

SMD Aluminum Hybrid Electrolytic Capacitors

AHC Series



FEATURES

- Low ESR
- High Ripple Current Resistance
- 125°C, 4000 hours
- RoHS Compliance and Halogen-free



APPLICATIONS

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

HOW TO ORDER

A	HC	0810	221	M	025	R	-
Product Type Aluminum	Series Type	Case Size See table below	Capacitance Code µF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)	Tolerance M = ±20%	Rated DC Voltage 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc 063 = 63Vdc	Packaging R = 15" Reel (Material details available upon request)	Special No Code = std

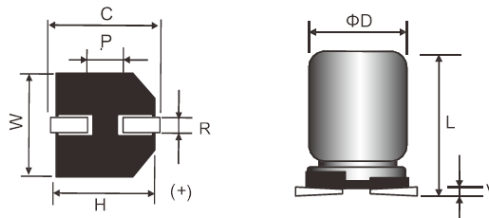
CASE DIMENSIONS millimeters (inches)

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)
0606	6.30 (0.248)	6.00 (0.236)	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)	0.32
0608	6.30 (0.248)	8.00 (0.315)	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)	0.41
0810	8.00 (0.315)	10.50 (0.413)	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)	0.76
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

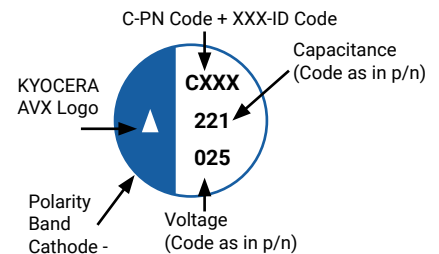
TECHNICAL SPECIFICATIONS

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



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CAPACITANCE AND RATED VOLTAGE RANGE (FIGURES DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V _R)			
μF	Code	25V	35V	50V	63V
15	150				0608
22	220			0608	0608
33	330			0608	
47	470		0606	0811	
68	680		0608		
100	101	0608			
220	221	0810	1010		
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	MSL
25 Volt								
AHC0608101M025R	0608	100	25	25	12	30	1400	1
AHC0810221M025R	0810	220	25	55	12	27	1600	1
AHC1010471M025R	1010	470	25	117.5	12	20	2500	1
AHC1012471M025R	1012	470	25	117.5	12	25	2000	1
35 Volt								
AHC0606470M035R	0606	47	35	16.5	10	60	900	1
AHC0608680M035R	0608	68	35	23.8	10	40	1200	1
AHC1010221M035R	1010	220	35	77	10	20	2000	1
50 Volt								
AHC0608220M050R	0608	22	50	11	10	90	900	1
AHC0608330M050R	0608	33	50	16.5	10	40	1100	1
AHC0811470M050R	0811	47	50	23.5	10	35	1600	1
63 Volt								
AHC0608150M063R	0608	15	63	9.5	8	80	800	1
AHC0608220M063R	0608	22	63	13.9	8	80	900	1

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 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	≦ 200% of the initial specified limit
		ESR	≦ 200% of the initial specified limit
		DCL	≦ Initial specified limit or less
High Temperature (On-Load)	The requirements for the Endurance characteristics listed above shall be satisfied when the capacitors are restored to normal temperature after storing them for 2000 hours under no-load at 125±2°C.		
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.	Visual Examination	≦ no visible damage
		ΔC/C	≦ ±30% of the initial limit
		DF	≦ 200% of the initial specified limit
		ESR	≦ 200% of the initial specified limit
		DCL	≦ Initial specified limit or less

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

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STORAGE

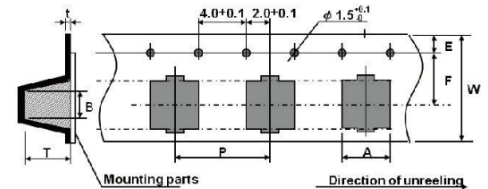
- It is recommended to keep capacitors between the ambient temperatures of 5°C to 35°C (if between 35°C to 85°C, it should be less than three months) and the relative humidity of 75% or below.
- Confirm that the environment does not have any of the following conditions:
 - Damp conditions such as water, saltwater spray, 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.
- Shelf life

Years		
0-1	1-2	>2
Ok	Ok	Performance check

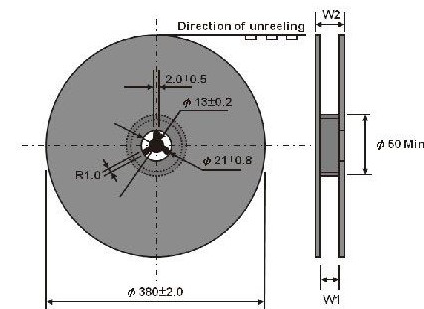
- Years from manufacturing date code.
- KYOCERA AVX does not guarantee or assume responsibility for product behavior after 3 years of storage.
- Ageing procedure should be performed as follows:
 - Connect the capacitor in series to a 1kΩ resistor, and apply half rated voltage for 2 hours.
 - After half rated voltage for 2 hours applied, increase and apply rated voltage for another 2 hours.

PACKAGE TAPE DIMENSIONS UNITS (MM)

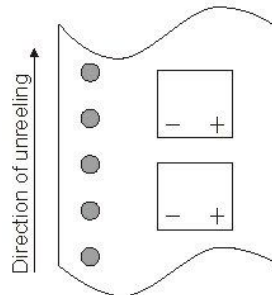
Size Code	A±0.20	B±0.20	W±0.30	F±0.10	E±0.10	P±0.10	t±0.10	T±0.20
0606	7.0	7.0	16.0	7.5	1.75	12.0	0.4	8.0
0608	7.0	7.0	16.0	7.5	1.75	12.0	0.4	8.0
0810	8.7	8.7	24.0	11.5	1.75	16.0	0.4	11.0
0811	8.7	8.7	24.0	11.5	1.75	16.0	0.4	12.0
1010	10.7	10.7	24.0	11.5	1.75	16.0	0.4	11.0
1012	10.7	10.7	24.0	11.5	1.75	16.0	0.4	13.0 - 13.5



REEL



POLARITY



DIMENSIONS units (mm)

Size Code	W1±1.00	W2±1.00	Qty./Reel
0606	18.0	22.0	800
0608	18.0	22.0	800
0810	18.0	22.0	500
0811	18.0	22.0	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)
0606	1.9	3.5	1.6
0608	1.9	3.5	1.6
0810	3.1	4.2	2.2
0811	3.1	4.2	2.2
1010	4.5	4.4	2.2
1012	4.5	4.4	2.2

