

### Surface Mount Type

Series: **EB(Large Can Size)** Type: **V**



#### ■ Features

- Endurance : 105 °C 3000 h to 5000 h
- RoHS directive compliant

#### ■ Specifications

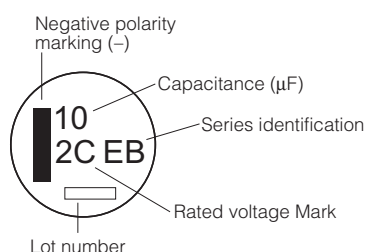
|                                    |                                                                                                                                                                                             |                                    |     |     |     |     |     |                             |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-----|-----|-----|-----|-----|-----------------------------|
| Category Temp. Range               | -25 °C to +105 °C                                                                                                                                                                           |                                    |     |     |     |     |     |                             |
| Rated W.V. Range                   | 160 V.DC to 450 V.DC                                                                                                                                                                        |                                    |     |     |     |     |     |                             |
| Nominal Cap. Range                 | 2.2 µF to 100 µF                                                                                                                                                                            |                                    |     |     |     |     |     |                             |
| Capacitance Tolerance              | ±20 % (120 Hz/+20 °C)                                                                                                                                                                       |                                    |     |     |     |     |     |                             |
| DC Leakage Current                 | I ≤ 0.06 CV +10 (µA) After 2 minutes                                                                                                                                                        |                                    |     |     |     |     |     |                             |
| tan δ                              | Please see the attached standard products list                                                                                                                                              |                                    |     |     |     |     |     |                             |
| Characteristics at Low Temperature | W.V. (V)                                                                                                                                                                                    | 160                                | 200 | 250 | 350 | 400 | 450 | (Impedance ratio at 120 Hz) |
|                                    | Z(-25 °C) / Z(+20 °C)                                                                                                                                                                       | 2                                  | 2   | 3   | 5   | 6   | 6   |                             |
| Endurance                          | After the life test with DC rated working voltage at +105 °C±2 °C for 5000 hours, the capacitors shall meet the limits specified below. (Size code G13 : 3000 hours, G17 : 4000 hours)      |                                    |     |     |     |     |     |                             |
|                                    | Capacitance change                                                                                                                                                                          | ±20 % of initial measured value    |     |     |     |     |     |                             |
|                                    | tan δ                                                                                                                                                                                       | ≤ 200 % of initial specified value |     |     |     |     |     |                             |
|                                    | DC leakage current                                                                                                                                                                          | ≤ initial specified value          |     |     |     |     |     |                             |
| Shelf Life                         | After storage for 1000 hours at +105 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) |                                    |     |     |     |     |     |                             |
| Resistance to Soldering Heat       | After reflow soldering and then being stabilized at +20 °C, capacitors shall meet the following limits.                                                                                     |                                    |     |     |     |     |     |                             |
|                                    | Capacitance change                                                                                                                                                                          | ±10 % of initial measured value    |     |     |     |     |     |                             |
|                                    | tan δ                                                                                                                                                                                       | ≤ initial specified value          |     |     |     |     |     |                             |
|                                    | DC leakage current                                                                                                                                                                          | ≤ initial specified value          |     |     |     |     |     |                             |

#### ■ Frequency correction factor for ripple current

| Rated Voltage (V.DC) |    |     | Frequency (Hz) |      |                      |                          |
|----------------------|----|-----|----------------|------|----------------------|--------------------------|
|                      |    |     | 120            | 1 k  | $10 k \leq f < 30 k$ | $30 k \leq f \leq 100 k$ |
| 160                  | to | 250 | 0.55           | 0.85 | 0.90                 | 1.00                     |
| 350                  | to | 450 | 0.50           | 0.80 | 0.90                 | 1.00                     |

#### ■ Marking

Example : 160 V 10 μF

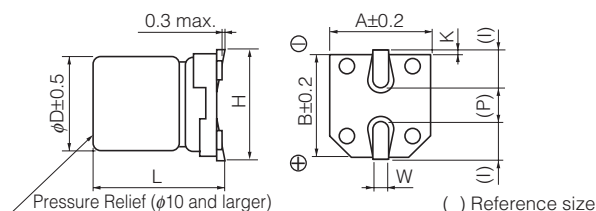


#### Rated Voltage Mark

|    |       |    |       |
|----|-------|----|-------|
| 2C | 160 V | 2V | 350 V |
| 2D | 200 V | 2G | 400 V |
| 2E | 250 V | 2W | 450 V |

#### ■ Dimensions in mm (not to scale)

(Unit : mm)



| Size code | D    | L        | A,B  | H         | I   | W       | P   | K         |
|-----------|------|----------|------|-----------|-----|---------|-----|-----------|
| G13       | 10.0 | 13.5±0.5 | 10.3 | 12.0 max. | 3.5 | 0.9±0.2 | 4.6 | 0.70±0.20 |
| G17       | 10.0 | 16.5±0.5 | 10.3 | 12.0 max. | 3.5 | 0.9±0.2 | 4.6 | 0.70±0.20 |
| H16       | 12.5 | 16.5±0.5 | 13.5 | 15.0 max. | 4.7 | 0.9±0.2 | 4.4 | 0.70±0.30 |
| J16       | 16.0 | 16.5±0.5 | 17.0 | 19.0 max. | 5.5 | 1.2±0.3 | 6.7 | 0.70±0.30 |
| J21       | 16.0 | 21.5±0.5 | 17.0 | 19.0 max. | 5.5 | 1.2±0.3 | 6.7 | 0.70±0.30 |
| K16       | 18.0 | 16.5±0.5 | 19.0 | 21.0 max. | 6.7 | 1.2±0.3 | 6.7 | 0.70±0.30 |
| K21       | 18.0 | 21.5±0.5 | 19.0 | 21.0 max. | 6.7 | 1.2±0.3 | 6.7 | 0.70±0.30 |

■ Standard Products

Endurance : 105 °C 5000 h (G13 : 3000 h, G17 : 4000 h)

| W.V. | Cap.<br>(±20 %) | Case size |        |              | Specification                                       |                                       |                      | Part No.<br>(RoHS:compliant) | Reflow | Min.<br>Packaging Q'ty |
|------|-----------------|-----------|--------|--------------|-----------------------------------------------------|---------------------------------------|----------------------|------------------------------|--------|------------------------|
|      |                 | Dia.      | Length | Size<br>Code | Ripple<br>Current<br>(100 kHz)<br>(+105 °C)<br>(mA) | $\tan \delta$<br>(120 Hz)<br>(+20 °C) | Endurance<br>(hours) |                              |        | Taping<br>(pcs)        |
| (V)  | (μF)            | (mm)      | (mm)   |              |                                                     |                                       |                      |                              |        |                        |
| 160  | 10              | 10        | 13.5   | G13          | 70                                                  | 0.15                                  | 3000                 | EEVEB2C100Q                  | (4)    | 250                    |
|      | 33              | 12.5      | 16.5   | H16          | 470                                                 | 0.15                                  | 5000                 | EEVEB2C330SQ                 | (4)    | 150                    |
|      | 47              | 16        | 16.5   | J16          | 600                                                 | 0.15                                  | 5000                 | EEVEB2C470SM                 | (4)    | 125                    |
|      | 68              | 16        | 21.5   | J21          | 750                                                 | 0.15                                  | 5000                 | EEVEB2C680M                  | (4)    | 75                     |
|      |                 | 18        | 16.5   | K16          | 750                                                 | 0.15                                  | 5000                 | EEVEB2C680SM                 | (4)    | 125                    |
|      | 100             | 18        | 21.5   | K21          | 1060                                                | 0.15                                  | 5000                 | EEVEB2C101M                  | (4)    | 75                     |
| 200  | 10              | 10        | 16.5   | G17          | 80                                                  | 0.15                                  | 4000                 | EEVEB2D100Q                  | (4)    | 200                    |
|      | 22              | 12.5      | 16.5   | H16          | 470                                                 | 0.15                                  | 5000                 | EEVEB2D220SQ                 | (4)    | 150                    |
|      | 33              | 16        | 16.5   | J16          | 600                                                 | 0.15                                  | 5000                 | EEVEB2D330SM                 | (4)    | 125                    |
|      | 47              | 18        | 16.5   | K16          | 600                                                 | 0.15                                  | 5000                 | EEVEB2D470SM                 | (4)    | 125                    |
|      | 68              | 16        | 21.5   | J21          | 750                                                 | 0.15                                  | 5000                 | EEVEB2D680M                  | (4)    | 75                     |
|      | 100             | 18        | 21.5   | K21          | 1060                                                | 0.15                                  | 5000                 | EEVEB2D101M                  | (4)    | 75                     |
| 250  | 10              | 10        | 16.5   | G17          | 88                                                  | 0.15                                  | 4000                 | EEVEB2E100Q                  | (4)    | 200                    |
|      | 22              | 16        | 16.5   | J16          | 560                                                 | 0.15                                  | 5000                 | EEVEB2E220SM                 | (4)    | 125                    |
|      | 33              | 18        | 16.5   | K16          | 560                                                 | 0.15                                  | 5000                 | EEVEB2E330SM                 | (4)    | 125                    |
|      | 47              | 16        | 21.5   | J21          | 710                                                 | 0.15                                  | 5000                 | EEVEB2E470M                  | (4)    | 75                     |
|      | 68              | 18        | 21.5   | K21          | 990                                                 | 0.15                                  | 5000                 | EEVEB2E680M                  | (4)    | 75                     |
| 350  | 3.3             | 10        | 13.5   | G13          | 38                                                  | 0.20                                  | 3000                 | EEVEB2V3R3Q                  | (4)    | 250                    |
|      | 4.7             | 10        | 16.5   | G17          | 50                                                  | 0.20                                  | 4000                 | EEVEB2V4R7Q                  | (4)    | 200                    |
|      | 10              | 16        | 16.5   | J16          | 270                                                 | 0.20                                  | 5000                 | EEVEB2V100SM                 | (4)    | 125                    |
|      | 22              | 18        | 16.5   | K16          | 350                                                 | 0.20                                  | 5000                 | EEVEB2V220SM                 | (4)    | 125                    |
|      | 33              | 16        | 21.5   | J21          | 480                                                 | 0.20                                  | 5000                 | EEVEB2V330M                  | (4)    | 75                     |
|      | 47              | 18        | 21.5   | K21          | 670                                                 | 0.20                                  | 5000                 | EEVEB2V470M                  | (4)    | 75                     |
| 400  | 3.3             | 10        | 13.5   | G13          | 40                                                  | 0.24                                  | 3000                 | EEVEB2G3R3Q                  | (4)    | 250                    |
|      | 4.7             | 10        | 16.5   | G17          | 50                                                  | 0.24                                  | 4000                 | EEVEB2G4R7Q                  | (4)    | 200                    |
|      | 10              | 16        | 16.5   | J16          | 250                                                 | 0.24                                  | 5000                 | EEVEB2G100SM                 | (4)    | 125                    |
|      | 22              | 16        | 21.5   | J21          | 410                                                 | 0.24                                  | 5000                 | EEVEB2G220M                  | (4)    | 75                     |
|      | 33              | 18        | 21.5   | K21          | 600                                                 | 0.24                                  | 5000                 | EEVEB2G330M                  | (4)    | 75                     |
| 450  | 2.2             | 10        | 13.5   | G13          | 29                                                  | 0.24                                  | 3000                 | EEVEB2W2R2Q                  | (4)    | 250                    |
|      | 3.3             | 10        | 16.5   | G17          | 41                                                  | 0.24                                  | 4000                 | EEVEB2W3R3Q                  | (4)    | 200                    |
|      | 4.7             | 12.5      | 16.5   | H16          | 49                                                  | 0.24                                  | 5000                 | EEVEB2W4R7SQ                 | (4)    | 150                    |
|      | 10              | 18        | 16.5   | K16          | 310                                                 | 0.24                                  | 5000                 | EEVEB2W100SM                 | (4)    | 125                    |
|      | 22              | 18        | 21.5   | K21          | 560                                                 | 0.24                                  | 5000                 | EEVEB2W220M                  | (4)    | 75                     |

The taping dimensions are explained on EE188 of our Catalog.

- Please refer to the page of "Reflow Profile" and "The Taping Dimensions".
- When requesting vibration-proof product, please put the last "V" instead to "Q or M"

## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9