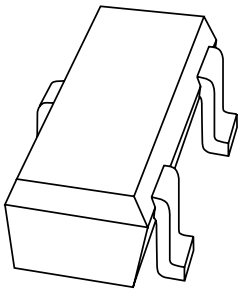
DATA SHEET



PZM-NA series
Voltage regulator double diodes

Product specification
Supersedes data of 1999 Jun 02

1999 Jun 11

Philips
Semiconductors

PHILIPS

Voltage regulator double diodes PZM-NA series

FEATURES

- Total power dissipation: max. 220 mW per diode
- Small plastic package suitable for surface mounted design
- Working voltage: nom. 2.4 V and 15 V (E24 range).

APPLICATIONS

- General regulation functions.

DESCRIPTION

Low power general purpose voltage regulator double diodes in a SOT346 (SC59) plastic package, suitable for surface mounted design.

PINNING

PIN	DESCRIPTION
1	cathode
2	cathode
3	anode

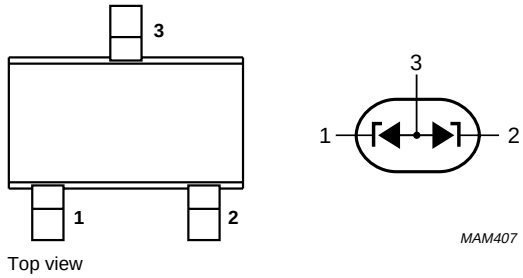


Fig.1 Simplified outline (SOT346; SC59) and symbol.

MARKING

TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE
PZM2.4NBA	2A4	PZM6.2NB2A	6A2
PZM2.7NB2A	2A7	PZM6.8NB2A	6A8
PZM3.0NB2A	3A0	PZM7.5NB2A	7A5
PZM3.3NB2A	3A3	PZM8.2NB2A	8A2
PZM3.6NB2A	3A6	PZM9.1NB2A	9A1
PZM3.9NB2A	3A9	PZM10NB2A	10A
PZM4.3NB2A	4A3	PZM11NB2A	11A
PZM4.7NB2A	4A7	PZM12NB2A	12A
PZM5.1NB2A	5A1	PZM13NB2A	13A
PZM5.6NB2A	5A6	PZM15NB2A	15A

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
I_F	continuous forward current		–	200	mA
I_{ZSM}	non-repetitive peak current	t_p = 100 µs; square wave	see Table 1		
P	power dissipation; see note 1	T_{amb} = 25 °C	–	220	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	operating junction temperature		–	150	°C

Note

1. Device mounted on an FR4 printed circuit board with Cu clad 5 × 5 mm.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}s}$	thermal resistance from junction to soldering point	one diode loaded; note 1	350	K/W
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	one diode loaded; note 2	560	K/W

Notes

1. Solderpoint of cathode tab.
2. Device mounted on an FR4 printed circuit board with Cu clad 5 × 5 mm.

ELECTRICAL CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

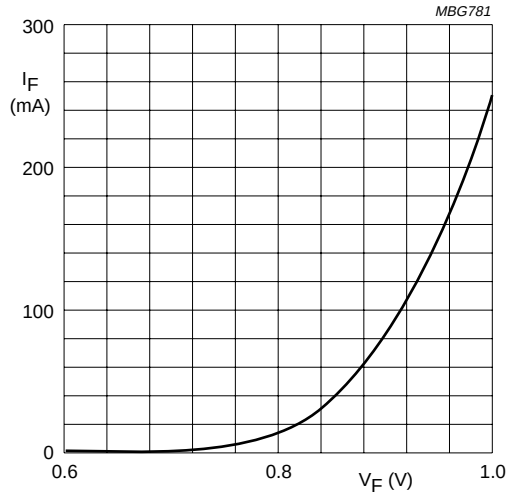
SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
V_F	forward voltage	I_F = 10 mA; see Fig.2	0.9	V
		I_F = 100 mA; see Fig.2	1.1	V
I_R	reverse current			
	PZM2.4NBA	V_R = 1 V	50	µA
	PZM2.7NB2A	V_R = 1 V	20	µA
	PZM3.0NB2A	V_R = 1 V	10	µA
	PZM3.3NB2A	V_R = 1 V	5	µA
	PZM3.6NB2A	V_R = 1 V	5	µA
	PZM3.9NB2A	V_R = 1 V	3	µA
	PZM4.3NB2A	V_R = 1 V	3	µA
	PZM4.7NB2A	V_R = 1 V	3	µA
	PZM5.1NB2A	V_R = 1.5 V	3	µA
	PZM5.6NB2A	V_R = 2.5 V	2	µA
	PZM6.2NB2A	V_R = 3.0 V	2	µA
	PZM6.8NB2A	V_R = 3.5 V	2	µA
	PZM7.5NB2A	V_R = 4.0 V	1	µA
	PZM8.2NB2A	V_R = 5.0 V	700	nA
	PZM9.1NB2A	V_R = 6.0 V	500	nA
	PZM10NB2A	V_R = 7.0 V	200	nA
	PZM11NB2A	V_R = 8.0 V	100	nA
	PZM12NB2A	V_R = 9.0 V	100	nA
	PZM13NB2A	V_R = 10.0 V	100	nA
	PZM15NB2A	V_R = 11.0 V	70	nA

Table 1 Per type; PZM2.4N to PZM24N

T_j = 25 °C unless otherwise specified.

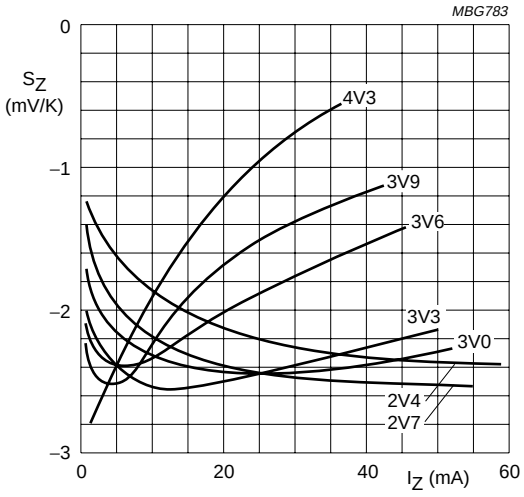
PZM -XXX	WORKING VOLTAGE V_Z (V) at I_Z = 5 mA; t_m = 40 ms; T_{amb} = 25 °C		DIFFERENTIAL RESISTANCE r_{dif} (Ω)				TEMP. COEFF. S_Z (mV/K) at I_Z = 5 mA	DIODE CAP. C_d (pF) at f = 1 MHz; V_R = 0	NON-REPETITIVE PEAK REVERSE CURRENT I_{ZSM} (A) at t_p = 100 μs
			I_Z = 1 mA		I_Z = 5 mA				
	MIN.	MAX.	TYP.	MAX.	TYP.	MAX.	TYP.	MAX.	MAX.
2.4NBA	2.30	2.60	275	400	70	100	–1.6	450	8.00
2.7NB2A	2.65	2.90	300	450	75	100	–2.0	440	8.00
3.0NB2A	2.95	3.20	325	500	80	95	–2.1	425	8.00
3.3NB2A	3.25	3.50	350	500	85	95	–2.4	410	8.00
3.6NB2A	3.55	3.80	375	500	85	90	–2.4	390	8.00
3.9NB2A	3.87	4.10	400	500	85	90	–2.5	370	8.00
4.3NB2A	4.15	4.34	410	600	80	90	–2.5	350	8.00
4.7NB2A	4.55	4.75	425	500	50	80	–1.4	325	8.00
5.1NB2A	4.98	5.20	400	480	40	60	–0.8	300	8.00
5.6NB2A	5.49	5.73	80	400	15	40	1.2	275	8.00
6.2NB2A	6.06	6.33	40	150	6	10	2.3	250	8.00
6.8NB2A	6.65	6.93	30	80	6	15	3.0	215	8.00
7.5NB2A	7.28	7.60	15	80	2	10	4.0	170	3.50
8.2NB2A	8.02	8.36	20	80	2	10	4.6	150	3.50
9.1NB2A	8.85	9.23	20	100	2	10	5.5	120	3.50
10NB2A	9.77	10.21	20	150	2	10	6.4	110	3.50
11NB2A	10.76	11.22	25	150	2	10	7.4	110	3.00
12NB2A	11.74	12.24	25	150	2	10	8.4	105	3.00
13NB2A	12.91	13.49	25	170	2	10	9.4	105	2.50
15NB2A	14.34	14.98	25	200	3	15	11.4	100	2.00

GRAPHICAL DATA



T_j = 25 °C.

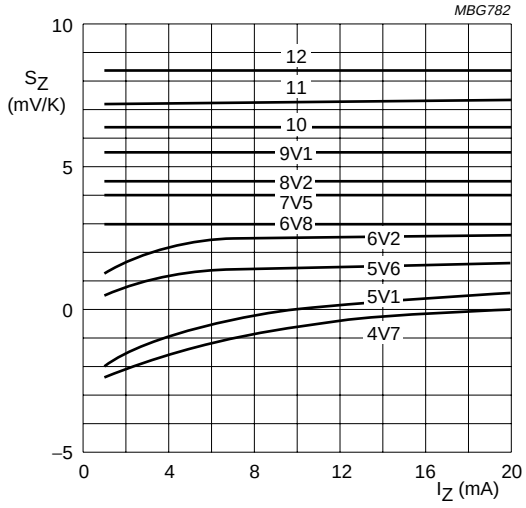
Fig.2 Forward current as a function of forward voltage; typical values.



PZM2.4NBA to PZM4.3NB2A.

T_j = 25 °C to 150 °C.

Fig.3 Temperature coefficient as a function of working current; typical values.



PZM4.7NB2A to PZM12NB2A.

T_j = 25 °C to 150 °C.

Fig.4 Temperature coefficient as a function of working current; typical values.

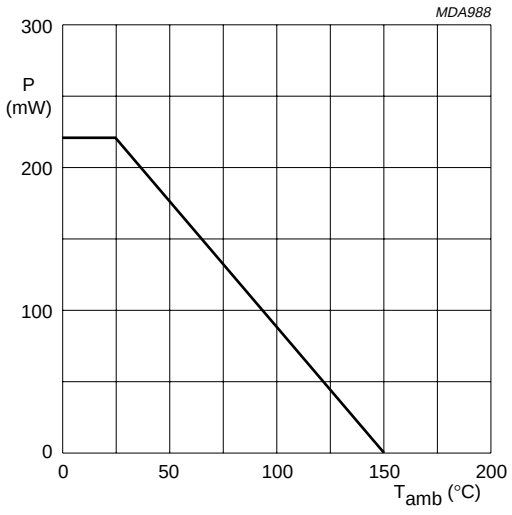
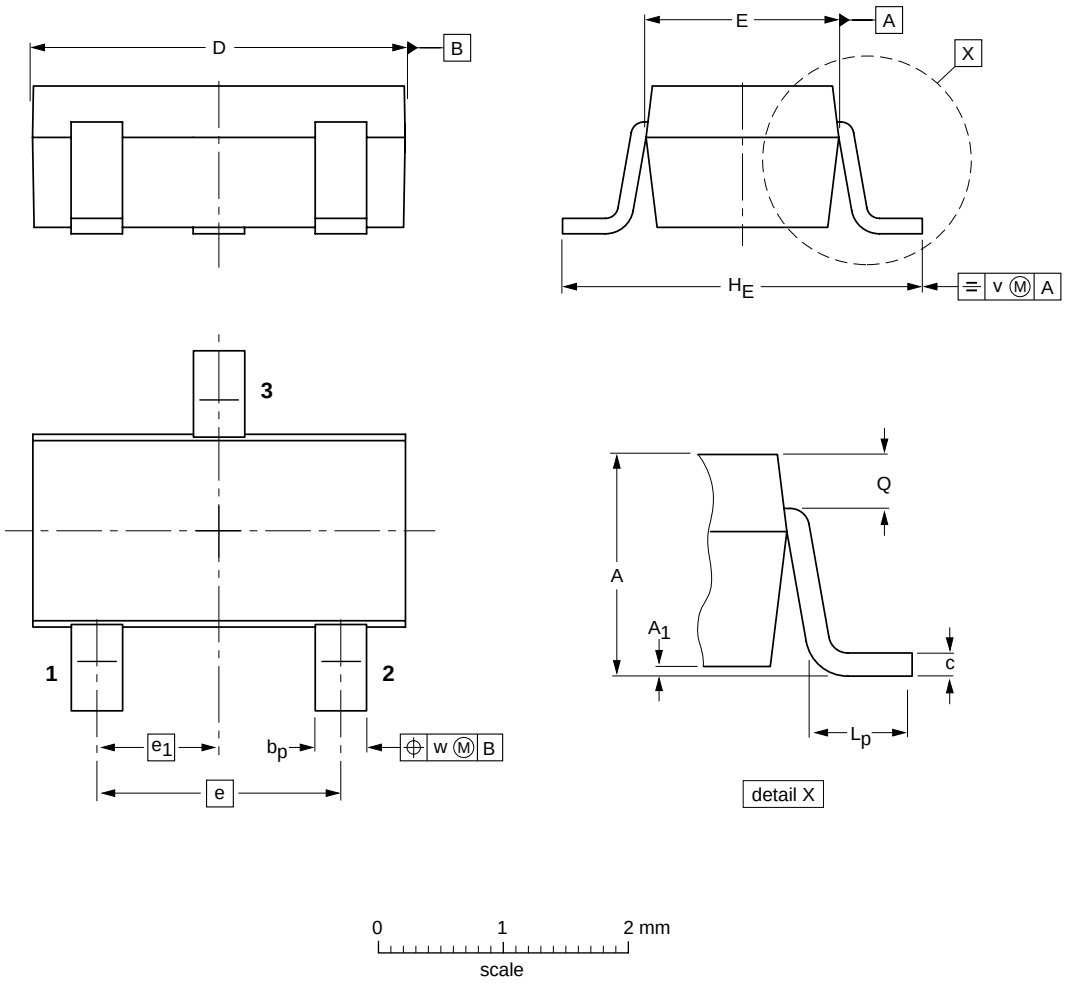


Fig.5 Power derating curve per diode.

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT346**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.3 1.0	0.1 0.013	0.50 0.35	0.26 0.10	3.1 2.7	1.7 1.3	1.9	0.95	3.0 2.5	0.6 0.2	0.33 0.23	0.2	0.2

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT346		TO-236	SC-59			98-07-17

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.	

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