

## High-Temperature Silicone Resin Metal Oxide Varistor



### ◆ Product Introduction

High-temperature silicone-based surge resistors utilize a flexible silicone encapsulation that offers superior temperature resistance compared to epoxy-based versions. They are resistant to thermal and mechanical shock, and exhibit excellent insulation and moisture resistance. These surge resistors are suitable for demanding applications in automotive, photovoltaic, and industrial high-temperature environments, providing reliable and long-lasting protection against overvoltage and transient surges.

### ◆ Features

1. The nominal voltage ( $V_{1ma}$ ) range is wide: 82V~1200V
2. Fast response speed for transient overvoltage
3. Possesses excellent transient energy absorption capabilities.
4. Low clamping ratio, no follow-up flow
5. Complies with J-STD-020 standard, moisture sensitivity level MSL 1
6. Operating temperature range: -40°C ~ +140°C
7. Storage temperature: -40°C ~ +140°C
8. Safety Certification: UL Certification Number: E327997

TUV Certification Number: B0960480010

CQC Certification Number: 17001172542

CSA Certification Number: 246579

### ◆ Application

1. Protection for semiconductor devices such as transistors, diodes, integrated circuits, thyristors, and bidirectional thyristors
2. Surge protection for consumer electronics
3. Surge protection for industrial electronic products
4. Surge protection for household appliances and oil and gas equipment throughout the entire machine
5. Relays and solenoid valves absorb surge suction

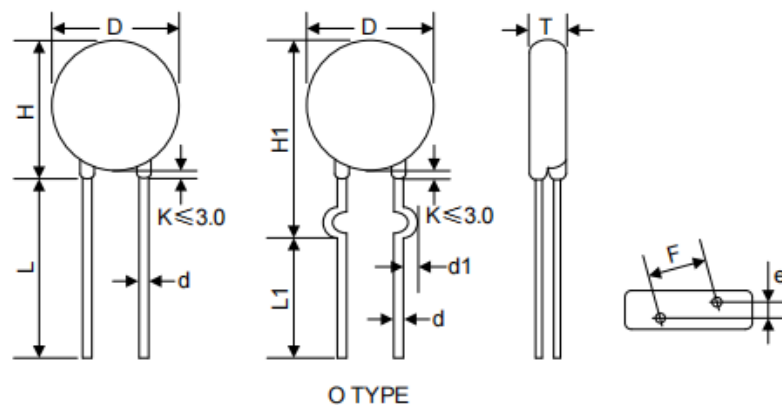
## ◆ Coding principles

| 1                | 2     | 3 | 4         |      | 5    |                  | 6                  | 7     | 10             |                | 11         |                         | 12               |                         | 13 |  |
|------------------|-------|---|-----------|------|------|------------------|--------------------|-------|----------------|----------------|------------|-------------------------|------------------|-------------------------|----|--|
| Varistor voltage |       |   | Tolerance |      | Type |                  | Component diameter |       | Impact series  |                | Wire shape |                         | Packaging method |                         |    |  |
| 820              | 82V   |   | K         | ±10% | H    | High-temperature | 07                 | Φ07mm | Without suffix | Standard type  | No rear    | Straight lead           | Without suffix   | Bulk                    |    |  |
| 101              | 100V  |   |           |      |      |                  | 10                 | Φ10mm | J              | High wave type | O          | External crimping leads | TB               | Tape & Box & P0=12.7mm  |    |  |
| 102              | 1000V |   |           |      |      |                  | 14                 | Φ14mm |                |                | F          | Y-shaped curved wire    | TR               | Tape & Reel & P0=12.7mm |    |  |
|                  |       |   |           |      |      |                  | 20                 | Φ20mm |                |                |            |                         | EB               | Tape & Box & P0=15.0mm  |    |  |
|                  |       |   |           |      |      |                  |                    |       |                |                |            |                         | ER               | Tape & Reel & P0=15.0mm |    |  |

YAGEO SENSOR

## ◆ KH/KH-J series

## ● Structure and dimensions -07D KH/KH-J



| Table 1  |            |
|----------|------------|
| Units:mm |            |
| Symbols  | Dimensions |
| H        | 7.5~13.0   |
| H1       | 9.0~13.5   |
| L(min.)  | 20.0       |
| L1(min.) | 15.0       |
| D        | 7.0~10.0   |
| F(±0.8)  | 5.0        |
| T        | Table 2    |
| e(±0.8)  | Table 2    |
| d(±0.05) | 0.6        |
| d1(±0.4) | 1.2        |

| Table 2  |           |     |       |           |     |
|----------|-----------|-----|-------|-----------|-----|
| Units:mm |           |     |       |           |     |
| Model    | T         | e   | Model | T         | e   |
| 820K     | 2.18~4.89 | 1.4 | 391K  | 2.95~6.42 | 2.6 |
| 101K     | 2.28~5.06 | 1.6 | 431K  | 3.08~6.66 | 2.8 |
| 121K     | 2.40~5.26 | 1.7 | 471K  | 3.21~6.89 | 3.0 |
| 151K     | 2.18~4.99 | 1.8 | 511K  | 3.34~7.13 | 3.2 |
| 181K     | 2.28~5.17 | 1.7 | 561K  | 3.50~7.43 | 3.4 |
| 201K     | 2.36~5.32 | 1.8 | 621K  | 3.69~7.79 | 3.7 |
| 221K     | 2.41~5.41 | 1.9 | 681K  | 3.89~8.14 | 4.0 |
| 241K     | 2.47~5.53 | 2.0 | 751K  | 4.11~8.56 | 4.1 |
| 271K     | 2.57~5.71 | 2.2 | 781K  | 4.21~8.74 | 4.2 |
| 301K     | 2.66~5.88 | 2.3 | 821K  | 4.34~8.98 | 4.4 |
| 331K     | 2.76~6.06 | 2.3 |       |           |     |
| 361K     | 2.86~6.24 | 2.5 |       |           |     |

## ◆ KH/KH-J Series

## ● Electrical Characteristics -07D KH/KH-J

| Part Number |             | Maximum allowed voltage |         | Varistor Voltage | Maximum holding voltage |        | Able to withstand surges Current |          | Maximum energy (10/1000μs) |         | Rated power | Typical capacitors (Reference value) |
|-------------|-------------|-------------------------|---------|------------------|-------------------------|--------|----------------------------------|----------|----------------------------|---------|-------------|--------------------------------------|
| Standard    | High impact | VAC (V)                 | VDC (V) | V1mA (V)         | IP (A)                  | VC (V) | I (A) Standard                   | Standard | High impact                | VAC (V) | VDC (V)     | V1mA (V)                             |
| 820KH07     | 820KH07J    | 50                      | 65      | 82(74~90)        | 10                      | 135    | 1200                             | 1750     | 5.0                        | 10.0    | 0.25        | 600                                  |
| 101KH07     | 101KH07J    | 60                      | 85      | 100(90~110)      | 10                      | 165    | 1200                             | 1750     | 6.5                        | 12.0    | 0.25        | 500                                  |
| 121KH07     | 121KH07J    | 75                      | 100     | 120(108~132)     | 10                      | 200    | 1200                             | 1750     | 7.8                        | 13.0    | 0.25        | 420                                  |
| 151KH07     | 151KH07J    | 95                      | 125     | 150(135~165)     | 10                      | 250    | 1200                             | 1750     | 9.7                        | 15.0    | 0.25        | 330                                  |
| 181KH07     | 181KH07J    | 115                     | 150     | 180(162~198)     | 10                      | 300    | 1200                             | 1750     | 11.7                       | 16.0    | 0.25        | 280                                  |
| 201KH07     | 201KH07J    | 130                     | 170     | 200(180~220)     | 10                      | 340    | 1200                             | 1750     | 13.0                       | 17.0    | 0.25        | 250                                  |
| 221KH07     | 221KH07J    | 140                     | 180     | 220(198~242)     | 10                      | 360    | 1200                             | 1750     | 14.0                       | 19.0    | 0.25        | 230                                  |
| 241KH07     | 241KH07J    | 150                     | 200     | 240(216~264)     | 10                      | 395    | 1200                             | 1750     | 15.0                       | 21.0    | 0.25        | 210                                  |
| 271KH07     | 271KH07J    | 175                     | 225     | 270(243~297)     | 10                      | 455    | 1200                             | 1750     | 18.0                       | 24.0    | 0.25        | 185                                  |
| 301KH07     | 301KH07J    | 190                     | 250     | 300(270~330)     | 10                      | 500    | 1200                             | 1750     | 20.0                       | 26.0    | 0.25        | 165                                  |
| 331KH07     | 331KH07J    | 210                     | 275     | 330(297~363)     | 10                      | 550    | 1200                             | 1750     | 23.0                       | 28.0    | 0.25        | 150                                  |
| 361KH07     | 361KH07J    | 230                     | 300     | 360(324~396)     | 10                      | 595    | 1200                             | 1750     | 24.0                       | 32.0    | 0.25        | 140                                  |
| 391KH07     | 391KH07J    | 250                     | 320     | 390(351~429)     | 10                      | 650    | 1200                             | 1750     | 26.0                       | 35.0    | 0.25        | 130                                  |
| 431KH07     | 431KH07J    | 275                     | 350     | 430(387~473)     | 10                      | 710    | 1200                             | 1750     | 28.0                       | 40.0    | 0.25        | 115                                  |
| 471KH07     | 471KH07J    | 300                     | 385     | 470(423~517)     | 10                      | 775    | 1200                             | 1750     | 29.0                       | 42.0    | 0.25        | 105                                  |
| 511KH07     | 511KH07J    | 320                     | 415     | 510(459~561)     | 10                      | 845    | 1200                             | 1750     | 31.0                       | 45.0    | 0.25        | 100                                  |
| 561KH07     | 561KH07J    | 350                     | 460     | 560(504~616)     | 10                      | 925    | 1200                             | 1750     | 35.0                       | 49.0    | 0.25        | 90                                   |
| 621KH07     | 621KH07J    | 385                     | 505     | 620(558~682)     | 10                      | 1025   | 1200                             | 1750     | 38.0                       | 55.0    | 0.25        | 80                                   |
| 681KH07     | 681KH07J    | 420                     | 560     | 680(612~748)     | 10                      | 1120   | 1200                             | 1750     | 42.0                       | 60.0    | 0.25        | 75                                   |
| 751KH07     | /           | 460                     | 615     | 750(675~825)     | 10                      | 1240   | 1200                             | /        | 45.0                       | /       | 0.25        | 70                                   |
| 781KH07     | /           | 485                     | 640     | 780(702~858)     | 10                      | 1290   | 1200                             | /        | 48.0                       | /       | 0.25        | 65                                   |
| 821KH07     | /           | 510                     | 670     | 820(738~902)     | 10                      | 1355   | 1200                             | /        | 52.0                       | /       | 0.25        | 60                                   |

Note: 1. Leakage current (with external 83% damping voltage V1mA):  $IR \leq 20\mu A$  (820K~821K)

2. The 750V and 820V pressure-sensitive voltage specifications do not include products with high-current, high-voltage applications.

◆ KH/KH-J series

- Structure and dimensions-10D KH/KH-J

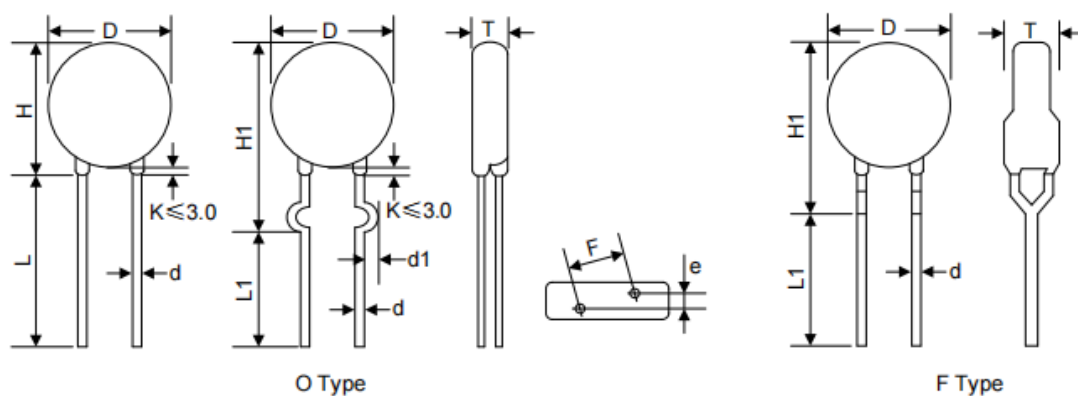


Table 1

Units:mm

| Symbols  | Dimensions |
|----------|------------|
| H        | 10.5~16.5  |
| H1       | 13.5~18.5  |
| L(min.)  | 20.0       |
| L1(min.) | 15.0       |
| D        | 10.0~13.5  |
| F(±0.8)  | 7.5        |
| T        | Table 2    |
| e(±0.8)  | Table 2    |
| d(±0.05) | 0.8        |
| d1(±0.4) | 1.4        |

Table 2

Units:mm

| Model | T         | e   | Model | T         | e   |
|-------|-----------|-----|-------|-----------|-----|
| 820K  | 2.58~5.30 | 1.8 | 391K  | 3.35~6.82 | 2.8 |
| 101K  | 2.69~5.47 | 2.0 | 431K  | 3.48~7.06 | 3.0 |
| 121K  | 2.81~5.67 | 2.2 | 471K  | 3.61~7.29 | 3.2 |
| 151K  | 2.58~5.39 | 1.8 | 511K  | 3.74~7.53 | 3.4 |
| 181K  | 2.68~5.57 | 1.9 | 561K  | 3.90~7.83 | 3.6 |
| 201K  | 2.76~5.72 | 2.0 | 621K  | 4.09~8.29 | 3.9 |
| 221K  | 2.81~5.81 | 2.1 | 681K  | 4.29~8.54 | 4.2 |
| 241K  | 2.87~5.93 | 2.2 | 751K  | 4.51~8.63 | 4.3 |
| 271K  | 2.97~6.11 | 2.4 | 781K  | 4.61~8.69 | 4.4 |
| 301K  | 3.06~6.28 | 2.5 | 821K  | 4.74~8.90 | 4.6 |
| 331K  | 3.16~6.46 | 2.5 | 911K  | 5.03~8.95 | 5.0 |
| 361K  | 3.26~6.64 | 2.7 | 102K  | 5.31~9.39 | 5.1 |

## ◆ KH/KH-J Series

## ● Electrical Characteristics -10D KH/KH-J

| Part Number |             | Maximum allowed voltage |         | Varistor Voltage | Maximum holding voltage |        | Able to withstand surges Current |          | Maximum energy (10/1000μs) |         | Rated power | Typical capacitors (Reference value) |
|-------------|-------------|-------------------------|---------|------------------|-------------------------|--------|----------------------------------|----------|----------------------------|---------|-------------|--------------------------------------|
| Standard    | High impact | VAC (V)                 | VDC (V) | V1mA (V)         | IP (A)                  | VC (V) | I (A) Standard                   | Standard | High impact                | VAC (V) | VDC (V)     | V1mA (V)                             |
| 820KH10     | 820KH10J    | 50                      | 65      | 82(74~90)        | 25                      | 135    | 2500                             | 3500     | 12.0                       | 17.0    | 0.4         | 1200                                 |
| 101KH10     | 101KH10J    | 60                      | 85      | 100(90~110)      | 25                      | 165    | 2500                             | 3500     | 15.0                       | 18.0    | 0.4         | 1000                                 |
| 121KH10     | 121KH10J    | 75                      | 100     | 120(108~132)     | 25                      | 200    | 2500                             | 3500     | 18.0                       | 21.0    | 0.4         | 830                                  |
| 151KH10     | 151KH10J    | 95                      | 125     | 150(135~165)     | 25                      | 250    | 2500                             | 3500     | 22.0                       | 25.0    | 0.4         | 670                                  |
| 181KH10     | 181KH10J    | 115                     | 150     | 180(162~198)     | 25                      | 300    | 2500                             | 3500     | 27.0                       | 30.0    | 0.4         | 560                                  |
| 201KH10     | 201KH10J    | 130                     | 170     | 200(180~220)     | 25                      | 340    | 2500                             | 3500     | 30.0                       | 35.0    | 0.4         | 500                                  |
| 221KH10     | 221KH10J    | 140                     | 180     | 220(198~242)     | 25                      | 360    | 2500                             | 3500     | 32.0                       | 39.0    | 0.4         | 450                                  |
| 241KH10     | 241KH10J    | 150                     | 200     | 240(216~264)     | 25                      | 395    | 2500                             | 3500     | 35.0                       | 42.0    | 0.4         | 420                                  |
| 271KH10     | 271KH10J    | 175                     | 225     | 270(243~297)     | 25                      | 455    | 2500                             | 3500     | 37.0                       | 49.0    | 0.4         | 370                                  |
| 301KH10     | 301KH10J    | 190                     | 250     | 300(270~330)     | 25                      | 500    | 2500                             | 3500     | 40.0                       | 54.0    | 0.4         | 330                                  |
| 331KH10     | 331KH10J    | 210                     | 275     | 330(297~363)     | 25                      | 550    | 2500                             | 3500     | 43.0                       | 58.0    | 0.4         | 300                                  |
| 361KH10     | 361KH10J    | 230                     | 300     | 360(324~396)     | 25                      | 595    | 2500                             | 3500     | 47.0                       | 65.0    | 0.4         | 280                                  |
| 391KH10     | 391KH10J    | 250                     | 320     | 390(351~429)     | 25                      | 650    | 2500                             | 3500     | 60.0                       | 70.0    | 0.4         | 260                                  |
| 431KH10     | 431KH10J    | 275                     | 350     | 430(387~473)     | 25                      | 710    | 2500                             | 3500     | 65.0                       | 80.0    | 0.4         | 230                                  |
| 471KH10     | 471KH10J    | 300                     | 385     | 470(423~517)     | 25                      | 775    | 2500                             | 3500     | 67.0                       | 85.0    | 0.4         | 210                                  |
| 511KH10     | 511KH10J    | 320                     | 415     | 510(459~561)     | 25                      | 845    | 2500                             | 3500     | 69.0                       | 90.0    | 0.4         | 200                                  |
| 561KH10     | 561KH10J    | 350                     | 460     | 560(504~616)     | 25                      | 925    | 2500                             | 3500     | 70.0                       | 92.0    | 0.4         | 180                                  |
| 621KH10     | 621KH10J    | 385                     | 505     | 620(558~682)     | 25                      | 1025   | 2500                             | 3500     | 72.0                       | 95.0    | 0.4         | 160                                  |
| 681KH10     | 681KH10J    | 420                     | 560     | 680(612~748)     | 25                      | 1120   | 2500                             | 3500     | 75.0                       | 98.0    | 0.4         | 150                                  |
| 751KH10     | 751KH10J    | 460                     | 615     | 750(675~825)     | 25                      | 1240   | 2500                             | 3500     | 77.0                       | 100.0   | 0.4         | 130                                  |
| 781KH10     | 781KH10J    | 485                     | 640     | 780(702~858)     | 25                      | 1290   | 2500                             | 3500     | 80.0                       | 105.0   | 0.4         | 125                                  |

Note: 1. Leakage current (with external 83% damping voltage V1mA): IR≤20uA (820K~102K)

## ◆ KH/KH-J series

## ● Electrical Characteristics-10D KH/KH-J

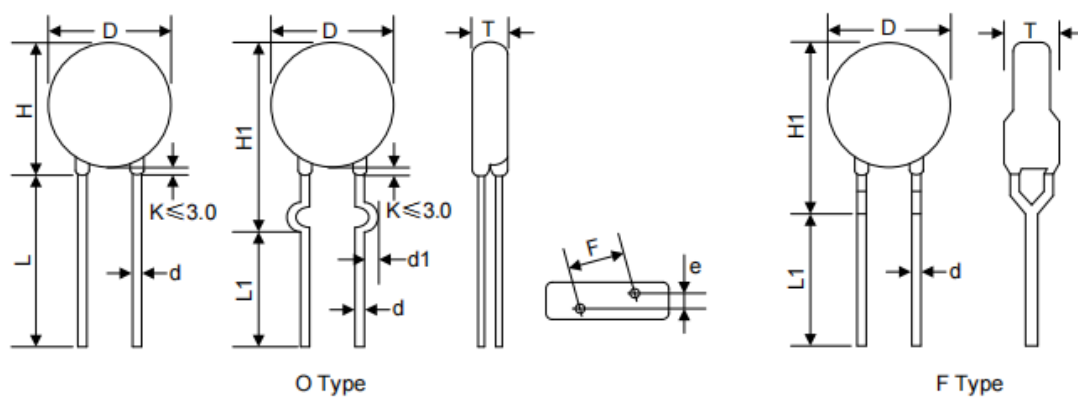
| Part Number |             | Maximum allowed voltage |         | Varistor Voltage | Maximum holding voltage |        | Able to withstand surges Current |          | Maximum energy (10/1000 $\mu$ s) |         | Rated power | Typical capacitors (Reference value) |
|-------------|-------------|-------------------------|---------|------------------|-------------------------|--------|----------------------------------|----------|----------------------------------|---------|-------------|--------------------------------------|
| Standard    | High impact | VAC (V)                 | VDC (V) | V1mA (V)         | IP (A)                  | VC (V) | I (A) Standard                   | Standard | High impact                      | VAC (V) | VDC (V)     | V1mA (V)                             |
| 821KH10     | 821KH10J    | 510                     | 670     | 820(738~902)     | 25                      | 1355   | 2500                             | 3500     | 85.0                             | 110.0   | 0.4         | 120                                  |
| 911KH10     | 911KH10J    | 550                     | 745     | 910(819~1001)    | 25                      | 1500   | 2500                             | 3500     | 93.0                             | 130.0   | 0.4         | 110                                  |
| 102KH10     | 102KH10J    | 625                     | 825     | 1000(900~1100)   | 25                      | 1650   | 2500                             | 3500     | 102.0                            | 140.0   | 0.4         | 100                                  |

Note: 1. Leakage current (with external 83% damping voltage V1mA):  $I_R \leq 20\mu A$  (820K~102K)

YAGEO SENSOR

## ◆ KH/KH-J series

## ● Structure and dimensions-14D KH/KH-J



| Table 1  |            |
|----------|------------|
| Units:mm |            |
| Symbols  | Dimensions |
| H        | 14.5~20.0  |
| H1       | 17.0~23.0  |
| L(min.)  | 20.0       |
| L1(min.) | 15.0       |
| D        | 14.0~17.5  |
| F(±0.8)  | 7.5        |
| T        | Table 2    |
| e(±0.8)  | Table 2    |
| d(±0.05) | 0.8        |
| d1(±0.4) | 1.4        |

| Table 2  |           |     |       |           |     |
|----------|-----------|-----|-------|-----------|-----|
| Units:mm |           |     |       |           |     |
| Model    | T         | e   | Model | T         | e   |
| 820K     | 2.64~5.31 | 1.8 | 431K  | 3.61~7.13 | 3.0 |
| 101K     | 2.74~5.48 | 2.0 | 471K  | 3.74~7.37 | 3.2 |
| 121K     | 2.84~5.68 | 2.2 | 511K  | 3.87~7.62 | 3.4 |
| 151K     | 2.69~5.47 | 1.8 | 561K  | 4.03~7.92 | 3.6 |
| 181K     | 2.79~5.66 | 1.9 | 621K  | 4.23~8.29 | 3.9 |
| 201K     | 2.87~5.82 | 2.0 | 681K  | 4.43~8.66 | 4.2 |
| 221K     | 2.92~5.84 | 2.1 | 751K  | 4.65~8.73 | 4.3 |
| 241K     | 2.99~5.97 | 2.2 | 781K  | 4.75~8.79 | 4.4 |
| 271K     | 3.08~6.15 | 2.4 | 821K  | 4.88~9.01 | 4.6 |
| 301K     | 3.18~6.33 | 2.5 | 911K  | 5.18~9.05 | 4.8 |
| 331K     | 3.28~6.52 | 2.5 | 102K  | 5.47~9.50 | 5.1 |
| 361K     | 3.38~6.70 | 2.7 | 112K  | 5.80~10.0 | 5.4 |
| 391K     | 3.48~6.88 | 2.8 | 122K  | 6.13~10.5 | 5.6 |

## ◆ KH/KH-J series

## ● Electrical Characteristics -14D KH/KH-J

| Part Number |             | Maximum allowed voltage |         | Varistor Voltage | Maximum holding voltage |        | Able to withstand surges Current |          | Maximum energy (10/1000μs) |         | Rated power | Typical capacitors (Reference value) |
|-------------|-------------|-------------------------|---------|------------------|-------------------------|--------|----------------------------------|----------|----------------------------|---------|-------------|--------------------------------------|
| Standard    | High impact | VAC (V)                 | VDC (V) | V1mA (V)         | IP (A)                  | VC (V) | I (A) Standard                   | Standard | High impact                | VAC (V) | VDC (V)     | V1mA (V)                             |
| 820KH14     | 820KH14J    | 50                      | 65      | 82(74~90)        | 50                      | 135    | 4500                             | 6000     | 22.0                       | 27.0    | 0.6         | 2400                                 |
| 101KH14     | 101KH14J    | 60                      | 85      | 100(90~110)      | 50                      | 165    | 4500                             | 6000     | 28.0                       | 33.0    | 0.6         | 2000                                 |
| 121KH14     | 121KH14J    | 75                      | 100     | 120(108~132)     | 50                      | 200    | 4500                             | 6000     | 32.0                       | 40.0    | 0.6         | 1700                                 |
| 151KH14     | 151KH14J    | 95                      | 125     | 150(135~165)     | 50                      | 250    | 4500                             | 6000     | 40.0                       | 53.0    | 0.6         | 1300                                 |
| 181KH14     | 181KH14J    | 115                     | 150     | 180(162~198)     | 50                      | 300    | 4500                             | 6000     | 50.0                       | 60.0    | 0.6         | 1100                                 |
| 201KH14     | 201KH14J    | 130                     | 170     | 200(180~220)     | 50                      | 340    | 4500                             | 6000     | 57.0                       | 70.0    | 0.6         | 1000                                 |
| 221KH14     | 221KH14J    | 140                     | 180     | 220(198~242)     | 50                      | 360    | 4500                             | 6000     | 60.0                       | 78.0    | 0.6         | 900                                  |
| 241KH14     | 241KH14J    | 150                     | 200     | 240(216~264)     | 50                      | 395    | 4500                             | 6000     | 63.0                       | 84.0    | 0.6         | 830                                  |
| 271KH14     | 271KH14J    | 175                     | 225     | 270(243~297)     | 50                      | 455    | 4500                             | 6000     | 70.0                       | 99.0    | 0.6         | 740                                  |
| 301KH14     | 301KH14J    | 190                     | 250     | 300(270~330)     | 50                      | 500    | 4500                             | 6000     | 77.0                       | 108     | 0.6         | 670                                  |
| 331KH14     | 331KH14J    | 210                     | 275     | 330(297~363)     | 50                      | 550    | 4500                             | 6000     | 85.0                       | 115     | 0.6         | 610                                  |
| 361KH14     | 361KH14J    | 230                     | 300     | 360(324~396)     | 50                      | 595    | 4500                             | 6000     | 93.0                       | 130     | 0.6         | 5860                                 |
| 391KH14     | 391KH14J    | 250                     | 320     | 390(351~429)     | 50                      | 650    | 4500                             | 6000     | 100                        | 140     | 0.6         | 510                                  |
| 431KH14     | 431KH14J    | 275                     | 350     | 430(387~473)     | 50                      | 710    | 4500                             | 6000     | 115                        | 155     | 0.6         | 460                                  |
| 471KH14     | 471KH14J    | 300                     | 385     | 470(423~517)     | 50                      | 775    | 4500                             | 6000     | 118                        | 175     | 0.6         | 430                                  |
| 511KH14     | 511KH14J    | 320                     | 415     | 510(459~561)     | 50                      | 845    | 4500                             | 6000     | 121                        | 180     | 0.6         | 390                                  |
| 561KH14     | 561KH14J    | 350                     | 460     | 560(504~616)     | 50                      | 925    | 4500                             | 6000     | 125                        | 185     | 0.6         | 360                                  |
| 621KH14     | 621KH14J    | 385                     | 505     | 620(558~682)     | 50                      | 1025   | 4500                             | 6000     | 128                        | 190     | 0.6         | 320                                  |
| 681KH14     | 681KH14J    | 420                     | 560     | 680(612~748)     | 50                      | 1120   | 4500                             | 6000     | 130                        | 200     | 0.6         | 290                                  |
| 751KH14     | 751KH14J    | 460                     | 615     | 750(675~825)     | 50                      | 1240   | 4500                             | 6000     | 143                        | 210     | 0.6         | 270                                  |
| 781KH14     | 781KH14J    | 485                     | 640     | 780(702~858)     | 50                      | 1290   | 4500                             | 6000     | 148                        | 220     | 0.6         | 260                                  |

Note:1. Pressure-resistant voltage: >1200V, with an F-type structure.

2. Leakage current (applied 83% of nominal V1mA voltage): IR < 20uA (820K - 122K)

## ◆ KH/KH-J series

## ● Electrical Characteristics-14D KH/KH-J

| Part Number |             | Maximum allowed voltage |         | Varistor Voltage | Maximum holding voltage |        | Able to withstand surges Current |          | Maximum energy (10/1000 $\mu$ s) |         | Rated power | Typical capacitors (Reference value) |
|-------------|-------------|-------------------------|---------|------------------|-------------------------|--------|----------------------------------|----------|----------------------------------|---------|-------------|--------------------------------------|
| Standard    | High impact | VAC (V)                 | VDC (V) | V1mA (V)         | IP (A)                  | VC (V) | I (A) Standard                   | Standard | High impact                      | VAC (V) | VDC (V)     | V1mA (V)                             |
| 821KH14     | 821KH14J    | 510                     | 670     | 820(738~902)     | 50                      | 1355   | 4500                             | 6000     | 157                              | 235     | 0.6         | 240                                  |
| 911KH14     | 911KH14J    | 550                     | 745     | 910(819~1001)    | 50                      | 1500   | 4500                             | 6000     | 175                              | 255     | 0.6         | 220                                  |
| 102KH14     | 102KH14J    | 625                     | 825     | 1000(900~1100)   | 50                      | 1650   | 4500                             | 6000     | 190                              | 280     | 0.6         | 200                                  |
| 112KH14     | 112KH14J    | 680                     | 895     | 1100(990~1210)   | 50                      | 1815   | 4500                             | 6000     | 213                              | 310     | 0.6         | 180                                  |
| 122KH14     | 122KH14J    | 750                     | 990     | 1200(1080~1320)  | 50                      | 1980   | 4500                             | 6000     | 232                              | 324     | 0.6         | 160                                  |

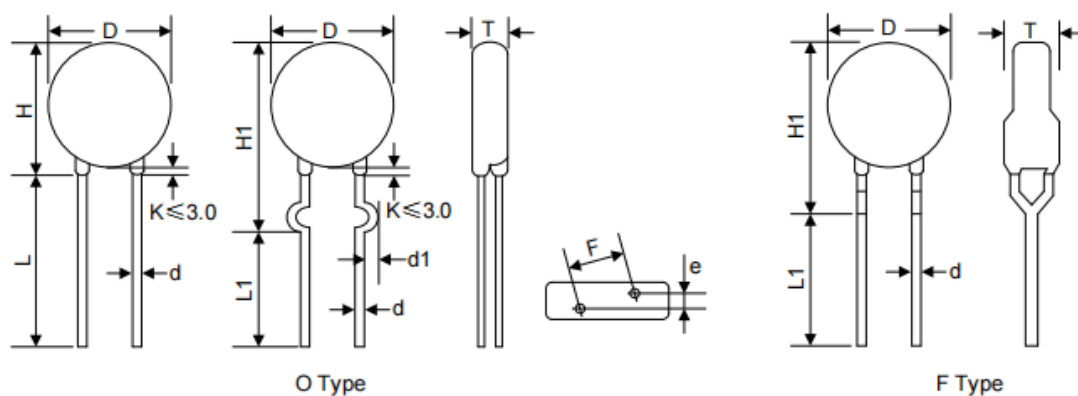
Note:1. Pressure-resistant voltage: >1200V, with an F-type structure.

2. Leakage current (applied 83% of nominal V1mA voltage): IR < 20uA (820K - 122K)

YAGEO SENSOR

## ◆ KH/KH-J series

## ● Structure and dimensions-20D KH/KH-J



| Table 1   |                  |
|-----------|------------------|
| Units: mm |                  |
| Symbols   | Dimensions       |
| H         | 19.5~26.5        |
| H1        | 24.0~30.0        |
| L(min.)   | 20.0             |
| L1(min.)  | 15.0             |
| D         | 19.0~23.5        |
| F         | 7.5±0.8/10.0±1.0 |
| T         | Table 2          |
| e(±0.8)   | Table 2          |
| d(±0.05)  | 0.8/1.0          |
| d1(±0.4)  | 1.4/1.6          |

| Table 2   |           |     |       |            |     |
|-----------|-----------|-----|-------|------------|-----|
| Units: mm |           |     |       |            |     |
| Model     | T         | e   | Model | T          | e   |
| 820K      | 2.74~5.72 | 2.0 | 431K  | 3.69~7.27  | 3.2 |
| 101K      | 2.84~5.89 | 2.2 | 471K  | 3.85~7.49  | 3.4 |
| 121K      | 2.94~6.09 | 2.4 | 511K  | 3.99~7.71  | 3.6 |
| 151K      | 2.79~5.90 | 2.0 | 561K  | 4.15~7.98  | 3.8 |
| 181K      | 2.89~6.10 | 2.1 | 621K  | 4.35~8.31  | 4.1 |
| 201K      | 2.97~6.26 | 2.2 | 681K  | 4.55~8.64  | 4.4 |
| 221K      | 3.02~6.11 | 2.3 | 751K  | 4.75~9.03  | 4.5 |
| 241K      | 3.09~6.22 | 2.4 | 781K  | 4.85~9.19  | 4.6 |
| 271K      | 3.18~6.39 | 2.6 | 821K  | 4.98~9.41  | 4.8 |
| 301K      | 3.25~6.55 | 2.7 | 911K  | 5.28~9.67  | 5.0 |
| 331K      | 3.35~6.72 | 2.7 | 102K  | 5.57~10.14 | 5.3 |
| 361K      | 3.45~6.88 | 2.9 | 112K  | 5.91~10.66 | 5.6 |
| 391K      | 3.55~7.05 | 3.0 | 122K  | 6.15~11.19 | 5.9 |

## ◆ KH/KH-J series

## ● Electrical Characteristics-20D KH/KH-J

| Part Number |             | Maximum allowed voltage |         | Varistor Voltage | Maximum holding voltage |        | Able to withstand surges Current |          | Maximum energy (10/1000μs) |         | Rated power | Typical capacitors (Reference value) |
|-------------|-------------|-------------------------|---------|------------------|-------------------------|--------|----------------------------------|----------|----------------------------|---------|-------------|--------------------------------------|
| Standard    | High impact | VAC (V)                 | VDC (V) | V1mA (V)         | IP (A)                  | VC (V) | I (A) Standard                   | Standard | High impact                | VAC (V) | VDC (V)     | V1mA (V)                             |
| 820KH20     | 820KH20J    | 50                      | 65      | 82(74~90)        | 100                     | 135    | 6500                             | 10000    | 45                         | 56      | 1.0         | 4900                                 |
| 101KH20     | 101KH20J    | 60                      | 85      | 100(90~110)      | 100                     | 165    | 6500                             | 10000    | 50                         | 70      | 1.0         | 4000                                 |
| 121KH20     | 121KH20J    | 75                      | 100     | 120(108~132)     | 100                     | 200    | 6500                             | 10000    | 55                         | 85      | 1.0         | 3300                                 |
| 151KH20     | 151KH20J    | 95                      | 125     | 150(135~165)     | 100                     | 250    | 6500                             | 10000    | 70                         | 106     | 1.0         | 2700                                 |
| 181KH20     | 181KH20J    | 115                     | 150     | 180(162~198)     | 100                     | 300    | 6500                             | 10000    | 85                         | 130     | 1.0         | 2200                                 |
| 201KH20     | 201KH20J    | 130                     | 170     | 200(180~220)     | 100                     | 340    | 6500                             | 10000    | 95                         | 140     | 1.0         | 2000                                 |
| 221KH20     | 221KH20J    | 140                     | 180     | 220(198~242)     | 100                     | 360    | 6500                             | 10000    | 100                        | 155     | 1.0         | 1800                                 |
| 241KH20     | 241KH20J    | 150                     | 200     | 240(216~264)     | 100                     | 395    | 6500                             | 10000    | 108                        | 168     | 1.0         | 1650                                 |
| 271KH20     | 271KH20J    | 175                     | 225     | 270(243~297)     | 100                     | 455    | 6500                             | 10000    | 127                        | 190     | 1.0         | 1500                                 |
| 301KH20     | 301KH20J    | 190                     | 250     | 300(270~330)     | 100                     | 500    | 6500                             | 10000    | 136                        | 210     | 1.0         | 1300                                 |
| 331KH20     | 331KH20J    | 210                     | 275     | 330(297~363)     | 100                     | 550    | 6500                             | 10000    | 150                        | 228     | 1.0         | 1200                                 |
| 361KH20     | 361KH20J    | 230                     | 300     | 360(324~396)     | 100                     | 595    | 6500                             | 10000    | 163                        | 255     | 1.0         | 1100                                 |
| 391KH20     | 391KH20J    | 250                     | 320     | 390(351~429)     | 100                     | 650    | 6500                             | 10000    | 180                        | 275     | 1.0         | 1000                                 |
| 431KH20     | 431KH20J    | 275                     | 350     | 430(387~473)     | 100                     | 710    | 6500                             | 10000    | 190                        | 305     | 1.0         | 930                                  |
| 471KH20     | 471KH20J    | 300                     | 385     | 470(423~517)     | 100                     | 775    | 6500                             | 10000    | 204                        | 350     | 1.0         | 850                                  |
| 511KH20     | 511KH20J    | 320                     | 415     | 510(459~561)     | 100                     | 845    | 6500                             | 10000    | 210                        | 360     | 1.0         | 780                                  |
| 561KH20     | 561KH20J    | 350                     | 460     | 560(504~616)     | 100                     | 925    | 6500                             | 10000    | 215                        | 380     | 1.0         | 710                                  |
| 621KH20     | 621KH20J    | 385                     | 505     | 620(558~682)     | 100                     | 1025   | 6500                             | 10000    | 224                        | 390     | 1.0         | 650                                  |
| 681KH20     | 681KH20J    | 420                     | 560     | 680(612~748)     | 100                     | 1120   | 6500                             | 10000    | 230                        | 400     | 1.0         | 600                                  |
| 751KH20     | 751KH20J    | 460                     | 615     | 750(675~825)     | 100                     | 1240   | 6500                             | 10000    | 255                        | 420     | 1.0         | 530                                  |
| 781KH20     | 781KH20J    | 485                     | 640     | 780(702~858)     | 100                     | 1290   | 6500                             | 10000    | 265                        | 440     | 1.0         | 510                                  |

## ◆ KH/KH-J series

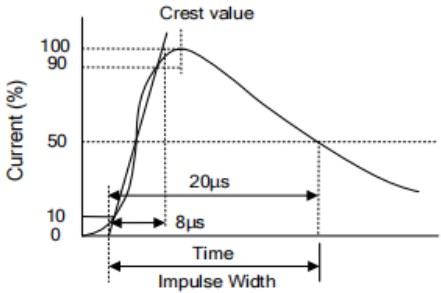
## ● Electrical Characteristics-20D KH/KH-J

| Part Number |             | Maximum allowed voltage |         | Varistor Voltage | Maximum holding voltage |        | Able to withstand surges Current |          | Maximum energy (10/1000 $\mu$ s) |         | Rated power | Typical capacitors (Reference value) |
|-------------|-------------|-------------------------|---------|------------------|-------------------------|--------|----------------------------------|----------|----------------------------------|---------|-------------|--------------------------------------|
| Standard    | High impact | VAC (V)                 | VDC (V) | V1mA (V)         | IP (A)                  | VC (V) | I (A) Standard                   | Standard | High impact                      | VAC (V) | VDC (V)     | V1mA (V)                             |
| 821KH20     | 821KH20J    | 510                     | 670     | 820(738~902)     | 100                     | 1355   | 6500                             | 10000    | 282                              | 460     | 1.0         | 500                                  |
| 911KH20     | 911KH20J    | 550                     | 745     | 910(819~1001)    | 100                     | 1500   | 6500                             | 10000    | 310                              | 510     | 1.0         | 440                                  |
| 102KH20     | 102KH20J    | 625                     | 825     | 1000(900~1100)   | 100                     | 1650   | 6500                             | 10000    | 342                              | 565     | 1.0         | 400                                  |
| 112KH20     | 112KH20J    | 680                     | 895     | 1100(990~1210)   | 100                     | 1815   | 6500                             | 10000    | 383                              | 620     | 1.0         | 360                                  |
| 122KH20     | 122KH20J    | 750                     | 990     | 1200(1080~1320)  | 100                     | 1980   | 6500                             | 10000    | 408                              | 660     | 1.0         | 350                                  |

YAGEO SENSOR

## ◆ KH/KH-J series

## ● Electrical rated parameters

| Experimental project                   | Experimental conditions/methods                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Performance Requirements         |              |              |            |              |               |            |              |               |            |              |               |                                         |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------|--------------|------------|--------------|---------------|------------|--------------|---------------|------------|--------------|---------------|-----------------------------------------|
| Tensile strength                       | The voltage measured between the two terminals when a specified test DC current of 1mA is applied, is recorded as V <sub>b</sub> .                                                                                                                                                                                                                                                                                                                                                                                                                  | Meet the specified requirements. |              |              |            |              |               |            |              |               |            |              |               |                                         |
| Bend resistance of the pin             | The recommended maximum alternating current voltage (RMS) or maximum direct current voltage for sustainable application.                                                                                                                                                                                                                                                                                                                                                                                                                            |                                  |              |              |            |              |               |            |              |               |            |              |               |                                         |
| Maximum clamp voltage                  | <p>The maximum voltage between the two pins under specified surge current conditions.<br/>Pulse width: 8/20 microseconds</p>                                                                                                                                                                                                                                                                                                                                     |                                  |              |              |            |              |               |            |              |               |            |              |               |                                         |
| Rated power consumption                | The maximum average power that the device can withstand within the specified operating temperature range.                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                  |              |              |            |              |               |            |              |               |            |              |               |                                         |
| Maximum allowable energy               | After applying a 10/1000us or 2ms pulse, the change in voltage should not exceed +10% Maximum allowable energy                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                  |              |              |            |              |               |            |              |               |            |              |               |                                         |
| Capable of withstanding surge currents | After applying a standard 8/20μs pulse current, the change in voltage should not exceed ±10% of the maximum current.                                                                                                                                                                                                                                                                                                                                                                                                                                |                                  |              |              |            |              |               |            |              |               |            |              |               |                                         |
| Maximum power consumption              | $\left  \frac{V_{1mA@140^{\circ}C} - V_{1mA@25^{\circ}C}}{V_{1mA@25^{\circ}C}} \times \frac{1}{115} \times 100\% ({}^{\circ}C) \right $ $\left  \frac{V_{1mA@40^{\circ}C} - V_{1mA@25^{\circ}C}}{V_{1mA@25^{\circ}C}} \times \frac{1}{65} \times 100\% ({}^{\circ}C) \right $                                                                                                                                                                                                                                                                       | ≤0.05%/°C                        |              |              |            |              |               |            |              |               |            |              |               |                                         |
| Wave endurance life                    | <p>Under room temperature conditions, apply the specified pulse sequence for 10,000 cycles, with a pulse interval of 10 seconds.<br/>After the test, measure the change in the resistance voltage, V<sub>b</sub>.</p> <table border="1"> <tr> <td>7Φ Series</td><td>820K to 821K</td><td>50A (8/20μs)</td></tr> <tr> <td>10Φ Series</td><td>820K to 102K</td><td>100A (8/20μs)</td></tr> <tr> <td>14Φ Series</td><td>820K to 122K</td><td>150A (8/20μs)</td></tr> <tr> <td>20Φ Series</td><td>820K to 122K</td><td>200A (8/20μs)</td></tr> </table> | 7Φ Series                        | 820K to 821K | 50A (8/20μs) | 10Φ Series | 820K to 102K | 100A (8/20μs) | 14Φ Series | 820K to 122K | 150A (8/20μs) | 20Φ Series | 820K to 122K | 200A (8/20μs) | ΔV <sub>b</sub> /V <sub>b</sub> ≤ ± 10% |
| 7Φ Series                              | 820K to 821K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 50A (8/20μs)                     |              |              |            |              |               |            |              |               |            |              |               |                                         |
| 10Φ Series                             | 820K to 102K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 100A (8/20μs)                    |              |              |            |              |               |            |              |               |            |              |               |                                         |
| 14Φ Series                             | 820K to 122K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 150A (8/20μs)                    |              |              |            |              |               |            |              |               |            |              |               |                                         |
| 20Φ Series                             | 820K to 122K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 200A (8/20μs)                    |              |              |            |              |               |            |              |               |            |              |               |                                         |

## ◆ KH/KH-J series

## ● Mechanical Properties

| Experimental project                    | Experimental conditions/methods                                                                                                                                                                                                                                                                                                                                                                            | Performance Requirements                          |                   |           |     |            |     |        |     |                                                  |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------------|-----------|-----|------------|-----|--------|-----|--------------------------------------------------|
| Curvature-derived strength              | <p>The specified load was applied gradually, and the device was kept stationary for a continuous period of 10±1seconds.</p> <table><tr><th><u>Terminal diameter (mm)</u></th><th><u>Force (kg)</u></th></tr><tr><td>0.5&lt;d≤0.8</td><td>1.0</td></tr><tr><td>0.8&lt;d≤1.25</td><td>2.0</td></tr><tr><td>1.25&lt;d</td><td>4.0</td></tr></table>                                                           | <u>Terminal diameter (mm)</u>                     | <u>Force (kg)</u> | 0.5<d≤0.8 | 1.0 | 0.8<d≤1.25 | 2.0 | 1.25<d | 4.0 | <p>No visible damage</p> <p> ΔV1mA/V1mA  ≤5%</p> |
| <u>Terminal diameter (mm)</u>           | <u>Force (kg)</u>                                                                                                                                                                                                                                                                                                                                                                                          |                                                   |                   |           |     |            |     |        |     |                                                  |
| 0.5<d≤0.8                               | 1.0                                                                                                                                                                                                                                                                                                                                                                                                        |                                                   |                   |           |     |            |     |        |     |                                                  |
| 0.8<d≤1.25                              | 2.0                                                                                                                                                                                                                                                                                                                                                                                                        |                                                   |                   |           |     |            |     |        |     |                                                  |
| 1.25<d                                  | 4.0                                                                                                                                                                                                                                                                                                                                                                                                        |                                                   |                   |           |     |            |     |        |     |                                                  |
| Durability of bent pins                 | <p>Secure the sample, applying the specified load to each pin; bend the pin.Return to the initial position after a 90° turn, then repeat the same turn in the opposite direction.</p> <table><tr><th><u>Terminal diameter (mm)</u></th><th><u>Force (kg)</u></th></tr><tr><td>0.5&lt;d≤0.8</td><td>0.5</td></tr><tr><td>0.8&lt;d≤1.25</td><td>1.0</td></tr><tr><td>1.25&lt;d</td><td>2.0</td></tr></table> | <u>Terminal diameter (mm)</u>                     | <u>Force (kg)</u> | 0.5<d≤0.8 | 0.5 | 0.8<d≤1.25 | 1.0 | 1.25<d | 2.0 | <p>No visible damage</p> <p> ΔV1mA/V1mA  ≤5%</p> |
| <u>Terminal diameter (mm)</u>           | <u>Force (kg)</u>                                                                                                                                                                                                                                                                                                                                                                                          |                                                   |                   |           |     |            |     |        |     |                                                  |
| 0.5<d≤0.8                               | 0.5                                                                                                                                                                                                                                                                                                                                                                                                        |                                                   |                   |           |     |            |     |        |     |                                                  |
| 0.8<d≤1.25                              | 1.0                                                                                                                                                                                                                                                                                                                                                                                                        |                                                   |                   |           |     |            |     |        |     |                                                  |
| 1.25<d                                  | 2.0                                                                                                                                                                                                                                                                                                                                                                                                        |                                                   |                   |           |     |            |     |        |     |                                                  |
| Vibration resistance                    | <p>Frequency range: 10 ~ 55 Hz<br/>Amplitude: 0.75 mm or acceleration of 98 m/s²<br/>Vibration direction: Three mutually perpendicular axes, each operating for 2 hours.</p>                                                                                                                                                                                                                               | <p>No visible damage</p> <p> ΔV1mA/V1mA  ≤5%</p>  |                   |           |     |            |     |        |     |                                                  |
| Solderability                           | <p>Tin melting temperature: 245±5°C<br/>Tinning time: 2±0.5 seconds</p>                                                                                                                                                                                                                                                                                                                                    | <p>Tin coverage≥95%</p>                           |                   |           |     |            |     |        |     |                                                  |
| High-temperature resistance for welding | <p>Tin melting temperature: 260±5°C<br/>Tinning time: 10±1 seconds</p>                                                                                                                                                                                                                                                                                                                                     | <p>No visible damage</p> <p> ΔV1mA/V1mA  ≤10%</p> |                   |           |     |            |     |        |     |                                                  |

## ◆ KH/KH-J series

## ● Reliability

| Experimental project          | Experimental conditions/methods                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Performance Requirements                                                                      |                                    |                 |   |            |           |   |                  |           |   |            |           |   |                  |           |                                                                                              |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------|-----------------|---|------------|-----------|---|------------------|-----------|---|------------|-----------|---|------------------|-----------|----------------------------------------------------------------------------------------------|
| High-temperature storage test | Ambient temperature: $140\pm 2^{\circ}\text{C}$<br>Duration: 1000 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | $\Delta V_{1\text{mA}}/V_{1\text{mA}} \leq 5\%$                                               |                                    |                 |   |            |           |   |                  |           |   |            |           |   |                  |           |                                                                                              |
| Low-temperature storage test  | Ambient temperature: $-40\pm 2^{\circ}\text{C}$<br>Duration: 1000 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | $ \Delta V_{1\text{mA}}/V_{1\text{mA}}  \leq 5\%$                                             |                                    |                 |   |            |           |   |                  |           |   |            |           |   |                  |           |                                                                                              |
| Moisture resistance testing   | Ambient temperature: $40\pm 2^{\circ}\text{C}$ , relative humidity 90 ~ 95% RH<br>Duration: 1000 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | $ \Delta V_{1\text{mA}}/V_{1\text{mA}}  \leq 5\%$                                             |                                    |                 |   |            |           |   |                  |           |   |            |           |   |                  |           |                                                                                              |
| Temperature cycling test      | <p>The temperature variation is tested under the following conditions on the PCB: five cycles.</p> <table border="1"> <thead> <tr> <th>Steps</th><th>Temperature (<math>^{\circ}\text{C}</math>)</th><th>Cycle (minutes)</th></tr> </thead> <tbody> <tr> <td>1</td><td><math>-40\pm 3</math></td><td><math>30\pm 3</math></td></tr> <tr> <td>2</td><td>Room temperature</td><td><math>15\pm 3</math></td></tr> <tr> <td>3</td><td><math>140\pm 3</math></td><td><math>30\pm 3</math></td></tr> <tr> <td>4</td><td>Room temperature</td><td><math>15\pm 3</math></td></tr> </tbody> </table> | Steps                                                                                         | Temperature ( $^{\circ}\text{C}$ ) | Cycle (minutes) | 1 | $-40\pm 3$ | $30\pm 3$ | 2 | Room temperature | $15\pm 3$ | 3 | $140\pm 3$ | $30\pm 3$ | 4 | Room temperature | $15\pm 3$ | <p>No visible damage</p> <p><math> \Delta V_{1\text{mA}}/V_{1\text{mA}}  \leq 5\%</math></p> |
| Steps                         | Temperature ( $^{\circ}\text{C}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Cycle (minutes)                                                                               |                                    |                 |   |            |           |   |                  |           |   |            |           |   |                  |           |                                                                                              |
| 1                             | $-40\pm 3$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | $30\pm 3$                                                                                     |                                    |                 |   |            |           |   |                  |           |   |            |           |   |                  |           |                                                                                              |
| 2                             | Room temperature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $15\pm 3$                                                                                     |                                    |                 |   |            |           |   |                  |           |   |            |           |   |                  |           |                                                                                              |
| 3                             | $140\pm 3$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | $30\pm 3$                                                                                     |                                    |                 |   |            |           |   |                  |           |   |            |           |   |                  |           |                                                                                              |
| 4                             | Room temperature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $15\pm 3$                                                                                     |                                    |                 |   |            |           |   |                  |           |   |            |           |   |                  |           |                                                                                              |
| High-temperature load test    | Ambient temperature: $140\pm 2^{\circ}\text{C}$<br>Duration: 1000 hours<br>Load condition: Maximum allowable continuous operating voltage under AC conditions.                                                                                                                                                                                                                                                                                                                                                                                                                              | $\Delta V_{1\text{mA}}/V_{1\text{mA}} \leq 10\%$                                              |                                    |                 |   |            |           |   |                  |           |   |            |           |   |                  |           |                                                                                              |
| Wet heat load test            | Ambient temperature: $40\pm 2^{\circ}\text{C}$ , relative humidity 90 ~ 95% RH<br>Duration: 1000 hours<br>Load: Maximum allowable continuous operating voltage                                                                                                                                                                                                                                                                                                                                                                                                                              | <p>No visible damage</p> <p><math> \Delta V_{1\text{mA}}/V_{1\text{mA}}  \leq 10\%</math></p> |                                    |                 |   |            |           |   |                  |           |   |            |           |   |                  |           |                                                                                              |
| Pressure test                 | <p>The pressure test was conducted using the metal ball method:</p> <p>1000 Alternating current, 1-minute compression (suitable for 820K to 331K specifications);</p> <p>1500 Alternating current, 1-minute compression (suitable for 361K to 821K models)</p>                                                                                                                                                                                                                                                                                                                              | No visible damage                                                                             |                                    |                 |   |            |           |   |                  |           |   |            |           |   |                  |           |                                                                                              |