

TOSHIBA ZENER DIODE SILICON DIFFUSED TYPE

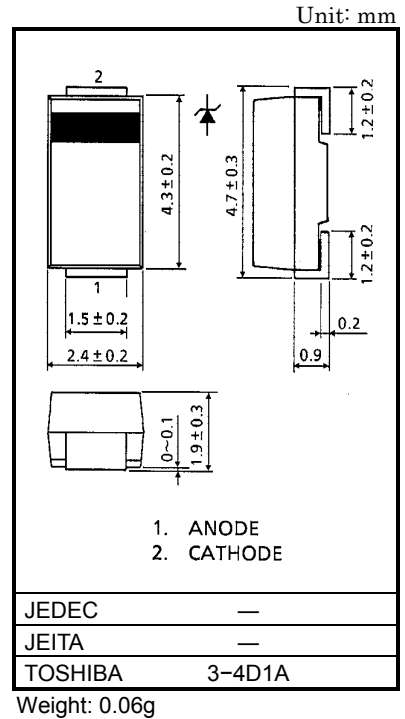
# U1ZB6.8~U1ZB390

CONSTANT VOLTAGE REGULATION  
TRANSIENT SUPPRESSORS

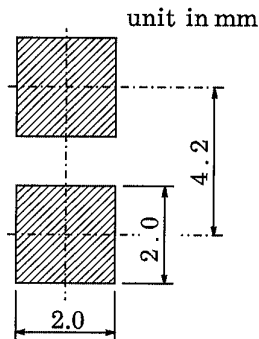
- Average Power Dissipation :  $P = 1.0 \text{ W}$
- Zener Voltage :  $V_Z = 6.8 \sim 390 \text{ V}$
- Surface Mounting Plastic Mold Package

**MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )**

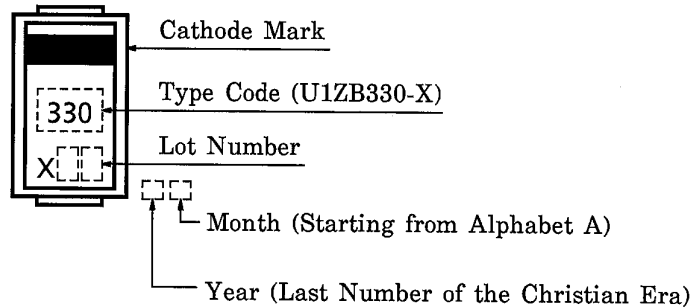
| CHARACTERISTIC            | SYMBOL    | RATING  | UNIT             |
|---------------------------|-----------|---------|------------------|
| Power Dissipation         | P         | 1.0     | W                |
| Junction Temperature      | $T_j$     | -40~150 | $^\circ\text{C}$ |
| Storage Temperature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



**STANDARD SOLDERING PAD**



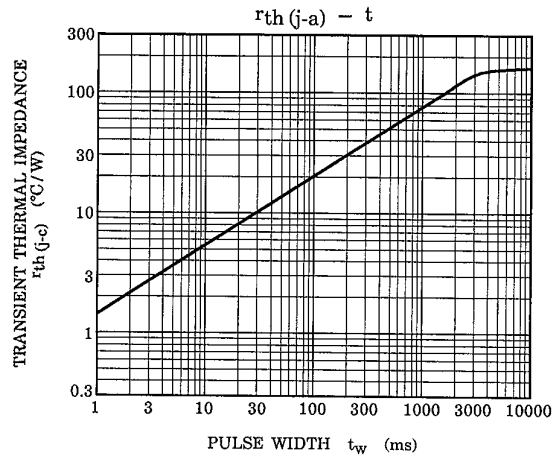
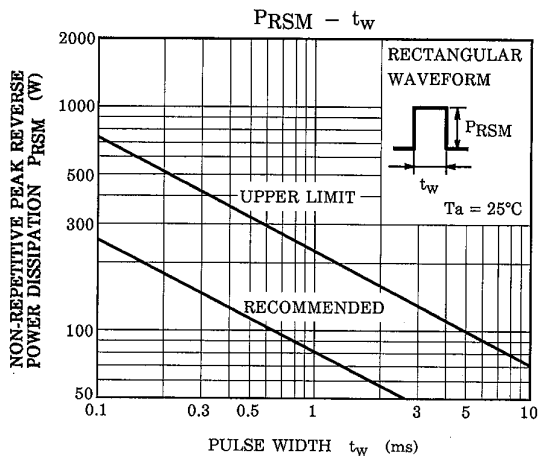
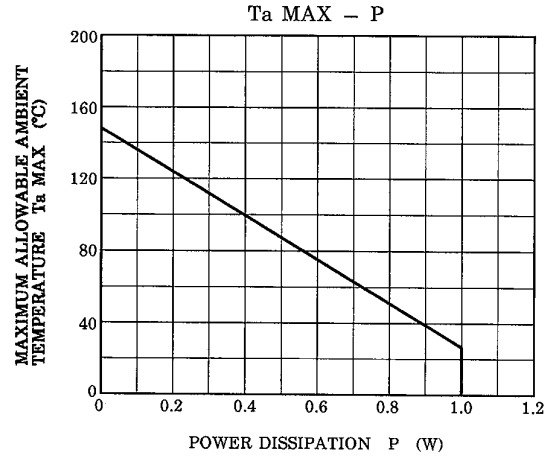
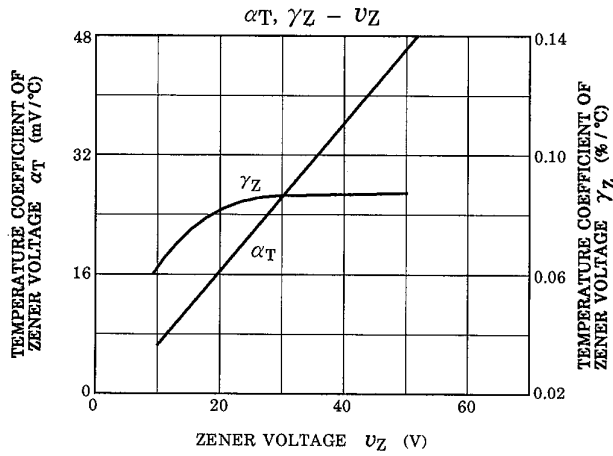
**MARK**



**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                                |                                |   |     |                 |                               |                  |                               |
| U1ZB6.8   | 6.2                     | 6.8  | 7.4  | 60                                 | 10                             | 3   | 4   | 1.2             | 0.2                           | 10               | 3                             |
| U1ZB7.5   | 6.8                     | 7.5  | 8.3  | 30                                 | 10                             | 4   | 5   | 1.2             | 0.2                           | 10               | 4.5                           |
| U1ZB8.2   | 7.4                     | 8.2  | 9.1  | 30                                 | 10                             | 4   | 6   | 1.2             | 0.2                           | 10               | 4.9                           |
| U1ZB9.1   | 8.2                     | 9.1  | 10.1 | 30                                 | 10                             | 5   | 8   | 1.2             | 0.2                           | 10               | 5.5                           |
| U1ZB10    | 9.0                     | 10   | 11.0 | 30                                 | 10                             | 6   | 9   | 1.2             | 0.2                           | 10               | 6                             |
| U1ZB11    | 9.9                     | 11   | 12.1 | 30                                 | 10                             | 7   | 11  | 1.2             | 0.2                           | 10               | 7                             |
| U1ZB12    | 10.8                    | 12   | 13.2 | 30                                 | 10                             | 8   | 13  | 1.2             | 0.2                           | 10               | 8                             |
| U1ZB13    | 11.7                    | 13   | 14.3 | 30                                 | 10                             | 9   | 14  | 1.2             | 0.2                           | 10               | 9                             |
| U1ZB15    | 13.5                    | 15   | 16.5 | 30                                 | 10                             | 11  | 17  | 1.2             | 0.2                           | 10               | 10                            |
| U1ZB16    | 14.4                    | 16   | 17.6 | 30                                 | 10                             | 12  | 19  | 1.2             | 0.2                           | 10               | 11                            |
| U1ZB18    | 16.2                    | 18   | 19.8 | 30                                 | 10                             | 14  | 23  | 1.2             | 0.2                           | 10               | 13                            |
| U1ZB20    | 18.0                    | 20   | 22.0 | 30                                 | 10                             | 16  | 26  | 1.2             | 0.2                           | 10               | 14                            |
| U1ZB22    | 19.8                    | 22   | 24.2 | 30                                 | 10                             | 18  | 28  | 1.2             | 0.2                           | 10               | 16                            |
| U1ZB24    | 21.6                    | 24   | 26.4 | 30                                 | 10                             | 20  | 32  | 1.2             | 0.2                           | 10               | 17                            |
| U1ZB27    | 24.3                    | 27   | 29.7 | 30                                 | 10                             | 23  | 36  | 1.2             | 0.2                           | 10               | 19                            |
| U1ZB30    | 27.0                    | 30   | 33.0 | 30                                 | 10                             | 25  | 40  | 1.2             | 0.2                           | 10               | 21                            |
| U1ZB33    | 29.7                    | 33   | 36.3 | 30                                 | 10                             | 26  | 41  | 1.2             | 0.2                           | 10               | 26.4                          |
| U1ZB36    | 32.4                    | 36   | 39.6 | 30                                 | 9                              | 28  | 45  | 1.2             | 0.2                           | 10               | 28.8                          |
| U1ZB43    | 38.7                    | 43   | 47.3 | 40                                 | 7                              | 33  | 53  | 1.2             | 0.2                           | 10               | 34.4                          |
| U1ZB47    | 42.3                    | 47   | 51.7 | 65                                 | 6                              | 38  | 60  | 1.2             | 0.2                           | 10               | 37.6                          |
| U1ZB51    | 45.9                    | 51   | 56.1 | 65                                 | 6                              | 43  | 68  | 1.2             | 0.2                           | 10               | 40.8                          |
| U1ZB68    | 61.2                    | 68   | 74.8 | 120                                | 4                              | 57  | 90  | 1.2             | 0.2                           | 10               | 54.4                          |
| U1ZB75    | 67.5                    | 75   | 82.5 | 150                                | 4                              | 66  | 104 | 1.2             | 0.2                           | 10               | 60                            |
| U1ZB82    | 73.8                    | 82   | 90.2 | 170                                | 3                              | 71  | 113 | 1.2             | 0.2                           | 10               | 65.4                          |
| U1ZB100   | 90                      | 100  | 110  | 300                                | 3                              | 87  | 138 | 1.2             | 0.2                           | 10               | 80                            |
| U1ZB110   | 99                      | 110  | 121  | 300                                | 3                              | 96  | 152 | 1.2             | 0.2                           | 10               | 88                            |
| U1ZB150   | 135                     | 150  | 165  | 450                                | 2                              | 136   | 212 | 1.2             | 0.2                           | 10               | 120                           |
| U1ZB180   | 162                     | 180  | 198  | 500                                | 1.5                            | 161   | 255 | 1.2             | 0.2                           | 10               | 144                           |
| U1ZB200   | 180                     | 200  | 220  | 500                                | 0.5                            | 170   | 269 | 1.2             | 0.2                           | 10               | 160                           |
| U1ZB200-Y | 190                     | 200  | 210  |                                    |                                | 170   | 269 |                 |                               |                  | 160                           |
| U1ZB200-Z | 200                     | 210  | 220  |                                    |                                | 178   | 286 |                 |                               |                  | 168                           |
| U1ZB220   | 198                     | 220  | 242  | 5000                               | 0.5                            | 200   | 309 | 1.2             | 0.2                           | 10               | 176                           |
| U1ZB220-Y | 210                     | 220  | 230  |                                    |                                | 200   | 309 |                 |                               |                  | 176                           |
| U1ZB220-Z | 220                     | 230  | 240  |                                    |                                | 207   | 320 |                 |                               |                  | 184                           |
| U1ZB240   | 216                     | 240  | 264  | 5000                               | 0.5                            | 215   | 325 | 1.2             | 0.2                           | 10               | 192                           |
| U1ZB240-Y | 230                     | 240  | 250  |                                    |                                | 215   | 325 |                 |                               |                  | 216                           |
| U1ZB240-Z | 240                     | 250  | 260  |                                    |                                | 225   | 338 |                 |                               |                  | 225                           |

| TYPE      | ZENER CHARACTERISTICS      |      |     |                                       | MEASUREMENT CURRENT<br>$I_z$ (mA) | TEMPERATURE COEFFICIENT OF ZENER VOLTAGE<br>$\alpha_T$ (mV / °C) |     | FORWARD VOLTAGE |                                  | REVERSE CURRENT  |                                  |
|-----------|----------------------------|------|-----|---------------------------------------|-----------------------------------|--|-----|-----------------|----------------------------------|------------------|----------------------------------|
|           | ZENER VOLTAGE<br>$V_z$ (V) |      |     | ZENER IMPEDANCE<br>$r_d$ ( $\Omega$ ) |                                   | TYP.   | MAX | $V_F$ (V)       | MEASUREMENT CURRENT<br>$I_F$ (A) | $I_R$ ( $\mu$ A) | MEASUREMENT VOLTAGE<br>$V_R$ (V) |
|           | MIN                        | TYP. | MAX | MAX.                                  |                                   |  |     |                 |                                  |                  |                                  |
| U1ZB270   | 243                        | 270  | 297 | 5000                                  | 0.5                               | 243  | 385 | 1.2             | 0.2                              | 10               | 216                              |
| U1ZB270-X | 250                        | 260  | 270 |                                       |                                   | 221  | 350 |                 |                                  |                  | 234                              |
| U1ZB270-Y | 260                        | 270  | 280 |                                       |                                   | 228  | 362 |                 |                                  |                  | 243                              |
| U1ZB270-Z | 270                        | 280  | 290 |                                       |                                   | 236  | 374 |                 |                                  |                  | 252                              |
| U1ZB300   | 270                        | 300  | 330 | 5000                                  | 0.5                               | 270  | 428 | 1.2             | 0.2                              | 10               | 240                              |
| U1ZB300-X | 280                        | 290  | 300 |                                       |                                   | 244  | 388 |                 |                                  |                  | 261                              |
| U1ZB300-Y | 290                        | 300  | 310 |                                       |                                   | 253  | 402 |                 |                                  |                  | 270                              |
| U1ZB300-Z | 300                        | 310  | 320 |                                       |                                   | 261  | 415 |                 |                                  |                  | 279                              |
| U1ZB330   | 297                        | 330  | 363 | 5000                                  | 0.5                               | 296  | 470 | 1.2             | 0.2                              | 10               | 264                              |
| U1ZB330-X | 310                        | 320  | 330 |                                       |                                   | 270  | 428 |                 |                                  |                  | 288                              |
| U1ZB330-Y | 320                        | 330  | 340 |                                       |                                   | 278  | 441 |                 |                                  |                  | 297                              |
| U1ZB330-Z | 330                        | 340  | 350 |                                       |                                   | 287  | 455 |                 |                                  |                  | 306                              |
| U1ZB390   | 351                        | 390  | 429 | 10000                                 | 0.5                               | 350  | 555 | 1.2             | 0.2                              | 10               | 312                              |



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