

## ► Specifications / Spezifikationen

| Items                                    | Characteristics  |
|--|--|
| Temperature range                        | -40°C ~ + 105°C  |
| Capacitance tolerance                    | +/- 20%  |
| Surge voltage                            | Repetitive max. 30 sec per 6 Minutes                           |
| Leakage current max. $I_L$ (20°C, 5 min) | $0.02 \cdot C \cdot V_r$ [ $\mu$ A] or 3 mA, which is smaller. |
| Useful life                              | 6000h at 105°C   |
| Field failure rate                       | 0.5 FIT = $0.5 \cdot 10^{-9}$ Failures/hour                    |
| RoHS conform                             | Directive 2002/95/ECff Annex                                   |
| Specification / Vibration                | JIS C 5101-4 / 0.75mm, 10...55Hz, 10g, 3x2h                    |



## ► Outline Drawings / Bauformen

Refer to page 6 for available terminal shapes and dimensions. / Auf Seite 6 finden Sie die verfügbaren Bauformen und Maße.

## ► Ripple Current Multiplier / Wechselstrommultiplikator

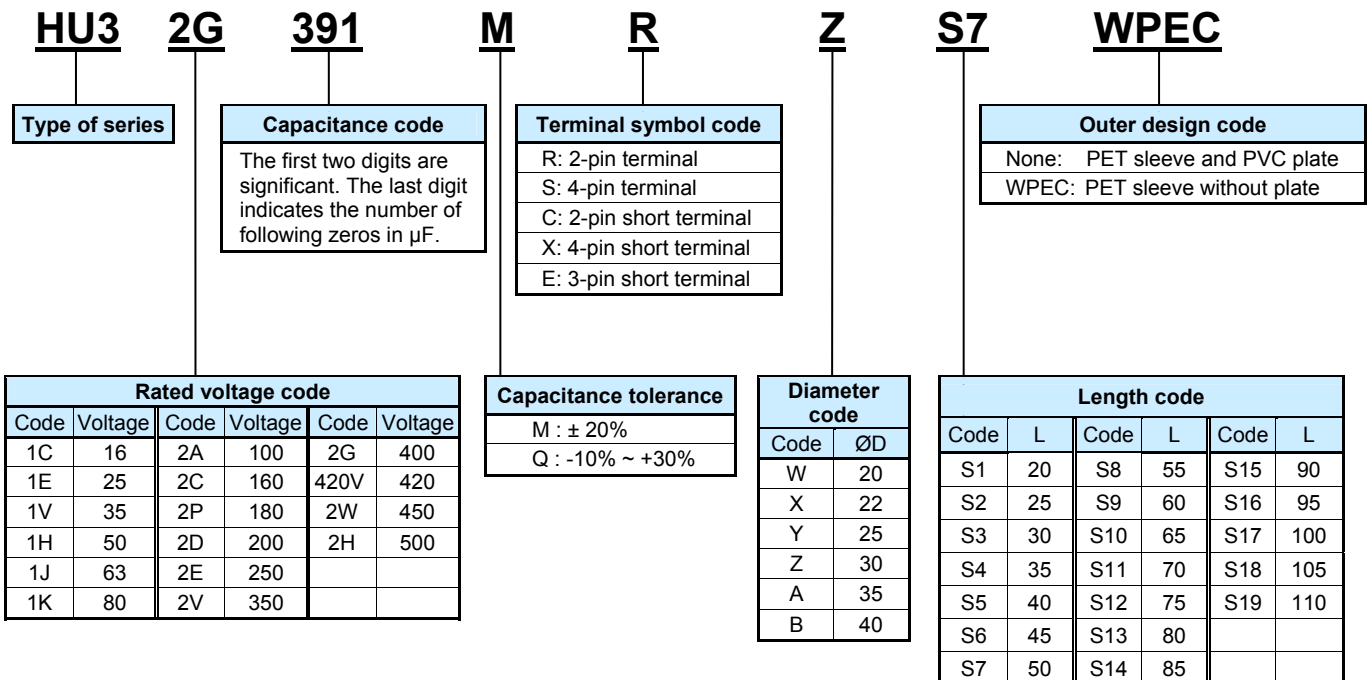
| Frequency [Hz] | 50/60       | 120  | 300  | 1k   | ≥ 10k |      |
|----------------|-------------|------|------|------|-------|------|
| multiplier     | 16V – 100V  | 0.70 | 1.00 | 1.10 | 1.20  | 1.20 |
|                | 160V – 500V | 0.70 | 1.00 | 1.18 | 1.34  | 1.45 |

| Forced cooling [m/sec] | $v < 1.0$ | $v \geq 1.0$ |
|------------------------|-----------|--------------|
| multiplier             | 1.0       | 1.1          |

| Temperature [°C] | 40  | 60  | 70  | 85  | 105 |
|------------------|-----|-----|-----|-----|-----|
| multiplier       | 2.8 | 2.4 | 2.1 | 2.0 | 1.0 |

## ► Product Code / Bestellbezeichnung

Example: HU3 400V 390µF ±20% 30x50mm Shape „R“



| Rated Voltage Code<br>(Surge Voltage)<br>$V_r$<br>[V DC] | Capacitance<br>$C_r$<br>[ $\mu$ F] | Dissipation factor<br>$\tan \delta$ | Ripple Current              | Ripple Current                        | ESR (typ)<br>at<br>20°C/100Hz<br>[m $\Omega$ ] | DxL<br>[mm]   | Product Code  |
|--|------------------------------------|-------------------------------------|-----------------------------|---------------------------------------|--|---------------|---------------|
|  |                                    |                                     | at<br>40°C/120Hz<br>[A RMS] | at<br>105°C/120Hz<br>$I_r$<br>[A RMS] |  |               |               |
| 16<br>1C<br>(20)   | 4 700                              | 0.50                                | 4.56                        | 1.63                                  | 95   | 22x25         | HU31C472M□XS2 |
|  | 6 800                              | 0.50                                | 5.94                        | 2.12                                  | 65   | 25x30         | HU31C682M□YS3 |
|  |                                    | 0.50                                | 6.22                        | 2.22                                  | 65   | 22x35         | HU31C682M□XS4 |
|  | 10 000                             | 0.50                                | 7.45                        | 2.66                                  | 45   | 30x25         | HU31C103M□ZS2 |
|  |                                    | 0.50                                | 7.84                        | 2.80                                  | 45   | 25x35         | HU31C103M□YS4 |
|  |                                    | 0.50                                | 8.34                        | 2.98                                  | 45   | 22x45         | HU31C103M□XS6 |
|  | 15 000                             | 0.50                                | 10.14                       | 3.62                                  | 30   | 30x35         | HU31C153M□ZS4 |
|  |                                    | 0.50                                | 10.14                       | 3.62                                  | 30   | 35x30         | HU31C153M□AS3 |
|  |                                    | 0.50                                | 10.30                       | 3.68                                  | 30   | 25x45         | HU31C153M□YS6 |
|  | 22 000                             | 0.50                                | 12.96                       | 4.63                                  | 20   | 35x35         | HU31C223M□AS4 |
| 0.50   |                                    | 13.50                               | 4.82                        | 20                                    | 30x45  | HU31C223M□ZS6 |               |
| 33 000   | 0.50                               | 17.86                               | 6.38                        | 15                                    | 35x50  | HU31C333M□AS7 |               |
| 25<br>1E<br>(32)   | 3 300                              | 0.40                                | 4.28                        | 1.53                                  | 130  | 22x25         | HU31E332M□XS2 |
|  | 4 700                              | 0.40                                | 5.18                        | 1.85                                  | 90   | 25x25         | HU31E472M□YS2 |
|  |                                    | 0.40                                | 5.43                        | 1.94                                  | 90   | 22x30         | HU31E472M□XS3 |
|  | 6 800                              | 0.40                                | 6.86                        | 2.45                                  | 65   | 25x30         | HU31E682M□YS3 |
|  |                                    | 0.40                                | 6.86                        | 2.45                                  | 65   | 30x25         | HU31E682M□ZS2 |
|  |                                    | 0.40                                | 6.97                        | 2.49                                  | 65   | 22x35         | HU31E682M□XS4 |
|  | 10 000                             | 0.40                                | 8.82                        | 3.15                                  | 45   | 25x35         | HU31E103M□YS4 |
|  |                                    | 0.40                                | 8.82                        | 3.15                                  | 45   | 30x30         | HU31E103M□ZS3 |
|  |                                    | 0.40                                | 8.82                        | 3.15                                  | 45   | 35x25         | HU31E103M□AS2 |
|  |                                    | 0.40                                | 9.32                        | 3.33                                  | 45   | 22x45         | HU31E103M□XS6 |
|  | 15 000                             | 0.40                                | 11.34                       | 4.05                                  | 30   | 30x35         | HU31E153M□ZS4 |
|  |                                    | 0.40                                | 11.34                       | 4.05                                  | 30   | 35x30         | HU31E153M□AS3 |
|  |                                    | 0.40                                | 11.54                       | 4.12                                  | 30   | 25x45         | HU31E153M□YS6 |
|  | 22 000                             | 0.40                                | 15.06                       | 5.38                                  | 20   | 30x45         | HU31E223M□ZS6 |
|  |                                    | 0.40                                | 15.06                       | 5.38                                  | 20   | 35x40         | HU31E223M□AS5 |
|  | 33 000                             | 0.40                                | 19.96                       | 7.13                                  | 15   | 35x50         | HU31E333M□AS7 |
| 35<br>1V<br>(44)   | 2 200                              | 0.35                                | 3.72                        | 1.33                                  | 160  | 22x25         | HU31V222M□XS2 |
|  | 3 300                              | 0.35                                | 4.87                        | 1.74                                  | 105  | 22x30         | HU31V332M□XS3 |
|  |                                    | 0.35                                | 4.65                        | 1.66                                  | 105  | 25x25         | HU31V332M□YS2 |
|  | 4 700                              | 0.35                                | 6.10                        | 2.18                                  | 75   | 25x30         | HU31V472M□YS3 |
|  |                                    | 0.35                                | 6.10                        | 2.18                                  | 75   | 30x25         | HU31V472M□ZS2 |
|  |                                    | 0.35                                | 6.19                        | 2.21                                  | 75   | 22x35         | HU31V472M□XS4 |
|  | 5 600                              | 0.35                                | 6.44                        | 2.30                                  | 65   | 25x30         | HU31V562M□YS3 |
|  | 6 800                              | 0.35                                | 7.73                        | 2.76                                  | 55   | 25x40         | HU31V682M□YS5 |
|  |                                    | 0.35                                | 7.73                        | 2.76                                  | 55   | 30x30         | HU31V682M□ZS3 |
|  |                                    | 0.35                                | 7.73                        | 2.76                                  | 55   | 35x25         | HU31V682M□AS2 |
|  |                                    | 0.35                                | 8.54                        | 3.05                                  | 55   | 22x50         | HU31V682M□XS7 |
|  | 8 200                              | 0.35                                | 8.48                        | 3.03                                  | 45   | 35x25         | HU31V822M□AS2 |
|  |                                    | 0.35                                | 9.88                        | 3.53                                  | 35   | 30x35         | HU31V103M□ZS4 |
|  |                                    | 0.35                                | 9.88                        | 3.53                                  | 35   | 35x30         | HU31V103M□AS3 |
|  | 10 000                             | 0.35                                | 10.53                       | 3.76                                  | 35   | 25x50         | HU31V103M□YS7 |
|  |                                    | 0.35                                | 13.33                       | 4.76                                  | 25   | 35x40         | HU31V153M□AS5 |
| 0.35   |                                    | 13.80                               | 4.93                        | 25                                    | 30x50  | HU31V153M□ZS7 |               |
| 0.35   |                                    | 17.50                               | 6.25                        | 20                                    | 35x50  | HU31V223M□AS7 |               |
| 50<br>1H<br>(63)   | 1 500                              | 0.30                                | 3.33                        | 1.19                                  | 215  | 22x25         | HU31H152M□XS2 |
|  | 2 200                              | 0.30                                | 4.09                        | 1.46                                  | 145  | 25x25         | HU31H222M□YS2 |
|  |                                    | 0.30                                | 4.28                        | 1.53                                  | 145  | 22x30         | HU31H222M□XS3 |
|  | 3 300                              | 0.30                                | 5.49                        | 1.96                                  | 100  | 25x30         | HU31H332M□YS3 |
|  |                                    | 0.30                                | 5.52                        | 1.97                                  | 100  | 30x25         | HU31H332M□ZS2 |
|  |                                    | 0.30                                | 5.60                        | 2.00                                  | 100  | 22x35         | HU31H332M□XS4 |
|  | 4 700                              | 0.30                                | 6.89                        | 2.46                                  | 70   | 25x35         | HU31H472M□YS4 |
|  |                                    | 0.30                                | 6.97                        | 2.49                                  | 70   | 30x30         | HU31H472M□ZS3 |
|  |                                    | 0.30                                | 6.97                        | 2.49                                  | 70   | 35x25         | HU31H472M□AS2 |
|  |                                    | 0.30                                | 7.39                        | 2.64                                  | 70   | 22x45         | HU31H472M□XS6 |
|  | 6 800                              | 0.30                                | 8.82                        | 3.15                                  | 50   | 30x35         | HU31H682M□ZS4 |
|  |                                    | 0.30                                | 8.82                        | 3.15                                  | 50   | 35x30         | HU31H682M□AS3 |
|  |                                    | 0.30                                | 9.35                        | 3.34                                  | 50   | 25x50         | HU31H682M□YS7 |
|  | 10 000                             | 0.35                                | 11.76                       | 4.20                                  | 35   | 30x45         | HU31H103M□ZS6 |
|  |                                    | 0.35                                | 11.76                       | 4.20                                  | 35   | 35x40         | HU31H103M□AS5 |
|  | 15 000                             | 0.35                                | 15.62                       | 5.58                                  | 25   | 35x50         | HU31H153M□AS7 |

| Rated Voltage Code<br>(Surge Voltage)<br>$V_r$<br>[V DC] | Capacitance<br>$C_r$<br>[ $\mu$ F] | Dissipation factor<br>$\tan \delta$ | Ripple Current              | Ripple Current                        | ESR (typ)<br>at<br>20°C/100Hz<br>[m $\Omega$ ] | DxL<br>[mm]   | Product Code  |
|--|------------------------------------|-------------------------------------|-----------------------------|---------------------------------------|--|---------------|---------------|
|  |                                    |                                     | at<br>40°C/120Hz<br>[A RMS] | at<br>105°C/120Hz<br>$I_r$<br>[A RMS] |  |               |               |
| 63<br>1J<br>(79)   | 1 000                              | 0.25                                | 3.00                        | 1.07                                  | 265  | 22x25         | HU31J102M□XS2 |
|  | 1 500                              | 0.25                                | 3.70                        | 1.32                                  | 180  | 25x25         | HU31J152M□YS2 |
|  |                                    | 0.25                                | 3.89                        | 1.39                                  | 180  | 22x30         | HU31J152M□XS3 |
|  | 2 200                              | 0.25                                | 4.87                        | 1.74                                  | 120  | 25x30         | HU31J222M□YS2 |
|  |                                    | 0.25                                | 4.93                        | 1.76                                  | 120  | 30x25         | HU31J222M□ZS2 |
|  |                                    | 0.25                                | 5.01                        | 1.79                                  | 120  | 22x35         | HU31J222M□XS4 |
|  | 3 300                              | 0.25                                | 6.38                        | 2.28                                  | 80   | 30x30         | HU31J332M□ZS3 |
|  |                                    | 0.25                                | 6.38                        | 2.28                                  | 80   | 35x25         | HU31J332M□AS2 |
|  |                                    | 0.25                                | 6.75                        | 2.41                                  | 80   | 30x35         | HU31J332M□ZS4 |
|  |                                    | 0.25                                | 6.78                        | 2.42                                  | 80   | 22x45         | HU31J332M□XS6 |
|  |                                    | 0.25                                | 6.78                        | 2.42                                  | 80   | 25x40         | HU31J332M□YS5 |
|  | 4 700                              | 0.25                                | 8.01                        | 2.86                                  | 60   | 30x35         | HU31J472M□ZS4 |
|  |                                    | 0.25                                | 8.01                        | 2.86                                  | 60   | 35x30         | HU31J472M□AS3 |
|  |                                    | 0.25                                | 8.54                        | 3.05                                  | 60   | 25x50         | HU31J472M□YS7 |
|  |                                    | 0.25                                | 8.81                        | 3.15                                  | 60   | 30x45         | HU31J472M□ZS6 |
|  | 5 600                              | 0.25                                | 9.18                        | 3.28                                  | 50   | 35x35         | HU31J562M□AS4 |
| 6 800  | 0.25                               | 10.58                               | 3.78                        | 40                                    | 30x45  | HU31J682M□ZS6 |               |
|  | 0.25                               | 10.58                               | 3.78                        | 40                                    | 35x40  | HU31J682M□AS5 |               |
| 8 200  | 0.25                               | 12.17                               | 4.34                        | 35                                    | 35x45  | HU31J822M□AS6 |               |
| 10 000   | 0.35                               | 13.94                               | 4.98                        | 30                                    | 35x50  | HU31J103M□AS7 |               |
| 80<br>1K<br>(100)  | 1 000                              | 0.20                                | 3.39                        | 1.21                                  | 230  | 25x25         | HU31K102M□YS2 |
|  |                                    | 0.20                                | 3.53                        | 1.26                                  | 230  | 22x30         | HU31K102M□XS3 |
|  | 1 500                              | 0.20                                | 4.56                        | 1.63                                  | 155  | 25x30         | HU31K152M□YS3 |
|  |                                    | 0.20                                | 4.56                        | 1.63                                  | 155  | 30x25         | HU31K152M□ZS2 |
|  |                                    | 0.20                                | 4.62                        | 1.65                                  | 155  | 22x35         | HU31K152M□XS4 |
|  | 2 200                              | 0.20                                | 5.82                        | 2.08                                  | 105  | 30x30         | HU31K222M□ZS3 |
|  |                                    | 0.20                                | 5.82                        | 2.08                                  | 105  | 35x25         | HU31K222M□AS2 |
|  |                                    | 0.20                                | 5.91                        | 2.11                                  | 105  | 25x40         | HU31K222M□YS5 |
|  |                                    | 0.20                                | 6.41                        | 2.29                                  | 105  | 22x50         | HU31K222M□XS7 |
|  | 3 300                              | 0.20                                | 7.50                        | 2.68                                  | 70   | 35x30         | HU31K332M□AS3 |
|  |                                    | 0.20                                | 7.67                        | 2.74                                  | 70   | 30x40         | HU31K332M□ZS5 |
|  |                                    | 0.20                                | 7.98                        | 2.85                                  | 70   | 25x50         | HU31K332M□YS7 |
| 4 700  | 0.25                               | 9.88                                | 3.53                        | 50                                    | 35x40  | HU31K472M□AS5 |               |
|  | 0.25                               | 10.22                               | 3.65                        | 50                                    | 30x50  | HU31K472M□ZS7 |               |
| 6 800  | 0.25                               | 12.88                               | 4.60                        | 35                                    | 35x50  | HU31K682M□AS7 |               |
| 100<br>2A<br>(125)                                       | 560                                | 0.20                                | 2.49                        | 0.89                                  | 325  | 22x25         | HU32A561M□XS2 |
|  | 1 000                              | 0.20                                | 3.39                        | 1.21                                  | 180  | 25x25         | HU32A102M□YS2 |
|  |                                    | 0.20                                | 3.53                        | 1.26                                  | 180  | 22x30         | HU32A102M□XS3 |
|  | 1 500                              | 0.20                                | 4.56                        | 1.63                                  | 130  | 30x25         | HU32A152M□ZS2 |
|  |                                    | 0.20                                | 4.84                        | 1.73                                  | 130  | 22x40         | HU32A152M□XS5 |
|  |                                    | 0.20                                | 4.84                        | 1.73                                  | 130  | 25x35         | HU32A152M□YS4 |
|  |                                    | 0.20                                | 5.30                        | 1.89                                  | 130  | 30x40         | HU32A152M□ZS5 |
|  |                                    | 0.20                                | 6.13                        | 2.19                                  | 90   | 30x35         | HU32A222M□ZS4 |
|  | 2 200                              | 0.20                                | 6.24                        | 2.23                                  | 90   | 25x45         | HU32A222M□YS6 |
|  |                                    | 0.20                                | 7.92                        | 2.83                                  | 60   | 35x35         | HU32A332M□AS4 |
|  |                                    | 0.20                                | 8.26                        | 2.95                                  | 60   | 30x45         | HU32A332M□ZS6 |
| 4 700  | 0.25                               | 10.36                               | 3.70                        | 45                                    | 35x45  | HU32A472M□AS6 |               |
| 160<br>2C<br>(200)                                       | 330                                | 0.15                                | 3.02                        | 1.08                                  | 430  | 22x25         | HU32C331M□XS2 |
|  | 390                                | 0.15                                | 3.36                        | 1.20                                  | 365  | 25x25         | HU32C391M□YS2 |
|  |                                    | 0.15                                | 3.39                        | 1.21                                  | 365  | 22x30         | HU32C391M□XS3 |
|  | 470                                | 0.15                                | 3.67                        | 1.31                                  | 305  | 25x25         | HU32C471M□YS2 |
|  |                                    | 0.15                                | 3.72                        | 1.33                                  | 305  | 22x30         | HU32C471M□XS3 |
|  | 560                                | 0.15                                | 4.31                        | 1.54                                  | 255  | 22x35         | HU32C561M□XS4 |
|  |                                    | 0.15                                | 4.31                        | 1.54                                  | 255  | 25x30         | HU32C561M□YS3 |
|  |                                    | 0.15                                | 4.31                        | 1.54                                  | 255  | 30x25         | HU32C561M□ZS2 |
|  | 680                                | 0.15                                | 4.73                        | 1.69                                  | 210  | 30x25         | HU32C681M□ZS2 |
|  |                                    | 0.15                                | 4.96                        | 1.77                                  | 210  | 25x35         | HU32C681M□YS4 |
|  |                                    | 0.15                                | 4.98                        | 1.78                                  | 210  | 22x40         | HU32C681M□XS5 |
|  | 820                                | 0.15                                | 5.52                        | 1.97                                  | 175  | 30x30         | HU32C821M□ZS3 |
|  |                                    | 0.15                                | 5.52                        | 1.97                                  | 175  | 35x25         | HU32C821M□AS2 |
|  |                                    | 0.15                                | 5.74                        | 2.05                                  | 175  | 22x45         | HU32C821M□XS6 |
| 0.15   |                                    | 5.74                                | 2.05                        | 175                                   | 25x40  | HU32C821M□YS5 |               |

| Rated Voltage Code<br>(Surge Voltage)<br>$V_r$<br>[V DC] | Capacitance<br>$C_r$<br>[ $\mu$ F] | Dissipation factor | Ripple Current<br>at<br>40°C/120Hz | Ripple Current<br>at<br>105°C/120Hz<br>$I_r$ | ESR (typ)<br>at<br>20°C/100Hz | DxL   | Product Code  |               |
|--|------------------------------------|--------------------|------------------------------------|--|-------------------------------|-------|---------------|---------------|
|  |                                    | $\tan \delta$      | [A RMS]                            | [A RMS]                                      | [m $\Omega$ ]                 | [mm]  |               |               |
| 160<br>2C<br>(200)                                       | 1 000                              | 0.15               | 6.10                               | 2.18   | 145                           | 35x25 | HU32C102M□AS2 |               |
|  |                                    | 0.15               | 6.44                               | 2.30   | 145                           | 30x35 | HU32C102M□ZS4 |               |
|  |                                    | 0.15               | 6.64                               | 2.37   | 145                           | 25x45 | HU32C102M□YS6 |               |
|  | 1 200                              | 0.15               | 7.06                               | 2.52   | 120                           | 30x35 | HU32C122M□ZS4 |               |
|  |                                    | 0.15               | 7.06                               | 2.52   | 120                           | 35x30 | HU32C122M□AS3 |               |
|  |                                    | 0.15               | 7.59                               | 2.71   | 120                           | 25x50 | HU32C122M□YS7 |               |
|  | 1 500                              | 0.15               | 8.37                               | 2.99   | 95                            | 35x35 | HU32C152M□AS4 |               |
|  |                                    | 0.15               | 8.62                               | 3.08   | 95                            | 30x45 | HU32C152M□ZS6 |               |
|  | 1 800                              | 0.15               | 9.52                               | 3.40   | 80                            | 35x40 | HU32C182M□AS5 |               |
|  |                                    | 0.15               | 9.63                               | 3.44   | 80                            | 40x36 | HU32C182M□BS4 |               |
| 180<br>2P<br>(225)                                       | 270                                | 0.15               | 2.66                               | 0.95   | 460                           | 22x25 | HU32P271M□XS2 |               |
|  | 330                                | 0.15               | 3.08                               | 1.10   | 375                           | 25x25 | HU32P331M□YS2 |               |
|  |                                    | 0.15               | 3.11                               | 1.11   | 375                           | 22x30 | HU32P331M□XS3 |               |
|  | 390                                | 0.15               | 3.36                               | 1.20   | 320                           | 25x25 | HU32P391M□YS2 |               |
|  |                                    | 0.15               | 3.39                               | 1.21   | 320                           | 22x30 | HU32P391M□XS3 |               |
|  | 470                                | 0.15               | 3.95                               | 1.41   | 265                           | 22x35 | HU32P471M□XS4 |               |
|  |                                    | 0.15               | 3.95                               | 1.41   | 265                           | 25x30 | HU32P471M□YS3 |               |
|  |                                    | 0.15               | 3.95                               | 1.41   | 265                           | 30x25 | HU32P471M□ZS2 |               |
|  | 560                                | 0.15               | 4.31                               | 1.54   | 225                           | 25x30 | HU32P561M□YS3 |               |
|  |                                    | 0.15               | 4.31                               | 1.54   | 225                           | 30x25 | HU32P561M□ZS2 |               |
|  |                                    | 0.15               | 4.54                               | 1.62   | 225                           | 22x40 | HU32P561M□XS5 |               |
|  | 680                                | 0.15               | 5.01                               | 1.79   | 185                           | 25x35 | HU32P681M□YS4 |               |
|  |                                    | 0.15               | 5.01                               | 1.79   | 185                           | 30x30 | HU32P681M□ZS3 |               |
|  |                                    | 0.15               | 5.01                               | 1.79   | 185                           | 35x25 | HU32P681M□AS2 |               |
|  |                                    | 0.15               | 5.24                               | 1.87   | 185                           | 22x45 | HU32P681M□XS6 |               |
|  | 820                                | 0.15               | 5.52                               | 1.97   | 155                           | 30x30 | HU32P821M□ZS3 |               |
|  |                                    | 0.15               | 5.52                               | 1.97   | 155                           | 35x25 | HU32P821M□AS2 |               |
|  |                                    | 0.15               | 5.77                               | 2.06   | 155                           | 25x40 | HU32P821M□YS5 |               |
|  |                                    | 0.15               | 5.96                               | 2.13   | 155                           | 22x50 | HU32P821M□XS7 |               |
|  | 1 000                              | 0.15               | 6.44                               | 2.30   | 125                           | 30x35 | HU32P102M□ZS4 |               |
|  |                                    | 0.15               | 6.44                               | 2.30   | 125                           | 35x30 | HU32P102M□AS3 |               |
|  |                                    | 0.15               | 6.64                               | 2.37   | 125                           | 25x45 | HU32P102M□YS6 |               |
|  | 1 200                              | 0.15               | 7.06                               | 2.52   | 105                           | 35x30 | HU32P122M□AS3 |               |
|  |                                    | 0.15               | 7.36                               | 2.63   | 105                           | 30x40 | HU32P122M□ZS5 |               |
|  | 1 500                              | 0.15               | 8.37                               | 2.99   | 85                            | 35x35 | HU32P152M□AS4 |               |
|  |                                    | 0.15               | 8.96                               | 3.20   | 85                            | 30x50 | HU32P152M□ZS7 |               |
|  | 1 800                              | 0.15               | 9.52                               | 3.40   | 70                            | 35x40 | HU32P182M□AS5 |               |
|  |                                    | 0.15               | 9.63                               | 3.44   | 70                            | 40x36 | HU32P182M□BS4 |               |
|  | 200<br>2D<br>(250)                 | 220                | 0.15                               | 2.83   | 1.01                          | 485   | 22x25         | HU32D221M□XS2 |
|  |                                    | 270                | 0.15                               | 3.16   | 1.13                          | 395   | 22x25         | HU32D271M□XS2 |
| 330  |                                    | 0.15               | 3.70                               | 1.32   | 325                           | 25x25 | HU32D331M□YS2 |               |
|  |                                    | 0.15               | 3.72                               | 1.33   | 325                           | 22x30 | HU32D331M□XS3 |               |
| 390  |                                    | 0.15               | 4.03                               | 1.44   | 275                           | 25x25 | HU32D391M□YS2 |               |
|  |                                    | 0.15               | 4.28                               | 1.53   | 275                           | 22x35 | HU32D391M□XS4 |               |
| 470  |                                    | 0.15               | 4.68                               | 1.67   | 230                           | 25x30 | HU32D471M□YS3 |               |
|  |                                    | 0.15               | 4.73                               | 1.69   | 230                           | 30x25 | HU32D471M□ZS2 |               |
|  |                                    | 0.15               | 4.98                               | 1.78   | 230                           | 22x40 | HU32D471M□XS5 |               |
|  |                                    | 0.15               | 5.45                               | 1.95   | 230                           | 22x50 | HU32D471M□XS7 |               |
| 560  |                                    | 0.15               | 5.38                               | 1.92   | 190                           | 25x35 | HU32D561M□YS4 |               |
|  |                                    | 0.15               | 5.49                               | 1.96   | 190                           | 30x30 | HU32D561M□ZS3 |               |
|  |                                    | 0.15               | 5.71                               | 2.04   | 190                           | 22x45 | HU32D561M□XS6 |               |
| 680  |                                    | 0.15               | 6.05                               | 2.16   | 160                           | 30x30 | HU32D681M□ZS3 |               |
|  |                                    | 0.15               | 6.05                               | 2.16   | 160                           | 35x25 | HU32D681M□AS2 |               |
|  |                                    | 0.15               | 6.27                               | 2.24   | 160                           | 22x45 | HU32D681M□XS6 |               |
|  |                                    | 0.15               | 6.27                               | 2.24   | 160                           | 25x40 | HU32D681M□YS5 |               |
| 820  |                                    | 0.15               | 7.00                               | 2.50   | 130                           | 30x35 | HU32D821M□ZS4 |               |
|  |                                    | 0.15               | 7.00                               | 2.50   | 130                           | 35x30 | HU32D821M□AS3 |               |
|  |                                    |                    | 0.15                               | 7.20   | 2.57                          | 130   | 25x45         | HU32D821M□YS6 |

| Rated Voltage Code<br>(Surge Voltage)<br>$V_r$<br>[V DC] | Capacitance<br>$C_r$<br>[ $\mu$ F] | Dissipation factor | Ripple Current<br>at<br>40°C/120Hz | Ripple Current<br>at<br>105°C/120Hz<br>$I_r$ | ESR (typ)<br>at<br>20°C/100Hz | DxL   | Product Code  |
|--|------------------------------------|--------------------|------------------------------------|--|-------------------------------|-------|---------------|
|  |                                    | $\tan \delta$      | [A RMS]                            | [A RMS]                                      | [m $\Omega$ ]                 | [mm]  |               |
| 200<br>2D<br>(250)                                       | 1 000                              | 0.15               | 7.73                               | 2.76   | 110                           | 35x30 | HU32D102M□AS3 |
|  |                                    | 0.15               | 8.09                               | 2.89   | 110                           | 30x40 | HU32D102M□ZS5 |
|  |                                    | 0.15               | 8.32                               | 2.97   | 110                           | 25x50 | HU32D102M□YS7 |
|  | 1 200                              | 0.15               | 8.99                               | 3.21   | 90                            | 35x35 | HU32D122M□AS4 |
|  |                                    | 0.15               | 9.24                               | 3.30   | 90                            | 30x45 | HU32D122M□ZS6 |
|  | 1 500                              | 0.15               | 10.42                              | 3.72   | 75                            | 35x45 | HU32D152M□AS6 |
|  |                                    | 0.15               | 10.56                              | 3.77   | 75                            | 40x36 | HU32D152M□BS4 |
|  | 1 800                              | 0.15               | 11.98                              | 4.28   | 60                            | 40x41 | HU32D182M□BS5 |
|  |                                    | 0.15               | 12.35                              | 4.41   | 60                            | 35x50 | HU32D182M□AS7 |
|  | 2 200                              | 0.15               | 11.40                              | 4.07   | 50                            | 35x50 | HU32D222M□AS7 |
| 250<br>2E<br>(300)                                       | 220                                | 0.15               | 3.02                               | 1.08   | 445                           | 25x25 | HU32E221M□YS2 |
|  |                                    | 0.15               | 3.08                               | 1.10   | 445                           | 22x30 | HU32E221M□XS2 |
|  | 270                                | 0.15               | 3.33                               | 1.19   | 360                           | 25x25 | HU32E271M□YS2 |
|  |                                    | 0.15               | 3.58                               | 1.28   | 360                           | 22x35 | HU32E271M□XS4 |
|  | 330                                | 0.15               | 3.92                               | 1.40   | 295                           | 25x30 | HU32E331M□YS3 |
|  |                                    | 0.15               | 3.95                               | 1.41   | 295                           | 22x35 | HU32E331M□XS4 |
|  |                                    | 0.15               | 3.95                               | 1.41   | 295                           | 30x25 | HU32E331M□ZS2 |
|  | 390                                | 0.15               | 4.28                               | 1.53   | 250                           | 30x25 | HU32E391M□ZS2 |
|  |                                    | 0.15               | 4.51                               | 1.61   | 250                           | 25x35 | HU32E391M□YS4 |
|  |                                    | 0.15               | 4.56                               | 1.63   | 250                           | 22x40 | HU32E391M□XS5 |
|  | 470                                | 0.15               | 4.98                               | 1.78   | 210                           | 35x25 | HU32E471M□AS2 |
|  |                                    | 0.15               | 5.01                               | 1.79   | 210                           | 30x30 | HU32E471M□ZS3 |
|  |                                    | 0.15               | 5.21                               | 1.86   | 210                           | 25x40 | HU32E471M□YS5 |
|  |                                    | 0.15               | 5.43                               | 1.94   | 210                           | 22x50 | HU32E471M□XS7 |
|  | 560                                | 0.15               | 5.49                               | 1.96   | 175                           | 35x25 | HU32E561M□AS2 |
|  |                                    | 0.15               | 5.77                               | 2.06   | 175                           | 30x35 | HU32E561M□ZS4 |
|  |                                    | 0.15               | 5.94                               | 2.12   | 175                           | 25x45 | HU32E561M□YS6 |
|  | 680                                | 0.15               | 6.36                               | 2.27   | 145                           | 30x35 | HU32E681M□ZS4 |
|  |                                    | 0.15               | 6.36                               | 2.27   | 145                           | 35x30 | HU32E681M□AS3 |
|  |                                    | 0.15               | 6.83                               | 2.44   | 145                           | 25x50 | HU32E681M□YS7 |
|  | 820                                | 0.15               | 7.42                               | 2.65   | 120                           | 35x35 | HU32E821M□AS4 |
|  |                                    | 0.15               | 7.64                               | 2.73   | 120                           | 30x45 | HU32E821M□ZS6 |
|  | 1 000                              | 0.15               | 8.51                               | 3.04   | 100                           | 35x40 | HU32E102M□AS5 |
|  |                                    | 0.15               | 8.62                               | 3.08   | 100                           | 40x36 | HU32E102M□BS4 |
|  | 1 200                              | 0.15               | 9.66                               | 3.45   | 85                            | 35x45 | HU32E122M□AS6 |
|  |                                    | 0.15               | 9.77                               | 3.49   | 85                            | 40x41 | HU32E122M□BS5 |
|  | 1 500                              | 0.15               | 10.81                              | 3.86   | 65                            | 35x45 | HU32E152M□AS6 |
|  |                                    | 0.15               | 11.28                              | 4.03   | 65                            | 35x50 | HU32E152M□AS7 |
|  | 1 800                              | 0.15               | 12.94                              | 4.62   | 55                            | 40x51 | HU32E182M□BS7 |
|  | 2 200                              | 0.15               | 13.74                              | 4.91   | 45                            | 40x60 | HU32E222M□BS9 |
| 350<br>2V<br>(400)                                       | 82                                 | 0.15               | 1.46                               | 0.52   | 1126                          | 22x25 | HU32V820M□XS2 |
|  | 100                                | 0.15               | 1.68                               | 0.60   | 924                           | 25x25 | HU32V101M□YS2 |
|  |                                    | 0.15               | 1.74                               | 0.62   | 924                           | 22x30 | HU32V101M□XS3 |
|  | 120                                | 0.15               | 1.85                               | 0.66   | 770                           | 25x25 | HU32V121M□YS2 |
|  |                                    | 0.15               | 1.88                               | 0.67   | 770                           | 22x30 | HU32V121M□XS3 |
|  | 150                                | 0.15               | 2.21                               | 0.79   | 615                           | 22x35 | HU32V151M□XS4 |
|  |                                    | 0.15               | 2.21                               | 0.79   | 615                           | 25x30 | HU32V151M□YS3 |
|  |                                    | 0.15               | 2.21                               | 0.79   | 615                           | 30x25 | HU32V151M□ZS2 |
|  | 180                                | 0.15               | 2.55                               | 0.91   | 520                           | 22x40 | HU32V181M□XS5 |
|  |                                    | 0.15               | 2.55                               | 0.91   | 520                           | 25x35 | HU32V181M□YS4 |
|  |                                    | 0.15               | 2.58                               | 0.92   | 520                           | 30x30 | HU32V181M□ZS3 |
|  | 220                                | 0.15               | 2.86                               | 1.02   | 450                           | 30x30 | HU32V221M□ZS3 |
|  |                                    | 0.15               | 2.86                               | 1.02   | 450                           | 35x25 | HU32V221M□AS2 |
|  |                                    | 0.15               | 2.97                               | 1.06   | 450                           | 25x40 | HU32V221M□YS5 |
|  |                                    | 0.15               | 3.11                               | 1.11   | 450                           | 22x50 | HU32V221M□XS7 |
|  | 270                                | 0.15               | 3.36                               | 1.20   | 366                           | 30x35 | HU32V271M□ZS4 |
|  |                                    | 0.15               | 3.36                               | 1.20   | 366                           | 35x30 | HU32V271M□AS3 |
|  |                                    | 0.15               | 3.44                               | 1.23   | 366                           | 25x45 | HU32V271M□YS6 |

| Rated Voltage Code<br>(Surge Voltage)<br>$V_r$<br>[V DC] | Capacitance<br>$C_r$<br>[ $\mu$ F] | Dissipation factor | Ripple Current<br>at<br>40°C/120Hz | Ripple Current<br>at<br>105°C/120Hz<br>$I_r$ | ESR (typ)<br>at<br>20°C/100Hz | DxL           | Product Code    |                 |
|--|------------------------------------|--------------------|------------------------------------|--|-------------------------------|---------------|-----------------|-----------------|
|  |                                    | $\tan \delta$      | [A RMS]                            | [A RMS]                                      | [m $\Omega$ ]                 | [mm]          |                 |                 |
| 350<br>2V<br>(400)                                       | 330                                | 0.15               | 3.70                               | 1.32   | 299                           | 35x30         | HU32V331M□AS3   |                 |
|  |                                    | 0.15               | 3.89                               | 1.39   | 299                           | 30x40         | HU32V331M□ZS5   |                 |
|  |                                    | 0.15               | 3.98                               | 1.42   | 299                           | 25x50         | HU32V331M□YS7   |                 |
|  | 390                                | 0.15               | 4.26                               | 1.52   | 253                           | 35x35         | HU32V391M□AS4   |                 |
|  |                                    | 0.15               | 4.40                               | 1.57   | 253                           | 30x45         | HU32V391M□ZS6   |                 |
|  | 470                                | 0.15               | 4.87                               | 1.74   | 210                           | 35x40         | HU32V471M□AS5   |                 |
|  |                                    | 0.15               | 4.93                               | 1.76   | 210                           | 40x36         | HU32V471M□BS4   |                 |
|  | 560                                | 0.15               | 5.48                               | 1.96   | 181                           | 30x50         | HU32V561M□ZS7   |                 |
|  |                                    | 0.15               | 5.52                               | 1.97   | 181                           | 35x45         | HU32V561M□AS6   |                 |
|  |                                    | 0.15               | 5.54                               | 1.98   | 181                           | 40x41         | HU32V561M□BS5   |                 |
| 1 000  | 0.15                               | 7.98               | 2.85                               | 90   | 35x51                         | HU32V102M□AS7 |                 |                 |
| 400<br>2G<br>(450)                                       | 68                                 | 0.15               | 1.60                               | 0.57   | 1300                          | 22x25         | HU32G680M□XS2   |                 |
|  | 82                                 | 0.15               | 1.85                               | 0.66   | 1080                          | 22x30         | HU32G820M□XS3   |                 |
|  |                                    | 0.15               | 1.85                               | 0.66   | 1080                          | 25x25         | HU32G820M□YS2   |                 |
|  | 100                                | 0.15               | 2.04                               | 0.73   | 890                           | 25x25         | HU32G101M□YS2   |                 |
|  |                                    | 0.15               | 2.07                               | 0.74   | 890                           | 22x30         | HU32G101M□XS3   |                 |
|  | 120                                | 0.15               | 2.38                               | 0.85   | 740                           | 25x30         | HU32G121M□YS3   |                 |
|  |                                    | 0.15               | 2.41                               | 0.86   | 740                           | 22x35         | HU32G121M□XS4   |                 |
|  |                                    | 0.15               | 2.41                               | 0.86   | 740                           | 30x25         | HU32G121M□ZS2   |                 |
|  | 150                                | 0.15               | 2.80                               | 1.00   | 590                           | 22x40         | HU32G151M□XS5   |                 |
|  |                                    | 0.15               | 2.80                               | 1.00   | 590                           | 25x35         | HU32G151M□YS4   |                 |
|  |                                    | 0.15               | 2.83                               | 1.01   | 590                           | 30x30         | HU32G151M□ZS3   |                 |
|  | 180                                | 0.15               | 3.11                               | 1.11   | 490                           | 30x30         | HU32G181M□ZS3   |                 |
|  |                                    | 0.15               | 3.11                               | 1.11   | 490                           | 35x25         | HU32G181M□AS2   |                 |
|  |                                    | 0.15               | 3.19                               | 1.14   | 490                           | 22x45         | HU32G181M□XS6   |                 |
|  |                                    | 0.15               | 3.19                               | 1.14   | 490                           | 25x40         | HU32G181M□YS5   |                 |
|  | 220                                | 0.15               | 3.42                               | 1.22   | 400                           | 30x30         | HU32G221M□ZS3   |                 |
|  |                                    | 0.15               | 3.64                               | 1.30   | 400                           | 30x35         | HU32G221M□ZS4   |                 |
|  |                                    | 0.15               | 3.64                               | 1.30   | 400                           | 35x30         | HU32G221M□AS3   |                 |
|  |                                    | 0.15               | 3.72                               | 1.33   | 400                           | 25x45         | HU32G221M□YS6   |                 |
|  | 270                                | 0.15               | 4.03                               | 1.44   | 330                           | 35x30         | HU32G271M□AS3   |                 |
|  |                                    | 0.15               | 4.23                               | 1.51   | 330                           | 30x40         | HU32G271M□ZS5   |                 |
|  |                                    | 0.15               | 4.31                               | 1.54   | 330                           | 25x50         | HU32G271M□YS7   |                 |
|  | 330                                | 0.15               | 4.68                               | 1.67   | 270                           | 35x35         | HU32G331M□AS4   |                 |
|  |                                    | 0.15               | 4.84                               | 1.73   | 270                           | 30x45         | HU32G331M□ZS6   |                 |
|  | 390                                | 0.15               | 5.32                               | 1.90   | 230                           | 35x40         | HU32G391M□AS5   |                 |
|  |                                    | 0.15               | 5.35                               | 1.91   | 230                           | 40x36         | HU32G391M□BS4   |                 |
|  |                                    | 0.15               | 5.48                               | 1.96   | 230                           | 30x50         | HU32G391M□ZS7   |                 |
|  | 470                                | 0.15               | 6.08                               | 2.17   | 190                           | 35x45         | HU32G471M□AS6   |                 |
|  |                                    | 0.15               | 6.10                               | 2.18   | 190                           | 40x41         | HU32G471M□BS5   |                 |
|  |                                    | 0.15               | 6.33                               | 2.26   | 190                           | 35x50         | HU32G471M□AS7   |                 |
|  | 560                                | 0.15               | 6.41                               | 2.29   | 181                           | 40x36         | HU32G561M□BS4   |                 |
|  |                                    | 0.15               | 6.80                               | 2.43   | 160                           | 30x55         | HU32G561M□ZS8   |                 |
|  |                                    | 0.15               | 6.86                               | 2.45   | 160                           | 35x50         | HU32G561M□AS7   |                 |
|  | 680                                | 0.15               | 8.12                               | 2.90   | 130                           | 35x60         | HU32G681M□AS9   |                 |
|  | 820                                | 0.15               | 8.90                               | 3.18   | 110                           | 35x60         | HU32G821M□AS9   |                 |
|  |                                    | 0.15               | 9.16                               | 3.27   | 110                           | 40x61         | HU32G821M□BS9   |                 |
|  | 1 000                              | 0.15               | 9.86                               | 3.52   | 90                            | 40x76         | HU32G102M□BS12  |                 |
|  |                                    | 0.15               | 10.63                              | 3.80   | 90                            | 41x81         | HU32G102M□BS13  |                 |
|  | 1 200                              | 0.15               | 10.11                              | 3.61   | 75                            | 40x86         | HU32G122M□BS14  |                 |
|  |                                    | 0.15               | 10.50                              | 3.75   | 75                            | 40x75         | HU32G122M□BS12  |                 |
|  | 1 500                              | 0.15               | 12.10                              | 4.32   | 60                            | 40x100        | HU32G152M□BS17  |                 |
|  | 420<br>420V<br>(470)               | 47                 | 0.15                               | 1.18   | 0.42                          | 1880          | 22x25           | HU3420V470M□XS2 |
|  |                                    | 68                 | 0.15                               | 1.54   | 0.55                          | 1300          | 22x30           | HU3420V680M□XS3 |
| 82   |                                    | 0.15               | 1.65                               | 0.59   | 1080                          | 22x30         | HU3420V820M□XS3 |                 |
|  |                                    | 0.15               | 1.65                               | 0.59   | 1080                          | 25x25         | HU3420V820M□YS2 |                 |
| 100  |                                    | 0.15               | 1.93                               | 0.69   | 890                           | 22x35         | HU3420V101M□XS4 |                 |
|  |                                    | 0.15               | 1.93                               | 0.69   | 890                           | 25x30         | HU3420V101M□YS3 |                 |

| Rated Voltage Code<br>(Surge Voltage)<br>$V_r$<br>[V DC] | Capacitance<br>$C_r$<br>[ $\mu$ F] | Dissipation factor | Ripple Current<br>at<br>40°C/120Hz | Ripple Current<br>at<br>105°C/120Hz<br>$I_r$ | ESR (typ)<br>at<br>20°C/100Hz | DxL             | Product Code    |
|--|------------------------------------|--------------------|------------------------------------|--|-------------------------------|-----------------|-----------------|
|  |                                    | $\tan \delta$      | [A RMS]                            | [A RMS]                                      | [m $\Omega$ ]                 | [mm]            |                 |
| 420<br>420V<br>(470)                                     | 120                                | 0.15               | 2.16                               | 0.77   | 740                           | 25x30           | HU3420V121M□YS3 |
|  |                                    | 0.15               | 2.16                               | 0.77   | 740                           | 30x25           | HU3420V121M□ZS2 |
|  |                                    | 0.15               | 2.24                               | 0.80   | 740                           | 22x40           | HU3420V121M□XS5 |
|  | 150                                | 0.15               | 2.52                               | 0.90   | 590                           | 25x35           | HU3420V151M□YS4 |
|  |                                    | 0.15               | 2.55                               | 0.91   | 590                           | 30x30           | HU3420V151M□ZS3 |
|  |                                    | 0.15               | 2.66                               | 0.95   | 590                           | 22x45           | HU3420V151M□XS6 |
|  | 180                                | 0.15               | 2.77                               | 0.99   | 490                           | 35x25           | HU3420V181M□AS2 |
|  |                                    | 0.15               | 2.80                               | 1.00   | 490                           | 30x30           | HU3420V181M□ZS3 |
|  |                                    | 0.15               | 2.88                               | 1.03   | 490                           | 25x40           | HU3420V181M□YS5 |
|  | 220                                | 0.15               | 3.25                               | 1.16   | 400                           | 30x35           | HU3420V221M□ZS4 |
|  |                                    | 0.15               | 3.25                               | 1.16   | 400                           | 35x30           | HU3420V221M□AS3 |
|  |                                    | 0.15               | 3.47                               | 1.24   | 400                           | 25x50           | HU3420V221M□YS7 |
|  | 270                                | 0.15               | 3.75                               | 1.34   | 330                           | 30x40           | HU3420V271M□ZS5 |
|  |                                    | 0.15               | 3.78                               | 1.35   | 330                           | 35x35           | HU3420V271M□AS4 |
|  | 330                                | 0.15               | 4.34                               | 1.55   | 270                           | 35x40           | HU3420V331M□AS5 |
|  |                                    | 0.15               | 4.59                               | 1.64   | 270                           | 30x50           | HU3420V331M□ZS7 |
| 390  | 0.15                               | 4.96               | 1.77                               | 230  | 35x45                         | HU3420V391M□AS6 |                 |
| 470  | 0.15                               | 5.71               | 2.04                               | 140  | 35x50                         | HU3420V471M□AS7 |                 |
| 450<br>2W<br>(500)                                       | 47                                 | 0.15               | 1.29                               | 0.46   | 1880                          | 22x25           | HU32W470M□XS2   |
|  | 68                                 | 0.15               | 1.65                               | 0.59   | 1300                          | 25x25           | HU32W680M□YS2   |
|  |                                    | 0.15               | 1.68                               | 0.60   | 1300                          | 22x30           | HU32W680M□XS3   |
|  | 82                                 | 0.15               | 1.96                               | 0.70   | 1080                          | 22x35           | HU32W820M□XS4   |
|  |                                    | 0.15               | 1.96                               | 0.70   | 1080                          | 25x30           | HU32W820M□YS3   |
|  | 100                                | 0.15               | 2.18                               | 0.78   | 890                           | 30x25           | HU32W101M□ZS2   |
|  |                                    | 0.15               | 2.27                               | 0.81   | 890                           | 22x40           | HU32W101M□XS5   |
|  |                                    | 0.15               | 2.27                               | 0.81   | 890                           | 25x35           | HU32W101M□YS4   |
|  | 120                                | 0.15               | 2.46                               | 0.88   | 740                           | 25x35           | HU32W121M□YS4   |
|  |                                    | 0.15               | 2.52                               | 0.90   | 740                           | 30x30           | HU32W121M□ZS3   |
|  |                                    | 0.15               | 2.52                               | 0.90   | 740                           | 35x25           | HU32W121M□AS2   |
|  |                                    | 0.15               | 2.63                               | 0.94   | 740                           | 22x45           | HU32W121M□XS6   |
|  | 150                                | 0.15               | 2.97                               | 1.06   | 590                           | 30x35           | HU32W151M□ZS4   |
|  |                                    | 0.15               | 2.97                               | 1.06   | 590                           | 35x30           | HU32W151M□AS3   |
|  |                                    | 0.15               | 3.08                               | 1.10   | 590                           | 25x45           | HU32W151M□YS6   |
|  | 180                                | 0.15               | 3.28                               | 1.17   | 490                           | 30x35           | HU32W181M□ZS4   |
|  |                                    | 0.15               | 3.28                               | 1.17   | 490                           | 35x30           | HU32W181M□AS3   |
|  |                                    | 0.15               | 3.50                               | 1.25   | 490                           | 25x50           | HU32W181M□YS7   |
|  | 220                                | 0.15               | 3.75                               | 1.34   | 400                           | 30x40           | HU32W221M□ZS5   |
|  |                                    | 0.15               | 3.81                               | 1.36   | 400                           | 35x35           | HU32W221M□AS4   |
|  | 270                                | 0.15               | 4.22                               | 1.51   | 330                           | 35x35           | HU32W271M□AS4   |
|  |                                    | 0.15               | 4.40                               | 1.57   | 330                           | 35x40           | HU32W271M□AS5   |
|  |                                    | 0.15               | 4.56                               | 1.63   | 330                           | 30x50           | HU32W271M□ZS7   |
|  | 330                                | 0.15               | 5.04                               | 1.80   | 270                           | 35x45           | HU32W331M□AS6   |
|  | 390                                | 0.15               | 5.74                               | 2.05   | 230                           | 35x50           | HU32W391M□AS7   |
|  | 470                                | 0.15               | 6.27                               | 2.24   | 140                           | 35x50           | HU32W471M□AS7   |
|  |                                    | 0.15               | 6.53                               | 2.33   | 140                           | 35x55           | HU32W471M□AS8   |
|  | 560                                | 0.15               | 7.56                               | 2.70   | 160                           | 40x61           | HU32W561M□BS9   |
|  |                                    | 0.15               | 7.95                               | 2.84   | 159                           | 40x75           | HU32W561M□BS12  |
|  | 680                                | 0.15               | 8.10                               | 2.89   | 130                           | 35x60           | HU32W681M□AS9   |
| 0.15   |                                    | 8.43               | 3.01                               | 130  | 35x75                         | HU32W681M□AS12  |                 |
| 0.15   |                                    | 8.57               | 3.06                               | 130  | 40x61                         | HU32W681M□BS9   |                 |
| 750  | 0.15                               | 8.43               | 3.01                               | 128  | 40x61                         | HU32W751M□BS11  |                 |
|  | 0.15                               | 9.13               | 3.26                               | 128  | 35x81                         | HU32W751M□AS13  |                 |
|  | 0.15                               | 9.44               | 3.37                               | 128  | 40x81                         | HU32W751M□BS13  |                 |
| 820  | 0.15                               | 7.95               | 2.84                               | 110  | 40x76                         | HU32W821M□BS12  |                 |
|  | 0.15                               | 9.49               | 3.39                               | 110  | 35x80                         | HU32W821M□AS13  |                 |
|  | 0.15                               | 9.60               | 3.43                               | 110  | 40x91                         | HU32W821M□BS15  |                 |
| 1 000  | 0.15                               | 10.64              | 3.80                               | 100  | 40x76                         | HU32W102M□BS12  |                 |
| 1 300  | 0.15                               | 11.12              | 3.97                               | 69   | 40x96                         | HU32W132M□BS16  |                 |

| Rated Voltage Code<br>(Surge Voltage)<br>$V_r$<br>[V DC] | Capacitance<br>$C_r$<br>[ $\mu$ F] | Dissipation factor<br>$\tan \delta$ | Ripple Current<br>at<br>40°C/120Hz<br>[A RMS] | Ripple Current<br>at<br>105°C/120Hz<br>$I_r$<br>[A RMS] | ESR (typ)<br>at<br>20°C/100Hz<br>[m $\Omega$ ] | DxL<br>[mm]    | Product Code   |
|--|------------------------------------|-------------------------------------|---|---|--|----------------|----------------|
| 500<br>2H<br>(550)                                       | 39                                 | 0.20                                | 1.06  | 0.38  | 2440   | 22x30          | HU32H390M□XS3  |
|  | 47                                 | 0.20                                | 1.26  | 0.45  | 2030   | 22x35          | HU32H470M□XS4  |
|  | 56                                 | 0.20                                | 1.46  | 0.52  | 1700   | 22x40          | HU32H560M□XS5  |
|  | 68                                 | 0.20                                | 1.51  | 0.54  | 1400   | 30x25          | HU32H680M□ZS2  |
|  |                                    | 0.20                                | 1.65  | 0.59  | 1400   | 22x45          | HU32H680M□XS6  |
|  | 82                                 | 0.20                                | 1.72  | 0.62  | 1165   | 35x25          | HU32H820M□AS2  |
|  |                                    | 0.20                                | 1.76  | 0.63  | 1165   | 30x30          | HU32H820M□ZS3  |
|  |                                    | 0.20                                | 1.79  | 0.64  | 1165   | 25x40          | HU32H820M□YS5  |
|  |                                    | 0.20                                | 1.90  | 0.68  | 1165   | 22x50          | HU32H820M□XS7  |
|  |                                    | 0.20                                | 1.91  | 0.68  | 1165   | 22x45          | HU32H820M□XS5  |
|  | 100                                | 0.20                                | 2.03  | 0.73  | 960  | 35x30          | HU32H101M□AS3  |
|  |                                    | 0.20                                | 2.04  | 0.73  | 960  | 30x35          | HU32H101M□ZS4  |
|  |                                    | 0.20                                | 2.07  | 0.74  | 960  | 25x45          | HU32H101M□YS6  |
|  | 120                                | 0.20                                | 2.22  | 0.79  | 800  | 30x35          | HU32H121M□ZS4  |
|  |                                    | 0.20                                | 2.22  | 0.79  | 800  | 35x30          | HU32H121M□AS3  |
|  |                                    | 0.20                                | 2.34  | 0.84  | 800  | 30x40          | HU32H121M□ZS5  |
|  |                                    | 0.20                                | 2.38  | 0.85  | 800  | 25x50          | HU32H121M□YS7  |
|  | 150                                | 0.20                                | 2.63  | 0.94  | 640  | 30x40          | HU32H151M□ZS5  |
|  |                                    | 0.20                                | 2.63  | 0.94  | 640  | 35x35          | HU32H151M□AS4  |
|  |                                    | 0.20                                | 2.65  | 0.95  | 640  | 25x50          | HU32H151M□YS7  |
|  |                                    | 0.20                                | 2.72  | 0.97  | 640  | 30x45          | HU32H151M□ZS6  |
|  | 180                                | 0.20                                | 3.00  | 1.07  | 535  | 35x40          | HU32H181M□AS5  |
|  |                                    | 0.20                                | 3.11  | 1.11  | 535  | 30x50          | HU32H181M□ZS7  |
|  | 220                                | 0.20                                | 3.30  | 1.18  | 434  | 35x40          | HU32H221M□AS5  |
|  |                                    | 0.20                                | 3.44  | 1.23  | 434  | 35x45          | HU32H221M□AS6  |
|  | 270                                | 0.20                                | 3.98  | 1.42  | 360  | 35x50          | HU32H271M□AS7  |
|  | 330                                | 0.20                                | 4.40  | 1.57  | 290  | 35x50          | HU32H331M□AS7  |
|  |                                    | 0.20                                | 4.70  | 1.68  | 290  | 35x60          | HU32H331M□AS9  |
|  | 390                                | 0.20                                | 5.32  | 1.90  | 245  | 35x75          | HU32H391M□AS12 |
|  | 470                                | 0.20                                | 5.85  | 2.09  | 210  | 40x61          | HU32H471M□BS9  |
| 0.20   |                                    | 6.08                                | 2.17  | 210   | 35x85  | HU32H471M□AS14 |                |
| 0.20   |                                    | 6.08                                | 2.17  | 210   | 40x76  | HU32H471M□BS12 |                |
| 560  | 0.20                               | 6.78                                | 2.42  | 188   | 40x81  | HU32H561M□BS13 |                |
| 680  | 0.20                               | 7.48                                | 2.67  | 140   | 40x81  | HU32H681M□BS13 |                |
| 820  | 0.20                               | 8.99                                | 3.21  | 128   | 40x101   | HU32H821M□BS17 |                |



► **Life Time Table / Brauchbarkeitsdauer – Tabelle**

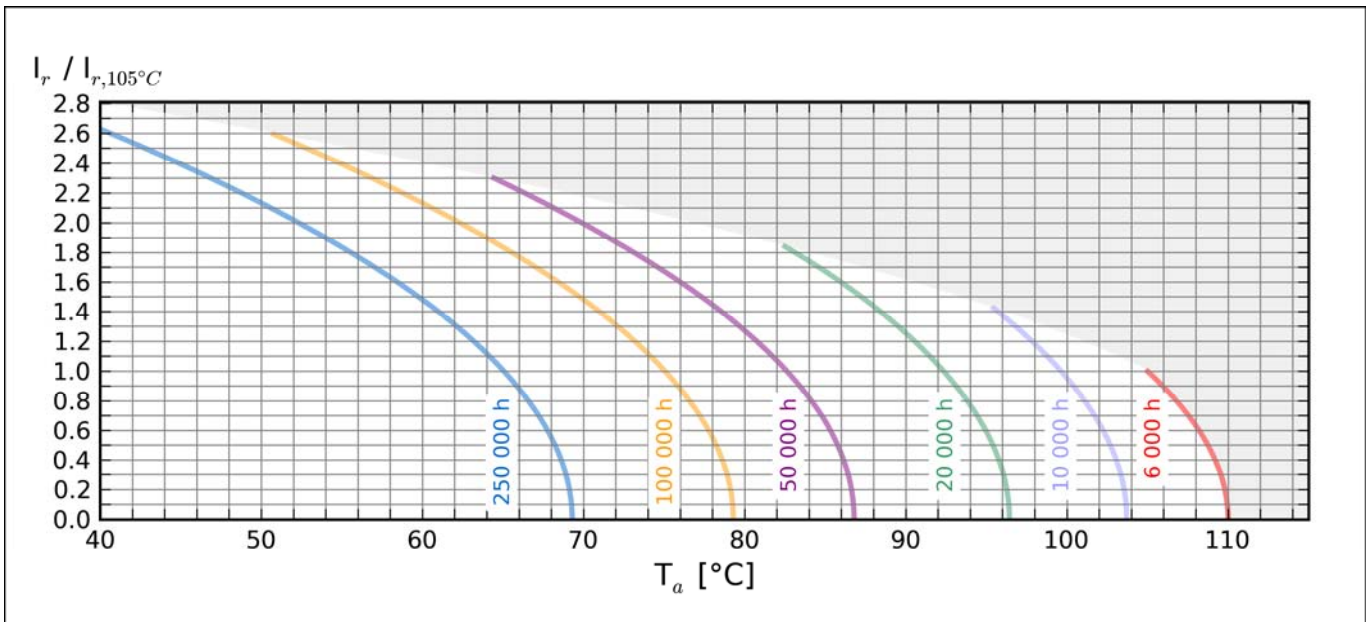
| HU3                       | Useful life as function of ambient temperature and ripple current |       |       |       |       |       |       |       |       |       |       |       |       |       |
|---------------------------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| $I_r$ at 105°C            | x 1.0   | x 1.2 | x 1.4 | x 1.6 | x 1.8 | x 2.0 | x 2.1 | x 2.2 | x 2.3 | x 2.4 | x 2.5 | x 2.6 | x 2.7 | x 2.8 |
| $T_a = 40^\circ\text{C}$  | 250   | 250   | 250   | 250   | 250   | 250   | 250   | 250   | 250   | 250   | 250   | 250   | 216   | 174   |
| $T_a = 45^\circ\text{C}$  | 250   | 250   | 250   | 250   | 250   | 250   | 250   | 250   | 250   | 247   | 204   | 168   | 136   |       |
| $T_a = 50^\circ\text{C}$  | 250   | 250   | 250   | 250   | 250   | 250   | 250   | 223   | 188   | 156   | 129   | 106   |       |       |
| $T_a = 55^\circ\text{C}$  | 250   | 250   | 250   | 250   | 250   | 196   | 167   | 141   | 118   | 99    | 81    |       |       |       |
| $T_a = 60^\circ\text{C}$  | 250   | 250   | 250   | 216   | 166   | 124   | 105   | 89    | 75    | 62    |       |       |       |       |
| $T_a = 65^\circ\text{C}$  | 250   | 211   | 173   | 137   | 105   | 78    | 66    | 56    | 47    |       |       |       |       |       |
| $T_a = 70^\circ\text{C}$  | 158   | 134   | 109   | 86    | 66    | 49    | 42    |       |       |       |       |       |       |       |
| $T_a = 75^\circ\text{C}$  | 100   | 84    | 69    | 54    | 42    | 31    | 26    |       |       |       |       |       |       |       |
| $T_a = 80^\circ\text{C}$  | 63  | 53    | 43    | 34    | 26    | 19    |       |       |       |       |       |       |       |       |
| $T_a = 85^\circ\text{C}$  | 40  | 33    | 27    | 21    | 16    | 12    |       |       |       |       |       |       |       |       |
| $T_a = 90^\circ\text{C}$  | 25  | 21    | 17    | 13    | 10    |       |       |       |       |       |       |       |       |       |
| $T_a = 95^\circ\text{C}$  | 16  | 13    | 11    | 8     |       |       |       |       |       |       |       |       |       |       |
| $T_a = 100^\circ\text{C}$ | 10  | 8     |       |       |       |       |       |       |       |       |       |       |       |       |
| $T_a = 105^\circ\text{C}$ | 6   |       |       |       |       |       |       |       |       |       |       |       |       |       |

khrs                      Max. value limited to 250 000 hours.

► **Life Time Graph / Brauchbarkeitsdauer – Diagramm**

Useful life depending on ambient temperature  $T_a$  and ripple current operating conditions  $I_r$  versus rated ripple current at the upper category temperature  $I_{r,105^\circ\text{C},120\text{Hz}}$

Brauchbarkeitsdauer in Abhängigkeit von Umgebungstemperatur  $T_a$  und Wechselstrombelastung  $I_r$  im Verhältnis zur max. Wechselstrombelastung bei oberer Kategorietemperatur  $I_{r,105^\circ\text{C},120\text{Hz}}$



► **Life Time Tests and Requirements / Anforderungen Brauchbarkeitsdauer**

| Life time test | Test procedure   | Life time criteria  |
|----------------|--|---|
| Endurance test | $T_a = 105^\circ\text{C}$ ; $V_r, I_r$ applied<br>4000 hours | $\Delta C/C \leq 15\%$ (of initial value)<br>$\text{Tan}\delta \leq 175\%$ (of specified value)<br>$I_L \leq$ specified value |
| Useful life    | $T_a = 105^\circ\text{C}$ ; $V_r, I_r$ applied<br>6000 hours | $\Delta C/C \leq 20\%$ (of initial value)<br>$\text{Tan}\delta < 200\%$ (of specified value)<br>$I_L \leq$ specified value    |

Reference Specification: JIS C 5101-4, JIS C 5102, IEC 60384-4