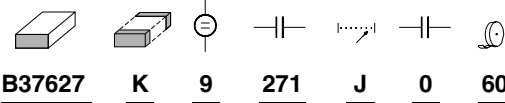


Ordering code system



Packaging
 60 \triangle cardboard tape, 180-mm reel
 70 \triangle cardboard tape, 330-mm reel

Internal coding

Capacitance tolerance
J \triangle \pm 5% (standard)
K \triangle \pm 10%

Capacitance, coded 102 \triangle $10 \cdot 10^2$ pF = 1 nF
 (example) 103 \triangle $10 \cdot 10^3$ pF = 10 nF
 333 \triangle $33 \cdot 10^3$ pF = 33 nF

| | | |
|----------------------|---------------------|----|
| Rated voltage | Rated voltage [VDC] | 16 |
| | Code | 9 |

Termination Standard: K \triangle nickel barrier

| Type and size | |
|--|-----------------------------------|
| Chip size (inch / mm) | Temperature characteristic HC1 |
| 0402 / 1005 0603 / 1608 0805 / 2012 | B37627 B37637 B37647 |

HC1
Preliminary Data
Features

- COG equivalent
- Class 1 characteristic with high capacitance values (up to 33 nF for case size 0805)
- No ageing effects
- No voltage dependence
- No piezoelectric effects
- Maximum relative capacitance change versus temperature within $\pm 4\%$


Applications

- Loop filters
- Telecom (mobile phones, Bluetooth, ADSL/XDSL)
- Keyless entry systems
- Set top boxes

Termination

- For soldering: Nickel-barrier terminations (Ni)

Options

- Alternative capacitance tolerances available on request

Delivery mode

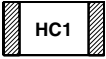
- Cardboard tape, 180-mm and 330-mm reel available

Note: Production ramp up end of 2003, all capacitance values on request

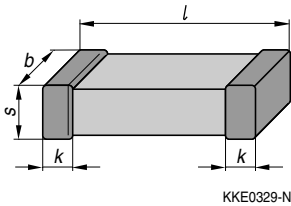
Electrical data

| | | | |
|---|---------------|-----------------------|------------|
| Temperature characteristic | | HC1 | |
| Climatic category (IEC 60068-1) | | 25/85/56 | |
| Standard | | EIA | |
| Dielectric | | Class 1 | |
| Rated voltage | V_R | 16 | VDC |
| Test voltage | V_{test} | $2,5 \cdot V_R/5 s$ | VDC |
| Capacitance range / E series | C_R | 270 pF ... 33 nF (E6) | |
| Max. relative capacitance change | $\Delta C/C$ | ± 4 | % |
| Dissipation factor (limit value) | $\tan \delta$ | $< 1,0 \cdot 10^{-3}$ | |
| Insulation resistance ¹⁾ at +25 °C | R_{ins} | $> 10^5$ | M Ω |
| Insulation resistance ¹⁾ at +85 °C | R_{ins} | $> 10^4$ | M Ω |
| Time constant ¹⁾ at +25 °C | τ | > 1000 | s |
| Time constant ¹⁾ at +85 °C | τ | > 100 | s |
| Operating temperature range | T_{op} | -25 ... +85 | °C |
| Ageing | | none | |

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


Capacitance tolerances

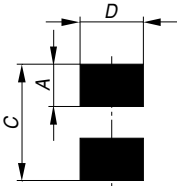
| | | |
|-------------|-----------------|------------|
| Code letter | J (standard) | K |
| Tolerance | $\pm 5\%$ | $\pm 10\%$ |

Dimensional drawing

Dimensions (mm)

| Case size (inch) (mm) | 0402 1005 | 0603 1608 | 0805 2012 |
|--------------------------|----------------|----------------|-----------------|
| <i>l</i> | $1,0 \pm 0,10$ | $1,6 \pm 0,15$ | $2,0 \pm 0,20$ |
| <i>b</i> | $0,5 \pm 0,05$ | $0,8 \pm 0,10$ | $1,25 \pm 0,15$ |
| <i>s</i> | $0,5 \pm 0,05$ | $0,8 \pm 0,10$ | 0,90 max. |
| <i>k</i> | 0,1 – 0,4 | 0,1 – 0,4 | 0,13 – 0,75 |

Tolerances to CECC 32101-801

Recommended solder pad

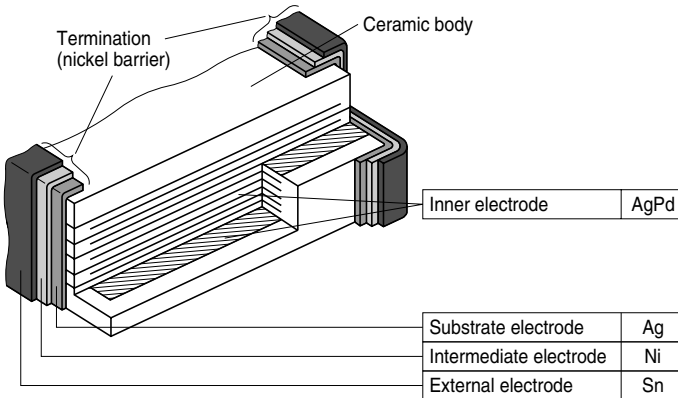


KKE0308-1

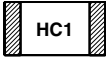
Maximum dimensions (mm)

| Case size | (inch/mm) | Type | A | C | D |
|-----------|-----------|-------------|-----|-----|-----|
| | 0402/1005 | single chip | 0,6 | 1,7 | 0,6 |
| | 0603/1608 | single chip | 1,0 | 3,0 | 1,0 |
| | 0805/2012 | single chip | 1,2 | 3,4 | 1,3 |

Termination



KKE0484-W



Product range chip capacitors

| | | HC1 | | | | | |
|--------------------|----|--------|--|--------|--|--------|--|
| Size ¹⁾ | | 0402 | | 0603 | | 0805 | |
| inch | | 1005 | | 1608 | | 2012 | |
| mm | | | | | | | |
| Type | | B37627 | | B37637 | | B37647 | |
| V_R (VDC) | | 16 | | 16 | | 16 | |
| C_R | | | | | | | |
| 270 | pF | | | | | | |
| 330 | pF | | | | | | |
| 470 | pF | | | | | | |
| 680 | pF | | | | | | |
| 1,0 | nF | | | | | | |
| 1,5 | nF | | | | | | |
| 2,2 | nF | | | | | | |
| 2,7 | nF | | | | | | |
| 3,3 | nF | | | | | | |
| 4,7 | nF | | | | | | |
| 6,8 | nF | | | | | | |
| 10 | nF | | | | | | |
| 15 | nF | | | | | | |
| 22 | nF | | | | | | |
| 33 | nF | | | | | | |

Production ramp up end of 2003, all capacitance values on request.

1) $l \times b$ (inch) / $l \times b$ (mm)

Multilayer Ceramic Capacitors
HC1; 0402, 0603, 0805 and 1206
HC1
Ordering codes and packing for HC1 capacitors, 16 VDC, nickel-barrier terminations

| C_R | Ordering code ¹⁾ | Chip thickness mm | Cardboard tape, ∅ 180-mm reel | Cardboard tape, ∅ 330-mm reel |
|-------|-----------------------------|----------------------|----------------------------------|----------------------------------|
| | | | ** \triangle 60 | ** \triangle 70 |
| | | | pcs/reel | pcs/reel |

Case size 0402, 16 VDC

| | | | | |
|--------|-----------------|------------|-------|-------|
| 270 pF | B37627K9271J0** | 0,5 ± 0,05 | 10000 | 50000 |
| 330 pF | B37627K9331J0** | 0,5 ± 0,05 | 10000 | 50000 |
| 470 pF | B37627K9471J0** | 0,5 ± 0,05 | 10000 | 50000 |
| 680 pF | B37627K9681J0** | 0,5 ± 0,05 | 10000 | 50000 |
| 1,0 nF | B37627K9102J0** | 0,5 ± 0,05 | 10000 | 50000 |

Case size 0603, 16 VDC

| | | | | |
|--------|-----------------|-----------|------|-------|
| 1,0 nF | B37637K9102J0** | 0,8 ± 0,1 | 4000 | 16000 |
| 1,5 nF | B37637K9152J0** | 0,8 ± 0,1 | 4000 | 16000 |
| 2,2 nF | B37637K9222J0** | 0,8 ± 0,1 | 4000 | 16000 |
| 2,7 nF | B37637K9272J0** | 0,8 ± 0,1 | 4000 | 16000 |
| 3,3 nF | B37637K9332J0** | 0,8 ± 0,1 | 4000 | 16000 |
| 4,7 nF | B37637K9472J0** | 0,8 ± 0,1 | 4000 | 16000 |
| 6,8 nF | B37637K9682J0** | 0,8 ± 0,1 | 4000 | 16000 |
| 10 nF | B37637K9103J0** | 0,8 ± 0,1 | 4000 | 16000 |

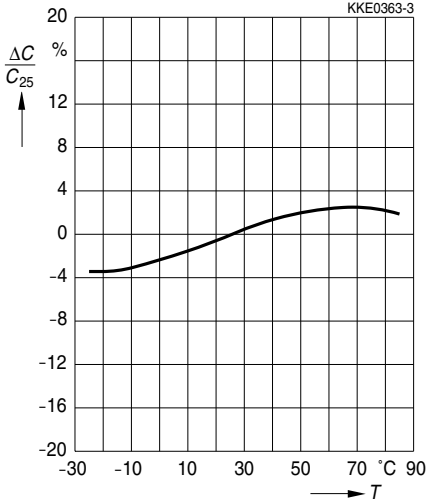
Case size 0805, 16 VDC

| | | | | |
|-------|-----------------|-----------|------|-------|
| 10 nF | B37647K9103J0** | 0,8 ± 0,1 | 4000 | 16000 |
| 15 nF | B37647K9153J0** | 0,8 ± 0,1 | 4000 | 16000 |
| 22 nF | B37647K9223J0** | 0,8 ± 0,1 | 4000 | 16000 |
| 33 nF | B37647K9333J0** | 0,8 ± 0,1 | 4000 | 16000 |

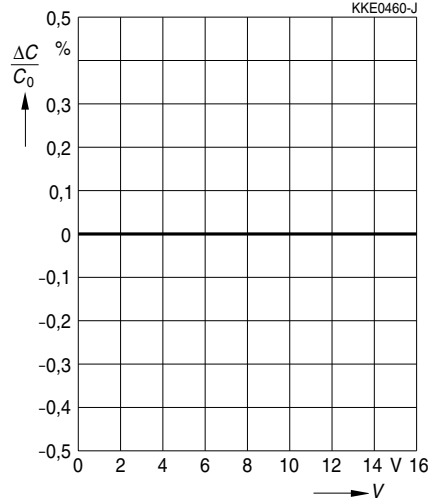
1) The table contains the ordering codes for the standard capacitance tolerance.
For other available capacitance tolerances see page 144.

Typical characteristics

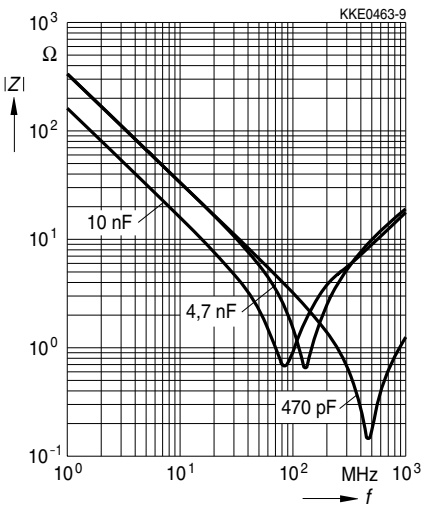
Capacitance change $\Delta C/C_{25}$ versus temperature T



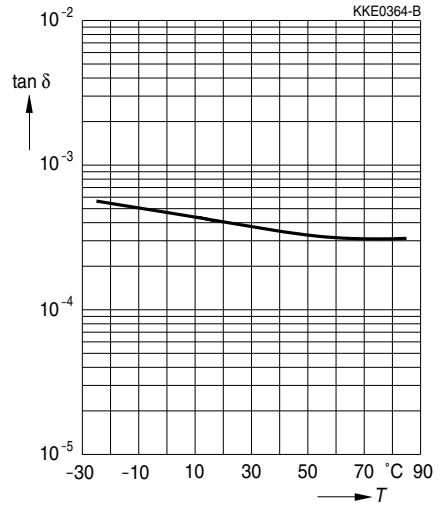
Capacitance change $\Delta C/C_0$ versus superimposed DC voltage V



Impedance $|Z|$ versus frequency f

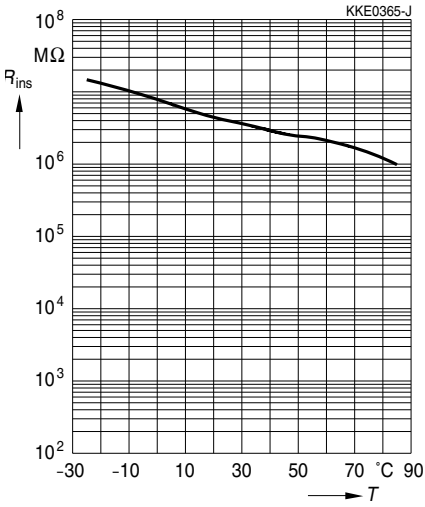


Dissipation factor $\tan \delta$ versus temperature T



Typical characteristics

Insulation resistance R_{ins} versus temperature T



Herausgegeben von EPCOS AG

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