SMD Aluminum Hybrid Electrolytic Capacitors

AHA Series



FEATURES

- Low ESR
- High Voltage, Long Life
- 105°C, 5000 to 10,000 hours
- RoHS Compliance and Halogen-free

LEAD-FREE
LEAD-FREE COMPATIBLE COMPONENT

RoHS COMPLIANT

APPLICATIONS

- Industrial Equipment
- Base Station Equipment, etc.

HOW TO ORDER

A	HA	0810	271	M	016	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** 016 = 16Vdc, 025 = 25Vdc, 035 = 35Vdc, 040 = 40Vdc, 050 = 50Vdc, 063 = 63Vdc, 080 = 80Vdc, 100 = 100Vdc, 125 = 125Vdc	**Packaging** R = 15" Reel (Material details available upon request)	**Special** No Code = std

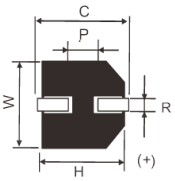
CASE DIMENSIONS millimeters (inches)

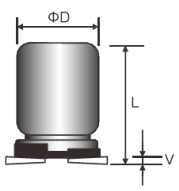
Code	D±0.50 (0.020)	L±0.50 (0.020)	W±0.20 (0.008)	H±0.20 (0.008)	C±0.20 (0.008)	R	P±0.30 (0.012)	V max	Typical Weight (g)
0608	6.30 (0.248)	8.00 (0.315)	6.60 (0.260)	6.60 (0.260)	7.30 (0.287)	0.50 - 0.80 (0.020 - 0.031)	2.00 (0.080)	0.30 (0.012)	0.41
0810	8.00 (0.315)	10.50 (0.413)	8.30 (0.327)	8.30 (0.327)	9.00 (0.354)	0.70 - 1.10 (0.028 - 0.043)	3.20 (0.126)	0.30 (0.012)	0.87
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)	1.38
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)	1.38

TECHNICAL SPECIFICATIONS

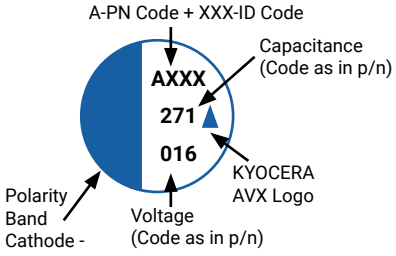
Category Temperature Range:	-55°C to + 105°C	
Capacitance Range:	At 25°C, 120Hz	10µF to 560µF
Capacitance Tolerance:	At 25°C, 120Hz	±20%
Dissipation Factor (%)	Measurement Frequency: 120Hz at 25°C	Please see the ratings and part number reference table below
Leakage Current:	After 2 minutes at rated working voltage at 25°C*	I ≦ 0.01CV or 3µA, 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 105°C.





MARKING



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CAPACITANCE AND RATED VOLTAGE RANGE (FIGURES DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V_R)								
µF	Code	16V	25V	35V	40V	50V	63V	80V	100V	125V
10	100						0608		1010	1010
12	120							1010	1010	
15	150					0608		1010	1012	
18	180							1012		
22	220						0810			
27	270		0608		0608					
33	330					0810	0810, 1010			
39	390							1010		
47	470			0608			1010			
56	560				0810	1010	1012		1012	
68	680		0608							
82	820					1012				
100	101			0810	1010	1012				
120	121	0608			1012					
150	151		0810	1010						
220	221			1012						
270	271	0810	1010							
330	331		1012							
390	391			1010						
470	471	1010								
560	561	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)/105°C	MSL
16 Volt								
AHA0608121M016R	0608	120	16	19	16	40	1500	1
AHA0810271M016R	0810	270	16	43	16	26	2000	1
AHA1010471M016R	1010	470	16	75	16	21	2600	1
AHA1012561M016R	1012	560	16	90	16	15	3000	1
25 Volt								
AHA0608270M025R	0608	27	25	7	16	70	1200	1
AHA0608680M025R	0608	68	25	17	16	45	1400	1
AHA0810151M025R	0810	150	25	38	16	27	1900	1
AHA1010271M025R	1010	270	25	68	16	22	2500	1
AHA1012331M025R	1012	330	25	83	16	16	2900	1
35 Volt								
AHA0608470M035R	0608	47	35	16	16	60	1300	1
AHA0810101M035R	0810	100	35	35	16	30	1800	1
AHA1010151M035R	1010	150	35	53	16	23	2400	1
AHA1012221M035R	1012	220	35	77	16	17	2800	1
AHA1010391M035R	1010	390	35	137	16	20	2500	1
40 Volt								
AHA0608270M040R	0608	27	40	11	16	70	1200	1
AHA0810560M040R	0810	56	40	22	16	32	1700	1
AHA1010101M040R	1010	100	40	40	16	24	2400	1
AHA1012121M040R	1012	120	40	48	16	18	2700	1
50 Volt								
AHA0608150M050R	0608	15	50	8	16	80	1200	1
AHA0810330M050R	0810	33	50	17	16	35	1600	1
AHA1010560M050R	1010	56	50	28	16	25	2300	1
AHA1012820M050R	1012	82	50	41	16	19	2600	1
AHA1012101M050R	1012	100	50	50	16	25	2000	1

All technical data relates to an ambient temperature of +25C. 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.

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SMD Aluminum Hybrid Electrolytic Capacitors

AHA Series

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)/105°C	MSL
63 Volt								
AHA0608100M063R	0608	10	63	6	16	100	1000	1
AHA0810220M063R	0810	22	63	14	16	40	1500	1
AHA0810330M063R	0810	33	63	21	16	40	1500	1
AHA1010330M063R	1010	33	63	21	16	30	2100	1
AHA1010470M063R	1010	47	63	30	16	30	2100	1
AHA1012560M063R	1012	56	63	35	16	22	2400	1
80 Volt								
AHA1010120M080R	1010	12	80	10	16	70	1600	1
AHA1010150M080R	1010	15	80	12	16	70	1600	1
AHA1012180M080R	1012	18	80	14	16	50	1800	1
AHA1010390M080R	1010	39	80	31	16	70	1600	1
100 Volt								
AHA1010100M100R	1010	10	100	10	16	80	1400	1
AHA1010120M100R	1010	12	100	12	16	80	1400	1
AHA1012150M100R	1012	15	100	15	16	80	1600	1
AHA1012560M100R	1012	56	100	56	16	60	1100	1
125 Volt								
AHA1010100M125R	1010	10	125	13	16	90	1200	1

All technical data relates to an ambient temperature of +25C. 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

Capacitance Range	100Hz ≦ F(Hz) < 1K	1K ≦ F(Hz) < 10K	10K ≦ F(Hz) < 100K	100K(Hz) ≦ F
4.7 < C ≦ 33	0.05	0.32	0.67	1.00
33 < C	0.10	0.35	0.70	1.00

QUALIFICATION TABLE

Test	AHA series (Temperature range -55°C to +105°C)		
	Condition	Characteristics	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 5000 to 10,000 hours at 105°C. Φ6.3 = 5000hrs, D≥ Φ8 = 10,000hrs	**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
Damp Heat (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjection them to store at 60°C, 90 to 95% RH for 1000 hours, without DC applied.	**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
Surge Voltage	The capacitors shall be subjected to 1000 cycles each consisting of charge with the surge voltages specified at 15-35°C for 30 seconds. Through a protective resistor (R = 1kΩ) and discharge for 5 minutes 30 seconds.	**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

Voltage Range (V)	16 - 63	80 - 125
Peak Temperature	260°C, 5 sec. max.	250°C, 5 sec. max.
Preheat Temperature	120°C, 120 sec. max.	
Duration at 200°C or higher	100 sec. max.	100 sec. max.
Duration at 220°C or higher	80 sec. max.	80 sec. max.
Duration at 230°C or higher	40 sec. max.	40 sec. max.
Reflow Number	Twice or less	Twice or less

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STORAGE

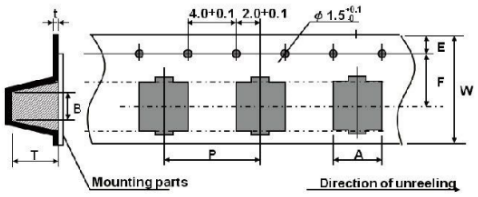
1. It is recommended to keep capacitors between the ambient temperatures of 5°C to 35°C (if between 35°C to 85°C, it should be less than three months) and the relative humidity of 75% or below.
2. Confirm that the environment does not have any of the following conditions:
   - Damp conditions such as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

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

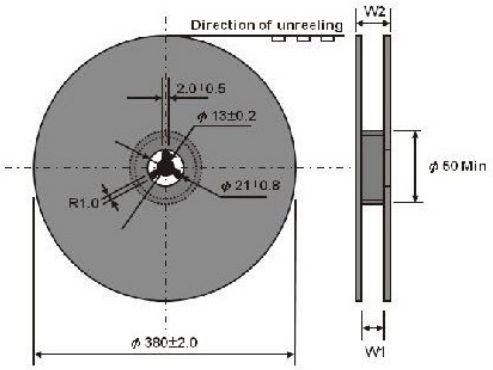
- Years from manufacturing date code.
- KYOCERA AVX does not guarantee or assume responsibility for product behavior after 3 years of storage.
- Ageing procedure should be performed as follows:
  - Connect the capacitor in series to a 1kΩ resistor, and apply half rated voltage for 2 hours.
  - After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

PACKAGE TAPE DIMENSIONS units (mm)

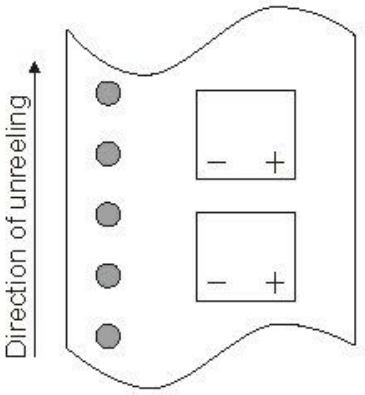
Size Code	A±0.20	B±0.20	W±0.30	F±0.10	E±0.10	P±0.10	t±0.10	T±0.20
0608	7.0	7.0	16.0	7.5	1.75	12.0	0.4	8.2
0810	8.7	8.7	24.0	11.5	1.75	16.0	0.4	11.0
1010	10.7	10.7	24.0	11.5	1.75	16.0	0.4	11.0
1012	10.7	10.7	24.0	11.5	1.75	16.0	0.4	13.0 - 13.5



REEL



POLARITY

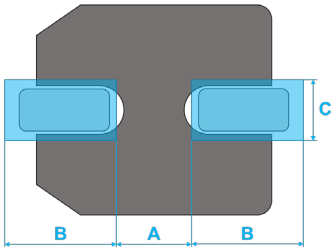


DIMENSIONS units (mm)

Size Code	W1±1.00	W2±1.00	Qty./Reel
0608	18.0	22.0	1000
0810	26.0	30.0	500
1010	26.0	30.0	500
1012	26.0	30.0	400

RECOMMENDED LAND PATTERN DIMENSION OF PCB

Size Code	A (mm)	B (mm)	C (mm)
0608	1.9	3.5	1.6
0810	3.1	4.2	2.2
1010	4.5	4.4	2.2
1012	4.5	4.4	2.2



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