6.50	6.70	V
	PLVA468A		6.60	6.80	7.00	V
V_Z	working voltage	$I_Z = 10\text{ }\mu\text{A}$				
	PLVA450A		–	4.30	–	V
	PLVA453A		–	5.20	–	V
	PLVA456A		–	5.51	–	V
	PLVA459A		–	5.85	–	V
	PLVA462A		–	6.19	–	V
	PLVA465A		–	6.49	–	V
	PLVA468A		–	6.80	–	V
R_Z	dynamic resistance	1 kHz superimposed; I_{ZAC} is 10% of I_{ZDC} ; $I_Z = 250\text{ }\mu\text{A}$				
	PLVA450A		–	–	700	Ω
	PLVA453A		–	–	250	Ω
	PLVA456A to PLVA468A		–	–	100	Ω
S_Z	temperature coefficient	$I_Z = 250\text{ }\mu\text{A}$				
	PLVA450A		–	0.20	–	mV/K
	PLVA453A		–	1.60	–	mV/K
	PLVA456A		–	1.90	–	mV/K
	PLVA459A		–	2.40	–	mV/K
	PLVA462A		–	2.65	–	mV/K
	PLVA465A		–	2.90	–	mV/K
	PLVA468A		–	3.40	–	mV/K
I_R	reverse current	$V_R = 80\% V_Z$ nominal				
	PLVA450A		–	–	20000	nA
	PLVA453A		–	–	5000	nA
	PLVA456A		–	–	1000	nA
	PLVA459A		–	–	500	nA
	PLVA462A		–	–	100	nA
	PLVA465A		–	–	50	nA
	PLVA468A		–	–	10	nA

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SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_R	reverse current	$V_R = 50\% V_Z$ nominal	-	34	-	nA
	PLVA450A					
	PLVA453A					
	PLVA456A					
	PLVA459A					
	PLVA462A					
	PLVA465A					
PLVA468A						
I_R	reverse current	$V_R = 90\% V_Z$ nominal	-	21	-	μA
	PLVA450A					
	PLVA453A					
	PLVA456A					
	PLVA459A					
	PLVA462A					
	PLVA465A					
PLVA468A						
ΔV_Z	line regulation		-	-	0.1	V
	PLVA459A to PLVA468A					
	PLVA456A					
	PLVA450A					
PLVA453A						
V_n	noise voltage density	$f = 1 \text{ kHz}; B = 1 \text{ kHz}; I_Z = 250 \mu\text{A}$	-	-	1.0	$\frac{\mu\text{V}}{\sqrt{\text{Hz}}}$

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point	lead length 8 mm.	300	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	lead length max.	380	K/W