



Press Release

Nippon Chemi-Con Corporation
October 2, 2019

Addition of Small-Size, High-Capacitance Products to the SMD Type Aluminum Electrolytic Capacitors MHS Series

Nippon Chemi-Con will expand its product lineup by adding small-size, high-capacitance products with diameters of $\phi 8$ mm and $\phi 10$ mm to the SMD type aluminum electrolytic capacitors MHS Series (currently available in $\phi 12.5$, $\phi 16$ and $\phi 18$ mm).

MHS Series products guarantee a long life at 125°C ($\phi 8$ to $\phi 10$ mm: 3,000 hours, $\phi 12.5$ to $\phi 18$ mm: 5,000 hours). The Series has a capacitance up to 3.8 times higher than that of conventional products of the same size (MVH Series) and ensures high temperature reflow (JEDEC). They are suitable for the communications infrastructure market such as mobile phone base stations and the automotive electronics market.

In the 5th generation mobile communications system (5G), many small mobile phone base stations (small cells) are installed in increments of tens of meters to increase the capacity and speed of communication. This requires smaller capacitors. Base stations operate 24 hours a day and are difficult to maintain when installed in remote areas. Therefore, aluminum electrolytic capacitors are required to have high temperature and long-life performances. High temperature reflow capability is also required due to simultaneous mounting with many other surface mount products.

The development of autonomous driving technology and ADAS (Advanced Driver Assistance System) is progressing rapidly, and ECU (Electronic Control Unit) plays an important role. ADAS-based ECUs (example: camera ECU) are located close to sensors and tend to be exposed to direct sunlight. They are also sealed due to waterproof and dustproof structures, so the inside of an ECU is a high temperature environment. Furthermore, market demand for higher capacitance for measures against momentary power failure is increasing.

To meet the requirements of the communications infrastructure market and automotive electronics market, we are adding sizes $\phi 8$ mm and $\phi 10$ mm to our small, high-capacitance products that are compatible with high temperatures and high temperature reflow.

We have already commercialized the MVH Series as high temperature compatible products (125°C) sized $\phi 8$ to $\phi 18$ mm. The newly developed MHS Series has a maximum 3.8 times higher capacitance compared to the MVH Series, achieving the industry's highest capacitance in products guaranteeing long life at 125°C . This was achieved by making the following two improvements: (1) increasing the aluminum electrode foil capacitance (increasing surface area) using a thinner separator than the MVH Series, and (2) using the newly developed high-capacitance electrode foil.

We have achieved both long life at 125°C and high-temperature reflow by adopting a high-performance electrolyte with excellent low-temperature characteristics, low

vapor pressure and low evaporation at high temperatures, as well as a newly developed sealing rubber that suppresses the evaporation of electrolyte at high temperatures.

[Main Specifications]

- Category temperature range: -40°C to +125°C
- Rated voltage range: φ8 to φ10 - 16 to 80 V
φ12.5 to φ18 - 16 to 100 V
- Capacitance range: 62 to 6,200μF
- Case size: φ8 x 10 L
φ10 x 10 L
φ12.5 x 13.5 L, φ12.5 x 16 L
φ16 x 16.5 L, φ16 x 21.5 L
φ18 x 16.5 L, φ18 x 21.5 L (8 sizes)
- Endurance: φ8 to φ10 - guarantees 3,000 hours at DC 125°C
φ12.5 to φ18 - guarantees 5,000 hours at DC 125°C
- Representative value of initial ESR
(Comparison of MVH and MHS, rates in the MHS columns are decline rates of ESR compared to MVH)

Unit: Ω_{max}/100kHz, 20°C

	35V		63V		80V	
	MVH	MHS	MVH	MHS	MVH	MHS
φ8 x 10L	0.40	0.17 -58%	0.70	0.37 -47%	0.75	0.37 -51%
φ10 x 10L	0.30	0.12 -60%	0.50	0.25 -50%	0.55	0.25 -55%

- Representative value of rated capacitance
(Comparison of MVH and MHS, rates in the MHS columns are rise rates of Cap compared to MVH)

Unit: μF/120Hz, 20°C

	35V		63V		80V	
	MVH	MHS	MVH	MHS	MVH	MHS
φ8 x 10L	100	300 300%	47	100 213%	33	62 188%
φ10 x 10L	220	470 214%	47	180 383%	47	100 213%

- Recommended reflow conditions
 - φ8 x 10 L, φ10 x 10 L
Peak temperature: 250°C, 40s at 245°C and higher, 90s at 217°C and higher, 3 times or less
 - φ12.5 x 13.5 L to φ18 x 21.5 L
Peak temperature: 245°C, 20s at 240°C and higher, 70s at 217°C and higher, 3 times or less

[Samples and Mass Production]

Samples: March 2020

Mass production: October 2020

[Production Sites]

φ8 to φ10 mm: Chemi-Con Miyagi Corp.

φ12.5 to φ18 mm: Chemi-Con Iwate Corp.

[Product Appearance]

