

Zener Diode Silicon Epitaxial Planar

CMZ12A to 51A

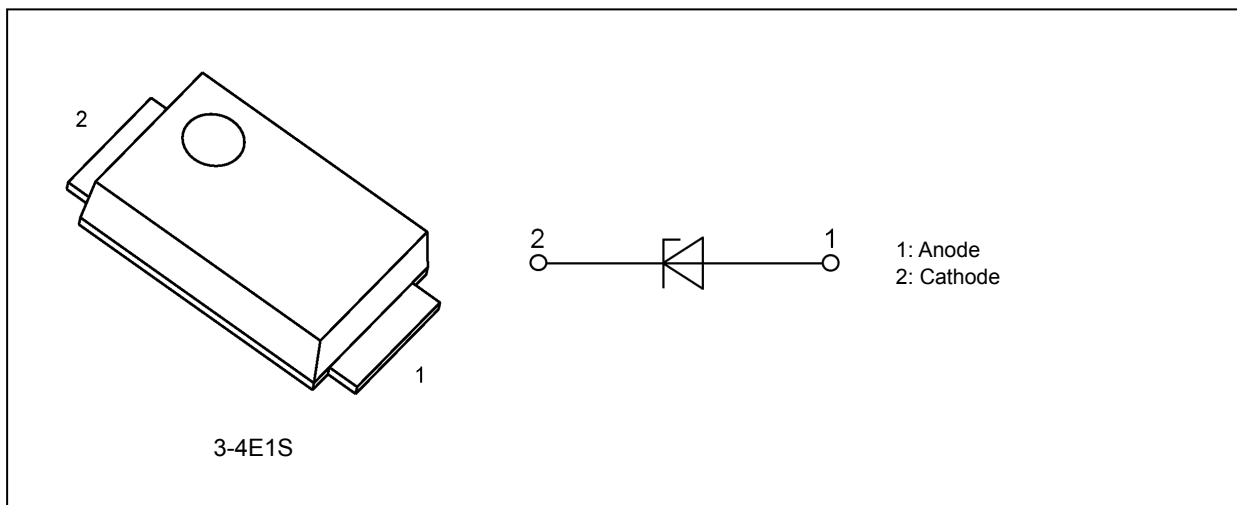
1. Applications

- Surge absorber

2. Features

- (1) Power dissipation : $P_D = 2W$
- (2) Zener voltage : $V_Z = 12$ to $51V$
- (3) The use of small, thin surface-mount package is optimum way for high-density mounting.
Nickname: M-FLAT™

3. Packaging and Internal Circuit



4. Absolute Maximum Ratings (Note) (Unless otherwise specified, $T_a = 25^\circ C$)

Characteristics	Symbol	Note	Rating	Unit
Power dissipation	P_D	(Note1)	2	W
Junction temperature	T_j		150	$^\circ C$
Storage temperature	T_{stg}		-55 to 150	$^\circ C$

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note1: $T_a = 30^\circ C$ Device mounted on a ceramic board

Board size: 50 mm × 50 mm, Soldering land: 2.0 mm × 2.0 mm, Board thickness: 0.64 mm

Start of commercial production

2024-10

5. Electrical Characteristics (Unless otherwise specified, $T_a = 25^\circ\text{C}$)

Type	Zener Voltage V_Z (V)				Dynamic Resistance r_d (Ω)		Temperature of Zener voltage coefficient α_Z (mV/ $^\circ\text{C}$)		Forward Voltage V_F (V)		Reverse Current I_R (μA)	
	Min	Typ.	Max	Test Current I_Z (mA)	Max	Test Current I_Z (mA)	Typ.	Max	Max	Test Current I_F (A)	Max	Test Voltage V_R (V)
CMZ12A	11.40	12.00	12.60	10	20	10	9	11	1.2	0.2	0.5	8.0
CMZ13A	12.35	13.00	13.65	10	20	10	10	13	1.2	0.2	0.5	9.0
CMZ15A	14.25	15.00	15.75	10	20	10	12	16	1.2	0.2	0.5	10.0
CMZ16A	15.20	16.00	16.80	10	20	10	13	17	1.2	0.2	0.5	11.0
CMZ18A	17.10	18.00	18.90	10	20	10	15	20	1.2	0.2	0.5	13.0
CMZ20A	19.00	20.00	21.00	10	20	10	17	23	1.2	0.2	0.5	14.0
CMZ24A	22.80	24.00	25.20	10	20	10	22	29	1.2	0.2	0.5	17.0
CMZ27A	25.65	27.00	28.35	10	20	10	26	33	1.2	0.2	0.5	19.0
CMZ30A	28.50	30.00	31.50	10	20	10	29	38	1.2	0.2	0.5	21.0
CMZ33A	31.35	33.00	34.65	10	20	10	33	43	1.2	0.2	0.5	26.4
CMZ36A	34.20	36.00	37.80	9	20	9	37	48	1.2	0.2	0.5	28.8
CMZ39A	37.05	39.00	40.95	8	30	8	41	53	1.2	0.2	0.5	31.2
CMZ43A	40.85	43.00	45.15	7	30	7	46	60	1.2	0.2	0.5	34.4
CMZ47A	44.65	47.00	49.35	6	50	6	51	67	1.2	0.2	0.5	37.6
CMZ51A	48.45	51.00	53.55	6	50	6	57	74	1.2	0.2	0.5	40.8

6. Marking (Note)

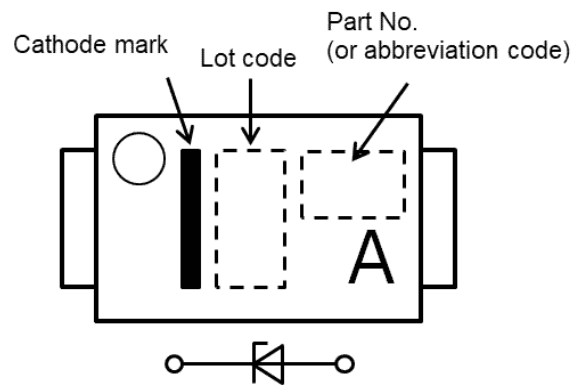


Fig. 6.1 Marking

Note: A dot marking identifies the indication of product Labels.

[[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product.

The RoHS is the Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

7. Marking List

Abbreviation Code	Part Number	Abbreviation Code	Part Number
12	CMZ12A	30	CMZ30A
13	CMZ13A	33	CMZ33A
15	CMZ15A	36	CMZ36A
16	CMZ16A	39	CMZ39A
18	CMZ18A	43	CMZ43A
20	CMZ20A	47	CMZ47A
24	CMZ24A	51	CMZ51A
27	CMZ27A		

8. Land Pattern Dimensions (for reference only)

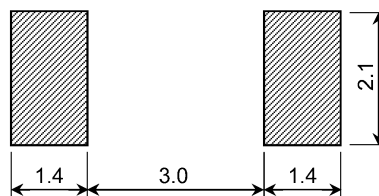


Fig. 8.1 Land Pattern Dimensions for Reference Only (Unit: mm)

9. Characteristics Curves (Note)

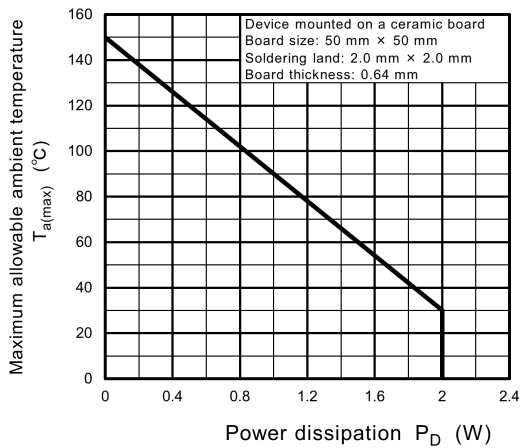


Fig. 9.1 $T_a \text{ max} - P_D$

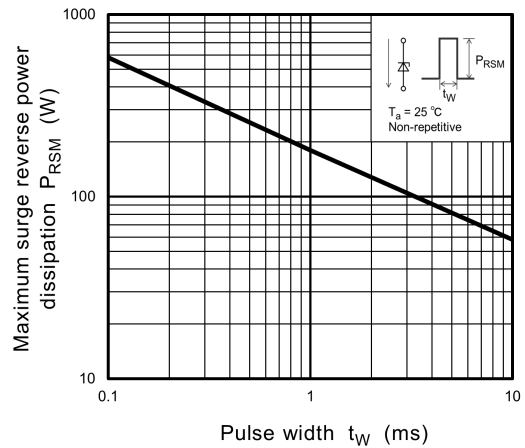


Fig. 9.2 $P_{RSM} - t_w$

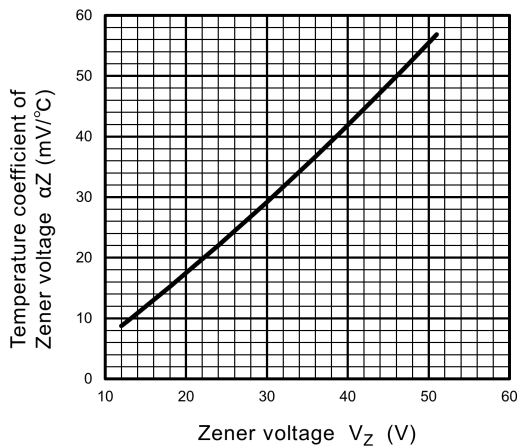


Fig. 9.3 $\alpha_Z - V_Z$
(reference value)

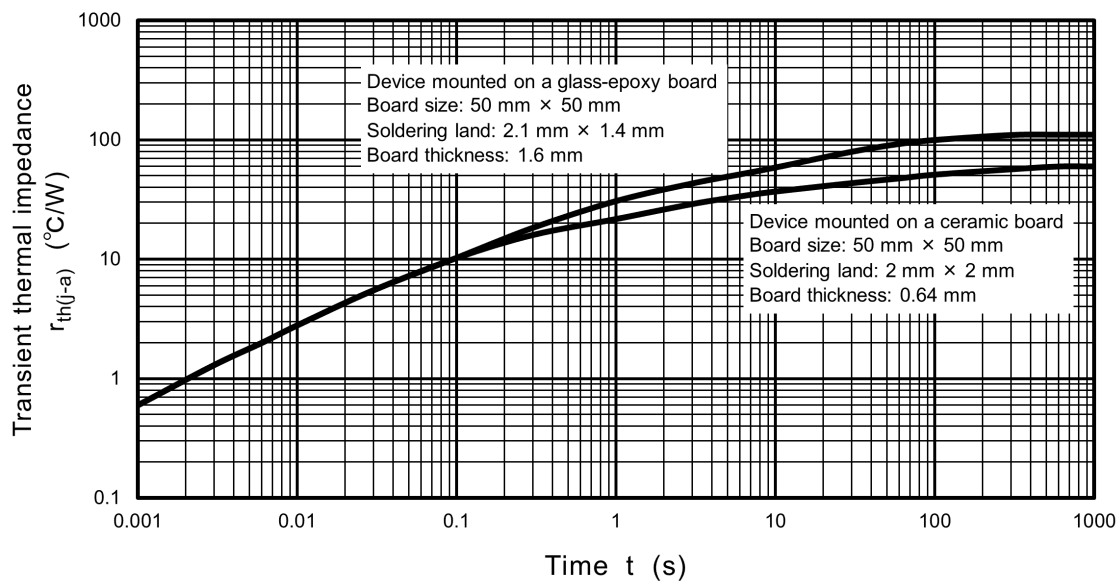
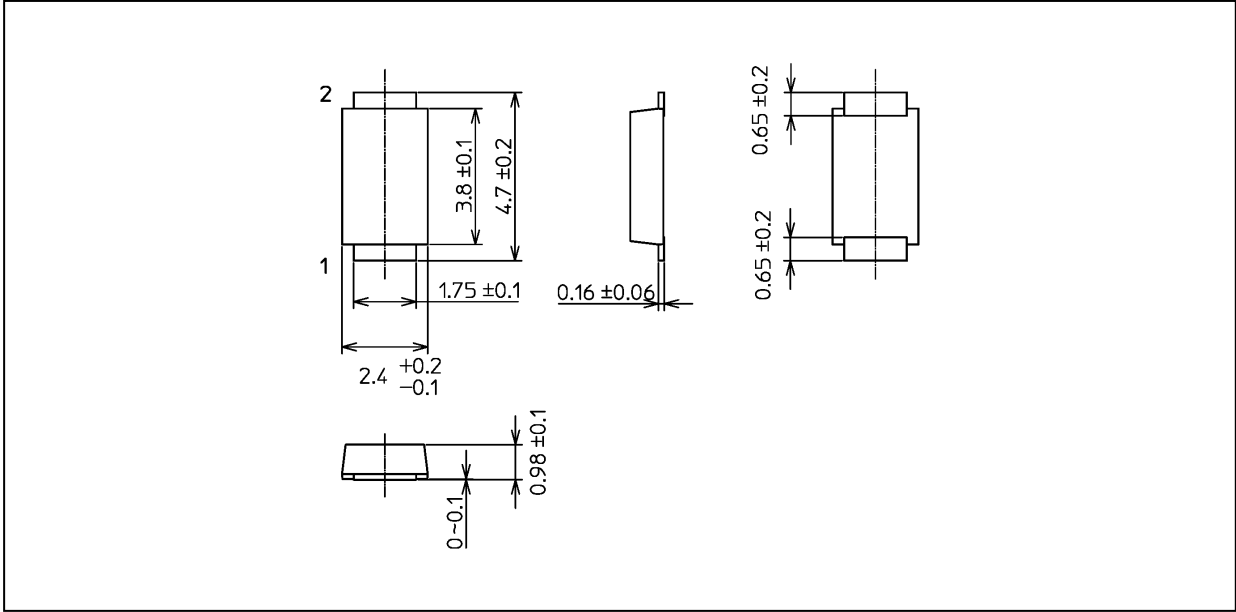


Fig. 9.4 $r_{th(j-a)} - t$

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

Package Dimensions

Unit: mm



Weight: 0.023 g (typ.)

Package Name(s)
TOSHIBA: 3-4E1S
Nickname: M-FLAT

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