

TOSHIBA ZENER DIODE SILICON DIFFUSED TYPE

# 1ZB6.8~1ZB390

CONSTANT VOLTAGE REGULATION

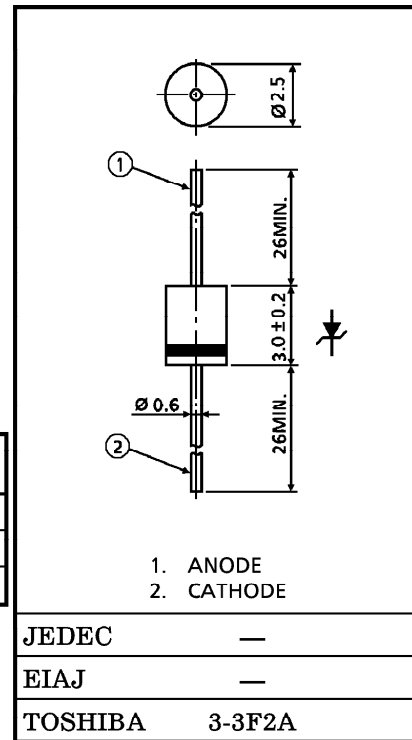
TRANSIENT SUPPRESSORS

- Average Power Dissipation :  $P=1.0W$
- Peak Reverse Power Dissipation :  $P_{RSM}=200W$  at  $t_W=200\mu s$
- Zener Voltage :  $V_Z=6.8\sim 390V$
- Tolerance of Zener Voltage :  $\pm 10\%$
- Plastic Mold Package

MAXIMUM RATINGS ( $T_a = 25^\circ C$ )

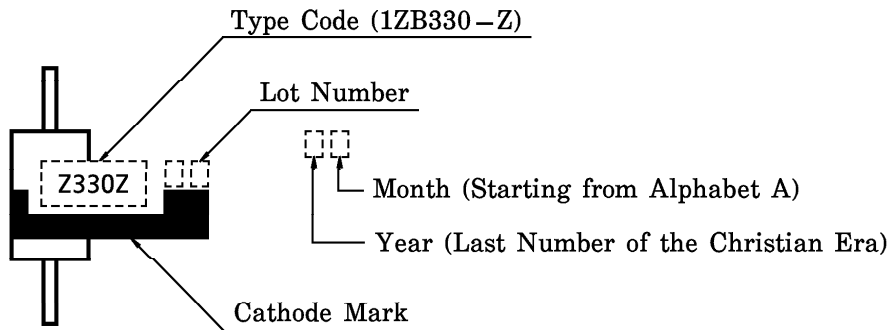
| CHARACTERISTIC            | SYMBOL    | RATING    | UNIT       |
|---------------------------|-----------|-----------|------------|
| Power Dissipation         | P         | 1.0       | W          |
| Junction Temperature      | $T_j$     | -40 ~ 150 | $^\circ C$ |
| Storage Temperature Range | $T_{stg}$ | -40 ~ 150 | $^\circ C$ |

Unit in mm



Weight : 0.18g

MARK



Color : Silver

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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) | TYP.  | MAX. | $V_F$ (V)       | MEASUREMENT CURRENT $I_F$ (A) | $I_R$ ( $\mu$ A) | MEASUREMENT VOLTAGE $V_R$ (V) |
|          | MIN.                    | TYP. | MAX. | MAX.                               |                                |   |      |                 |                               |                  |                               |
| 1ZB6.8   | 6.2                     | 6.8  | 7.4  | 60                                 | 10                             | 3   | 4    | 1.2             | 0.2                           | 10               | 3                             |
| 1ZB7.5   | 6.8                     | 7.5  | 8.3  | 30                                 | 10                             | 4   | 5    | 1.2             | 0.2                           | 10               | 4.5                           |
| 1ZB8.2   | 7.4                     | 8.2  | 9.1  | 30                                 | 10                             | 4   | 6    | 1.2             | 0.2                           | 10               | 4.9                           |
| 1ZB9.1   | 8.2                     | 9.1  | 10.1 | 30                                 | 10                             | 5   | 8    | 1.2             | 0.2                           | 10               | 5.5                           |
| 1ZB10    | 9.0                     | 10   | 11.0 | 30                                 | 10                             | 6   | 9    | 1.2             | 0.2                           | 10               | 6                             |
| 1ZB11    | 9.9                     | 11   | 12.1 | 30                                 | 10                             | 7   | 11   | 1.2             | 0.2                           | 10               | 7                             |
| 1ZB12    | 10.8                    | 12   | 13.2 | 30                                 | 10                             | 8   | 13   | 1.2             | 0.2                           | 10               | 8                             |
| 1ZB13    | 11.7                    | 13   | 14.3 | 30                                 | 10                             | 9   | 14   | 1.2             | 0.2                           | 10               | 9                             |
| 1ZB15    | 13.5                    | 15   | 16.5 | 30                                 | 10                             | 11  | 17   | 1.2             | 0.2                           | 10               | 10                            |
| 1ZB16    | 14.4                    | 16   | 17.6 | 30                                 | 10                             | 12  | 19   | 1.2             | 0.2                           | 10               | 11                            |
| 1ZB18    | 16.2                    | 18   | 19.8 | 30                                 | 10                             | 14  | 23   | 1.2             | 0.2                           | 10               | 13                            |
| 1ZB20    | 18.0                    | 20   | 22.0 | 30                                 | 10                             | 16  | 26   | 1.2             | 0.2                           | 10               | 14                            |
| 1ZB22    | 19.8                    | 22   | 24.2 | 30                                 | 10                             | 18  | 28   | 1.2             | 0.2                           | 10               | 16                            |
| 1ZB24    | 21.6                    | 24   | 26.4 | 30                                 | 10                             | 20  | 32   | 1.2             | 0.2                           | 10               | 17                            |
| 1ZB27    | 24.3                    | 27   | 29.7 | 30                                 | 10                             | 23  | 36   | 1.2             | 0.2                           | 10               | 19                            |
| 1ZB30    | 27.0                    | 30   | 33.0 | 30                                 | 10                             | 25  | 40   | 1.2             | 0.2                           | 10               | 21                            |
| 1ZB33    | 29.7                    | 33   | 36.3 | 30                                 | 10                             | 26  | 41   | 1.2             | 0.2                           | 10               | 26.4                          |
| 1ZB36    | 32.4                    | 36   | 39.6 | 30                                 | 9                              | 28  | 45   | 1.2             | 0.2                           | 10               | 28.8                          |
| 1ZB43    | 38.7                    | 43   | 47.3 | 40                                 | 7                              | 33  | 53   | 1.2             | 0.2                           | 10               | 34.4                          |
| 1ZB47    | 42.3                    | 47   | 51.7 | 65                                 | 6                              | 38  | 60   | 1.2             | 0.2                           | 10               | 37.6                          |
| 1ZB51    | 45.9                    | 51   | 56.1 | 65                                 | 6                              | 43  | 68   | 1.2             | 0.2                           | 10               | 40.8                          |
| 1ZB68    | 61.2                    | 68   | 74.8 | 120                                | 4                              | 57  | 90   | 1.2             | 0.2                           | 10               | 54.4                          |
| 1ZB75    | 67.5                    | 75   | 82.5 | 150                                | 4                              | 66  | 104  | 1.2             | 0.2                           | 10               | 60                            |
| 1ZB82    | 73.8                    | 82   | 90.2 | 170                                | 3                              | 71  | 113  | 1.2             | 0.2                           | 10               | 65.4                          |
| 1ZB100   | 90                      | 100  | 110  | 300                                | 3                              | 87  | 138  | 1.2             | 0.2                           | 10               | 80                            |
| 1ZB110   | 99                      | 110  | 121  | 300                                | 3                              | 96  | 152  | 1.2             | 0.2                           | 10               | 88                            |
| 1ZB150   | 135                     | 150  | 165  | 450                                | 2                              | 136   | 212  | 1.2             | 0.2                           | 10               | 120                           |
| 1ZB180   | 162                     | 180  | 198  | 500                                | 1.5                            | 161   | 255  | 1.2             | 0.2                           | 10               | 144                           |
| 1ZB200   | 180                     | 200  | 220  | 500                                | 0.5                            | 170   | 269  | 1.2             | 0.2                           | 10               | 160                           |
| 1ZB200-Y | 190                     | 200  | 210  |                                    |                                | 170   | 269  |                 |                               |                  | 160                           |
| 1ZB200-Z | 200                     | 210  | 220  |                                    |                                | 178   | 286  |                 |                               |                  | 168                           |
| 1ZB220   | 198                     | 220  | 242  | 5000                               | 0.5                            | 200   | 309  | 1.2             | 0.2                           | 10               | 176                           |
| 1ZB220-Y | 210                     | 220  | 230  |                                    |                                | 200   | 309  |                 |                               |                  | 176                           |
| 1ZB220-Z | 220                     | 230  | 240  |                                    |                                | 207   | 320  |                 |                               |                  | 184                           |
| 1ZB240   | 216                     | 240  | 264  | 5000                               | 0.5                            | 215   | 343  | 1.2             | 0.2                           | 10               | 192                           |
| 1ZB240-Y | 230                     | 240  | 250  |                                    |                                | 215   | 325  |                 |                               |                  | 216                           |
| 1ZB240-Z | 240                     | 250  | 260  |                                    |                                | 225   | 338  |                 |                               |                  | 225                           |

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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.  | MAX. | MAX.            |                               | MAX.              |                               |
| 1ZB270   | 243                     | 270  | 297  | 5000                               | 0.5                            | 243   | 385  | 1.2             | 0.2                           | 10                | 216                           |
| 1ZB270-X | 250                     | 260  | 270  |                                    |                                | 221   | 350  |                 |                               |                   | 234                           |
| 1ZB270-Y | 260                     | 270  | 280  |                                    |                                | 228   | 362  |                 |                               |                   | 243                           |
| 1ZB270-Z | 270                     | 280  | 290  |                                    |                                | 236   | 374  |                 |                               |                   | 252                           |
| 1ZB300   | 270                     | 300  | 330  | 5000                               | 0.5                            | 270   | 428  | 1.2             | 0.2                           | 10                | 240                           |
| 1ZB300-X | 280                     | 290  | 300  |                                    |                                | 244   | 388  |                 |                               |                   | 261                           |
| 1ZB300-Y | 290                     | 300  | 310  |                                    |                                | 253   | 402  |                 |                               |                   | 270                           |
| 1ZB300-Z | 300                     | 310  | 320  |                                    |                                | 261   | 415  |                 |                               |                   | 279                           |
| 1ZB330   | 297                     | 330  | 363  | 5000                               | 0.5                            | 296   | 470  | 1.2             | 0.2                           | 10                | 264                           |
| 1ZB330-X | 310                     | 320  | 330  |                                    |                                | 270   | 428  |                 |                               |                   | 288                           |
| 1ZB330-Y | 320                     | 330  | 340  |                                    |                                | 278   | 441  |                 |                               |                   | 297                           |
| 1ZB330-Z | 330                     | 340  | 350  |                                    |                                | 287   | 455  |                 |                               |                   | 306                           |
| 1ZB390   | 351                     | 390  | 429  | 10000                              | 0.5                            | 350   | 555  | 1.2             | 0.2                           | 10                | 312                           |

