



## Zener Diodes



### FEATURES

- Silicon planar power Zener diodes
- For use in stabilizing and clipping circuits with high power rating
- Standard Zener voltage tolerance is  $\pm 5\%$
- These diodes are also available in the DO-41 case with type designation 1N4728A to 1N4761A
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS		
PARAMETER	VALUE	UNIT
$V_Z$ range nom.	3.3 to 75	V
Test current $I_{ZT}$	3.3 to 76	mA
$V_Z$ specification	Thermal equilibrium	
Circuit configuration	Single	

ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY
ZM4728A to ZM4761A	ZM4728A to ZM4761A-series-GS18	5 000 (12 mm tape on 13" reel)	10 000/box
ZM4728A to ZM4761A	ZM4728A to ZM4761A-series-GS08	1 500 (12 mm tape on 7" reel)	12 000/box

PACKAGE				
PACKAGE NAME	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
MELF (DO-213AB) glass	approx. 135 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C

ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25\text{ °C}$ , unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Power dissipation	Valid provided that electrodes are kept at ambient temperature	$P_{tot}$	1000	mW
Zener current	See table "Characteristics"			
Junction to ambient air	Valid provided that electrodes are kept at ambient temperature	$R_{thJA}$	170	K/W
Junction temperature		$T_j$	175	°C
Storage temperature range		$T_{stg}$	-65 to +175	°C



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)									
PART NUMBER	ZENER VOLTAGE RANGE <sup>(3)</sup>	TEST CURRENT		REVERSE LEAKAGE CURRENT		DYNAMIC RESISTANCE <sup>(1)</sup> f = 1 kHz		SURGE CURRENT <sup>(4)</sup>	REGULATOR CURRENT <sup>(2)</sup>
	$V_Z$ at $I_{ZT1}$	$I_{ZT1}$	$I_{ZT2}$	$I_R$ at $V_R$		$Z_Z$ at $I_{ZT1}$	$Z_{ZK}$ at $I_{ZT2}$	$I_{ZSM}$	$I_{ZM}$
	V	mA		$\mu\text{A}$	V	$\Omega$		mA	mA
	NOM.			MAX.		MAX.	MAX.		MAX.
ZM4728A	3.3	76	1	100	1	10	400	1380	276
ZM4729A	3.6	69	1	100	1	10	400	1260	252
ZM4730A	3.9	64	1	50	1	9	400	1190	234
ZM4731A	4.3	58	1	10	1	9	400	1070	217
ZM4732A	4.7	53	1	10	1	8	500	970	193
ZM4733A	5.1	49	1	10	1	7	550	890	178
ZM4734A	5.6	45	1	10	2	5	600	810	162
ZM4735A	6.2	41	1	10	3	2	700	730	146
ZM4736A	6.8	37	1	10	4	3.5	700	660	133
ZM4737A	7.5	34	0.5	10	5	4	700	605	121
ZM4738A	8.2	31	0.5	10	6	4.5	700	550	110
ZM4739A	9.1	28	0.5	10	7	5	700	500	100
ZM4740A	10	25	0.25	10	7.6	7	700	454	91
ZM4741A	11	23	0.25	5	8.4	8	700	414	83
ZM4742A	12	21	0.25	5	9.1	9	700	380	76
ZM4743A	13	19	0.25	5	9.9	10	700	344	69
ZM4744A	15	17	0.25	5	11.4	14	700	304	61
ZM4745A	16	15.5	0.25	5	12.2	16	700	285	57
ZM4746A	18	14	0.25	5	13.7	20	750	250	50
ZM4747A	20	12.5	0.25	5	15.2	22	750	225	45
ZM4748A	22	11.5	0.25	5	16.7	23	750	205	41
ZM4749A	24	10.5	0.25	5	18.2	25	750	190	38
ZM4750A	27	9.5	0.25	5	20.6	35	750	170	34
ZM4751A	30	8.5	0.25	5	22.8	40	1000	150	30
ZM4752A	33	7.5	0.25	5	25.1	45	1000	135	27
ZM4753A	36	7	0.25	5	27.4	50	1000	125	25
ZM4754A	39	6.5	0.25	5	29.7	60	1000	115	23
ZM4755A	43	6	0.25	5	32.7	70	1500	110	22
ZM4756A	47	5.5	0.25	5	35.8	80	1500	95	19
ZM4757A	51	5	0.25	5	38.8	95	1500	90	18
ZM4758A	56	4.5	0.25	5	42.6	110	2000	80	16
ZM4759A	62	4	0.25	5	47.1	125	2000	70	14
ZM4760A	68	3.7	0.25	5	51.7	150	2000	65	13
ZM4761A	75	3.3	0.25	5	56	175	2000	60	12

**Notes**

- (1) The Zener impedance is derived from the 1 kHz AC voltage which results when an AC current having an RMS value equal to 10 % of the Zener current ( $I_{ZT1}$  or  $I_{ZT2}$ ) is superimposed on  $I_{ZT1}$  or  $I_{ZT2}$ . Zener impedance is measured at two points to insure a sharp knee on the breakdown curve and to eliminate unstable units
- (2) Valid provided that electrodes are kept at ambient temperature
- (3) Measured under thermal equilibrium and DC test conditions
- (4) Width of the test pulse is 8.3 ms

## BASIC CHARACTERISTICS (T<sub>amb</sub> = 25 °C, unless otherwise specified)

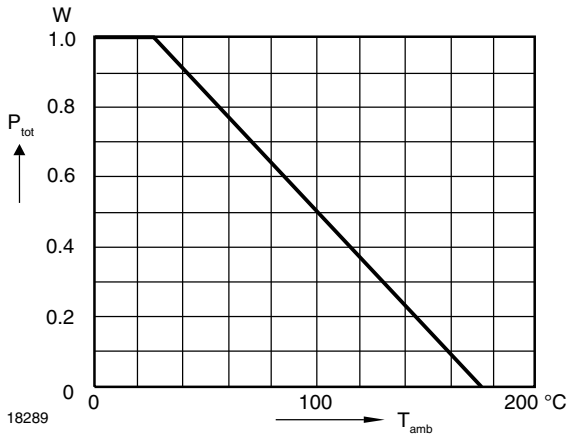


Fig. 1 - Admissible Power Dissipation vs. Ambient Temperature

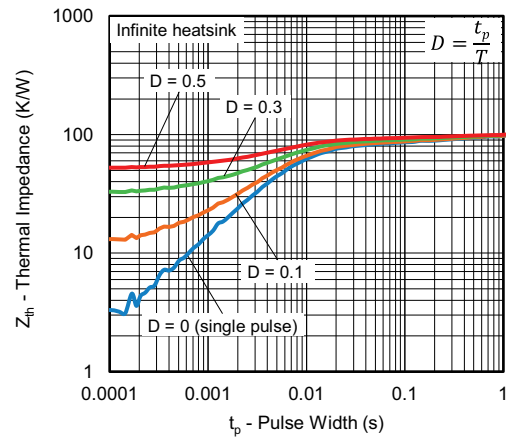


Fig. 2 - Thermal Impedance vs. Time

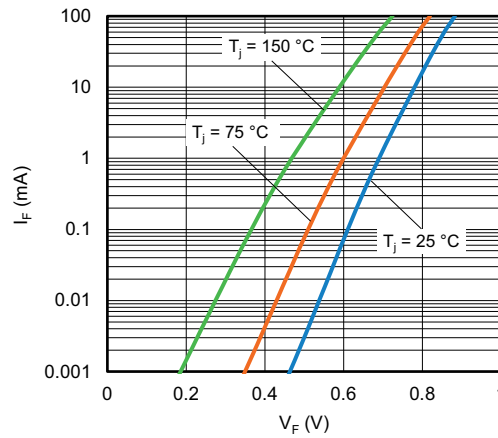
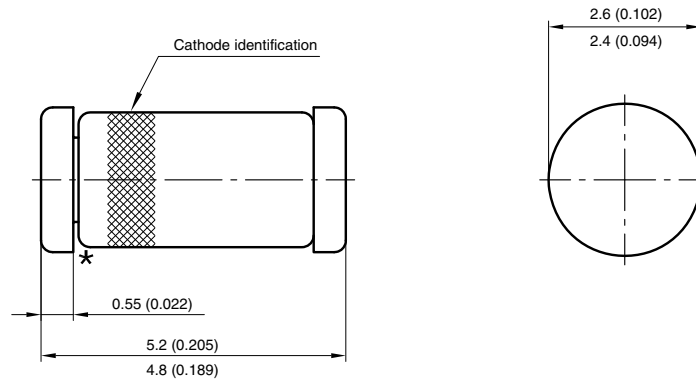


Fig. 3 - Typical Forward Current I<sub>F</sub> vs. Forward Voltage V<sub>F</sub>

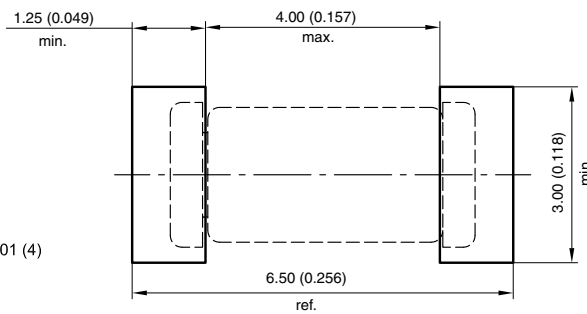


## PACKAGE DIMENSIONS in millimeters (inches): MELF DO-213AB (glass)



★ The gap between plug and glass can be either on cathode or anode side

Foot print recommendation:



Document no.:S8-V-3453.02-001 (4)  
Rev. 3 - Date: 07 June 2006  
18317



## **Disclaimer**

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.