

TOSHIBA Diode Silicon Epitaxial Planar Type

# 02DZ2.0~02DZ24

Constant Voltage Regulation Applications

Reference Voltage Applications

- The mounting of four devices on an ultra-compact package allows the number of parts and the mounting cost to be reduced.
- Nominal voltage tolerance about  $\pm 2.5\%$  (2.0V~24V)

### Absolute Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Power dissipation	P*	200	mW
Junction temperature	T <sub>j</sub>	125	°C
Storage temperature range	T <sub>stg</sub>	-55~125	°C

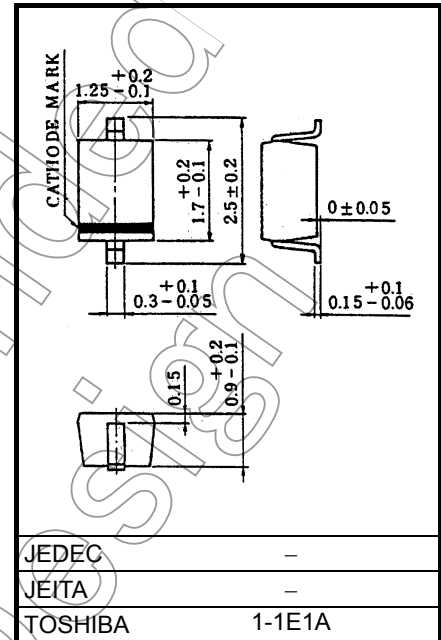
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

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

### Electrical Characteristics

(See Pages 3~5.)

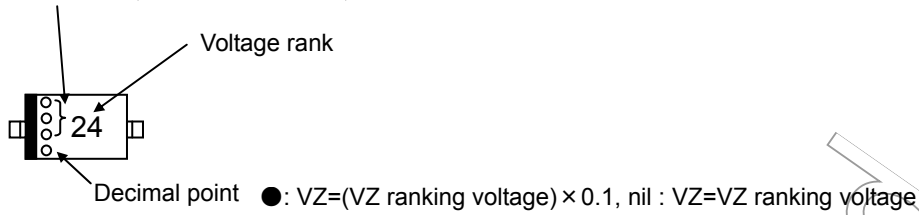
Unit: mm



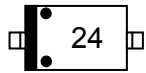
Weight: 4.5mg (typ.)

**Marking**

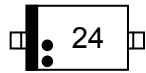
VZ additional ranking  
 upper ... X rank , middle ... Y rank , lower ... Z rank



Example1:02DZ2.4-X



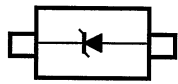
Example2:02DZ2.4-Z



Example3:02DZ24-X



**Pin Assignment (top view)**



Not Recommended for New Design

## Electrical Characteristics (Ta = 25°C)

Type No.		Zener Voltage		I <sub>Z</sub> (mA)	Dynamic Impedance		Knee Dynamic Impedance		Reverse Current	
		* V <sub>Z</sub> (V)			Z <sub>Z</sub> (Ω)	I <sub>Z</sub> (mA)	Z <sub>ZK</sub> (Ω)	I <sub>Z</sub> (mA)	I <sub>R</sub> (μA)	V <sub>R</sub> (V)
		Min	Max		Max		Max		Max	
02DZ2.0**	X	1.85	2.05	5	100	5	1000	0.5	120	0.5
	Z	1.95	2.15							
02DZ2.2**	X	2.05	2.26	5	100	5	1000	0.5	120	1.0
	Z	2.16	2.38							
02DZ2.4	X	2.28	2.50	5	100	5	1000	0.5	120	1.0
	Z	2.40	2.60							
02DZ2.7	X	2.50	2.75	5	110	5	1000	0.5	120	1.0
	Z	2.65	2.90							
02DZ3.0	X	2.80	3.05	5	120	5	1000	0.5	50	1.0
	Z	2.95	3.20							
02DZ3.3	X	3.10	3.35	5	130	5	1000	0.5	20	1.0
	Z	3.25	3.50							
02DZ3.6	X	3.40	3.65	5	130	5	1000	0.5	10	1.0
	Z	3.55	3.80							
02DZ3.9	X	3.70	3.97	5	130	5	1000	0.5	10	1.0
	Z	3.87	4.10							
02DZ4.3	X	4.00	4.23	5	130	5	1000	0.5	5	1.0
	Y	4.13	4.35							
	Z	4.25	4.50							
02DZ4.7	X	4.40	4.63	5	120	5	1000	0.5	5	1.0
	Y	4.53	4.76							
	Z	4.66	4.90							
02DZ5.1	X	4.80	5.07	5	70	5	1000	0.5	1	1.5
	Y	4.97	5.24							
	Z	5.14	5.40							
02DZ5.6	X	5.30	5.63	5	40	5	900	0.5	1	2.5
	Y	5.43	5.81							
	Z	5.61	6.00							
02DZ6.2	X	5.80	6.20	5	30	5	500	0.5	1	3.0
	Y	6.00	6.39							
	Z	6.19	6.60							

\*: Test time: t = 30ms

\*\* : Product by order

## Electrical Characteristics (Ta = 25°C)

Type No.		Zener Voltage			Dynamic Impedance		Knee Dynamic Impedance		Reverse Current	
		* Vz (V)		Iz (mA)	Zz(Ω)	Iz (mA)	Zzk (Ω)	Iz (mA)	IR (μA)	VR (V)
		Min	Max		Max		Max		Max	
02DZ6.8	X	6.40	6.80	5	25	5	150	0.5	0.5	5.0
	Y	6.60	7.02							
	Z	6.82	7.20							
02DZ7.5	X	7.00	7.43	5	23	5	120	0.5	0.5	6.0
	Y	7.23	7.66							
	Z	7.46	7.90							
02DZ8.2	X	7.70	8.16	5	20	5	120	0.5	0.5	6.5
	Y	7.96	8.43							
	Z	8.23	8.70							
02DZ9.1	X	8.50	9.00	5	18	5	120	0.5	0.5	7.0
	Y	8.80	9.30							
	Z	9.10	9.60							
02DZ10	X	9.40	9.93	5	15	5	120	0.5	0.5	8.0
	Y	9.73	10.26							
	Z	10.06	10.60							
02DZ11	X	10.40	10.98	5	15	5	120	0.5	0.5	8.5
	Y	10.73	11.26							
	Z	11.06	11.60							
02DZ12	X	11.40	11.93	5	15	5	110	0.5	0.5	9.0
	Y	11.73	12.26							
	Z	12.06	12.60							
02DZ13	X	12.40	13.08	5	15	5	110	0.5	0.5	10
	Y	12.88	13.57							
	Z	13.37	14.10							
02DZ15	X	13.80	14.63	5	15	5	110	0.5	0.5	11
	Y	14.33	15.11							
	Z	14.81	15.60							
02DZ16	X	15.30	16.10	5	18	5	150	0.5	0.5	12
	Y	15.80	16.60							
	Z	16.30	17.10							
02DZ18	X	16.80	17.76	5	20	5	150	0.5	0.5	14
	Y	17.46	18.43							
	Z	18.13	19.10							

\*: Test time: t = 30ms

\*\* : Product by order

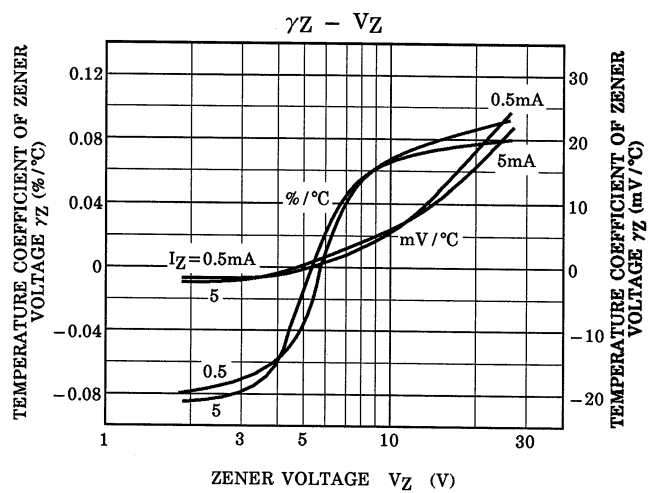
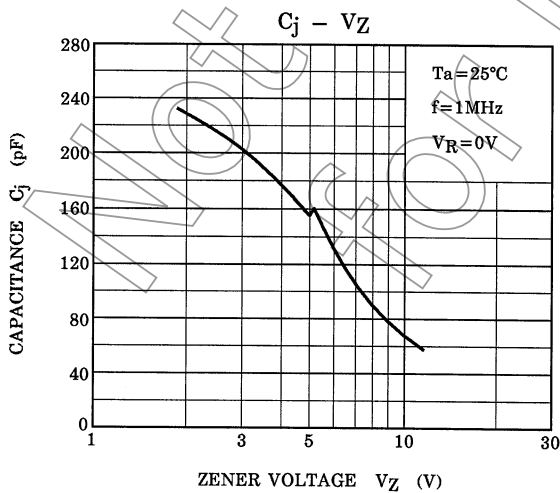
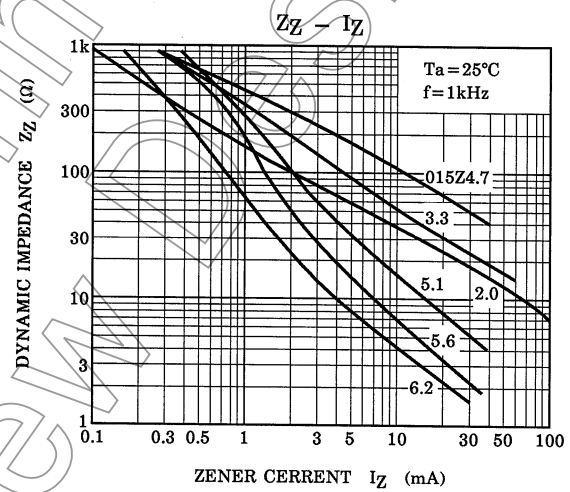
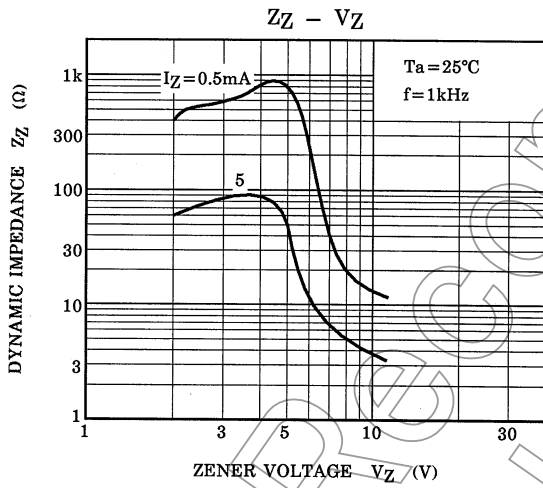
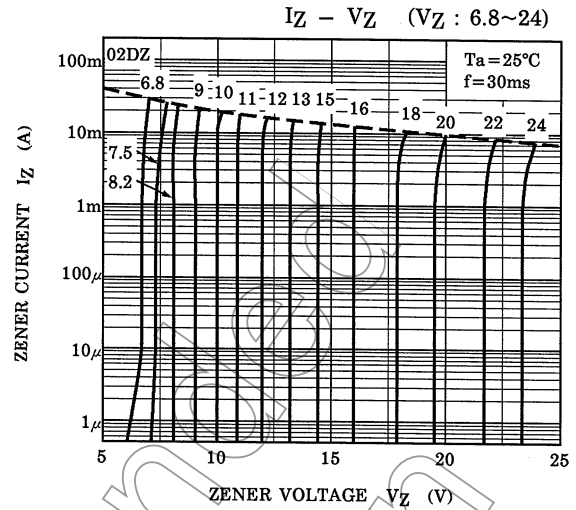
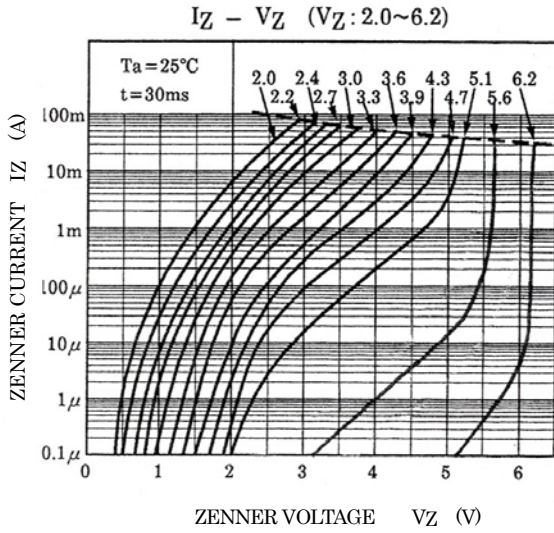
## Electrical Characteristics (Ta = 25°C)

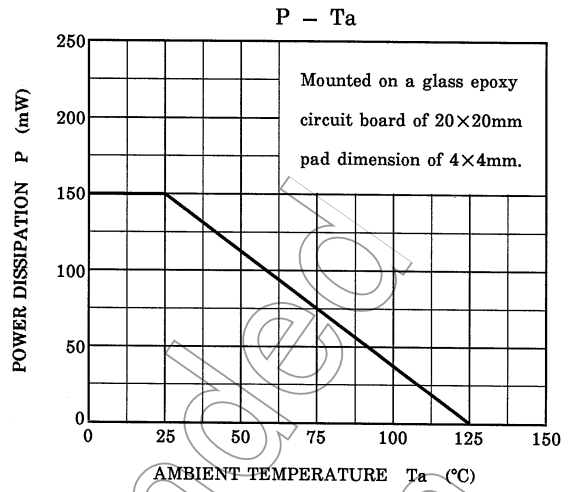
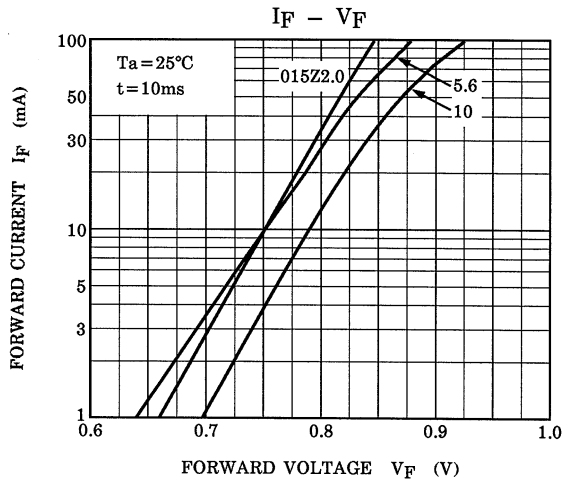
Type No.		Zener Voltage			Dynamic Impedance		Knee Dynamic Impedance		Reverse Current	
		* Vz (V)		Iz (mA)	Zz(Ω)	Iz (mA)	Zzk (Ω)	Iz (mA)	IR (μA)	VR (V)
		Min	Max		Max		Max		Max	
02DZ20	X	18.80	19.78	5	25	5	200	0.5	0.5	15
	Y	19.48	20.46							
	Z	20.16	21.20							
02DZ22	X	20.80	21.88	5	30	5	200	0.5	0.5	17
	Y	21.48	22.56							
	Z	22.16	23.30							
02DZ24	X	22.80	24.11	5	40	5	200	0.5	0.5	19
	Y	23.61	24.92							
	Z	24.42	25.60							

\*: Test time: t = 30ms

\*\* : Product by order

Not Recommended for New Design





Not Recommended for New Design

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