

TOSHIBA Zener Diode Silicon Epitaxial Planar Type

CEZ24V

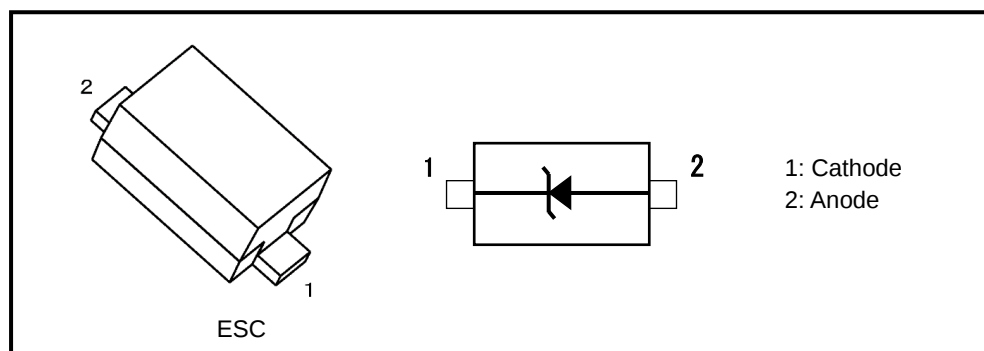
Applications

Voltage surge protection

Features

- Small package
- The typical voltage of V_Z is accorded to E24 series

Packaging and Internal Circuit



Absolute Maximum Ratings 1 (Note) (Unless otherwise specified, $T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Rating	Unit
Power dissipation	P_D^{*1}	150	mW
	P_D^{*2}	300	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to 150	$^\circ\text{C}$

Absolute Maximum Ratings 2 (Note) (Unless otherwise specified, $T_a = 25^\circ\text{C}$)

Type No.	Electrostatic discharge voltage ^{*3}		Peak pulse power ^{*4}	Peak pulse current ^{*4}	Type No.	Electrostatic discharge voltage ^{*3}		Peak pulse power ^{*4}	Peak pulse current ^{*4}
	Contact	Air				Contact	Air		
	VESD(kV)					VESD(kV)			
CEZ5V6	± 30		155	12	CEZ12V	± 30		200	7
CEZ6V2	± 30		175	11	CEZ16V	± 30		200	5.5
CEZ6V8	± 30		180	10	CEZ24V	± 30		200	4.5

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.).

*1: Mounted on a glass epoxy circuit board of 20 mm × 20 mm, pad dimensions of 4 mm × 4 mm.

*2: Mounted on a glass epoxy circuit board of 25.4 mm × 25.4 mm × 1.6 mm, Cu pad: 645 mm²

*3: according to IEC61000-4-2

*4: according to IEC61000-4-5, $t_p = 8 / 20 \mu s$

Start of commercial production
2020-07

CEZ series Electrical Characteristics (Unless otherwise specified, T_a = 25°C)

Type No.	Zener Voltage				Dynamic Impedance		Dynamic resistance	Clamp voltage	Total capacitance	Reverse Current	
	V _Z (V) *1			Test Current I _Z (mA)	Z _Z (Ω)	Test Current I _Z (mA)	R _{DYN} (Ω) *2	V _C (V) *2*3	C _t (pF) *4	I _R (μA)	Test Voltage V _R (V)
	Min	Typ.	Max		Max		Typ.	Typ.	Typ.	Max	
CEZ5V6	5.3	5.6	6.0	5	30	5	0.16	9	125	1	3.5
CEZ6V2	5.8	6.2	6.6	5	30	5	0.21	10	105	2.5	5.0
CEZ6V8	6.4	6.8	7.2	5	30	5	0.27	13	88	1.5	5.5
CEZ12V	11.4	12	12.6	5	30	5	0.7	26	44	0.1	10
CEZ16V	15.3	16	17.1	5	35	5	0.5	27	35	0.1	14
CEZ24V	22.8	24	25.6	5	70	5	0.6	36.5	26	0.1	19

*1: Test time: t = 30 ms

*2: TLP parameters: Z₀ = 50 Ω, t_p = 100 ns, t_r = 300 ps, averaging window: t₁ = 30 ns to t₂ = 60 ns,

extraction of dynamic resistance using least squares fit of TLP characteristics between I_{TLP1} = 16 A and I_{TLP2} = 30 A.

*3: I_{TLP} = 16 A

*4: V_R = 0 V, f = 1 MHz

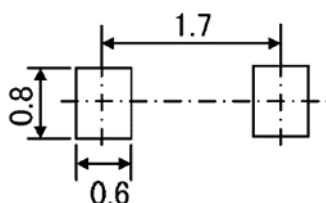
Marking List

Type No.	Marking	Type No.	Marking
CEZ5V6	LL	CEZ12V	M4
CEZ6V2	LM	CEZ16V	M7
CEZ6V8	LN	CEZ24V	MB

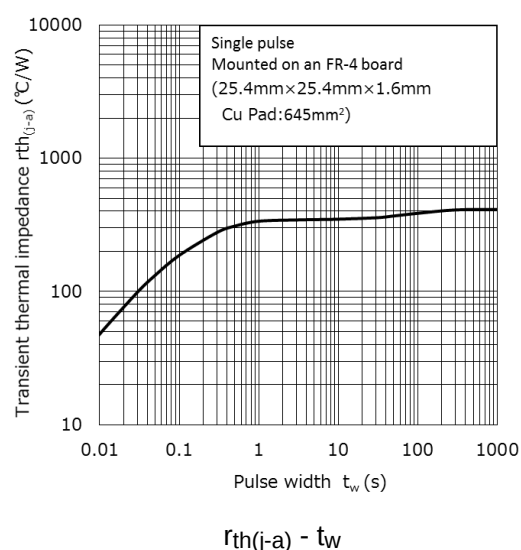
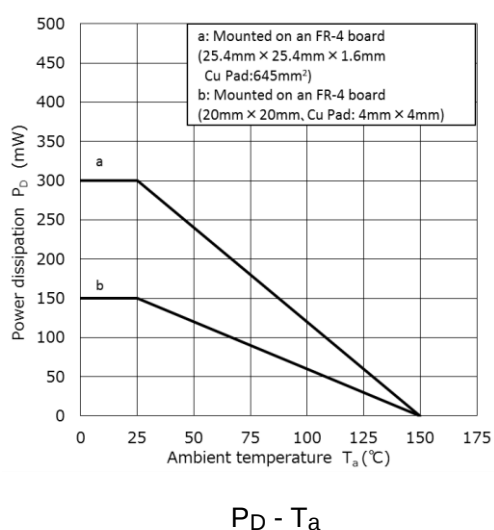
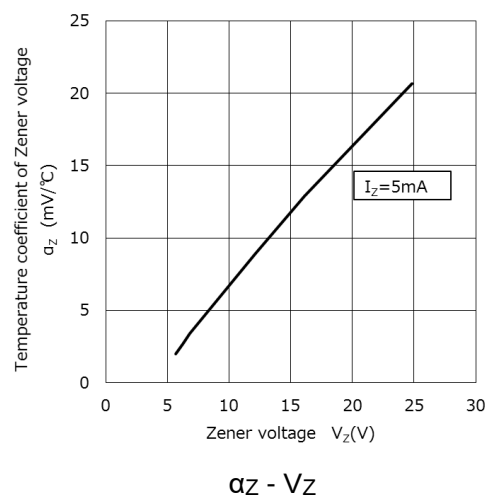
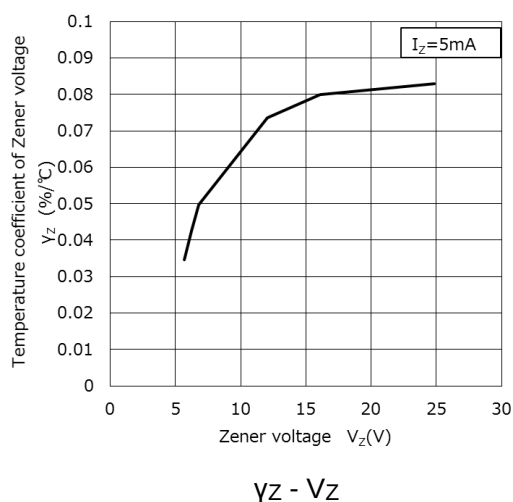
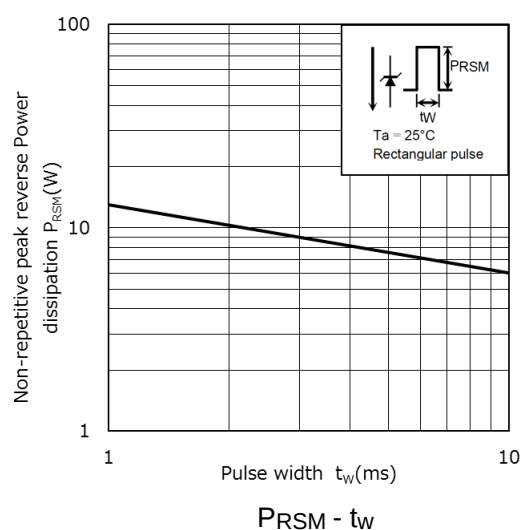
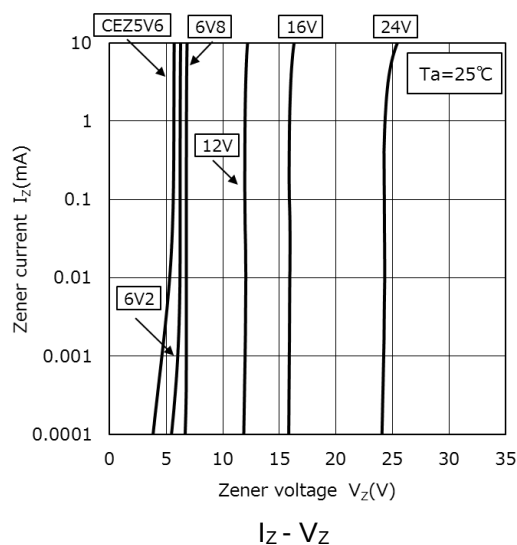
Marking (CEZ24V)



Land Pattern Dimensions (for reference only) (Unit: mm)

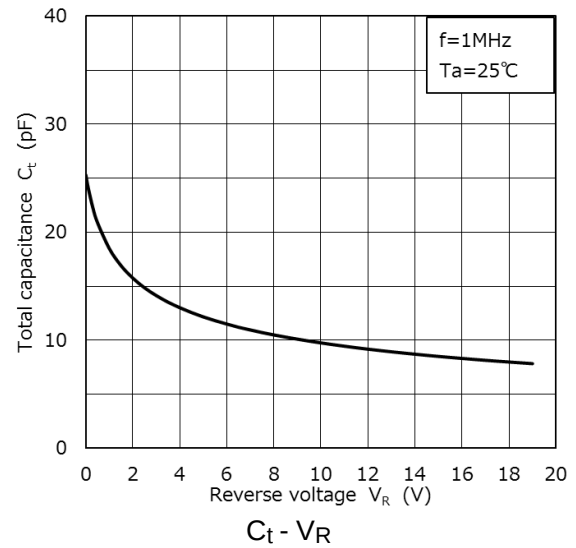
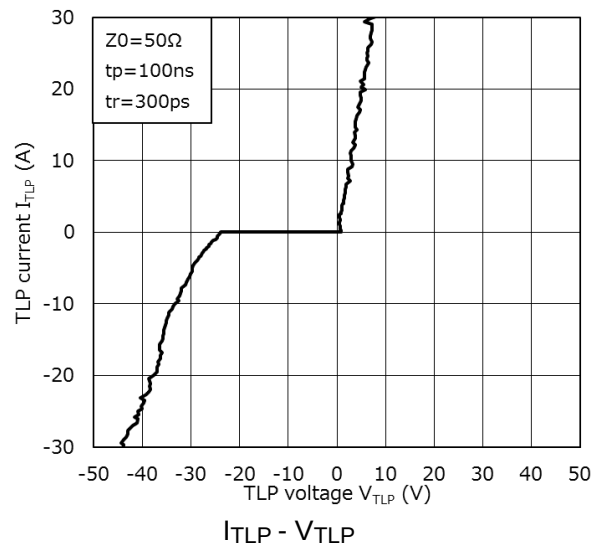


CEZ series Characteristics Curves (Note)

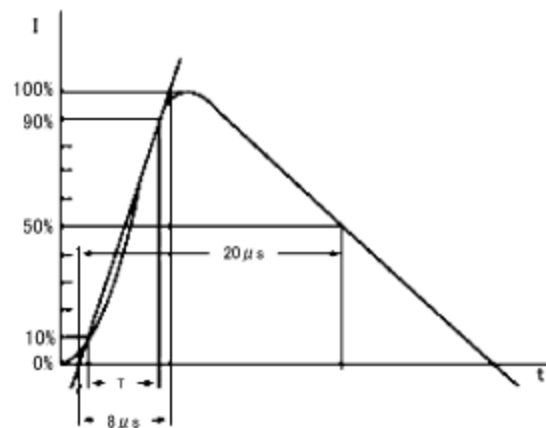
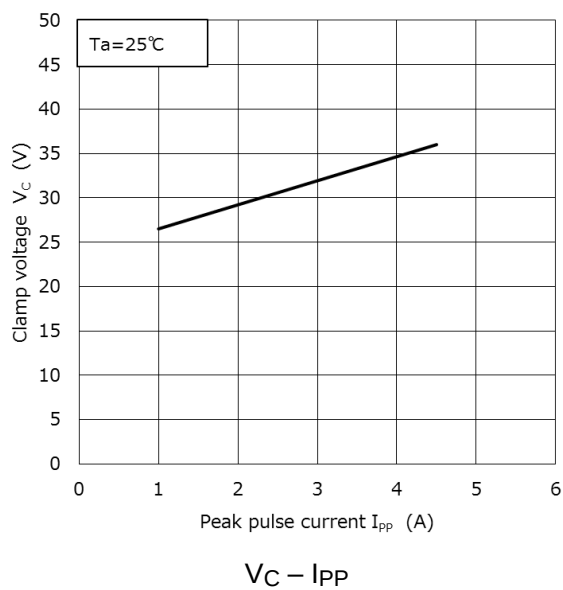


Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

CEZ24V Characteristics Curves (Note)



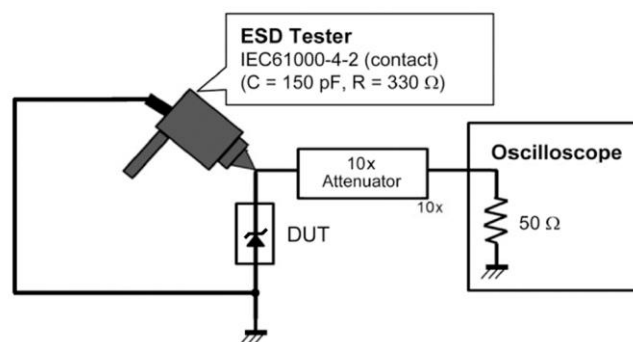
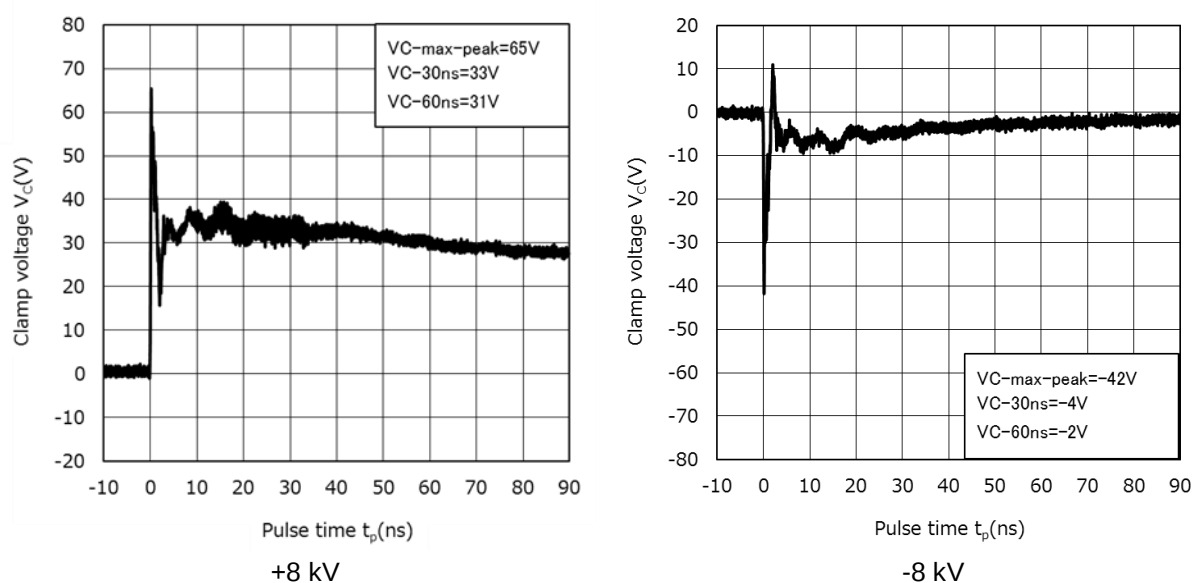
CEZ24V Clamp Voltage - Peak Pulse Current ($V_C - I_{PP}$) (Note)



Based on IEC61000-4-5 8/20 μs pulse.

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CEZ24V Clamp Waveform (Note)

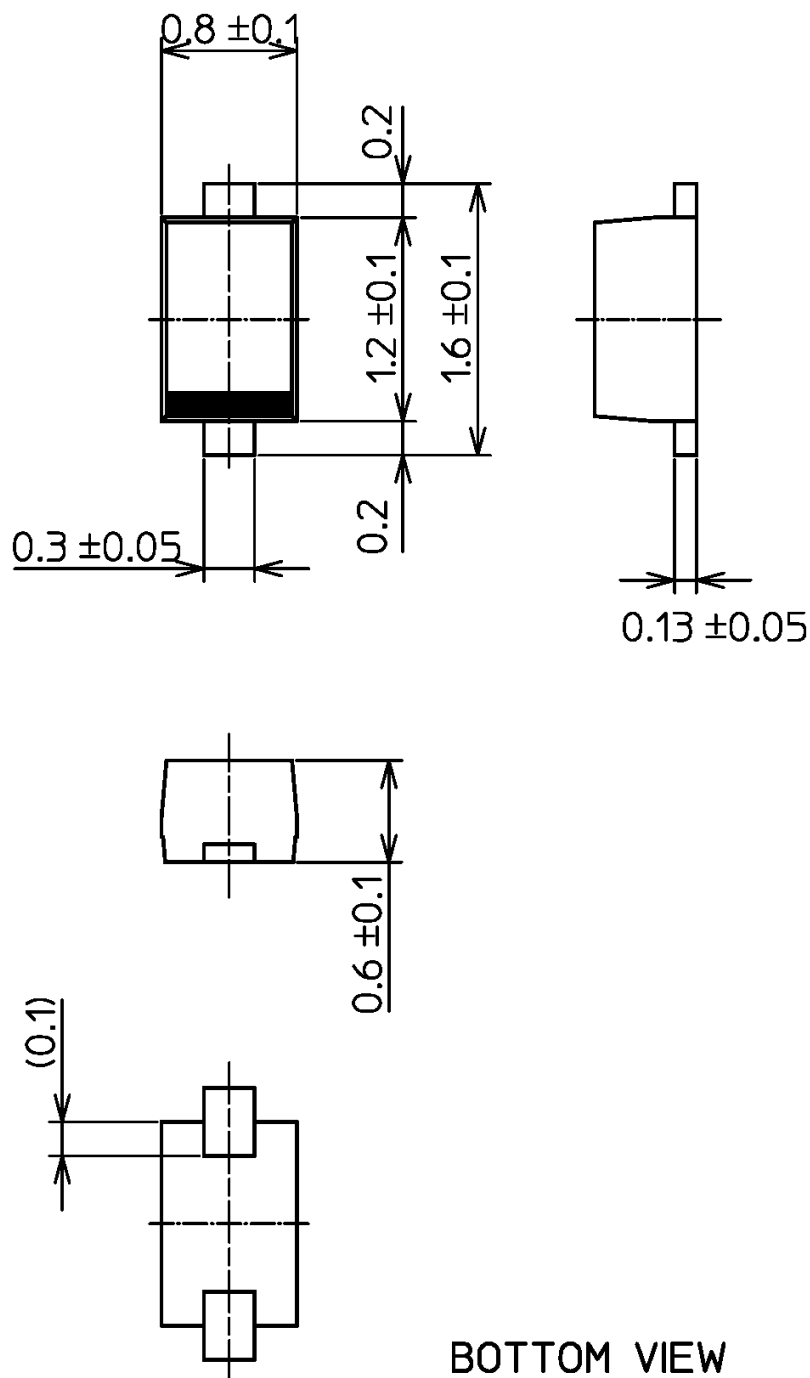


IEC61000-4-2 (Contact)

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

Package Dimensions

Unit: mm



Weight: 1.4 mg (typ.)

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