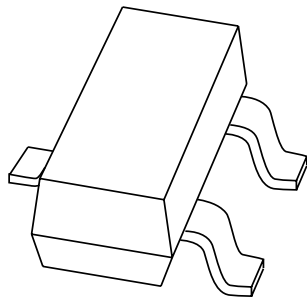


DATA SHEET



PLVA2600A series

Low-voltage avalanche regulator
double diodes

Product specification
Supersedes data of 1996 May 06

1999 May 10

Low-voltage avalanche regulator double diodes

PLVA2600A series

FEATURES

- Very low dynamic impedance at low currents: approximately 1/20 of conventional series
- Hard breakdown knee
- Low noise: approximately 1/10 of conventional series
- Total power dissipation: max. 250 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

The PLVA2600A series consists of two high performance voltage regulator diodes with common anodes, in small SOT23 plastic SMD packages.

The series consists of PLVA2650A to PLVA2668A.

MARKING

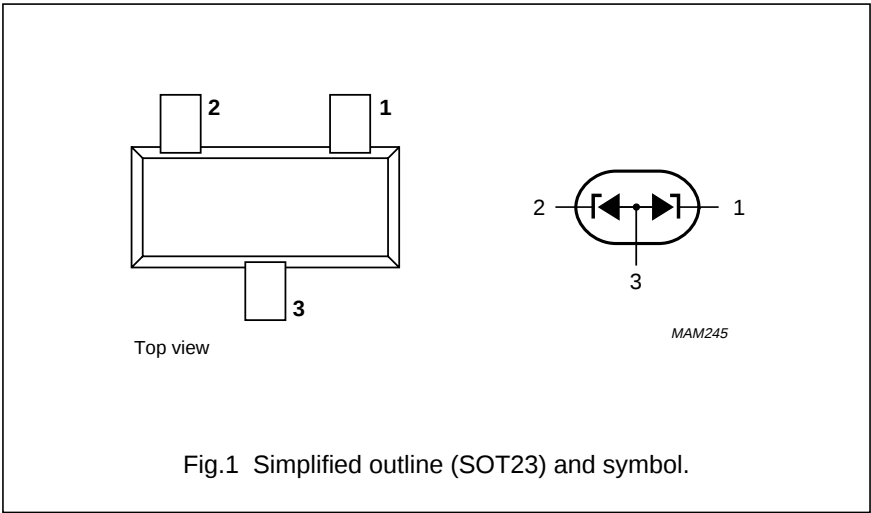
TYPE NUMBER	MARKING CODE ⁽¹⁾
PLVA2650A	*9J
PLVA2653A	*9K
PLVA2656A	*9L
PLVA2659A	*9M
PLVA2662A	*9N
PLVA2665A	*9O
PLVA2668A	*9P

Note

1. * = p : Made in Hong Kong.
* = t : Made in Malaysia.

PINNING

PIN	DESCRIPTION
1	cathode (k1)
2	cathode (k2)
3	common anode



Low-voltage avalanche regulator double diodes

PLVA2600A series

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_{ZSM}	non-repetitive peak reverse power dissipation	$t_p = 100 \mu s$; $T_j = 150^\circ C$	—	30	W
P_{tot}	total power dissipation	single diode loaded; $T_{amb} = 25^\circ C$; note 1	—	250	mW
		double diode loaded; $T_{amb} = 25^\circ C$; note 1	—	180	mW
T_{stg}	storage temperature		−65	+150	$^\circ C$
T_j	junction temperature		—	150	$^\circ C$

Note

1. Device mounted on an FR4 printed circuit-board.

Low-voltage avalanche regulator double diodes

PLVA2600A series

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	$I_Z = 250\text{ }\mu\text{A}$				
	PLVA2650A		4.80	5.00	5.20	V
	PLVA2653A		5.10	5.30	5.50	V
	PLVA2656A		5.40	5.60	5.80	V
	PLVA2659A		5.70	5.90	6.10	V
	PLVA2662A		6.00	6.20	6.40	V
	PLVA2665A		6.30	6.50	6.70	V
	PLVA2668A		6.60	6.80	7.00	V
	working voltage	$I_Z = 10\text{ }\mu\text{A}$				
	PLVA2650A		—	4.30	—	V
	PLVA2653A		—	5.20	—	V
	PLVA2656A		—	5.51	—	V
	PLVA2659A		—	5.85	—	V
	PLVA2662A		—	6.19	—	V
	PLVA2665A		—	6.49	—	V
	PLVA2668A		—	6.80	—	V
R_Z	dynamic resistance	1 kHz superimposed;				
	PLVA2650A	I_{ZAC} is 10% of I_{ZDC} ; $I_Z = 250\text{ }\mu\text{A}$	—	—	700	Ω
	PLVA2653A		—	—	250	Ω
	PLVA2656A to PLVA2668A		—	—	100	Ω
S_Z	temperature coefficient	$I_Z = 250\text{ }\mu\text{A}$				
	PLVA2650A		—	0.20	—	mV/K
	PLVA2653A		—	1.60	—	mV/K
	PLVA2656A		—	1.90	—	mV/K
	PLVA2659A		—	2.40	—	mV/K
	PLVA2662A		—	2.65	—	mV/K
	PLVA2665A		—	2.90	—	mV/K
	PLVA2668A		—	3.40	—	mV/K
I_R	reverse current	$V_R = 80\%$; V_Z nominal				
	PLVA2650A		—	—	20000	nA
	PLVA2653A		—	—	5000	nA
	PLVA2656A		—	—	1000	nA
	PLVA2659A		—	—	500	nA
	PLVA2662A		—	—	100	nA
	PLVA2665A		—	—	50	nA
	PLVA2668A		—	—	10	nA

Low-voltage avalanche regulator double diodes

PLVA2600A series

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_R	reverse current	$V_R = 50\%$; V_Z nominal				
	PLVA2650A		–	34	–	nA
	PLVA2653A		–	22	–	nA
	PLVA2656A		–	1.1	–	nA
	PLVA2659A		–	0.9	–	nA
	PLVA2662A		–	0.9	–	nA
	PLVA2665A		–	0.9	–	nA
	PLVA2668A		–	0.8	–	nA
	reverse current	$V_R = 90\%$; V_Z nominal				
	PLVA2650A		–	21	–	μ A
	PLVA2653A		–	3.5	–	μ A
	PLVA2656A		–	1.3	–	μ A
	PLVA2659A		–	1.0	–	μ A
	PLVA2662A		–	0.05	–	μ A
	PLVA2665A		–	0.04	–	μ A
	PLVA2668A		–	0.006	–	μ A
ΔV_Z	line regulation					
	PLVA2659A to PLVA2668A	$I_{LO} = 10 \mu\text{A}$; $I_{Hi} = 1 \text{ mA}$	–	–	0.1	V
	PLVA2656A	$I_{LO} = 50 \mu\text{A}$; $I_{Hi} = 1 \text{ mA}$	–	–	0.1	V
	PLVA2650A	$I_{LO} = 100 \mu\text{A}$; $I_{Hi} = 1 \text{ mA}$	–	–	0.4	V
	PLVA2653A	$I_{LO} = 100 \mu\text{A}$; $I_{Hi} = 1 \text{ mA}$	–	–	0.2	V
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		360	K/W
$R_{th j-a}$	thermal resistance from junction to ambient	note 1	500	K/W

Note

1. Device mounted on an FR4 printed circuit-board.

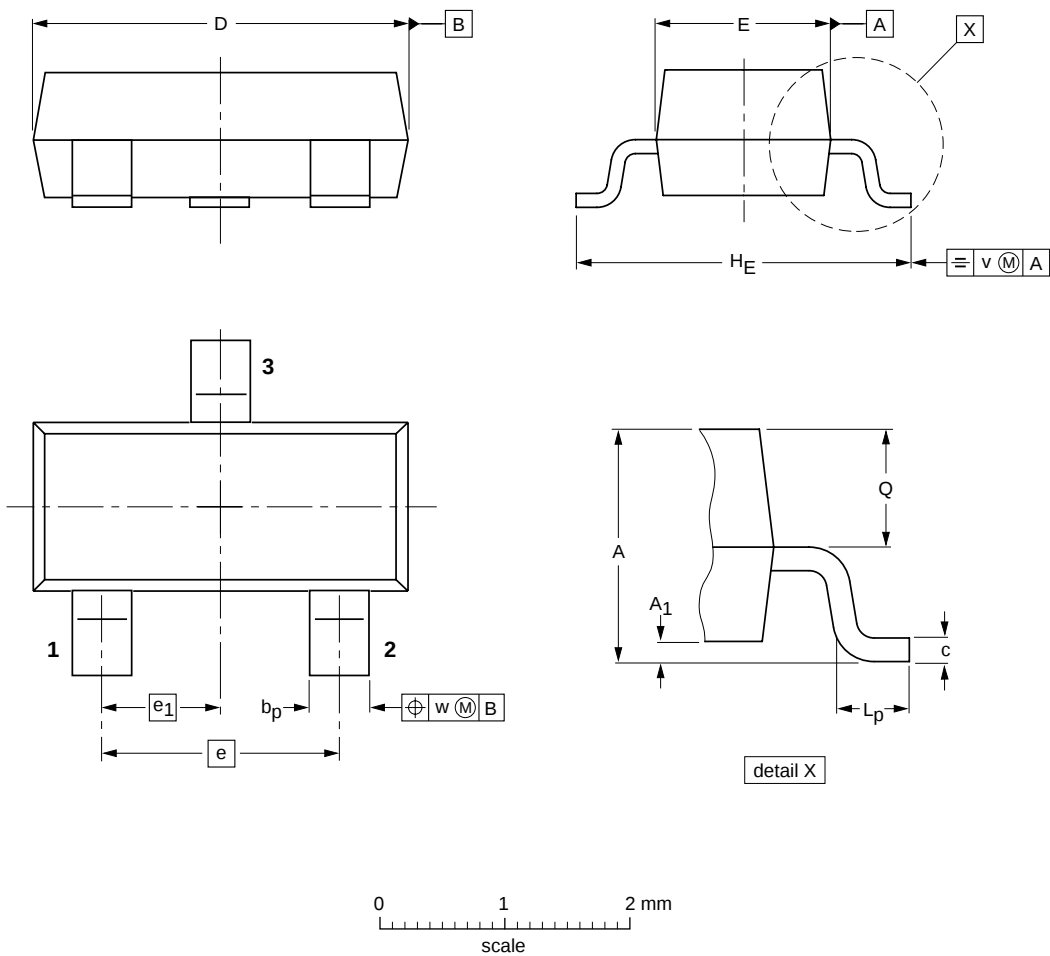
Low-voltage avalanche regulator double diodes

PLVA2600A series

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max.	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23						97-02-28

Low-voltage avalanche regulator double diodes

PLVA2600A series

DEFINITIONS

Data sheet status	
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.
Limiting values	
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.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

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SCA 64

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