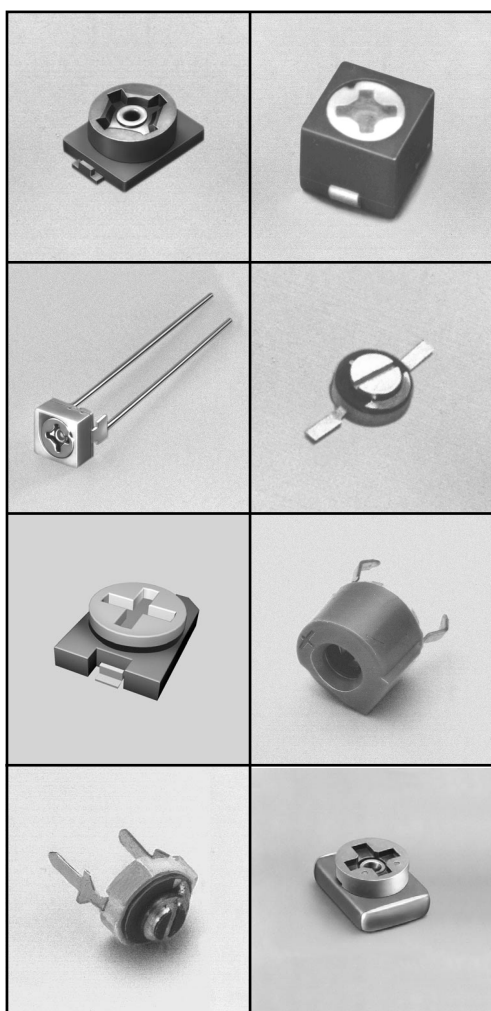


# CERAMIC DIELECTRIC TRIMMER CAPACITORS



## Engineering Bulletin SG-305 Contents

[\(Click on a topic to go to that section\)](#)

- SURFTRIM® Surface Mount: GKP Series
- SURFTRIM® Surface Mount: GKY Series
- SURFTRIM® Surface Mount: Sealed Construction:  
GKG \_\_\_ 26, 66, 27, 67, 28, 68 Series
- Plastic Encased Type: 4 x 4.5 mm Leaded:  
GKG \_\_\_ 21, 71, 24, 74, 25 Series
- Plastic Encased Type: 6 mm Leaded:  
GKG \_\_\_ 11, 51, 12, 52 Series
- Economical 6 mm Type Top Adjust Leaded:  
GKG \_\_\_ 15 Series
- Economical 6 mm Type Bottom Adjust Leaded:  
GKG \_\_\_ 16 Series
- Rugged 5 mm Type: GKU \_\_\_ 00 Series
- Economical 5 mm Type: GKU \_\_\_ 10 Series
- 7 mm Type: GKT Series
- Thin 2 mm & 3 mm Types: GKH and GKX Series
- Carrier and Reel Specifications
- Specification Notes
- Application Notes



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# SURFTRIM® SURFACE MOUNT GKP SERIES

## FEATURES

- Multilayer construction.
- Setting drift within 0.5%
- Low mounting profile.
- Carrier and reel packaging standard.
- NPO temperature coefficient (up to 10 pF max).
- Self resonant frequency above 1 GHz.

## SPECIFICATIONS

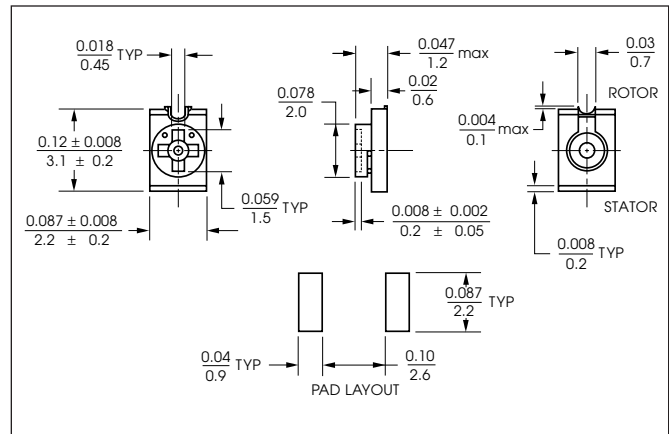
Operating Temperature Range: -25°C to +85°C  
 Voltage Rating: 50 VDC  
 Dielectric Withstanding Voltage: 110 VDC  
 Insulation Resistance: 10<sup>4</sup> Megohms min  
 Torque: 10 to 100 g-cm (0.14 to 1.39 oz-in)

### 2.2 x 3.1 x 1.2 mm Models

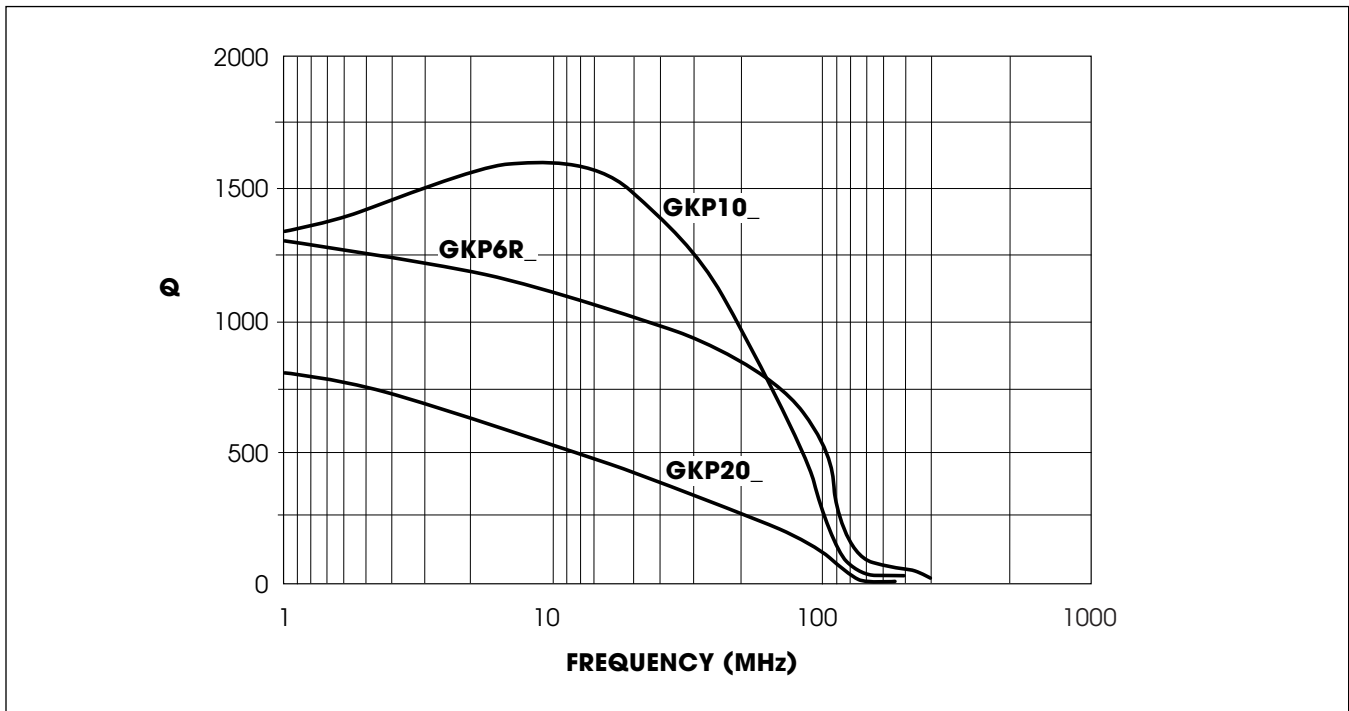


| Capacitance (pF) |      | TCC (ppm/°C) | Q min (1 MHz) | Carrier and Reel Pack Model No. |
|------------------|------|--------------|---------------|---------------------------------|
| min              | max  |              |               |                                 |
| 1.5              | 3.0  | 0 ± 500      | 200           | GKP3R066                        |
| 2.5              | 6.0  | 0 ± 500      | 200           | GKP6R066                        |
| 3.0              | 10.0 | 0 ± 500      | 200           | GKP10066                        |
| 4.5              | 20.0 | N750 ± 500   | 200           | GKP20066                        |

Carrier and reel specifications on page 11.



All dimensions are in /mm.  
 Unless otherwise specified, the tolerance on dimensions is ± 0.004/0.1.



# SURFTRIM® SURFACE MOUNT GKY SERIES

## FEATURES

- Designed for reflow soldering.
- Available in carrier and reel packaging.
- Sealed version available - contact factory for details

**3.2 x 4.5 x 1.8 mm  
Models**

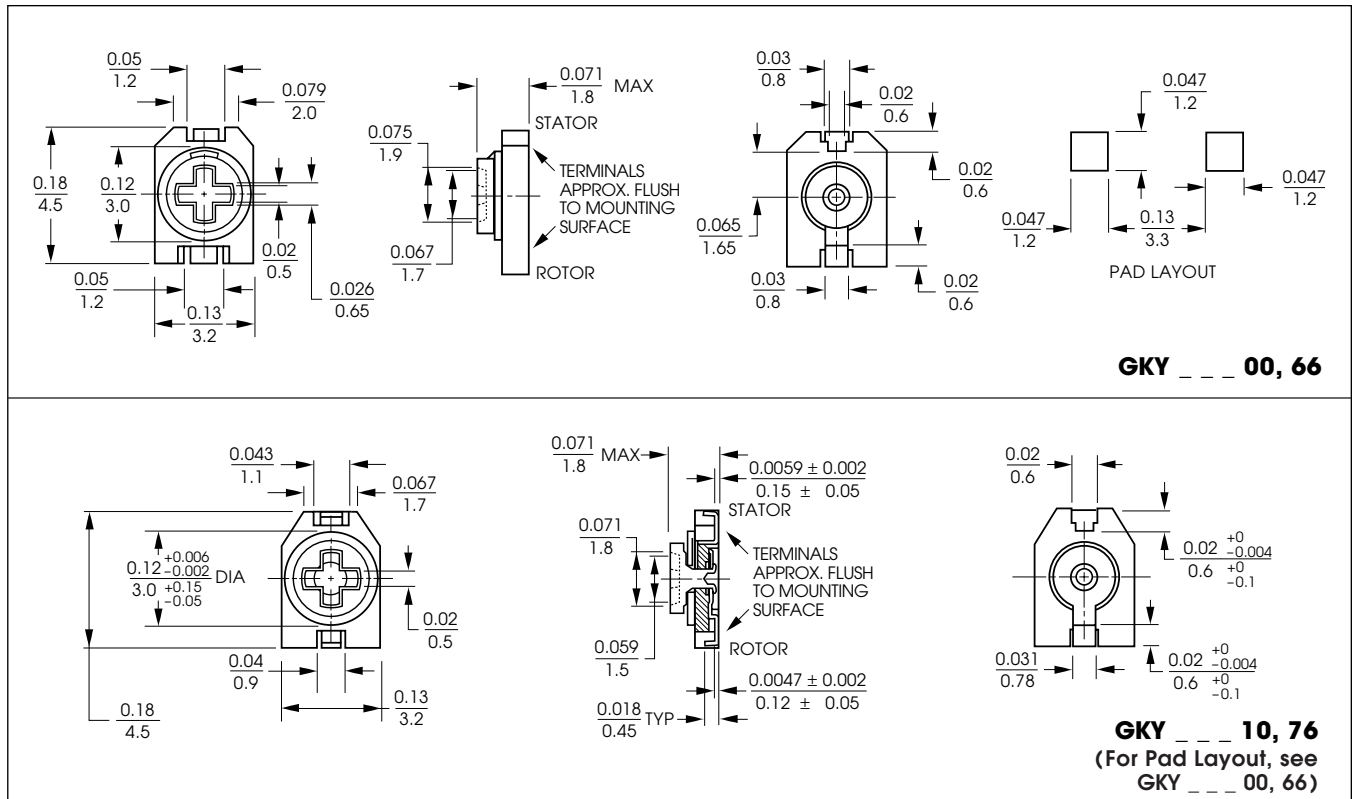


## SPECIFICATIONS

Operating Temperature Range: -25°C to +85°C  
Voltage Rating: 100 VDC  
Dielectric Withstanding Voltage: 220 VDC  
Insulation Resistance: 10<sup>4</sup> Megohms min  
Torque: 10 to 150 g-cm (0.14 to 2.08 oz-in)

| Capacitance (pF) |      | TCC (ppm/°C) | Q min (1 MHz) | Color Code | Bulk Pack Model No. | Carrier and Reel Pack Model No. |
|------------------|------|--------------|---------------|------------|---------------------|---------------------------------|
| min              | max  |              |               |            |                     |                                 |
| 1.0              | 3.0  | 0 ± 500      | 300           | White      | GKY3R010            | GKY3R076                        |
| 1.7              | 3.0  | 0 ± 300      | 500           | Brown      | GKY3R000            | GKY3R066                        |
| 2.5              | 6.0  | 0 ± 300      | 500           | Blue       | GKY6R000            | GKY6R066                        |
| 3.0              | 10.0 | N400 ± 400   | 500           | White      | GKY10000            | GKY10066                        |
| 5.0              | 20.0 | N900 ± 400   | 300           | Red        | GKY20000            | GKY20066                        |
| 6.0              | 30.0 | N1200 ± 500  | 300           | Green      | GKY30000            | GKY30066                        |
| 5.0              | 40.0 | N750 ± 500   | 300           | White      | GKY40010            | GKY40076                        |
| 7.0              | 50.0 | N750 ± 500   | 300           | White      | GKY50010            | GKY50076                        |

Carrier and reel specifications on page 11.



All dimensions are in / mm.  
Unless otherwise specified, the tolerance on dimensions is ± 0.004/0.1.

# SURFTRIM® SURFACE MOUNT

## Sealed Construction

### FEATURES

- Process seal provides protection against contaminants (flux, solvents, etc.) during production.
- Designed for flow and reflow soldering.
- Available in carrier and reel packaging.

### SPECIFICATIONS

Operating Temperature Range: -25°C to +85°C  
(For expanded temperature range applications, consult factory.)

Voltage Rating: 100 VDC

Dielectric Withstanding Voltage: 220 VDC

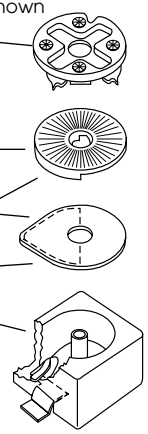
Insulation Resistance: 10<sup>4</sup> Megohms min

Torque: 15 to 100 g-cm (0.2 to 1.39 oz-in)

### CONSTRUCTION DETAILS OF 4 x 4.5 mm GKG MODELS

Model GKG \_\_\_ 27 Shown

- Special "drive assembly" with pointed spring fingers to engage rotor upper surface contour. Spring fingers also provide proper tension for smooth torque and low resistance.
- Special rotor with die-formed "drive" contour on upper surface.
- Flat-lapped and lubricated surfaces join for reliable capacitance settings.
- Special ceramic stator insert with metalized electrode.
- Solid one-piece housing with integrally molded terminals and contact areas. Central tubular column is spun-out into a flare after assembly to maintain built-in spring tension.



### 4 x 4.5 x 2.7 mm Models

| Capacitance (pF) |      | TCC (ppm/°C) | Q min (1 MHz) | Color Code | Bulk Pack Model No. | Carrier and Reel Pack Model No. | Bulk Pack Model No. | Carrier and Reel Pack Model No. | Bulk Pack Model No. | Carrier and Reel Pack Model No. |
|------------------|------|--------------|---------------|------------|---------------------|---------------------------------|---------------------|---------------------------------|---------------------|---------------------------------|
| *min             | max  |              |               |            |                     |                                 |                     |                                 |                     |                                 |
| 1.4              | 3.0  | 0 ± 200      | 300**         | †Red Dot   | GKG3R026            | GKG3R066                        | GKG3R027            | GKG3R067                        | GKG3R028            | GKG3R068                        |
| 2.0              | 6.0  | 0 ± 200      | 500**         | Blue       | GKG6R026            | GKG6R066                        | GKG6R027            | GKG6R067                        | GKG6R028            | GKG6R068                        |
| 3.0              | 10.0 | 0 ± 300      | 500**         | White      | GKG10026            | GKG10066                        | GKG10027            | GKG10067                        | GKG10028            | GKG10068                        |
| 4.5              | 20.0 | N900 ± 300   | 500**         | Red        | GKG20026            | GKG20066                        | GKG20027            | GKG20067                        | GKG20028            | GKG20068                        |
| 6.5              | 30.0 | N1100 ± 450  | 300           | Green      | GKG30026            | GKG30066                        | GKG30027            | GKG30067                        | GKG30028            | GKG30068                        |
| 15.0             | 50.0 | N1700 ± 500  | 300           | Orange     | GKG50H26            | GKG50H66                        | GKG50H27            | GKG50H67                        | GKG50H28            | GKG50H68                        |

† Marking on bottom of capacitor.

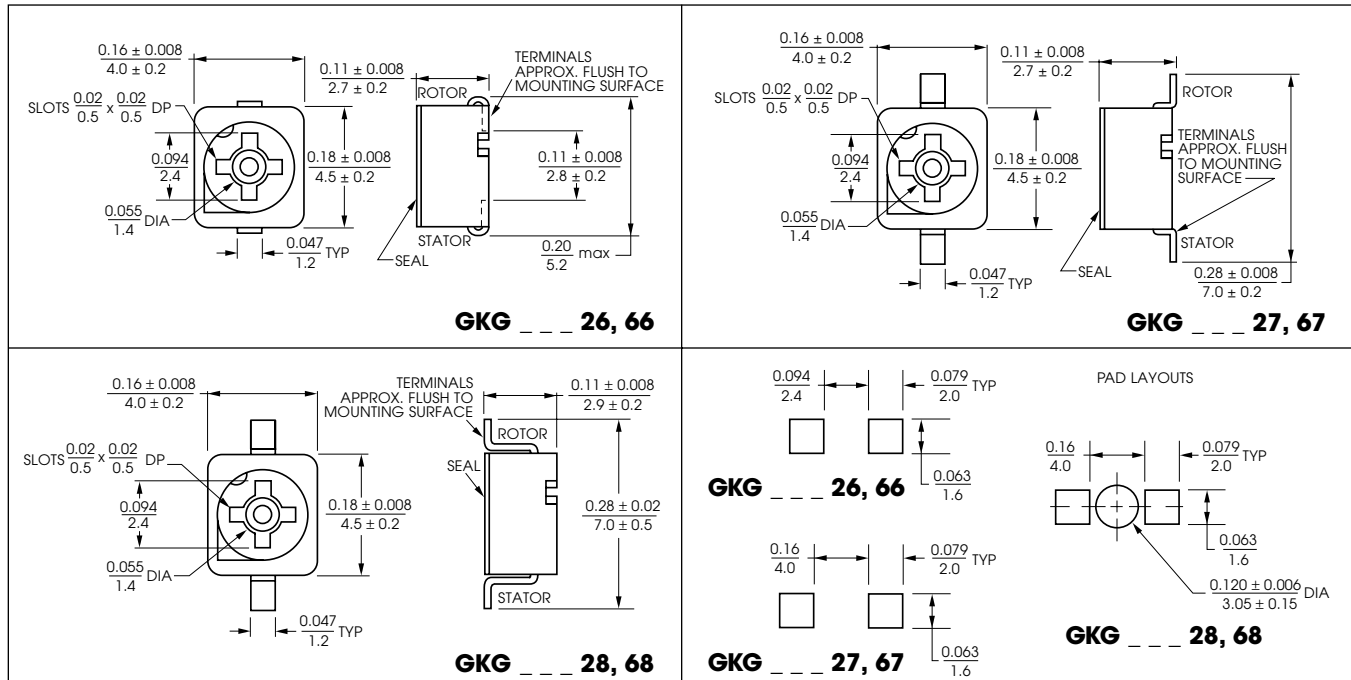
\* Re-rated in 1994 for lower min capacitance.

\*\* Q at 10MHz

Available without seal — consult factory.

Carrier and reel specifications on page 11.

Add -07 to Model No. for 700 / reel, -25 for 2500 / reel.



All dimensions are in / mm.  
Unless otherwise specified, the tolerance on dimensions is ± 0.004 / 0.1.

# PLASTIC ENCASED TYPE: 4 x 4.5 mm

## Available With or Without Adjust Cavity Seal

### FEATURES

- Very low cost due to automated production and solderless touch contact construction.
- Wide selection of capacitance ranges.
- Color coded housings.
- Easy blind tuning (2 slots at 90° angle in adjust cavity — accepts cross-slotted tool).
- Process seal on adjust screw access face (optional) provides protection against contaminants (flux, solvents, etc.) during production.

### SPECIFICATIONS

Operating Temperature Range: -25°C to +85°C  
 Voltage Rating: 100 VDC  
 Dielectric Withstanding Voltage: 220 VDC  
 Insulation Resistance: 10<sup>4</sup> Megohms min  
 Torque: 10 to 100 g-cm (0.14 to 1.39 oz-in)



### 4 x 4.5 mm Models

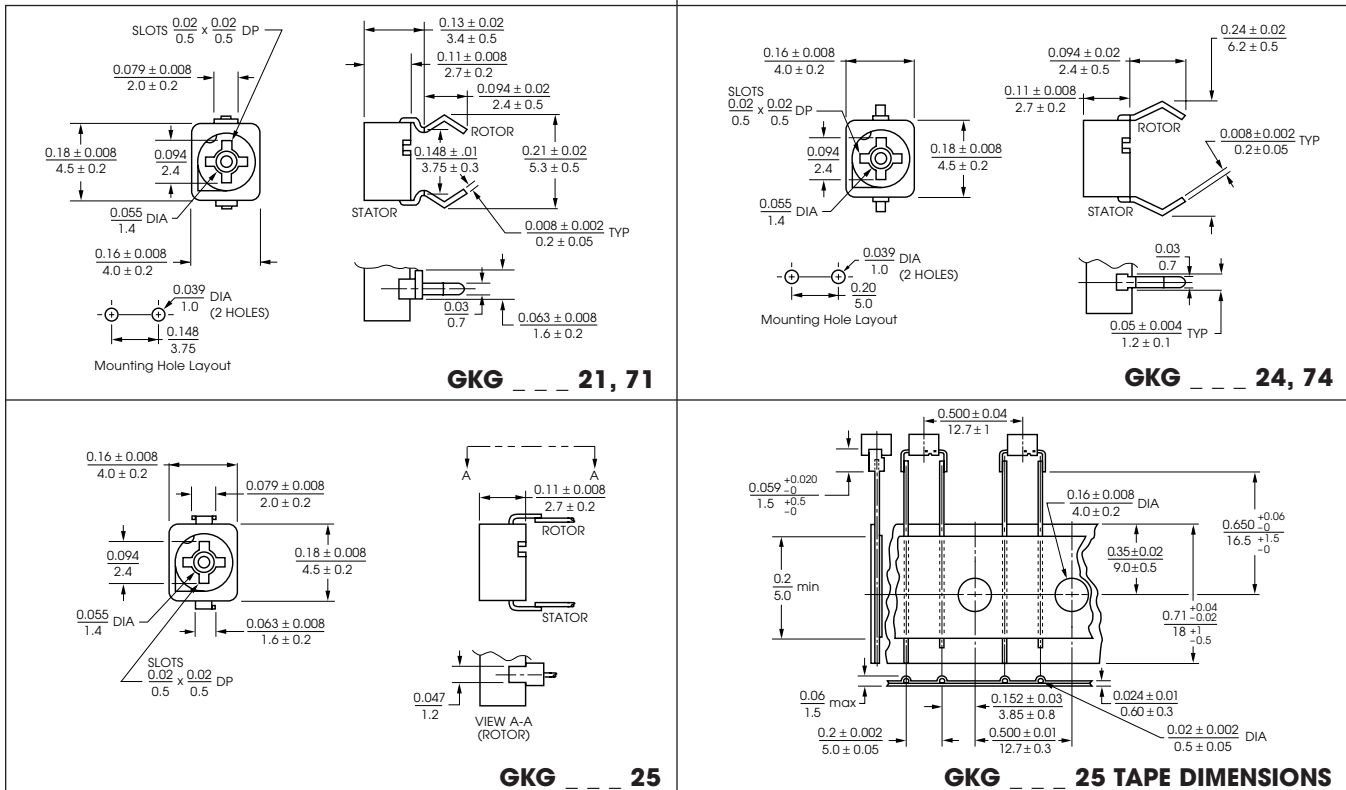
| Capacitance (pF) |      | TCC (ppm/°C) | Q min |        | Color Code           | Top Mount <sup>3</sup> Spring Lead Model No. |          | Top Mount <sup>3</sup> Spring Lead Model No. |          | Top Mount <sup>4</sup> Ammo Pack Model No. |
|------------------|------|--------------|-------|--------|----------------------|--|----------|--|----------|--|
| min              | max  |              | 1 MHz | 10 MHz |                      | Unsealed                                     | Sealed   | Unsealed                                     | Sealed   | Unsealed                                   |
| 1.4              | 3.0  | 0 ± 200      | 300   | 300    | <sup>2</sup> Red Dot | GKG3R021                                     | GKG3R071 | GKG3R024                                     | GKG3R074 | GKG3R025                                   |
| 2.0              | 6.0  | 0 ± 200      | 500   | 300    | Blue                 | GKG6R021                                     | GKG6R071 | GKG6R024                                     | GKG6R074 | GKG6R025                                   |
| 3.0              | 10.0 | 0 ± 300      | 500   | 300    | White                | GKG10021                                     | GKG10071 | GKG10024                                     | GKG10074 | GKG10025                                   |
| 4.5              | 20.0 | N900 ± 350   | 500   | 300    | Red                  | GKG20021                                     | GKG20071 | GKG20024                                     | GKG20074 | GKG20025                                   |
| 6.5              | 30.0 | N1100 ± 450  | 300   | 300    | Green                | GKG30021                                     | GKG30071 | GKG30024                                     | GKG30074 | GKG30025                                   |
| 15.0             | 50.0 | N1700 ± 500  | 300   | N.A.   | Orange               | GKG50021                                     | GKG50071 | GKG50024                                     | GKG50074 | GKG50025                                   |

<sup>1</sup>Re-rated in 1993.

<sup>2</sup>Marking on bottom of capacitor.

<sup>3</sup>Magazine pack (120 pieces) for auto insertion available — consult factory for pricing.

<sup>4</sup>Ammo pack contains 1000 pcs.



All dimensions are in /mm.

Unless otherwise specified, the tolerance on dimensions is ± 0.004/0.1.

Tape dimensions on page 3.

# PLASTIC ENCASED TYPE: 6 mm

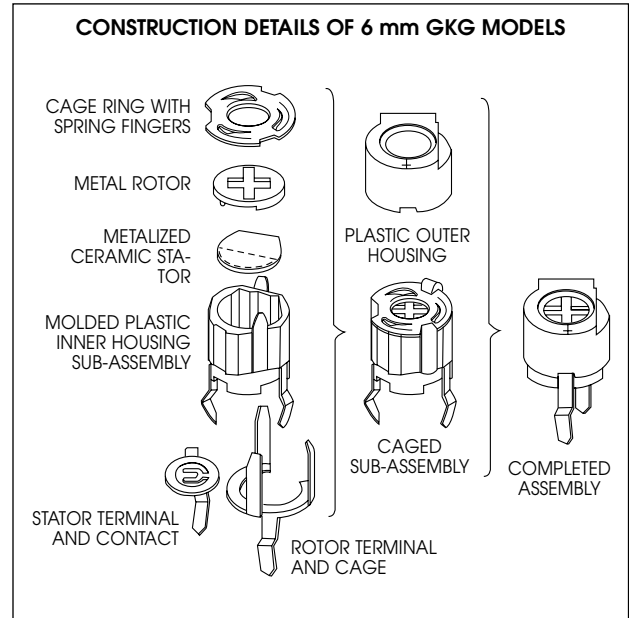
## Available With or Without Membrane Adjust Cavity Seal

### FEATURES

- Low cost due to automated production and solderless touch contact construction.
- Wide selection of capacitance ranges.
- Color coded housings.
- Double plastic housing provides improved protection against dust & contamination.
- Rugged construction (working parts supported by metal structure, not just plastic).
- Easy blind tuning (2 slots at 90° angle in adjust cavity — accepts cross-slotted tool).
- Visual indication of maximum capacitance setting.
- Membrane seal on adjust screw access face (optional) provides protection against contaminants (flux, solvents, etc.) during production.

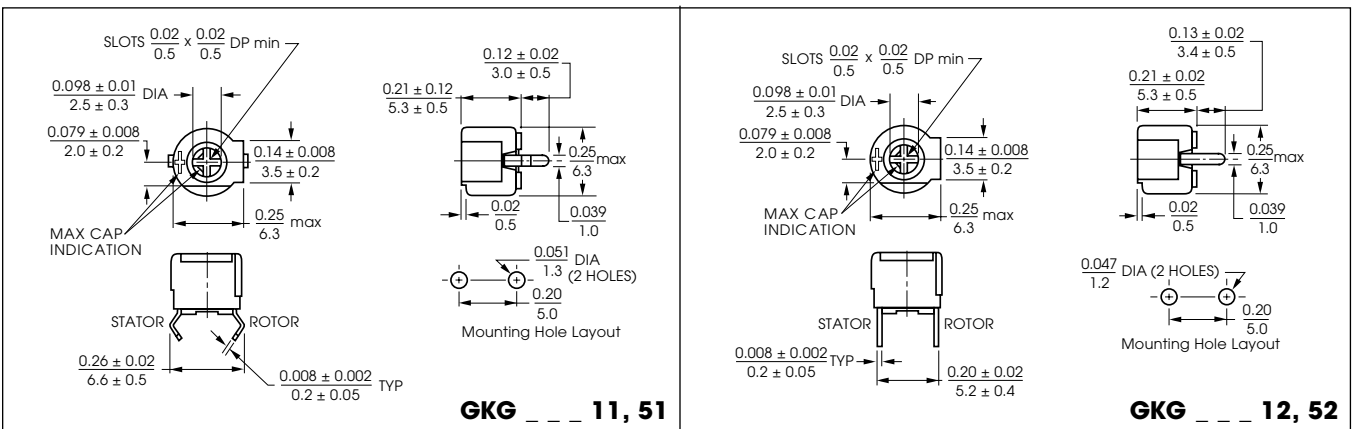
### SPECIFICATIONS

Operating Temperature Range: -25°C to +85°C  
 Voltage Rating: 100 VDC  
 Dielectric Withstanding Voltage: 220 VDC  
 Insulation Resistance: 10<sup>4</sup> Megohms min  
 Torque: 20 to 200 g-cm (0.28 to 2.77 oz-in)



### 6 mm Models

| Capacitance (pF) |      | TCC (ppm/°C) | Q min (10 MHz) | Color Code | Top Mount Spring Lead Model No. |          | Top Mount Straight Lead Model No. |          |
|------------------|------|--------------|----------------|------------|---------------------------------|----------|-----------------------------------|----------|
| min              | max  |              |                |            | Unsealed                        | Sealed   | Unsealed                          | Sealed   |
| 2.8              | 10.0 | 0 ± 250      | 300            | White      | GKG10011                        | GKG10051 | GKG10012                          | GKG10052 |
| 4.0              | 20.0 | N600 ± 300   | 300            | Red        | GKG20011                        | GKG20051 | GKG20012                          | GKG20052 |
| 5.5              | 30.0 | N750 ± 300   | 200            | Green      | GKG30011                        | GKG30051 | GKG30012                          | GKG30052 |
| 6.5              | 40.0 | N750 ± 400   | 200            | Yellow     | GKG40011                        | GKG40051 | GKG40012                          | GKG40052 |
| 8.0              | 50.0 | N1200 ± 600  | 200            | Orange     | GKG50011                        | GKG50051 | GKG50012                          | GKG50052 |
| 10.5             | 60.0 | N1200 ± 600  | 200 (1 MHz)    | Brown      | GKG60011                        | GKG60051 | GKG60012                          | GKG60052 |
| 12.0             | 70.0 | N1500 ± 600  | 200 (1 MHz)    | Grey       | GKG70011                        | GKG70051 | GKG70012                          | GKG70052 |
| 20.0             | 90.0 | N2200 ± 600  | 200 (1 MHz)    | Black      | GKG90011                        | GKG90051 | GKG90012                          | GKG90052 |



All dimensions are in / mm.  
 Unless otherwise specified, the tolerance on dimensions is ± 0.004 / 0.1; except slot tolerance is ± 0.008 / 0.2.

# PLASTIC ENCASED TYPE: 6 mm ECONOMY

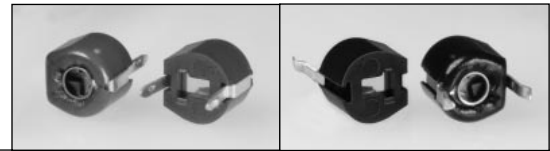
## GKG SERIES

### FEATURES

- Very low cost.
- Wide selection of capacitance ranges.
- Suitable for printed circuit production methods using "spring leads" or "straight leads".

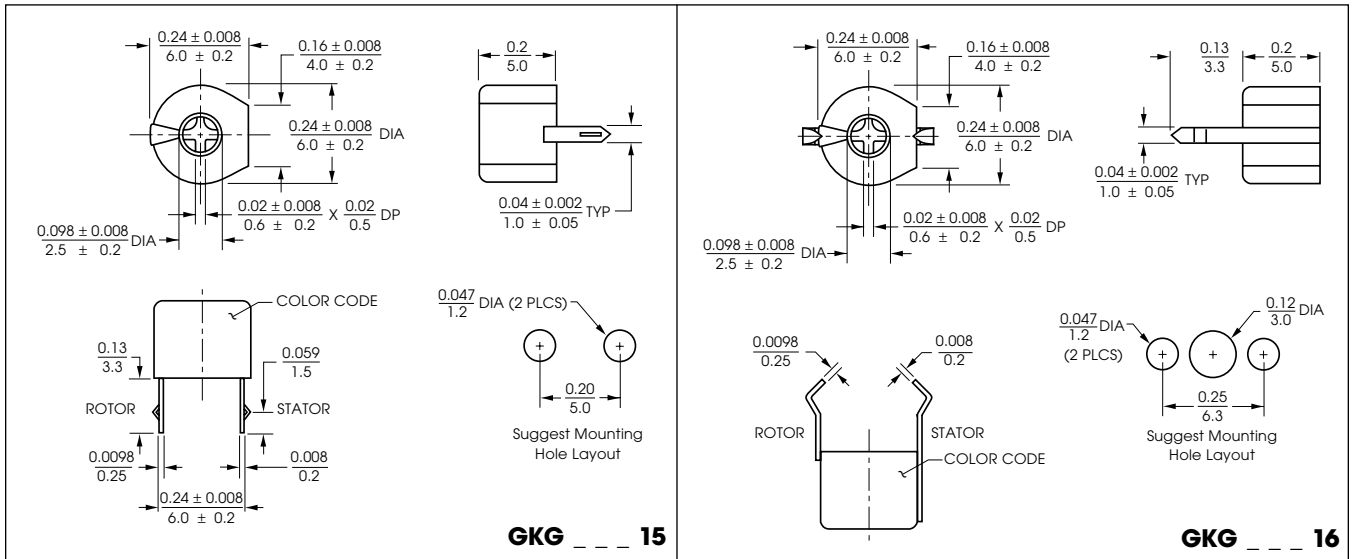
### SPECIFICATIONS

Operating Temperature Range: -25°C to +85°C  
 Voltage Rating: 100 VDC  
 Dielectric Withstanding Voltage: 220 VDC  
 Insulation Resistance: 10<sup>4</sup> Megohms min  
 Torque: 15 to 150 g-cm (0.21 to 2.1 oz-in)



### 6 mm Economy Models

| Capacitance (pF) |      | TCC (ppm/°C) | Q min (1 MHz) | Color Code | Top Adjust Model No. | Bottom Adjust Model No. |
|------------------|------|--------------|---------------|------------|----------------------|-------------------------|
| min              | max  |              |               |            |                      |                         |
| 1.0              | 3.0  | NPO ± 250    | 300           | Black      | GKG3R015             | GKG3R016                |
| 2.0              | 5.0  | NPO ± 250    | 300           | Blue       | GKG5R015             | GKG5R016                |
| 3.0              | 10.0 | NPO ± 250    | 300           | White      | GKG10015             | GKG10016                |
| 5.0              | 20.0 | N750 ± 250   | 300           | Red        | GKG20015             | GKG20016                |
| 6.5              | 30.0 | N1000 ± 500  | 200           | Green      | GKG30015             | GKG30016                |
| 7.0              | 40.0 | N2200 ± 800  | 200           | Yellow     | GKG40015             | GKG40016                |
| 10.0             | 50.0 | N2200 ± 800  | 200           | Brown      | GKG50015             | GKG50016                |
| 12.0             | 60.0 | N2200 ± 800  | 200           | Brown      | GKG60015             | GKG60016                |
| 15.0             | 70.0 | N2200 ± 800  | 200           | Brown      | GKG70015             | GKG70016                |



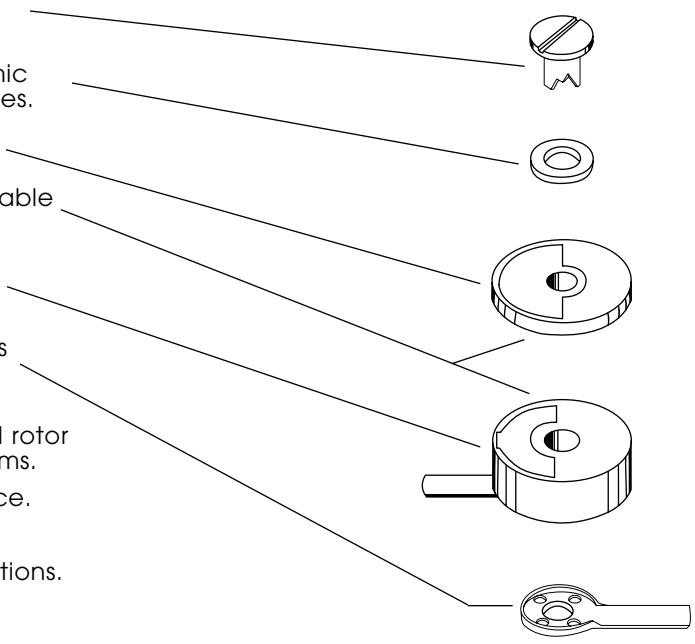
All dimensions are in / mm.  
 Unless otherwise specified, the tolerance on dimensions is ± 0.004/0.1; except slot tolerance is ± 0.008/0.2.



# RUGGED 5 mm GKU SERIES

## FEATURES

- Proven rugged axle design prevents electrode shifting, maximizes stability.
- Plastic washer between adjust shaft and ceramic rotor to absorb tuning and environmental stresses.
- Special ceramic dielectric rotor with metalized electrode.
- Flat-lapped and lubricated surfaces join for reliable capacity settings.
- Solid one-piece stator electrode and terminal, recessed and integral with base. Cannot shift. Improves stability and resistance to humidity.
- Combination spring/contact/terminal maintains proper tension for smooth torque and low resistance.
- Soldered connection between adjust shaft and rotor electrode eliminates contact resistance problems.
- Compact form factor conserves mounting space.
- Straight line capacitance curve.
- Low cost for industrial and commercial applications.



## SPECIFICATIONS

Operating Temperature Range: -55°C to +125°C

Voltage Rating: 250 VDC at 85°C  
125 VDC at 125°C

Dielectric

Withstanding Voltage: 500 VDC at 85°C  
250 VDC at 125°C

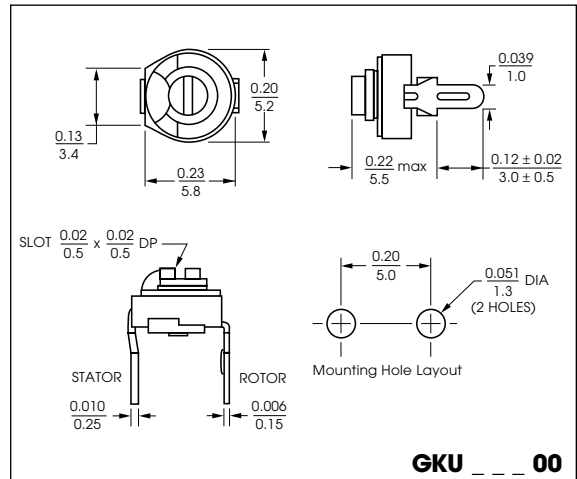
Insulation Resistance: 10<sup>4</sup> Megohms min

Torque: 30 to 140 g-cm (0.42 to 1.94 oz-in)

## 5 mm Rugged Models



| Capacitance Range (pF) |         | TCC (ppm/°C) | Q min (10 MHz) | Color Code or Mark | Model No. |
|------------------------|---------|--------------|----------------|--------------------|-----------|
| min                    | max     |              |                |                    |           |
| 1.5                    | † 5.5   | 0 ± 250      | 300            | Black              | GKU4R000  |
| 2.0                    | † 8.0   | N100 ± 200   | 300            | Red                | GKU6R000  |
| 2.8                    | † 12.0  | N600 ± 300   | 300            | None               | GKU10000  |
| 3.3                    | †† 20.5 | N800 ± 300   | 300            | Blue               | GKU18000  |
| 3.8                    | † 28.5  | N1350 ± 650  | 200            | Purple             | GKU25000  |
| 4.5                    | 30.0    | N1350 ± 650  | 200            | Orange             | GKU30000  |
| 5.0                    | 40.0    | N1600 ± 800  | 200            | Brown              | GKU40000  |
| 6.0                    | 50.0    | N1300 ± 500  | 150 (1MHz)     | Green              | GKU50000  |
| 7.0                    | 60.0    | N1300 ± 500  | 150 (1MHz)     | Pink               | GKU60000  |
| 15.0                   | 90.0    | N1500 ± 800  | 100 (1MHz)     | None               | GKU90000  |



† Re-rated in 1992    †† Re-rated in 1986

All dimensions are in /mm. Unless otherwise specified, the tolerance on dimensions is ± 0.004/0.1.

# ECONOMY 5 mm GKU SERIES

## FEATURES

- Economical for consumer and industrial applications.
- Rotor soldered to tuning axle for stability.
- For lead-through-hole connection to printed circuit boards.

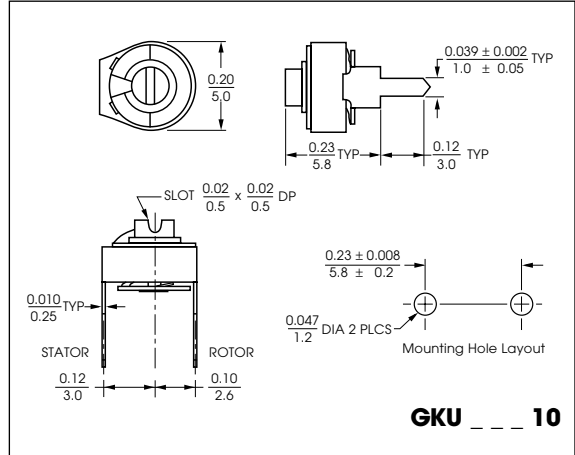
## SPECIFICATIONS

Operating Temperature Range: -25°C to +85°C  
 Voltage Rating: 250 VDC  
 Dielectric Withstanding Voltages: 500 VDC  
 Insulation Resistance: 10<sup>4</sup> Megohms min  
 Torque: 35 to 200 g-cm (0.49 to 2.8 oz-in)

### 5 mm Economy Models



| Capacitance Range (pF) |      | TCC (ppm/°C) | Q min (1 MHz) | Model No. |
|------------------------|------|--------------|---------------|-----------|
| min                    | max  |              |               |           |
| 1.0                    | 3.0  | 0 ± 250      | 300           | GKU3R010  |
| 2.0                    | 6.0  | 0 ± 250      | 300           | GKU6R010  |
| 3.0                    | 10.0 | N750 ± 250   | 300           | GKU10010  |
| 4.8                    | 20.0 | N750 ± 250   | 300           | GKU20010  |
| 5.5                    | 30.0 | N1000 ± 250  | 200           | GKU30010  |
| 6.8                    | 40.0 | N2200 ± 800  | 200           | GKU40010  |
| 9.8                    | 50.0 | N2200 ± 800  | 200           | GKU50010  |
| 12.0                   | 60.0 | N2200 ± 800  | 200           | GKU60010  |
| 14.0                   | 70.0 | N2200 ± 800  | 200           | GKU70010  |



# ECONOMY 7 mm GKT SERIES

## FEATURES

- Economical for consumer and industrial applications.
- Rotor soldered to tuning axle for stability.
- For lead-through-hole connection to printed circuit boards.
- Three hole mounting pattern.

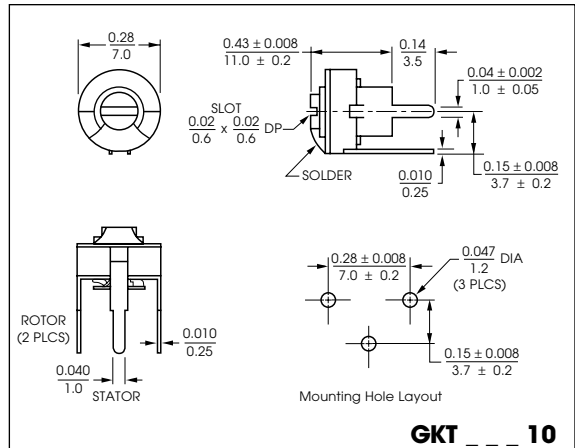
## SPECIFICATIONS

Operating Temperature Range: -25°C to +85°C  
 Voltage Rating: 250 VDC  
 Dielectric Withstanding Voltages: 500 VDC  
 Insulation Resistance: 10<sup>4</sup> Megohms min  
 Torque: 35 to 200 g-cm (0.49 to 2.8 oz-in)

### 7 mm Economy Models



| Capacitance Range (pF) |       | TCC (ppm/°C) | Q min (1 MHz) | Model No. |
|------------------------|-------|--------------|---------------|-----------|
| min                    | max   |              |               |           |
| 2.0                    | 5.0   | 0 ± 250      | 300           | GKT5R010  |
| 3.0                    | 10.0  | 0 ± 250      | 300           | GKT10010  |
| 4.0                    | 20.0  | N750 ± 250   | 300           | GKT20010  |
| 5.0                    | 30.0  | N1000 ± 500  | 300           | GKT30010  |
| 7.0                    | 45.0  | N1000 ± 500  | 200           | GKT45010  |
| 9.0                    | 63.0  | N1000 ± 500  | 200           | GKT60010  |
| 12.0                   | 90.0  | N2200 ± 800  | 200           | GKT90010  |
| 14.0                   | 108.0 | N2200 ± 800  | 100           | GKT10110  |



All dimensions are in / mm. Unless otherwise specified, the tolerance on dimensions is ± 0.004/0.1.

# THIN 2 mm & 3 mm TYPES

## FEATURES

- Very small size — for hybrid circuit applications.
- Straight line capacitance curve.
- Choice of mounting styles.

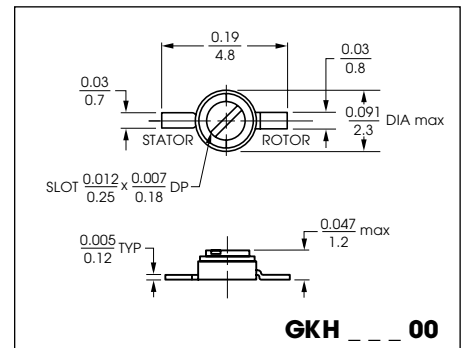
## SPECIFICATIONS

Operating Temperature Range: -25°C to +85°C  
 Voltage Rating: 25 VDC  
 Dielectric Withstanding Voltages: 75 VDC  
 Insulation Resistance: 10<sup>4</sup> Megohms min  
 Torque: 10 to 75 g-cm (0.14 to 1.0 oz-in)  
 Terminal Plating: Silver

### MINIATURE SERIES 2.0 x 1.2 mm Models

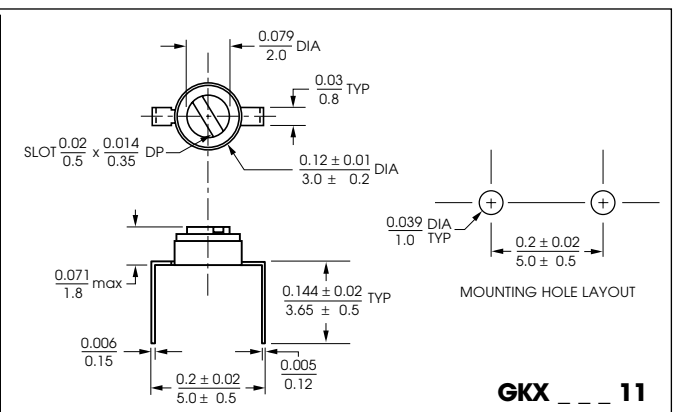
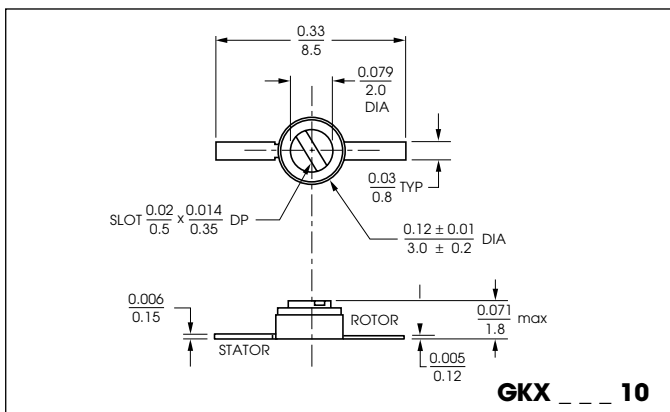
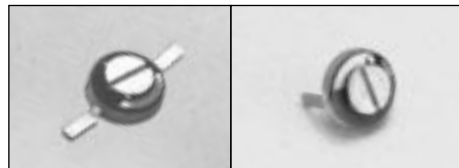
| Capacitance (pF) |      | TCC (ppm / °C) | Q min (1 MHz) | Model No. |
|------------------|------|----------------|---------------|-----------|
| min*             | max  |                |               |           |
| 5.0              | 25.0 | N1200 ± 800    | 100           | GKH25000  |

\*Re-rated in 1996



### 3.0 x 1.8 mm Models

| Capacitance (pF) |      | TCC (ppm / °C) | Q min (1 MHz) | Model No. | Model No. |
|------------------|------|----------------|---------------|-----------|-----------|
| min              | max  |                |               |           |           |
| 1.0              | 3.0  | 0 ± 300        | 200           | GKX3R010  | GKX3R011  |
| 1.5              | 5.0  | 0 ± 300        | 200           | GKX5R010  | GKX5R011  |
| 2.5              | 10.0 | 0 ± 300        | 200           | GKX10010  | GKX10011  |
| 5.0              | 20.0 | N750 ± 500     | 200           | GKX20010  | GKX20011  |
| 5.0              | 30.0 | N750 ± 500     | 200           | GKX30010  | GKX30011  |
| 5.0              | 35.0 | N750 ± 500     | 200           | GKX35010  | GKX35011  |
| 6.0              | 40.0 | N750 ± 500     | 200           | GKX40010  | GKX40011  |



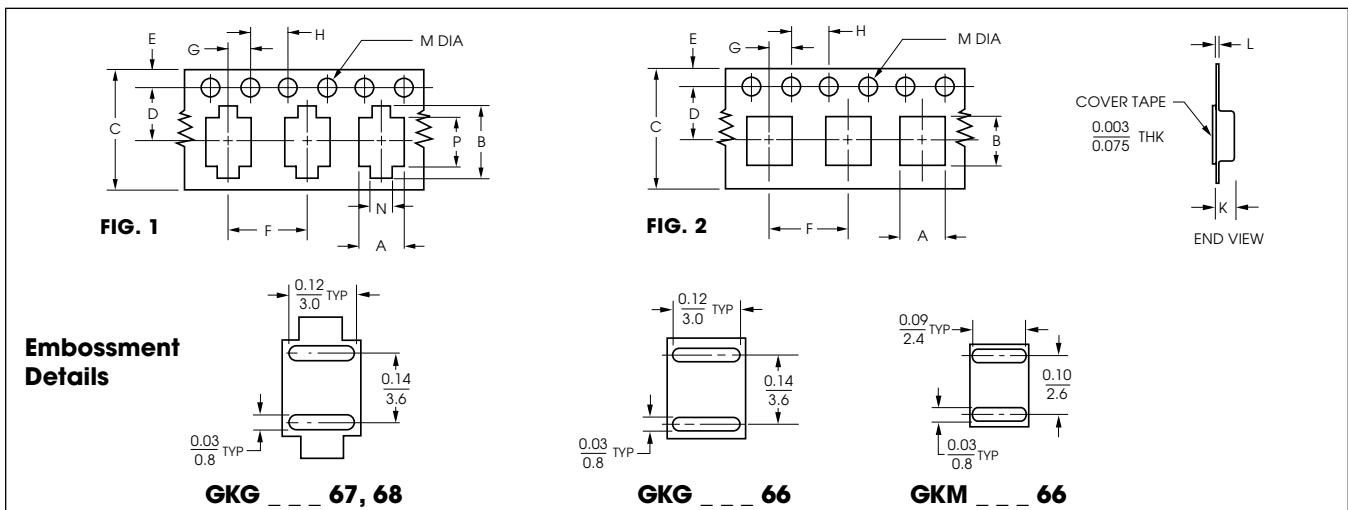
All dimensions are in / mm.  
 Unless otherwise specified, the tolerance on dimensions is ± 0.004/0.1.

# CARRIER AND REEL SPECIFICATIONS

## CARRIER

| Product Line    | Dimension<br>Tolerance | A                       | B                       | C                      | D                       | E                       | F                       | G                       | H                       | K                       | L                       | M                        | N                       | P                       |
|-----------------|------------------------|-------------------------|-------------------------|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|-------------------------|-------------------------|
|                 |                        | $\pm \frac{0.004}{0.1}$ | $\pm \frac{0.004}{0.1}$ | $\pm \frac{0.01}{0.3}$ | $\pm \frac{0.004}{0.1}$ | $\pm \frac{0.004}{0.1}$ | $\pm \frac{0.004}{0.1}$ | $\pm \frac{0.004}{0.1}$ | $\pm \frac{0.004}{0.1}$ | $\pm \frac{0.004}{0.1}$ | $\pm \frac{0.008}{0.2}$ | $\pm \frac{0.002}{0.05}$ | $\pm \frac{0.004}{0.1}$ | $\pm \frac{0.004}{0.1}$ |
| GKG_ _ _ 66     | Fig. 2                 | $\frac{0.18}{4.5}$      | $\frac{0.21}{5.4}$      | $\frac{0.47}{12}$      | $\frac{0.22}{5.5}$      | $\frac{0.069}{1.75}$    | $\frac{0.31}{8.0}$      | $\frac{0.08}{2.0}$      | $\frac{0.2}{4}$         | $\frac{0.13}{3.2}$      | $\frac{0.01}{0.3}$      | $\frac{0.059}{1.5}$      | —                       | —                       |
| GKG_ _ _ 67, 68 | Fig. 1                 | $\frac{0.18}{4.5}$      | $\frac{0.30}{7.5}$      | $\frac{0.47}{12}$      | $\frac{0.22}{5.5}$      | $\frac{0.069}{1.75}$    | $\frac{0.31}{8.0}$      | $\frac{0.08}{2.0}$      | $\frac{0.2}{4}$         | $\frac{0.13}{3.2}$      | $\frac{0.01}{0.3}$      | $\frac{0.059}{1.5}$      | $\frac{0.08}{2.0}$      | $\frac{0.2}{5}$         |
| GKM_ _ _ 66     | Fig. 2                 | $\frac{0.14}{3.6}$      | $\frac{0.18}{4.5}$      | $\frac{0.47}{12}$      | $\frac{0.22}{5.5}$      | $\frac{0.069}{1.75}$    | $\frac{0.2}{4}$         | $\frac{0.08}{2.0}$      | $\frac{0.2}{4}$         | $\frac{0.091}{2.3}$     | $\frac{0.01}{0.3}$      | $\frac{0.059}{1.5}$      | —                       | —                       |
| GKP_ _ _ 66     | Fig. 2                 | $\frac{0.11}{2.7}$      | $\frac{0.14}{3.6}$      | $\frac{0.3}{8}$        | $\frac{0.14}{3.5}$      | $\frac{0.069}{1.75}$    | $\frac{0.2}{4}$         | $\frac{0.08}{2.0}$      | $\frac{0.2}{4}$         | $\frac{0.075}{1.9}$     | $\frac{0.01}{0.3}$      | $\frac{0.059}{1.5}$      | —                       | —                       |
| GKY_ _ _ 66     | Fig. 2                 | $\frac{0.14}{3.6}$      | $\frac{0.19}{4.9}$      | $\frac{0.47}{12}$      | $\frac{0.22}{5.5}$      | $\frac{0.069}{1.75}$    | $\frac{0.31}{8.0}$      | $\frac{0.08}{2.0}$      | $\frac{0.2}{4}$         | $\frac{0.091}{2.3}$     | $\frac{0.01}{0.3}$      | $\frac{0.059}{1.5}$      | —                       | —                       |

NOTE: SURFRIM® capacitors in compartments (blisters) have stator terminal nearest "M" holes. "A" suffix specifies rotor terminal closer to "M" holes.



## REEL

| Product Line                 | Dimension<br>Tolerance | Quantity<br>Per Reel | A                   | B                   | C                    | D                    | E                    | T                      | W                    |
|------------------------------|------------------------|----------------------|---------------------|---------------------|----------------------|----------------------|----------------------|------------------------|----------------------|
|                              |                        |                      | $\pm \frac{0.1}{3}$ | $\pm \frac{0.1}{3}$ | $\pm \frac{0.04}{1}$ | $\pm \frac{0.08}{2}$ | $\pm \frac{0.04}{1}$ | $\pm \frac{0.02}{0.5}$ | $\pm \frac{0.08}{2}$ |
| GKG_ _ _ 66-07, 67-07, 68-07 |                        | 700                  | $\frac{7.09}{180}$  | $\frac{2.4}{60}$    | $\frac{0.51}{13}$    | $\frac{0.91}{23}$    | $\frac{0.08}{2}$     | $\frac{0.043}{1.1}$    | $\frac{0.531}{13.5}$ |
| GKG_ _ _ 66-25, 67-25, 68-25 |                        | 2500                 | $\frac{13.0}{330}$  | $\frac{3.1}{80}$    | $\frac{0.51}{13}$    | $\frac{0.91}{23}$    | $\frac{0.098}{2.5}$  | $\frac{0.079}{2.0}$    | $\frac{0.531}{13.5}$ |
| GKM_ _ _ 66                  |                        | 2000                 | $\frac{7.09}{180}$  | $\frac{2.4}{60}$    | $\frac{0.51}{13}$    | $\frac{0.91}{23}$    | $\frac{0.08}{2}$     | $\frac{0.043}{1.1}$    | $\frac{0.531}{13.5}$ |
| GKP_ _ _ 66                  |                        | 2000                 | $\frac{7.09}{180}$  | $\frac{2.4}{60}$    | $\frac{0.51}{13}$    | $\frac{0.91}{23}$    | $\frac{0.08}{2}$     | $\frac{0.043}{1.1}$    | $\frac{0.37}{9.5}$   |
| GKY_ _ _ 66, 76              |                        | 1000                 | $\frac{7.09}{180}$  | $\frac{2.4}{60}$    | $\frac{0.51}{13}$    | $\frac{0.91}{23}$    | $\frac{0.08}{2}$     | $\frac{0.043}{1.1}$    | $\frac{0.531}{13.5}$ |

All dimensions are in /mm.  
Unless otherwise specified, the tolerance on dimensions is  $\pm 0.004/0.1$ .



## SPECIFICATION NOTES

1. Parts are 100% tested for capacitance range, dielectric withstanding voltage, insulation resistance, and torque.
2. Capacitance range specified is that which is guaranteed, and is measured at 1 MHz and 25°C.
3. For soldering SURFTRIM® surface mounting models, pre-heat at 140°C ±10°C for 2 minutes maximum, and reflow solder at 240°C ±5°C for 20 seconds maximum.
4. For soldering printed circuit board mounting models, solder at 260°C ±10°C for 5 seconds maximum, except 3 seconds maximum for Miniature Models (page 10).
5. Q factor is measured at maximum rated capacitance and at room temperature. Frequency of measurement is as listed for each model.
6. Dielectric strength is measured at maximum rated capacitance and room temperature, with test voltage as listed for each model applied for 5 seconds.
7. Insulation resistance is measured at maximum rated capacitance and room temperature and at rated voltage, unless otherwise specified.
8. Temperature coefficient of capacitance (TCC) is measured at 100 kHz or 1 MHz, over a temperature range of -20°C to +70°C with capacitor set at maximum rated capacitance.
9. Axial load during tuning should not exceed 250 grams.
10. Capacitors should not be operated outside of rated capacitance range and working voltage.
11. Angular orientation of adjusting slot is random.

## APPLICATION NOTES

### Soldering and Cleaning of Ceramic Trimmer Capacitors

Soldering temperatures and times are specified in Notes 3 and 4 above. If using an iron for manual soldering (for prototyping or repairs, for example) use an appropriate size and temperature so that the high temperature exposure of the trimmer is less than 3 seconds.

We strongly recommend the use of water soluble fluxes for soldering, followed by cleaning in water containing detergents, and then a clear water rinse.

Some operations still use Freon or similar fluorinated or chlorinated hydrocarbon solvents. These solvents have a tendency to remove the lubricant, which in turn makes for bumpy adjustment, and will degrade the tuning torque, adjustment life, and other mechanical specifications.

In general, the minimum exposure to cleaning solutions is recommended. The gentlest would be the detergent and water rinses at fairly low temperatures. When chlorinated or fluorinated hydrocarbons are used, the boards should never be plunged into the solvent solution, but rather maintained in the vapor area of the defluxing equipment, and for the minimum possible time. Most desirable would be to clean only the bottom of the printed circuit board, as with board scrubbers.

The unsealed GKG models are usually specified for consumer applications where cleaning after soldering is normally not required. Should cleaning be required, the method to use would be to clean the bottom of the board, as with board scrubbers. If a solvent is used when cleaning the GKG series, sealed versions should be specified to prevent the solvent from being trapped in the housing and degrading performance.

Other precautions for using ceramic trimmer capacitors include:

- Beware of excessive handling with bare hands as, "finger oil" and dirt can bring down Q and insulation resistance values.
- Terminals should not be cut or reformed, as this could cause deformation of the spring or breaking of the rotor.

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