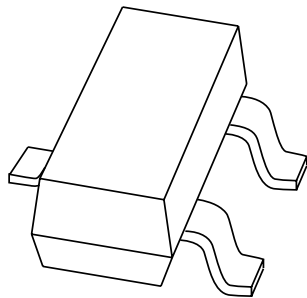


# DATA SHEET



## **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  $\frac{1}{20}$  of conventional series
- Hard breakdown knee
- Low noise: approximately  $\frac{1}{10}$  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

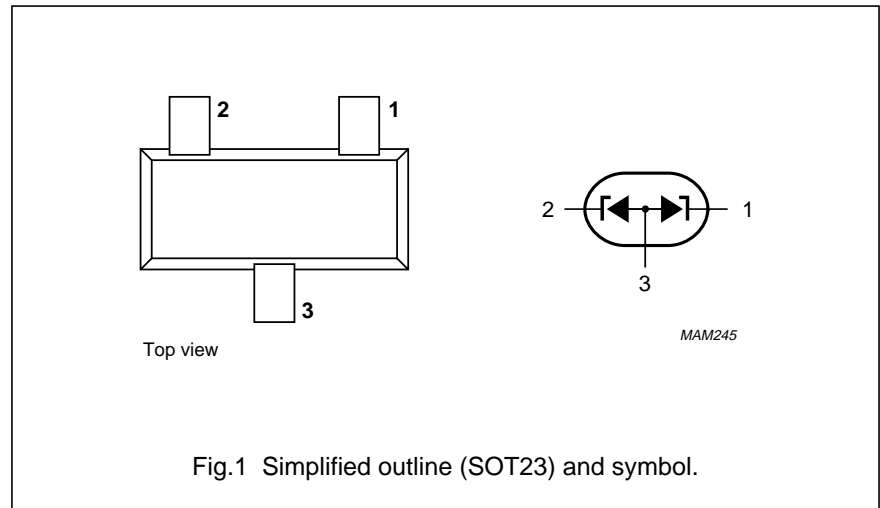
TYPE NUMBER	MARKING CODE <sup>(1)</sup>
PLVA2650A	*9J
PLVA2653A	*9K
PLVA2656A	*9L
PLVA2659A	*9M
PLVA2662A	*9N
PLVA2665A	*9O
PLVA2668A	*9P

### 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	$t_p = 100 \mu s$ ; $T_j = 150 \text{ }^\circ\text{C}$	–	30	W
$P_{tot}$	total power dissipation	single diode loaded; $T_{amb} = 25 \text{ }^\circ\text{C}$ ; note 1	–	250	mW
		double diode loaded; $T_{amb} = 25 \text{ }^\circ\text{C}$ ; note 1	–	180	mW
$T_{stg}$	storage temperature		–65	+150	$^\circ\text{C}$
$T_j$	junction temperature		–	150	$^\circ\text{C}$

### Note

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

# Low-voltage avalanche regulator double diodes

## PLVA2600A series

### ELECTRICAL CHARACTERISTICS

$T_j = 25\text{ °C}$  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; $I_{ZAC}$ is 10% of $I_{ZDC}$ ; $I_Z = 250\text{ }\mu\text{A}$					
			PLVA2650A	–	–	700	$\Omega$
			PLVA2653A	–	–	250	$\Omega$
	PLVA2656A to PLVA2668A	–	–	100	$\Omega$		
$S_Z$	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	–	34	–	nA					
	PLVA2650A										
	PLVA2653A										
	PLVA2656A										
	PLVA2659A										
	PLVA2662A										
	PLVA2665A										
	PLVA2668A										
	reverse current	$V_R = 90\%$ ; $V_Z$ nominal	–	21	–	$\mu$ A					
	PLVA2650A										
	PLVA2653A										
	PLVA2656A										
	PLVA2659A										
	PLVA2662A										
PLVA2665A											
PLVA2668A											
$\Delta V_Z$	line regulation	$I_{LO} = 10 \mu\text{A}$ ; $I_{Hi} = 1 \text{ mA}$	–	–	0.1	V					
	PLVA2659A to PLVA2668A										
	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.

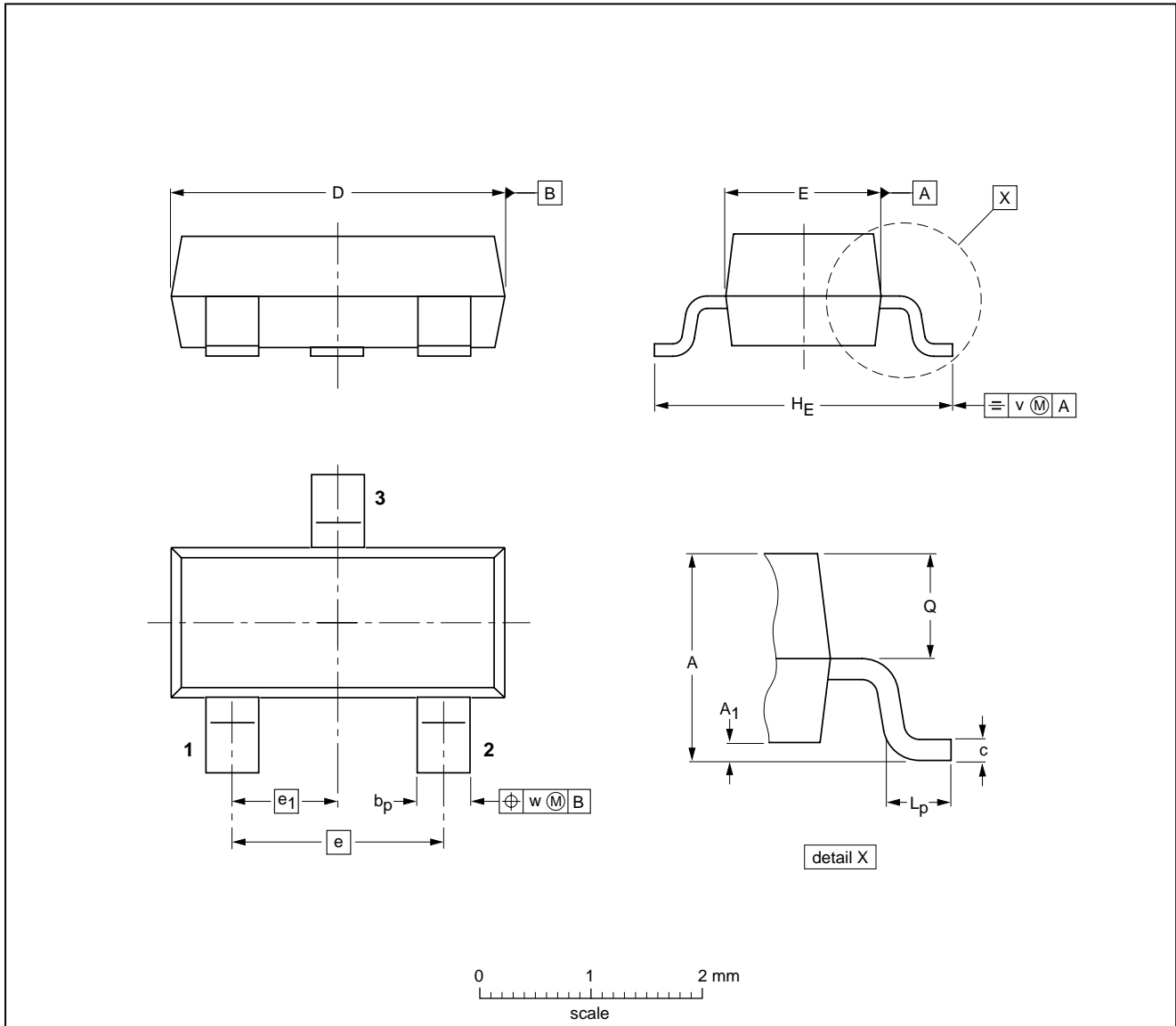
# Low-voltage avalanche regulator double diodes

## PLVA2600A series

### PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub> max.	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	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

<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.	

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