

TOSHIBA ZENER DIODE SILICON DIFFUSED TYPE

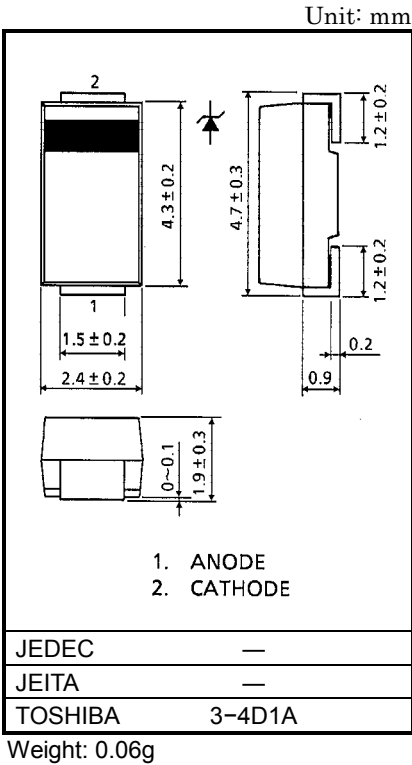
U1ZB6.8~U1ZB390

CONSTANT VOLTAGE REGULATION  
TRANSIENT SUPPRESSORS

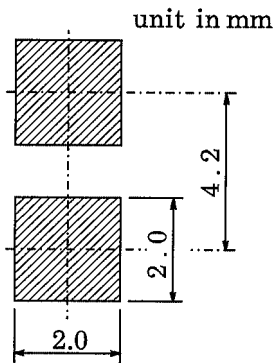
- Average Power Dissipation :  $P = 1.0\text{ W}$
- Zener Voltage :  $V_Z = 6.8\sim 390\text{ V}$
- Surface Mounting Plastic Mold Package

MAXIMUM RATINGS (Ta = 25°C)

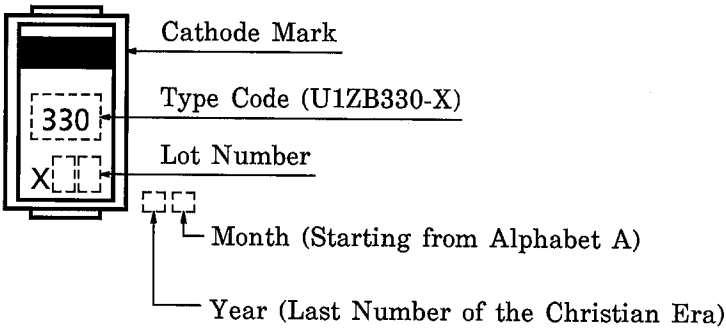
| CHARACTERISTIC            | SYMBOL | RATING  | UNIT |
|---------------------------|--------|---------|------|
| Power Dissipation         | P      | 1.0     | W    |
| Junction Temperature      | Tj     | -40~150 | °C   |
| Storage Temperature Range | Tstg   | -40~150 | °C   |



STANDARD SOLDERING PAD



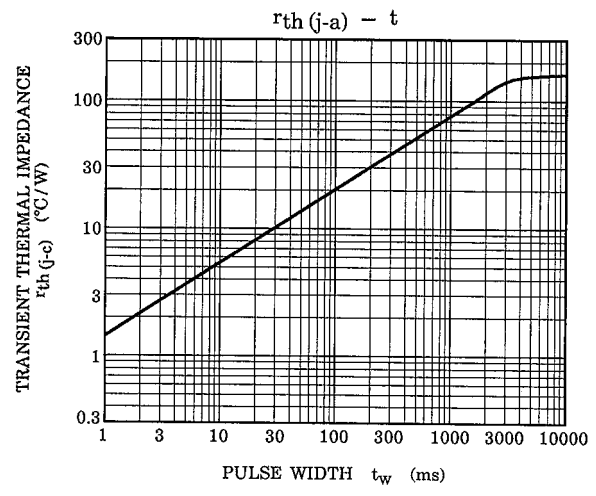
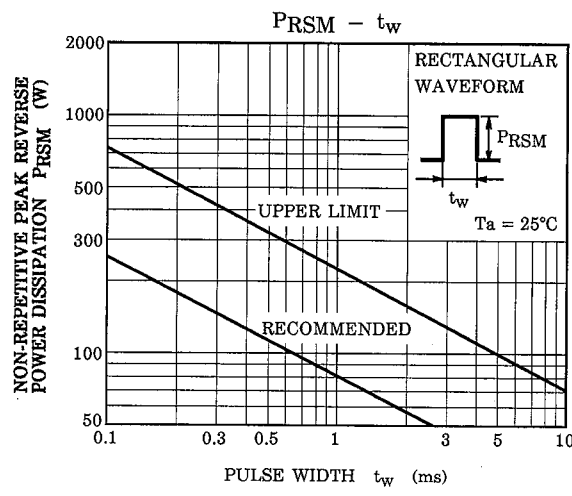
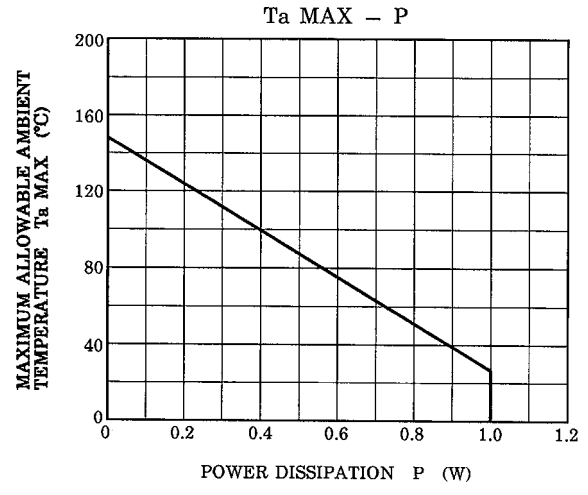
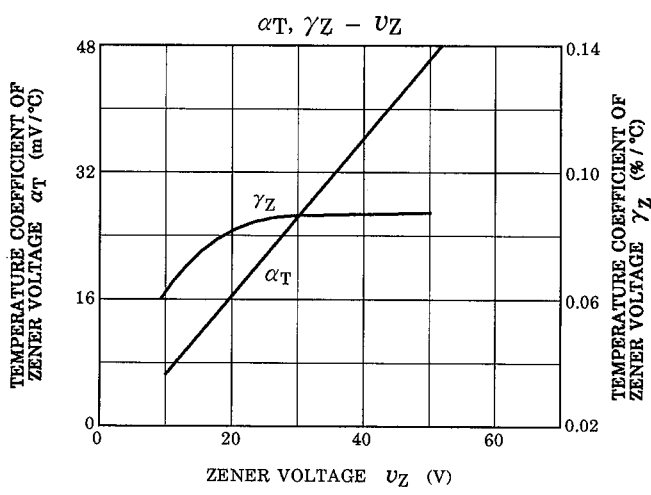
MARK



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

| TYPE      | ZENER CHARACTERISTICS         |      |      |                                          |                                           | TEMPERATURE<br>COEFFICIENT<br>OF ZENER<br>VOLTAGE<br>$\alpha_T$ (mV / °C) |     | FORWARD<br>VOLTAGE |                                          | REVERSE<br>CURRENT |                                          |
|-----------|-------------------------------|------|------|------------------------------------------|-------------------------------------------|---------------------------------------------------------------------------|-----|--------------------|------------------------------------------|--------------------|------------------------------------------|
|           | ZENER<br>VOLTAGE<br>$V_Z$ (V) |      |      | ZENER<br>IMPEDANCE<br>$r_d$ ( $\Omega$ ) | MEASURE-<br>MENT<br>CURRENT<br>$I_Z$ (mA) |                                                                           |     | $V_F$ (V)          | MEASURE-<br>MENT<br>CURRENT<br>$I_F$ (A) | $I_R$ ( $\mu$ A)   | MEASURE-<br>MENT<br>VOLTAGE<br>$V_R$ (V) |
|           | MIN                           | TYP. | MAX  | MAX                                      |                                           | TYP.                                                                      | 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         |      |     |                                          |                                           | TEMPERATURE<br>COEFFICIENT<br>OF ZENER<br>VOLTAGE<br>$\alpha_T$ (mV / °C) |     | FORWARD<br>VOLTAGE |                                          | REVERSE<br>CURRENT |                                          |
|-----------|-------------------------------|------|-----|------------------------------------------|-------------------------------------------|---------------------------------------------------------------------------|-----|--------------------|------------------------------------------|--------------------|------------------------------------------|
|           | ZENER<br>VOLTAGE<br>$V_Z$ (V) |      |     | ZENER<br>IMPEDANCE<br>$r_d$ ( $\Omega$ ) | MEASURE-<br>MENT<br>CURRENT<br>$I_Z$ (mA) |                                                                           |     | $V_F$ (V)          | MEASURE-<br>MENT<br>CURRENT<br>$I_F$ (A) | $I_R$ ( $\mu$ A)   | MEASURE-<br>MENT<br>VOLTAGE<br>$V_R$ (V) |
|           | MIN                           | TYP. | MAX | MAX.                                     |                                           | TYP.                                                                      | MAX | 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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