

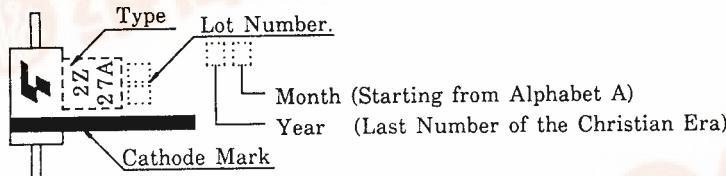
TOSHIBA ZENER DIODE SILICON DIFFUSED TYPE

# 2Z12~2Z51

CONSTANT VOLTAGE REGULATION  
TRANSIENT SUPPRESSORS

- Average Power Dissipation : P=1.5W
- Peak Reverse Power Dissipation : PRSM=900W at  $t_w=200\mu s$
- Zener Voltage :  $V_Z=12\sim 51V$
- Plastic Mold Package

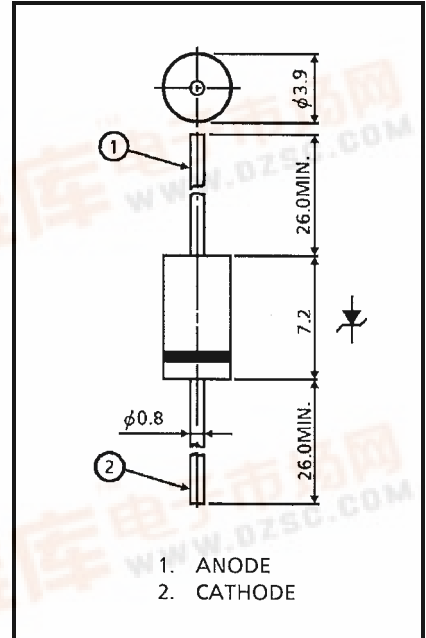
**MARK**



**MAXIMUM RATINGS (Ta = 25°C)**

CHARACTERISTIC	SYMBOL	RATING	UNIT
Power Dissipation	P	1.5	W
Junction Temperature	T <sub>j</sub>	-40 ~ 150	°C
Storage Temperature Range	T <sub>stg</sub>	-40 ~ 150	°C

Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	3-4B1A

Weight : 0.47 g

000707EAA1

• TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.

In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the "Handling Guide for Semiconductor Devices," or "TOSHIBA Semiconductor Reliability Handbook" etc..

• The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer's own risk.

• The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.

• The information contained herein is subject to change without notice.



### ELECTRICAL CHARACTERISTICS (Ta=25°C)

TYPE	ZENER CHARACTERISTICS					TEMPERATURE COEFFICIENT OF ZENER VOLTAGE $\alpha_T$ (mV / °C)		FORWARD VOLTAGE		REVERSE CURRENT	
	ZENER VOLTAGE $V_Z$ (V)			ZENER IMPEDANCE $r_d$ ( $\Omega$ )	MEASUREMENT CURRENT $I_Z$ (mA)			$V_F$ (V)	MEASUREMENT CURRENT $I_F$ (A)	$I_R$ ( $\mu$ A)	MEASUREMENT VOLTAGE $V_R$ (V)
	MIN.	TYP.	MAX.			MAX.	TYP.				
2Z12	10.8	12	13.2	30	10	8	13	1.2	0.2	5	10.2
2Z13	11.7	13	14.3	30	10	9	14	1.2	0.2	5	11.1
2Z15	13.5	15	16.5	30	10	11	17	1.2	0.2	5	12.8
2Z16	14.4	16	17.6	30	10	12	19	1.2	0.2	5	13.6
*2Z16A	15.2	16	16.8	30	10	12	19	1.2	0.2	5	13.6
2Z18	16.2	18	19.8	30	10	14	23	1.2	0.2	5	15.3
*2Z18A	17.1	18	18.9	30	10	14	23	1.2	0.2	5	15.3
2Z20	18.0	20	22.0	30	10	16	26	1.2	0.2	5	17.1
2Z22	19.8	22	24.2	30	10	18	28	1.2	0.2	5	18.8
2Z24	21.6	24	26.4	30	10	20	32	1.2	0.2	5	20.5
2Z27	24.3	27	29.7	30	10	23	36	1.2	0.2	5	23.1
*2Z27A	25.7	27	28.3	30	10	23	36	1.2	0.2	5	23.1
2Z30	27.0	30	33.0	30	10	25	40	1.2	0.2	5	25.6
2Z33	29.7	33	36.3	30	10	26	41	1.2	0.2	5	28.2
2Z36	32.4	36	39.6	30	9	28	45	1.2	0.2	5	30.8
2Z43	38.7	43	47.3	40	7	33	53	1.2	0.2	5	34.4
2Z47	42.3	47	51.7	65	6	38	60	1.2	0.2	5	40.2
2Z51	45.9	51	56.1	65	6	43	68	1.2	0.2	5	43.6

Note: \* Production upon request.

