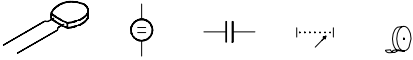


Ordering code system

B37979N 1 100 K 0 54
Packaging

51 \triangle cardboard tape, reel packing (360-mm reel)
 54 \triangle Ammo packing (standard)
 00 \triangle bulk

Internal coding
Capacitance tolerance

J \triangle $\pm 5\%$ (standard for C0G)
K \triangle $\pm 10\%$ (standard for X7R)
M \triangle $\pm 20\%$ (standard for Z5U (Y5U))

Capacitance, coded 101 \triangle $10 \cdot 10^1$ pF = 100 pF
 (example) 222 \triangle $22 \cdot 10^2$ pF = 2,2 nF
 473 \triangle $47 \cdot 10^3$ pF = 47 nF

| Rated voltage | Rated voltage [VDC] | 50 | 100 |
|---------------|---------------------|----|-----|
| | Code | 5 | 1 |

Type and size

| With radial leads EIA standard | Temperature characteristic | | |
|--|----------------------------|-------------------------------|-------------------------------|
| | C0G | X7R | Z5U (Y5U) |
| Lead spacing 2,5 mm 5,5 × 5,0 × 2,5 6,5 × 5,0 × 2,5 | B37979N B37986N | B37981M B37987M | B37982N B37988N |
| Lead spacing 5,0 mm 5,5 × 5,0 × 2,5 6,5 × 5,0 × 2,5 9,0 × 7,5 × 2,5 | B37979G B37986G — | B37981F B37987F B37984M | B37982G B37988G B37985N |

Features

- Good thermal stability
- High insulation resistance
- Low dissipation factor
- Low inductance


Applications

- Resonant circuits
- Filter circuits
- Timing elements
- Coupling and filtering, particularly in RF circuits

Termination

- Parallel wire leads, iron-nickel, tinned
- Crimped leads
- Non-standard lead lengths on request

Marking

- Rated capacitance, tolerance, manufacturer's logo, ceramic material, voltage

Delivery mode

- Cardboard tape in Ammo packing (standard)
- Cardboard tape on 360-mm reel or bulk on request

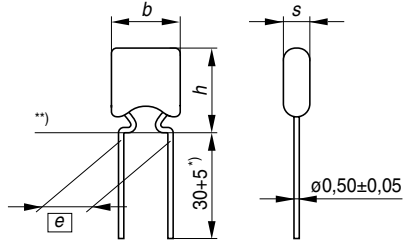
Electrical data

| | | | |
|--|---------------|-----------------------------|-----|
| Temperature characteristic | | C0G | |
| Climatic category (IEC 60068-1) | | 55/125/56 | |
| Standard | | EIA | |
| Dielectric | | Class 1 | |
| Rated voltage | V_R | 50, 100 | VDC |
| Test voltage | V_{test} | $2,5 \cdot V_R/5 \text{ s}$ | VDC |
| Capacitance range / E series | C_R | 10 pF ... 10 nF (E6) | |
| Temperature coefficient | | $0 \pm 30 \cdot 10^{-6}/K$ | |
| Dissipation factor (limit value) | $\tan \delta$ | $< 1,0 \cdot 10^{-3}$ | |
| Insulation resistance ¹⁾ at + 25 °C | R_{ins} | $> 10^5$ | MΩ |
| Insulation resistance ¹⁾ at +125 °C | R_{ins} | $> 10^4$ | MΩ |
| Time constant ¹⁾ at + 25 °C | τ | > 1000 | s |
| Time constant ¹⁾ at +125 °C | τ | > 100 | s |
| Operating temperature range | T_{op} | -55 ... +125 | °C |
| Ageing | | none | |

1) For $C_R > 10 \text{ nF}$ the time constant $\tau = C \cdot R_{ins}$ is given.


Capacitance tolerances

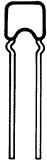
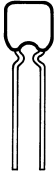
| | | |
|-------------|-----------------|------|
| Code letter | J (standard) | K |
| Tolerance | ±5% | ±10% |

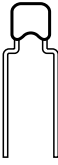
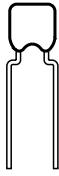
Dimensional drawing

^{*)} Lead length for bulk packaging

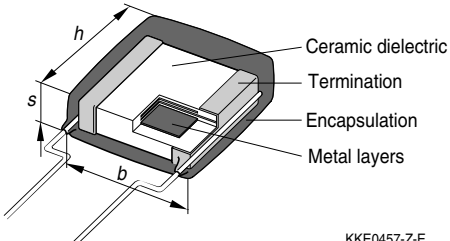
KKE0456-R-E

^{**)} Seating plane in acc. with IEC 600717

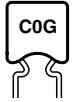
Dimensions (mm)

| | Lead spacing \boxed{e} = 2,5 +0,6/-0,1 mm | |
|--|--|---------|
| Type | B37979N | B37986N |
|  |  | |
| h_{\max} | 5,5 | 6,5 |
| b_{\max} | 5,0 | 5,0 |
| s_{\max} | 2,5 | 2,5 |

| | Lead spacing \boxed{e} = 5,0 +0,6/-0,1 mm | |
|--|--|---------|
| Type | B37979G | B37986G |
|  |  | |
| h_{\max} | 5,5 | 6,5 |
| b_{\max} | 5,0 | 5,0 |
| s_{\max} | 2,5 | 2,5 |

Termination


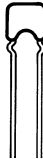
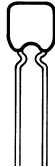


KKE0457-Z-E



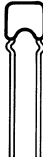
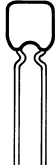


Multilayer Ceramic Capacitors

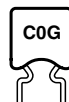
COG

Product range leaded capacitors

| | | COG | | | | | | | |
|----------------------------|--|---|-----|---|-----|---|-----|---|-----|
| Lead spacing | | 2,5 mm | | | | 5,0 mm | | | |
| | |  | |  | |  | |  | |
| $h \times b \times s$ (mm) | | 5,5 × 5,0 × 2,5 | | 6,5 × 5,0 × 2,5 | | 5,5 × 5,0 × 2,5 | | 6,5 × 5,0 × 2,5 | |
| Type | | B37979N | | B37986N | | B37979G | | B37986G | |
| V_R (VDC) | | 50 | 100 | 50 | 100 | 50 | 100 | 50 | 100 |
| C_R | | | | | | | | | |
| 10 pF | | | | | | | | | |
| 15 pF | | | | | | | | | |
| 22 pF | | | | | | | | | |
| 33 pF | | | | | | | | | |
| 47 pF | | | | | | | | | |
| 68 pF | | | | | | | | | |
| 100 pF | | | | | | | | | |
| 150 pF | | | | | | | | | |
| 220 pF | | | | | | | | | |
| 330 pF | | | | | | | | | |
| 470 pF | | | | | | | | | |
| 680 pF | | | | | | | | | |


Product range leaded capacitors

| | | COG | | | | | | | |
|----------------------------|--|---|-----|---|-----|---|-----|---|-----|
| Lead spacing | | 2,5 mm | | | | 5,0 mm | | | |
| | |  | |  | |  | |  | |
| $h \times b \times s$ (mm) | | 5,5 × 5,0 × 2,5 | | 6,5 × 5,0 × 2,5 | | 5,5 × 5,0 × 2,5 | | 6,5 × 5,0 × 2,5 | |
| Type | | B37979N | | B37986N | | B37979G | | B37986G | |
| V_R (VDC) | | 50 | 100 | 50 | 100 | 50 | 100 | 50 | 100 |
| C_R | | | | | | | | | |
| 1,0 nF | | | | | | | | | |
| 1,5 nF | | | | | | | | | |
| 2,2 nF | | | | | | | | | |
| 3,3 nF | | | | | | | | | |
| 4,7 nF | | | | | | | | | |
| 6,8 nF | | | | | | | | | |
| 10 nF | | | | | | | | | |



Multilayer Ceramic Capacitors

COG

Ordering codes and packing for COG, 50 VDC, lead spacing 2,5 mm

| C _R | Ordering code ¹⁾ | Ammo packing | Reel packing | Bulk |
|----------------|-----------------------------|-------------------|-------------------|-------------------|
| | | ** \triangle 54 | ** \triangle 51 | ** \triangle 00 |
| | | pcs | pcs/reel | pcs |

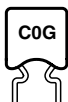
B37979, 50 VDC, 5,5 × 5,0 × 2,5 mm

| | | | | |
|--------|-----------------|------|------|------|
| 100 pF | B37979N5101J0** | 2500 | 2500 | 2000 |
| 150 pF | B37979N5151J0** | 2500 | 2500 | 2000 |
| 220 pF | B37979N5221J0** | 2500 | 2500 | 2000 |
| 330 pF | B37979N5331J0** | 2500 | 2500 | 2000 |
| 470 pF | B37979N5471J0** | 2500 | 2500 | 2000 |
| 680 pF | B37979N5681J0** | 2500 | 2500 | 2000 |
| 1,0 nF | B37979N5102J0** | 2500 | 2500 | 2000 |
| 1,5 nF | B37979N5152J0** | 2500 | 2500 | 2000 |
| 2,2 nF | B37979N5222J0** | 2500 | 2500 | 2000 |

B37986, 50 VDC, 6,5 × 5,0 × 2,5 mm

| | | | | |
|--------|-----------------|------|------|------|
| 3,3 nF | B37986N5332J0** | 2500 | 2500 | 2000 |
| 4,7 nF | B37986N5472J0** | 2500 | 2500 | 2000 |
| 6,8 nF | B37986N5682J0** | 2500 | 2500 | 2000 |
| 10 nF | B37986N5103J0** | 2500 | 2500 | 2000 |

1) The table contains the ordering codes for the standard capacitance tolerance.
For other available capacitance tolerances see page 154.

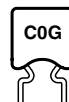

Ordering codes and packing for C0G, 50 VDC, lead spacing 5,0 mm

| C_R | Ordering code ¹⁾ | Ammo packing | Reel packing | Bulk |
|---|-----------------------------|-------------------|-------------------|-------------------|
| | | ** \triangle 54 | ** \triangle 51 | ** \triangle 00 |
| | | pcs | pcs/reel | pcs |
| B37979, 50 VDC, 5,5 × 5,0 × 2,5 mm | | | | |
| 100 pF | B37979G5101J0** | 2500 | 2500 | 2000 |
| 150 pF | B37979G5151J0** | 2500 | 2500 | 2000 |
| 220 pF | B37979G5221J0** | 2500 | 2500 | 2000 |
| 330 pF | B37979G5331J0** | 2500 | 2500 | 2000 |
| 470 pF | B37979G5471J0** | 2500 | 2500 | 2000 |
| 680 pF | B37979G5681J0** | 2500 | 2500 | 2000 |
| 1,0 nF | B37979G5102J0** | 2500 | 2500 | 2000 |
| 1,5 nF | B37979G5152J0** | 2500 | 2500 | 2000 |
| 2,2 nF | B37979G5222J0** | 2500 | 2500 | 2000 |

B37986, 50 VDC, 6,5 × 5,0 × 2,5 mm

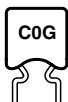
| | | | | |
|--------|-----------------|------|------|------|
| 3,3 nF | B37986G5332J0** | 2500 | 2500 | 2000 |
| 4,7 nF | B37986G5472J0** | 2500 | 2500 | 2000 |
| 6,8 nF | B37986G5682J0** | 2500 | 2500 | 2000 |
| 10 nF | B37986G5103J0** | 2500 | 2500 | 2000 |

1) The table contains the ordering codes for the standard capacitance tolerance.
For other available capacitance tolerances see page 154.


Multilayer Ceramic Capacitors
C0G
Ordering codes and packing for C0G, 100 VDC, lead spacing 2,5 mm

| C _R | Ordering code ¹⁾ | Ammo packing | Reel packing | Bulk |
|--|-----------------------------|-------------------|-------------------|-------------------|
| | | ** \triangle 54 | ** \triangle 51 | ** \triangle 00 |
| | | pcs | pcs/reel | pcs |
| B37979, 100 VDC, 5,5 × 5,0 × 2,5 mm | | | | |
| 10 pF | B37979N1100J0** | 2500 | 2500 | 2000 |
| 15 pF | B37979N1150J0** | 2500 | 2500 | 2000 |
| 22 pF | B37979N1220J0** | 2500 | 2500 | 2000 |
| 33 pF | B37979N1330J0** | 2500 | 2500 | 2000 |
| 47 pF | B37979N1470J0** | 2500 | 2500 | 2000 |
| 68 pF | B37979N1680J0** | 2500 | 2500 | 2000 |
| 100 pF | B37979N1101J0** | 2500 | 2500 | 2000 |
| 150 pF | B37979N1151J0** | 2500 | 2500 | 2000 |
| 220 pF | B37979N1221J0** | 2500 | 2500 | 2000 |
| 330 pF | B37979N1331J0** | 2500 | 2500 | 2000 |
| 470 pF | B37979N1471J0** | 2500 | 2500 | 2000 |
| 680 pF | B37979N1681J0** | 2500 | 2500 | 2000 |
| 1,0 nF | B37979N1102J0** | 2500 | 2500 | 2000 |
| B37986, 100 VDC, 6,5 × 5,0 × 2,5 mm | | | | |
| 1,5 nF | B37986N1152J0** | 2500 | 2500 | 2000 |
| 2,2 nF | B37986N1222J0** | 2500 | 2500 | 2000 |

1) The table contains the ordering codes for the standard capacitance tolerance.
For other available capacitance tolerances see page 154.


Ordering codes and packing for C0G, 100 VDC, lead spacing 5,0 mm

| C_R | Ordering code ¹⁾ | Ammo packing | Reel packing | Bulk |
|--|-----------------------------|-------------------|-------------------|-------------------|
| | | ** \triangle 54 | ** \triangle 51 | ** \triangle 00 |
| | | pcs | pcs/reel | pcs |
| B37979, 100 VDC, 5,5 × 5,0 × 2,5 mm | | | | |
| 10 pF | B37979G1100J0** | 2500 | 2500 | 2000 |
| 15 pF | B37979G1150J0** | 2500 | 2500 | 2000 |
| 22 pF | B37979G1220J0** | 2500 | 2500 | 2000 |
| 33 pF | B37979G1330J0** | 2500 | 2500 | 2000 |
| 47 pF | B37979G1470J0** | 2500 | 2500 | 2000 |
| 68 pF | B37979G1680J0** | 2500 | 2500 | 2000 |
| 100 pF | B37979G1101J0** | 2500 | 2500 | 2000 |
| 150 pF | B37979G1151J0** | 2500 | 2500 | 2000 |
| 220 pF | B37979G1221J0** | 2500 | 2500 | 2000 |
| 330 pF | B37979G1331J0** | 2500 | 2500 | 2000 |
| 390 pF | B37979G1391J0** | 2500 | 2500 | 2000 |
| 470 pF | B37979G1471J0** | 2500 | 2500 | 2000 |
| 680 pF | B37979G1681J0** | 2500 | 2500 | 2000 |
| 1,0 nF | B37979G1102J0** | 2500 | 2500 | 2000 |
| B37986, 100 VDC, 6,5 × 5,0 × 2,5 mm | | | | |
| 1,5 nF | B37986G1152J0** | 2500 | 2500 | 2000 |
| 2,2 nF | B37986G1222J0** | 2500 | 2500 | 2000 |

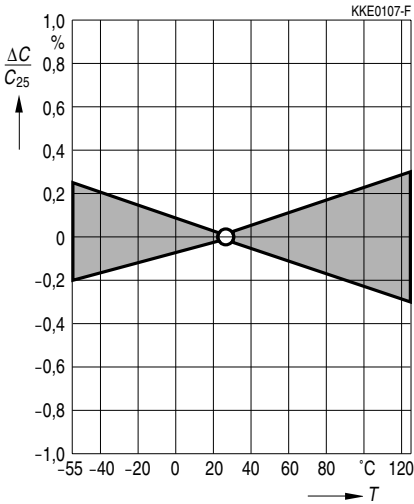
1) The table contains the ordering codes for the standard capacitance tolerance.
For other available capacitance tolerances see page 154.

Multilayer Ceramic Capacitors

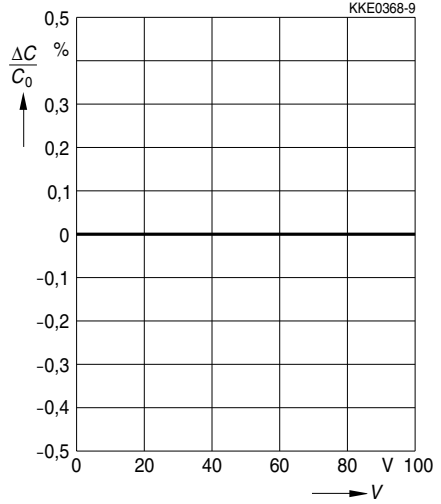
COG

Typical characteristics

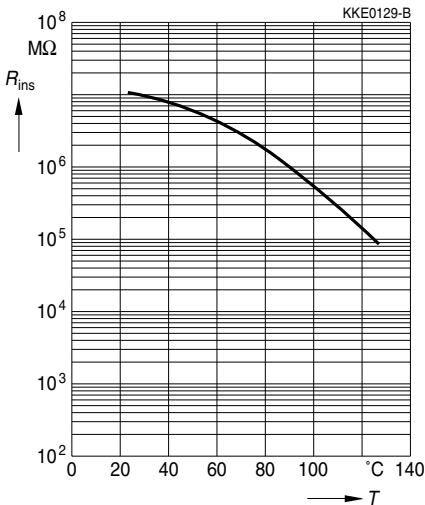
Capacitance change $\Delta C/C_{25}$ versus temperature T (tolerance range $\pm 0.2\%$)



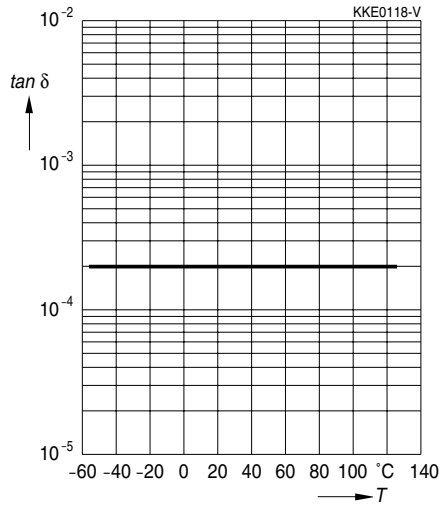
Capacitance change $\Delta C/C_0$ versus superimposed DC voltage V



Insulation resistance R_{ins} versus temperature T



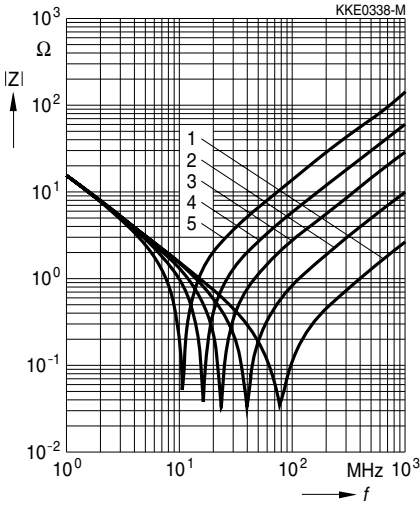
Dissipation factor $\tan \delta$ versus temperature T





Typical characteristics

Impedance $|Z|$ versus frequency f



- 1: Chip
- 2: 1,5 mm lead length
- 3: 5,0 mm lead length
- 4: 10,0 mm lead length
- 5: 20,0 mm lead length

Capacitance change $\Delta C/C_1$ versus time t

