

High temperature ceramic cased capacitors, with a new, unique design concept, are ideally suited for continuous operation up to +260°C. Problems associated with epoxy cased/epoxy potted capacitors, such as material deterioration, cracks in cases and potted areas, are nonexistent, even at +260°C.

## COG

COG (NP0) capacitors, which exhibit little change in capacitance with variations in temperature, are used in RF oscillators, precision timing circuits, wave filters, and other circuits requiring a predictable linear temperature coefficient.

## X7R

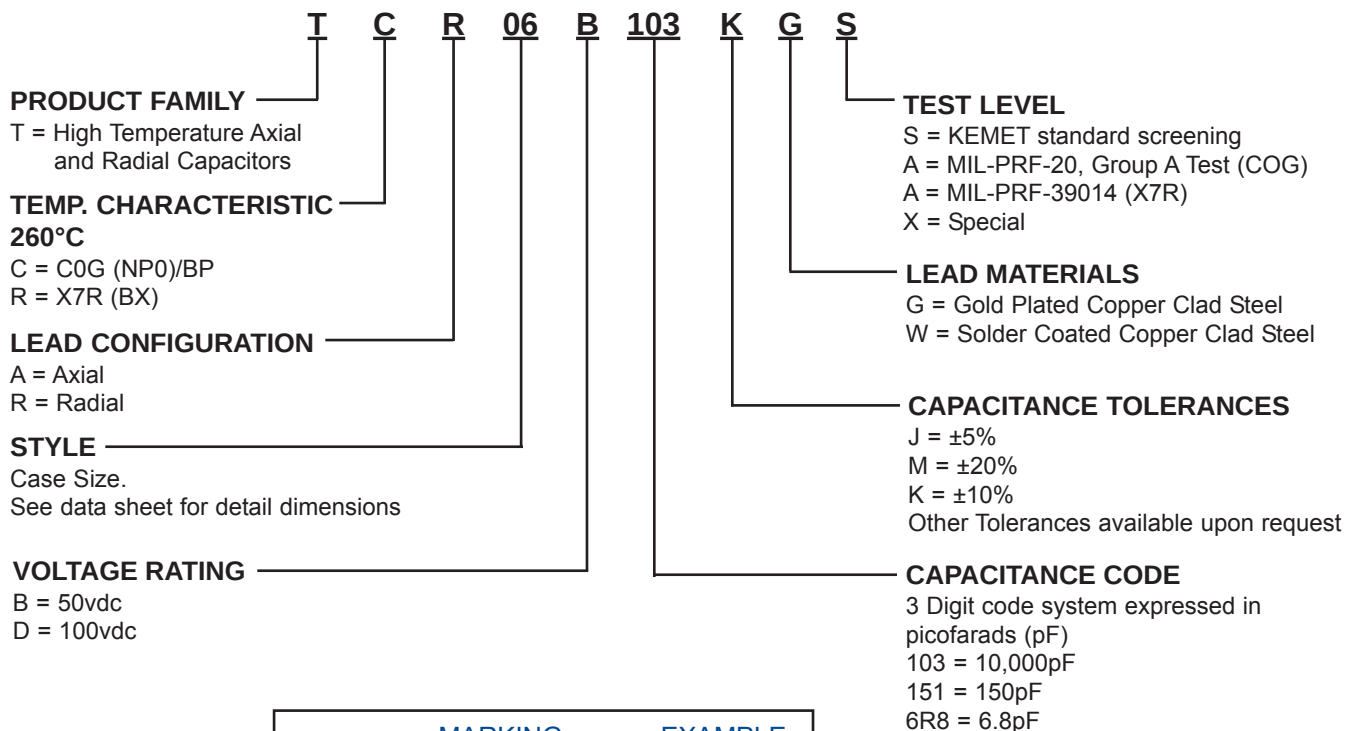
Conventional X7R materials lose up to 75% of the +25°C capacitance. Dissipation factor drops from 1.25% at +25°C to 0.2% at +260°C. At +120°C the ceramic undergoes a transformation (crystalline inversion) resulting in the material changing from ferroelectric to paraelectric - no piezoelectric behavior.

Typical applications include oil well logging (down hole), jet engine controls and geophysical pressure probes.

## INSTALLATION:

Parts should be soldered using a heat sink between the soldering point and the part using a soldering iron rated 18-30 watts. Remove all traces of flux or other contamination resulting from the soldering operation. An intermittent conducting path between the leads, at high voltage, could cause breakdown. Soldering temperature should not exceed +300°C.

## PART NUMBER AND ORDERING INFORMATION

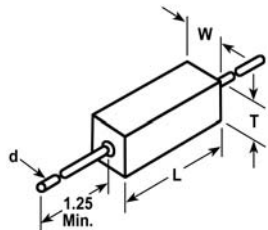


| MARKING           | EXAMPLE |
|-------------------|---------|
| Manufacturer's ID | KEC     |
| Capacitance       | 106J    |
| Voltage           | 50V     |
| Date Code         | 123     |
| Red dot = +260°C  | •       |

# High Temperature (+260°C) Axial and Radial Ceramic Cased Capacitors (C<sup>3</sup>) TCR/TCA Series

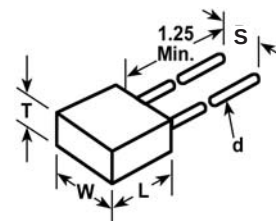
## AXIAL

All Dimensions  
in Inches (mm)



## RADIAL

All Dimensions  
in Inches (mm)

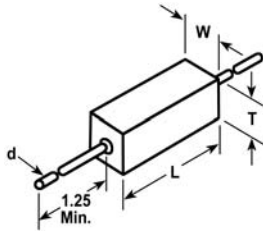


## C0G DIELECTRIC

| AXIAL            |                              |                              |                              |                              |                              |                              |                              |                              |                              |                              | RADIAL |      |     |      |     |      |     |      |     |      |     |
|------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------|------|-----|------|-----|------|-----|------|-----|------|-----|
| STYLE            | 16                           | 25                           | 39                           | 50                           | 69                           | 05                           | 06                           | 07                           | 08                           | 09                           |        |      |     |      |     |      |     |      |     |      |     |
| L <sub>MAX</sub> | .170 (4.32)                  | .270 (6.86)                  | .400 (10.16)                 | .520 (13.21)                 | .720 (18.29)                 | .200 (5.08)                  | .300 (7.62)                  | .300 (7.62)                  | .500 (12.70)                 | .500 (12.70)                 |        |      |     |      |     |      |     |      |     |      |     |
| W <sub>MAX</sub> | .080 (2.03)                  | .100 (2.54)                  | .150 (3.81)                  | .265 (6.73)                  | .370 (9.40)                  | .200 (5.08)                  | .300 (7.62)                  | .300 (7.62)                  | .500 (12.70)                 | .500 (12.70)                 |        |      |     |      |     |      |     |      |     |      |     |
| T <sub>MAX</sub> | .080 (2.03)                  | .100 (2.54)                  | .150 (3.81)                  | .160 (4.06)                  | .160 (4.06)                  | .100 (2.54)                  | .100 (2.54)                  | .150 (3.81)                  | .100 (2.54)                  | .150 (3.81)                  |        |      |     |      |     |      |     |      |     |      |     |
| s                | ---                          | ---                          | ---                          | ---                          | ---                          | .200 ± .015<br>(5.08 ± .38)  | .200 ± .015<br>(5.08 ± .38)  | .200 ± .015<br>(5.08 ± .38)  | .400 ± .015<br>(10.16 ± .38) | .400 ± .015<br>(10.16 ± .38) |        |      |     |      |     |      |     |      |     |      |     |
| d                | .020 ± .002<br>(.508 ± .051) | .020 ± .002<br>(.508 ± .051) | .025 ± .002<br>(.635 ± .051) | .025 ± .002<br>(.635 ± .051) | .025 ± .002<br>(.635 ± .051) | .020 ± .002<br>(.508 ± .051) | .020 ± .002<br>(.508 ± .051) | .020 ± .002<br>(.508 ± .051) | .025 ± .002<br>(.635 ± .051) | .025 ± .002<br>(.635 ± .051) |        |      |     |      |     |      |     |      |     |      |     |
| Cap              | Cap Code                     | WVDC                         |                              | WVDC                         |                              | WVDC                         |                              | WVDC                         |                              | WVDC                         |        | WVDC |     | WVDC |     | WVDC |     | WVDC |     | WVDC |     |
|                  |                              | 50                           | 100                          | 50                           | 100                          | 50                           | 100                          | 50                           | 100                          | 50                           | 100    | 50   | 100 | 50   | 100 | 50   | 100 | 50   | 100 | 50   | 100 |
| 5.6pF            | 569                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 6.8              | 689                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 8.2              | 829                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 10               | 100                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 12               | 120                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 15               | 150                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 18               | 180                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 22               | 220                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 27               | 270                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 33               | 330                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 39               | 390                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 47               | 470                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 56               | 560                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 68               | 680                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 82               | 820                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 100              | 101                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 120              | 121                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 150              | 151                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 180              | 181                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 220              | 221                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 270              | 271                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 330              | 331                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 390              | 391                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 470              | 471                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 560              | 561                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 680              | 681                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 820              | 821                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 1000             | 102                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 1200             | 122                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 1500             | 152                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 1800             | 182                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 2200             | 222                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 2700             | 272                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 3300             | 332                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 3900             | 392                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 4700             | 472                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 5600             | 562                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 6800             | 682                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 8200             | 822                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 0.01 μF          | 103                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 0.012            | 123                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 0.015            | 153                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 0.018            | 183                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 0.022            | 223                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 0.027            | 273                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 0.033            | 333                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 0.039            | 393                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 0.047            | 473                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 0.056            | 563                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 0.068            | 683                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 0.082            | 823                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 0.10             | 104                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 0.12             | 124                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |
| 0.15             | 154                          |                              |                              |                              |                              |                              |                              |                              |                              |                              |        |      |     |      |     |      |     |      |     |      |     |

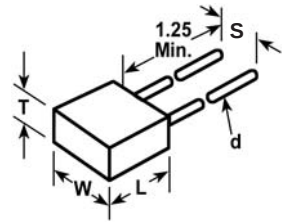
**AXIAL**

All Dimensions  
in Inches (mm)



**RADIAL**

All Dimensions  
in Inches (mm)



**X7R DIELECTRIC**

| AXIAL   |                  |                              |     |                              |     |                              |     |                              |     |                              | RADIAL |                              |     |                              |     |                              |     |                              |     |                              |     |
|---------|------------------|------------------------------|-----|------------------------------|-----|------------------------------|-----|------------------------------|-----|------------------------------|--------|------------------------------|-----|------------------------------|-----|------------------------------|-----|------------------------------|-----|------------------------------|-----|
| STYLE   |                  | 16                           |     | 25                           |     | 39                           |     | 50                           |     | 69                           |        | 05                           |     | 06                           |     | 07                           |     | 08                           |     | 09                           |     |
| Cap     | L <sub>MAX</sub> | .170 (4.32)                  |     | .270 (6.86)                  |     | .400 (10.16)                 |     | .520 (13.21)                 |     | .720 (18.29)                 |        | .200 (5.08)                  |     | .300 (7.62)                  |     | .300 (7.62)                  |     | .500 (12.70)                 |     | .500 (12.70)                 |     |
|         | W <sub>MAX</sub> | .080 (2.03)                  |     | .100 (2.54)                  |     | .150 (3.81)                  |     | .265 (6.73)                  |     | .370 (9.40)                  |        | .200 (5.08)                  |     | .300 (7.62)                  |     | .300 (7.62)                  |     | .500 (12.70)                 |     | .500 (12.70)                 |     |
|         | T <sub>MAX</sub> | .080 (2.03)                  |     | .100 (2.54)                  |     | .150 (3.81)                  |     | .160 (4.06)                  |     | .160 (4.06)                  |        | .100 (2.54)                  |     | .100 (2.54)                  |     | .150 (3.81)                  |     | .100 (2.54)                  |     | .150 (3.81)                  |     |
|         | S                | ---                          |     | ---                          |     | ---                          |     | ---                          |     | ---                          |        | .200 ± .015<br>(5.08 ± .38)  |     | .200 ± .015<br>(5.08 ± .38)  |     | .200 ± .015<br>(5.08 ± .38)  |     | .400 ± .015<br>(10.16 + .38) |     | .400 ± .015<br>(10.16 + .38) |     |
|         | d                | .020 ± .002<br>(.508 ± .051) |     | .020 ± .002<br>(.508 ± .051) |     | .025 ± .002<br>(.635 ± .051) |     | .025 ± .002<br>(.635 ± .051) |     | .025 ± .002<br>(.635 ± .051) |        | .020 ± .002<br>(.508 ± .051) |     | .020 ± .002<br>(.508 ± .051) |     | .020 ± .002<br>(.508 ± .051) |     | .025 ± .002<br>(.635 ± .051) |     | .025 ± .002<br>(.635 ± .051) |     |
|         | Cap Code         | WVDC                         |     | WVDC                         |     | WVDC                         |     | WVDC                         |     | WVDC                         |        | WVDC                         |     | WVDC                         |     | WVDC                         |     | WVDC                         |     | WVDC                         |     |
|         |                  | 50                           | 100 | 50                           | 100 | 50                           | 100 | 50                           | 100 | 50                           | 100    | 50                           | 100 | 50                           | 100 | 50                           | 100 | 50                           | 100 | 50                           | 100 |
|         | 100pF            | 101                          |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
|         | 120              | 121                          |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
|         | 150              | 151                          |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
|         | 180              | 181                          |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
|         | 220              | 221                          |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
|         | 270              | 271                          |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
|         | 330              | 331                          |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
|         | 390              | 391                          |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
|         | 470              | 471                          |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
|         | 560              | 561                          |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
|         | 680              | 681                          |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
|         | 820              | 821                          |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 1000    | 102              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 1200    | 122              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 1500    | 152              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 1800    | 182              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 2200    | 222              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 2700    | 272              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 3300    | 332              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 3900    | 392              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 4700    | 472              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 5600    | 562              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 6800    | 682              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 8200    | 822              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.01 μF | 103              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.012   | 123              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.015   | 153              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.018   | 183              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.022   | 223              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.027   | 273              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.033   | 333              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.039   | 393              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.047   | 473              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.056   | 563              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.068   | 683              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.082   | 823              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.10    | 104              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.12    | 124              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.15    | 154              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.18    | 184              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.22    | 224              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.27    | 274              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.33    | 334              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.39    | 394              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.47    | 474              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.56    | 564              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.68    | 684              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 0.82    | 824              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 1.0     | 105              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 1.2     | 125              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 1.5     | 155              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 1.8     | 185              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 2.0     | 205              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 2.2     | 225              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 2.7     | 275              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 3.3     | 335              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |
| 3.9     | 395              |                              |     |                              |     |                              |     |                              |     |                              |        |                              |     |                              |     |                              |     |                              |     |                              |     |