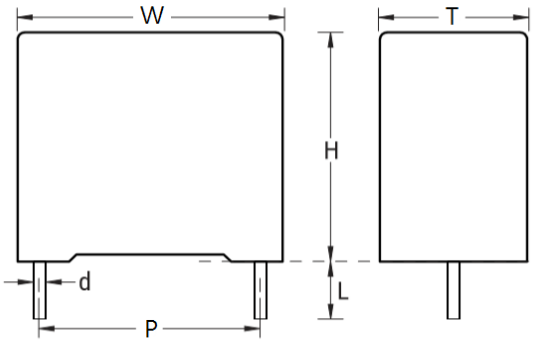
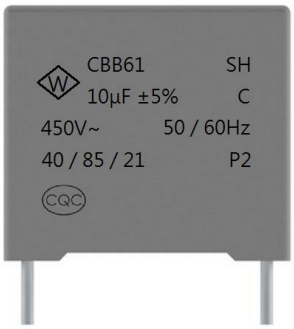
# *SMC2 series*

## ■ Outline Drawing




## ■ Typical Applications

Widely applied to starting and running of AC
Single-phase motors at 50Hz/60Hz frequency power

## ■ Features

Self-healing property
Extremely stable performance and reliability
Safety class P2, with segmented film designing

## ■ Construction

Dielectric: Polypropylene film
Electrodes: Metal vapor coating (Zn-Al synthetic)
Case: Flame-retardant PBT (UL94 V-0)
Epoxy Resin coating (UL 94 V-0)
Lead: Tinned wires or insulated flexible lead wires

## ■ Safety Approvals

| | | | |
|---|---|---|---|
| CQC | GB/T3667.1- 2005 | Class C of operation | CQC |

## ■ Specifications

| | | |
|---|---|---|
| Climatic Category | | 40/85/21 |
| Operating Temperature Range | | -40℃~85℃ |
| Rated (AC) Voltage - 50/60 Hz | | 450Vac |
| Class of safety protection | | P2 |
| Capacitance Range | | CQC |
| | | 1.0μF ~5.0μF |
| Voltage Proof | Between Terminals | $U_R$*1.414*175%(Vdc), 60s |
| | Between terminal and Enclosure | $U_R$×200%+1500Vac, 60sec |
| Capacitance Tolerance | | ±5% (J) |
| Insulation Resistance | | ≥3,000s (25℃, 100V, 1min) |
| Dissipation Factor | | 0.2% Max, at 1KHz and 25℃ |

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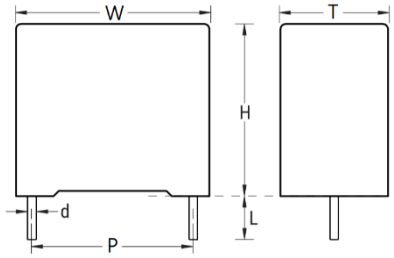
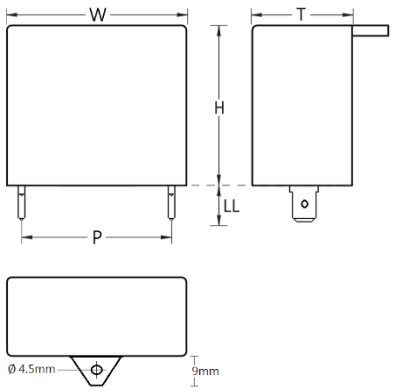
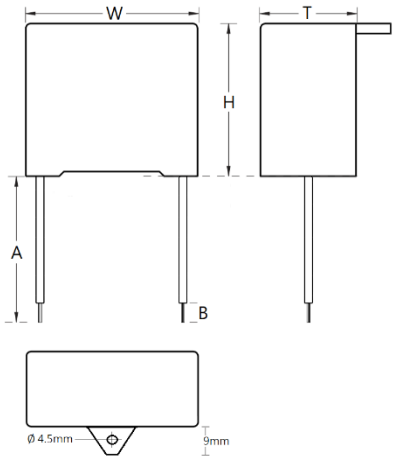
## ■ Product code system (For Tinned Lead Wires and Flat quick-connectors)

| SMC2 | H | 105 | J | 0450 | A | T | 32 | 15 |
|---|---|---|---|---|---|---|---|---|
| Type | Internal use | Capacitance | Tolerance | Rated Voltage | Voltage | Lead forming | Lead Pitch | Lead Length |
| SMC2= AC Film Capacitor Incl. Motor Run | -- | 105 =1000nF =1.0μF | J=±5% | 0250=250V<br>0300=300V<br>0350=350V<br>0400=400V<br>0450=450V | A=AC | Shown as Table I | 28=27.5mm<br>32=31.5mm<br>38=37.5mm<br>42=41.5mm<br>52=52mm | 04=3.5mm<br>15=15mm<br>23=23mm<br>DP= Flat quick-connectors |

## ■ Product code system (For Insulated Flexible wires)

| SMC2 | H | 105 | J | 0450 | A | 20 | 080 |
|---|---|---|---|---|---|---|---|
| Type | Internal use | Capacitance | Tolerance | Rated Voltage | Voltage | Cable No. | Lead Length |
| SMC2= AC Film Capacitor Incl. Motor Run | -- | 105 =1000nF =1.0μF | J=±5% | 0250=250V<br>0300=300V<br>0350=350V<br>0400=400V<br>0450=450V | A=AC | 18=1015 AWG 18<br>20=1015 AWG 20<br>22=1015 AWG 22 | 60=60mm<br>80=80mm<br>100=100mm<br>120=120mm<br>150=150mm |

## ■ Table I

| Code | T (Tinned Lead Wires) | F (Flat quick-connectors) | P (Insulated Flexible wires) |
|---|---|---|---|
| Lead Forming |  |  |  |

# *SMC2 series*

■ Dimensions (mm)

| **450Vac** (Tinned lead wire) | | | | | | |
|---|---|---|---|---|---|---|
| **Cap. µF** | W | H | T | P | d | Part number |
| 1.0 | 38 | 26 | 16 | 31 | 0.8 | SMCB_105J0450A*31** |
| 1.2 | 38 | 26 | 16 | 31 | 0.8 | SMCB_125J0450A*31** |
| 1.5 | 38 | 26 | 16 | 31 | 0.8 | SMCB_155J0450A*31** |
| 1.8 | 38 | 28 | 18 | 31 | 0.8 | SMCB_185J0450A*31** |
| 2.0 | 38 | 28 | 18 | 31 | 0.8 | SMCB_205J0450A*31** |
| 2.2 | 38 | 20 | 20 | 31 | 0.8 | SMCB_225J0450A*31** |
| 2.5 | 38 | 30 | 20 | 31 | 0.8 | SMCB_255J0450A*31** |
| 2.7 | 38 | 30 | 20 | 31 | 0.8 | SMCB_275J0450A*31** |
| 3.0 | 48 | 32 | 22 | 41 | 0.8 | SMCB_305J0450A*41** |
| 3.5 | 48 | 32 | 22 | 41 | 0.8 | SMCB_355J0450A*41** |
| 4.0 | 48 | 37 | 26 | 41 | 0.8 | SMCB_405J0450A*41** |
| 4.5 | 48 | 37 | 26 | 41 | 0.8 | SMCB_455J0450A*41** |
| 5.0 | 58 | 38 | 26 | 51 | 0.8 | SMCB_505J0450A*51** |

* = Lead forming

** = Lead length

## ■ Specifications ( IEC 60252-1)

| Test items | Performance | Test Method |
|---|---|---|
| Withstand voltage (Between Terminals) | Shall be no abnormality | $U_R$×1.414×175% of 60 sec |
| Between terminal and Enclosure | Shall be no abnormality | $U_R$×200%+1000Vac, 60sec. |
| Insulation resistance (Between Terminals) | IR ≥ 3,000s | Measured at 100±15Vdc, For 60sec / 25℃ |
| Capacitance | Within the tolerance specified | 1KHz, 1Vrms Max. at 25℃ |
| Dissipation Factor | 0.002 (0.2%) Max. | 1KHz, 1Vrms Max. at 25℃ |
| Tense Strength of Terminal | No wire breakage and no damage of capacitor | 1. Load Force : 1.0 Kg<br>2. Holding Time : 10 ± 1sec |
| Bending Strength of Terminal | No wire breakage and no damage of capacitor | 1. Load Force : 0.5 Kg<br>2. Bending Time : 4 x 90˚ in 5sec |
| Humidity Resistance | (1) Appearance : No visible damage<br>(2) Withstand Voltage : Normal<br>(3) Capacitance change : ≤ ±0.5%<br>(4) Insulation resistance: ≥ 50% of the rated value<br>(5) DF (tanδ) ≤ 0.002 | 1. Test Temperature: 40℃ ± 2℃<br>2. Relative Humidity: 90 ~ 95%<br>3. Test Times: 500±8Hrs |
| Heat Resistance (Continuous) | (1) Appearance : No Visible Damage<br>(2) DF ( tanδ) ≤ 0.002<br>(3) Capacitance Change : ±3% of The Initial Value<br>(4) Insulation Resistance: ≥ 50%of the rated value | a. Test Voltage : 125% of the rated voltage test<br>b. Test Temperature : 85℃±2℃<br>c. Test Times : 600Hrs |

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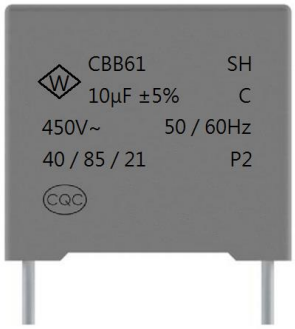
## ■ **Mark** (Example)

| For 450Vac |
|---|




| | | | |
|---|---|---|---|
| 1. | Trademark of WINDAY | 2. | Type of the capacitors CBB61=SMCB |
| 3. | Self-healing in nature such as SH | 4. | Nominal capacitance such as 10μF |
| 5. | Capacitance tolerance is ± 5% | 6. | Class C of operation |
| 7. | Rated Voltage in AC volts, such as 450V~ | 8. | Working frequency such as 50/60Hz |
| 9. | Climatic category such as 40/085/21 | 10. | Class of Safety Protection such as P2 |
| 11. | Recognized approval mark. | | |

## ■ **Storage conditions and duration**

Packaged capacitors should be kept in clean, ventilated, dry coffers, not near the heat source, not subject to direct sunlight, is strictly prohibited and chemical reagents, acid and harmful gas storage together.

Capacitor at a temperature within the range 20 ~ 25 ℃, humidity less than 50% of the state of storage for one year.

APPROVAL SHEETS FOR SAFETY STANDARD OF TYPE SMCB-P2

| Approval marks | Standards | Certificate | Climatic Category | Rated Cap. | Rated Voltage |
|---|---|---|---|---|---|
| CQC | GB/T3667.1- 2005 | CQC12002085936 | 40/85/21 | 1.0μF ~ 5μF | 450Vac |

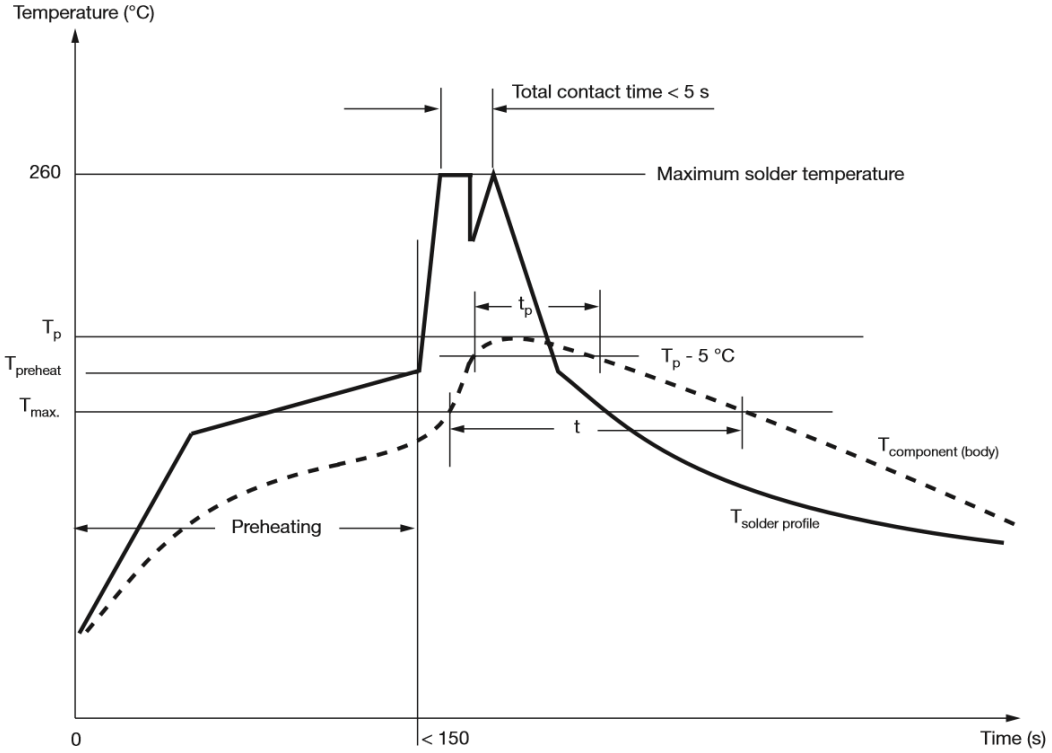
## ■ Soldering Guidelines for Film Capacitors

WDC recommends that users observe the following guidelines for soldering our film capacitors. Adherence to these recommendations will help to safeguard product specifications and reliability while preventing damage to the capacitors during soldering.

**SOLDERING GUIDELINES AND RECOMMENDED WAVE SOLDERING PROFILE**

With regard to the resistance to soldering heat and the solderability, our products comply with "IEC 60384-1" and the additional type specifications. The recommended wave soldering profile for our leaded components is defined as follows:

## ■ Wave Soldering Recommendations




Tp : Peak temperature of the component body (top)

Tmax : Maximum application temperature of the component

The PSL (Process Sensitivity Level) is classified according JEDEC standard J-STD-075 "Classification of Non-IC Electronic Components for Assembly Processes" and summarized in following tables per product family and pitch size of the component:

| SERIES | PRODUCT PITCH SIZE | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 22.5 mm | 27.5 mm | 31.5 mm | 37.5 mm | 41.5 mm | 52 mm | 61.5 mm | -- |
| SMCB | (1),(6) | (1),(6) | (1),(6) | (1),(6) | (1),(6) | (1),(6) | (1),(6) | -- |

(1) No risk

(2) Risk for parameter change if PSL is not strictly followed

(3) Risk for product damage if PSL is not strictly followed

(4) Temperature is measured at the body top and must be kept as follows:

During preheating: $T_{max.} \leq 100$ °C

During soldering: $T_p \leq 110$ °C, $t_p \leq 20$ s, $t \leq 30$ s

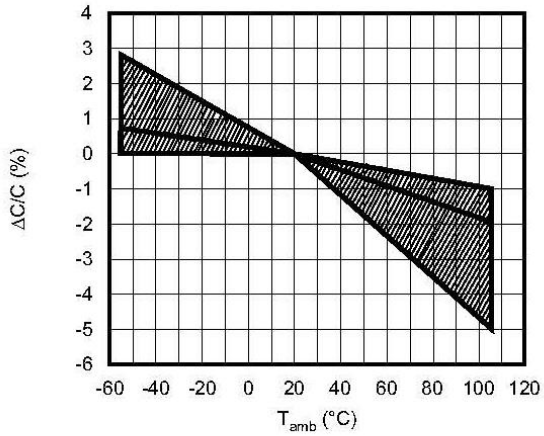
(5) Temperature is measured at the body top and must be kept as follows:

During preheating: $T_{max.} \leq 110$ °C

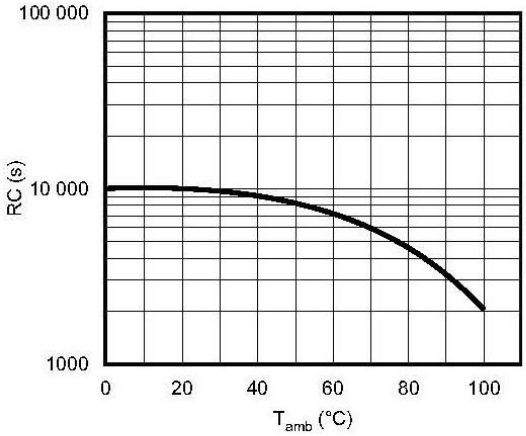
During soldering: $T_p \leq 120$ °C, $t_p \leq 20$ s, $t \leq 30$ s

(6) The component has a preheat limitation of 150 °C

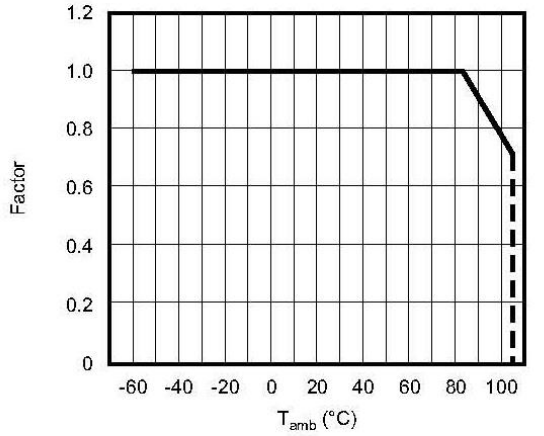
## ■ Characteristics



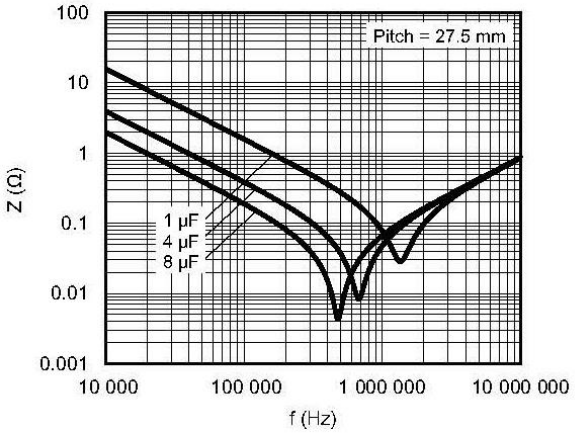

Capacitance as a function of ambient temperature (typical)



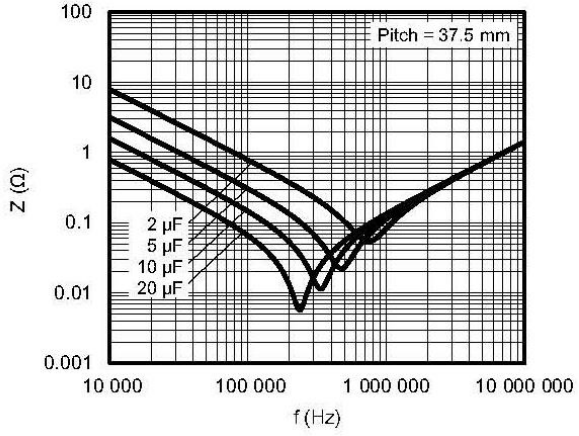

Insulation resistance as a function of ambient temperature (typical)



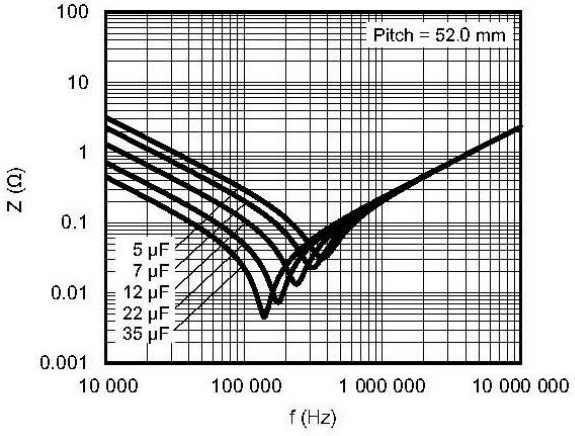

RMS voltage in function of temperature




Impedance vs. Frequency (typical)

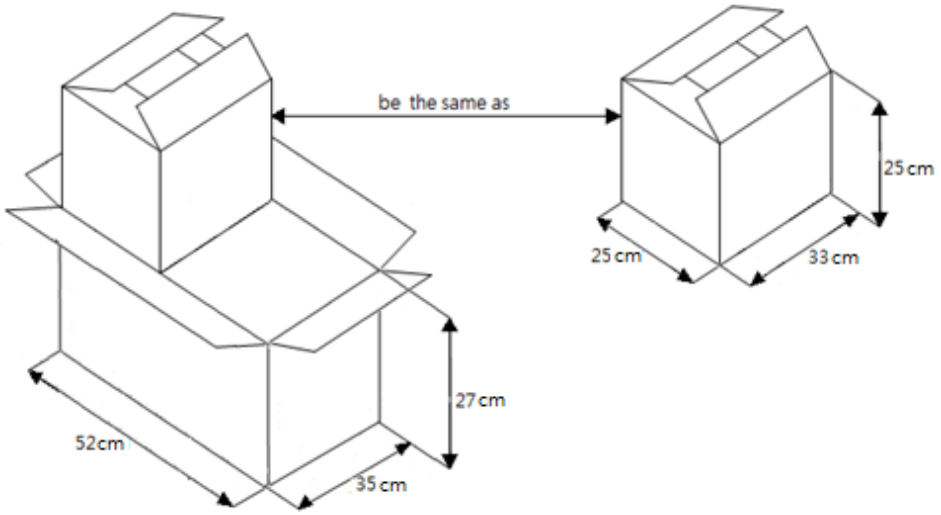



Impedance vs. Frequency (typical)




Impedance vs. Frequency (typical)

■ **Packaging**




| Size (mm) | Pcs / Bag | Pcs / Inner carton (L33:cm XH:25cm X T:25cm) | Pcs / Out box (L52:cm XH:27cm X T:35cm) |
|---|---|---|---|
| 26.5 * 15 * 6 | 200 | 2000 | 4000 |
| 26.5 * 17 * 8.5 | 200 | 2000 | 4000 |
| 26.5 * 19 * 10 | 200 | 1600 | 3200 |
| 26 * 20 * 11 | 200 | 1400 | 2800 |
| 26 * 21.5 * 12 | 200 | 1200 | 2400 |
| 26.5 * 23 * 13 | 200 | 1200 | 2400 |