

SMD Aluminum Hybrid Electrolytic Capacitors

AHC Series



FEATURES

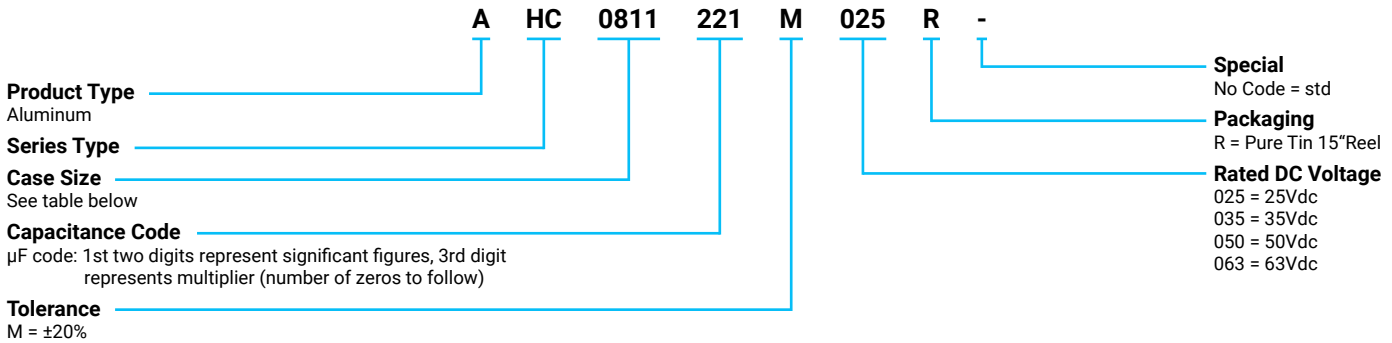
- Low ESR
- High Ripple Current Resistance
- 125°C, 4000 hours
- RoHS compliant



APPLICATIONS

- Commercial/Industrial power supply applications requiring high capacitance in energy-dense, in small-volume packages with a low ESR

HOW TO ORDER



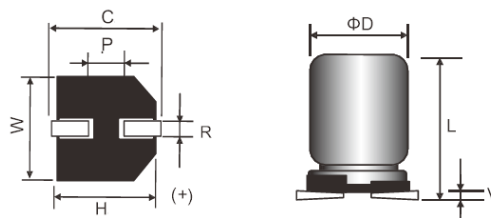
CASE DIMENSIONS millimeters (inches)

Code	D±0.50 (0.020)	L±0.50 (0.020)	W±0.20 (0.008)	H±0.20 (0.008)	C±0.20 (0.008)	R	P±0.30 (0.012)	V max	Typical Weight (g)
0609	6.30 (0.248)	9.30 (0.366)	6.60 (0.260)	6.60 (0.260)	7.30 (0.287)	0.50 - 0.80 (0.020 - 0.031)	2.00 (0.080)	0.30 (0.012)	0.39
0811	8.00 (0.315)	11.50 (0.453)	8.30 (0.327)	8.30 (0.327)	9.00 (0.354)	0.70 - 1.10 (0.028 - 0.043)	3.20 (0.126)	0.30 (0.012)	1.12
1010	10.00 (0.394)	10.50 (0.413)	10.30 (0.406)	10.30 (0.406)	11.00 (0.433)	0.70 - 1.30 (0.028 - 0.051)	4.50 (0.177)	0.30 (0.012)	1.17
1012	10.00 (0.394)	12.50 (0.492)	10.30 (0.406)	10.30 (0.406)	11.00 (0.433)	0.70 - 1.30 (0.028 - 0.051)	4.50 (0.177)	0.30 (0.012)	1.18

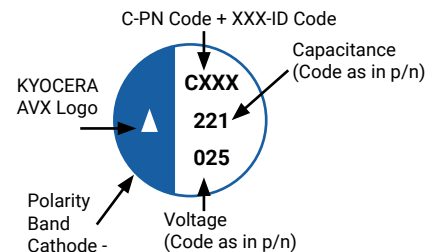
TECHNICAL SPECIFICATIONS

Category Temperature Range:	-55°C to + 125°C	
Capacitance Range:	At 25°C, 120Hz	15µF to 470µF
Capacitance Tolerance:	At 25°C, 120Hz	±20%
Dissipation Factor (%):	Measurement Frequency: 120Hz at 25°C	Please see the ratings and part number reference table below
Leakage Current:	After 2 minutes at rated working voltage at 25°C*	$I \leq 0.01CV$ or $3\mu A$, whichever is greater

* Note: In the case of an anomalous reading, re-measure the leakage current after following voltage treatment:
Voltage treatment: DC rated voltage to be applied to the capacitors for 120 minutes at 125°C.



MARKING



SMD Aluminum Hybrid Electrolytic Capacitors

AHC Series



CAPACITANCE AND RATED VOLTAGE RANGE (FIGURES DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V _R)			
μF	Code	25V	35V	50V	63V
15	150				0609
22	220			0609	0609
33	330			0609	
47	470		0609	0811	
68	680		0609		
100	101	0609			
220	221	0811	1012		
470	471	1010,1012			

Released ratings

RATINGS & PART NUMBER REFERENCE

Part No.	Case Size	Capacitance (μF)	Rated Voltage (V)	DCL Max. (μA)	DF Max. (%)	ESR Max. @ 100kHz (mΩ)	100kHz RMS Current (mA)/125°C
25 Volt							
AHC0609101M025R	0609	100	25	25	12	30	1400
AHC0811221M025R	0811	220	25	55	12	27	1600
AHC1010471M025R	1010	470	25	117.5	12	20	2000
AHC1012471M025R	1012	470	25	117.5	12	25	2300
35 Volt							
AHC0609470M035R	0609	47	35	16.5	12	60	900
AHC0609680M035R	0609	68	35	23.8	12	40	1200
AHC1012221M035R	1012	220	35	77	12	30	1800
50 Volt							
AHC0609220M050R	0609	22	50	11	12	90	900
AHC0609330M050R	0609	33	50	16.5	12	40	1100
AHC0811470M050R	0811	47	50	23.5	12	35	1100
63 Volt							
AHC0609150M063R	0609	15	63	9.5	12	100	800
AHC0609220M063R	0609	22	63	13.9	12	80	800

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2 volts. DCL is measured at rated voltage after 5 minutes.

FREQUENCY COEFFICIENT OF PERMISSIBLE RIPPLE CURRENT

Frequency	120Hz ≤ F(Hz) < 1K	1K ≤ F(Hz) < 10K	10K ≤ F(Hz) < 100K	100K(Hz) ≤ F
Coefficient	0.05	0.30	0.70	1.00

QUALIFICATION TABLE

Test	AHC series (Temperature range -55°C to +125°C)	
	Condition	Characteristics
Endurance	The following specifications shall be satisfied when the capacitors are restored to normal temperature after storing them for 2000 hours under no-load at 125±2°C. The rated voltage with ripple current is applied for 4000 hours at 125°C.	Visual Examination
		no visible damage
		ΔC/C
		≤ ±30% of the initial limit
		DF
Humidity Resistance (On-Load)	The following specifications shall be satisfied when the rated voltage is applied for 2000 hours at 85±2°C and 85 to 90% RH.	≤ 200% of the initial specified limit
		ESR
		≤ 200% of the initial specified limit
		DCL
		≤ Initial specified limit or less

SMD Aluminum Hybrid Electrolytic Capacitors

AHC Series

REFLOW

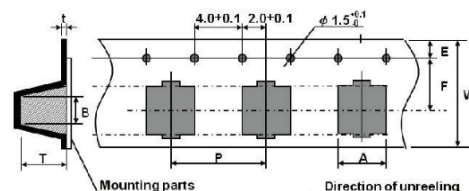
Peak Temperature	260°C, 10 sec. max.
Preheat Temperature	150°C to 180°C, 90 sec. max.
Duration at 200°C or higher	60 sec. max.
Duration at 230°C or higher	40 sec. max.
Reflow Number	Twice or less

STORAGE

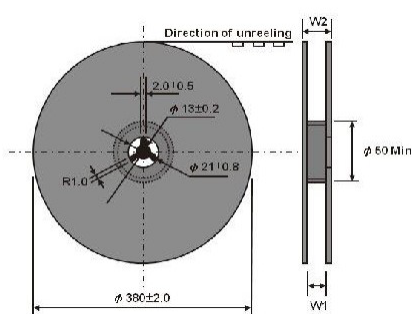
- It is recommended to keep capacitors between the ambient temperatures of 5°C to 35°C (If between 35 to 85°C, it should be less than three months), and the relative humidity of 75% or below.
- Confirm that the environment does not have any of the following conditions:
 - Damp conditions such as water, saltwater spray, or oil spray or fumes. High humidity or humidity condensation situations.
 - In an atmosphere filled with toxic gasses (such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, etc.).
 - Being exposed to direct sunlight, ozone, ultraviolet ray, or radiation.
 - Being exposed to acidic or alkaline solutions.
 - Under severe conditions where vibration and / or mechanical shock exceed the applicable ranges of the specification.
- Storage time:
 - Before unseal: within 1 year after delivery
 - After seal: within 1 month from opening

PACKAGE TAPE DIMENSIONS units (mm)

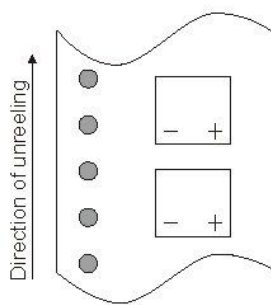
Size Code	A±0.20	B±0.20	W±0.30	F±0.10	E±0.10	P±0.10	t±0.10	T±0.20
0609	7.0	7.0	16.0	7.5	1.75	12.0	0.4	10.0
0811	8.7	8.7	24.0	11.5	1.75	16.0	0.4	12.0
1010	10.7	10.7	24.0	11.5	1.75	16.0	0.4	11.0
1012	10.7	10.7	24.0	11.5	1.75	16.0	0.4	13.0 - 13.5



REEL



POLARITY



DIMENSIONS units (mm)

Size Code	W1±1.00	W2±1.00	Qty./Reel
0609	18.0	22.0	800
0811	26.0	31.0	500
1010	26.0	31.0	500
1012	26.0	31.0	500

RECOMMENDED LAND PATTERN DIMENSION OF PCB

Size Code	A (mm)	B (mm)	C (mm)
0609	1.9	3.5	1.6
0811	3.1	4.2	2.2
1010	4.5	4.4	2.2
1012	4.5	4.4	2.2

