AREA SERIES

2000 HOURS STANDARD TYPE

ALUMINUM SOLID ELECTROLYTIC CAPACITOR ▪ THT type
High ripple current up to 5.4A at 100kHz/105°C
Low ESR up to 10mΩ at 100kHz/20°C
Low drift and stable electrical characteristics over lifetime
No liquid electrolyte ▲ No dry-out effect
Lifetime with 2000 hours at 105°C

SPECIFICATION

Item		Characteristics
Category Temperature Range		-55°C to +105°C
Rated Voltage Range	V_R	2.5V_{DC} to 16V_{DC}
Rated Capacitance Range	C_R	100µF to 1000µF
Capacitance Tolerance ▪ At 20°C; 120Hz	ΔC	±20%
Surge Voltage ▪ At 105°C	V_S	$V_S = 1.15 \times V_R$
Dissipation Factor ▪ At 20°C; 120Hz	tan δ	0.1 max.
Leakage Current ▪ At 20°C; after 2min.	I_{LEAK}	Shall not exceed values in the electrical characteristics
Endurance	Test	105°C ▲ 2000hrs ▲ V_R applied
	Appearance	No significant damage
	$\Delta C/C_R$	≤ ±20% of the initial value
	tan δ	≤ 150% of the initial specified value
	ESR	≤ 150% of the initial specified value
	I_{LEAK}	≤ The initial specified value
Damp Heat (Steady State)	Test	60°C ▲ 90 to 95% RH ▲ 1000hrs ▪ No voltage applied
	Appearance	No significant damage
	$\Delta C/C_R$	≤ ±20% of the initial value
	tan δ	≤ 150% of the initial specified value
	ESR	≤ 150% of the initial specified value
	I_{LEAK}	≤ The initial specified value
Surge Voltage	Test	1000 cycles and each one includes charge with V_S specified at 105°C for 0.5min through a protective resistor (R=1kΩ) and discharge for 5.5min.
	Appearance	No significant damage
	$\Delta C/C_R$	≤ ±20% of the initial value
	tan δ	≤ 150% of the initial specified value
	ESR	≤ 150% of the initial specified value
	I_{LEAK}	≤ The initial specified value

ELECTRICAL CHARACTERISTICS

$V_{R\ DC}$ (V)	C_R (µF)	Size Code	Dimensions (mm)				I_{LEAK} 20°C 2min (µA)	ESR 20°C 100kHz (mΩ)	I_R 105°C 100kHz (mA)	Part Number Note 1
			D	L	P	Ød				
2.5	560	06X5	6.3	5	2.5	0.45	280	10	3900	2R5AREA561M06X5T
	820	08X8	8	8	3.5	0.6	410	10	5230	2R5AREA821M08X8T
6.3	220	06X5	6.3	5	2.5	0.45	277	15	3160	6R3AREA221M06X5T
	330	06X5	6.3	5	2.5	0.45	416	17	3390	6R3AREA331M06X5T
	470	08X8	8	8	3.5	0.6	592	15	4210	6R3AREA471M08X8T
	820	08A2	8	12	3.5	0.6	1033	12	4710	6R3AREA821M08A2T
16	100	06X5	6.3	5	2.5	0.45	320	24	2490	160AREA101M06X5T
	100	06X8	6.3	8	2.5	0.6	320	25	2820	160AREA101M06X8T
	1000	10A2	10	12	5	0.6	3200	12	5400	160AREA102M10A2T

Notes

1 **Part number shows the standard Tape/Ammo version**

APPLICATIONS

Input/Output Filter in DC/DC Converter	High Frequency Applications	Equipment with High Expected Life	Server & Industrial PC	Voltage Stabilizing in LED Panels
				

REFERENCE DATA ▲ 6R3AREA331M06X5T ▲ 330µF ▲ 6.3V ▲ 6.3 x 5.0mm

Fig. 1 ▪ Frequency Characteristics of ESR & |Z|

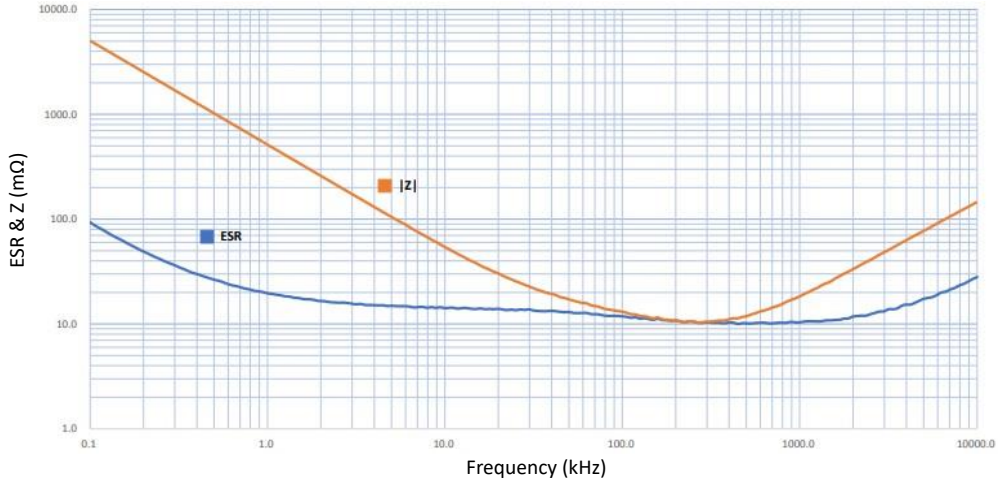


Fig. 2 ▪ Frequency Characteristics of C (µF)

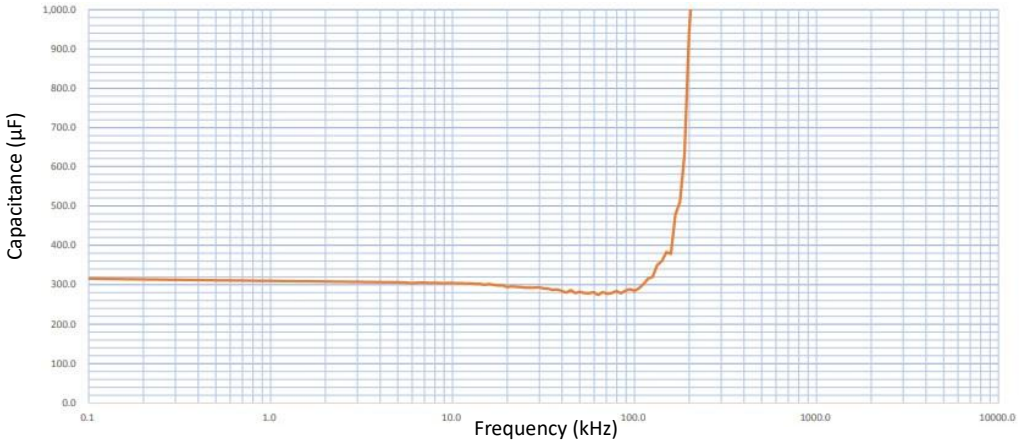
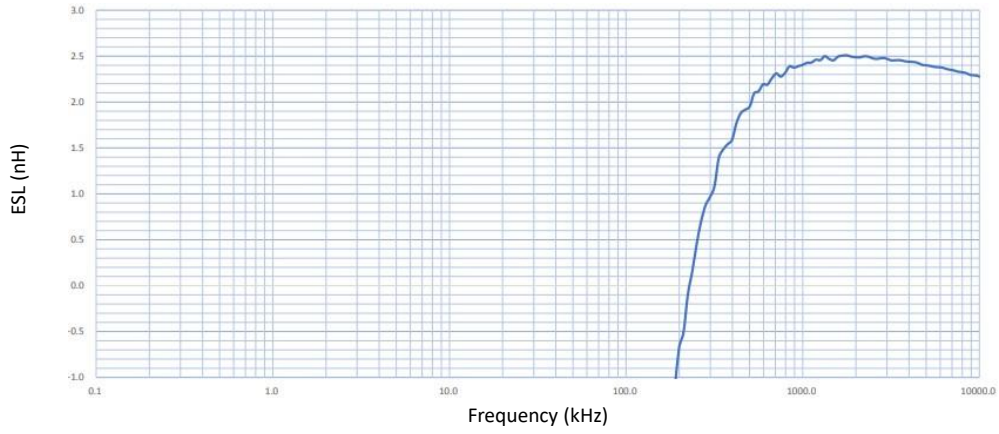


Fig. 3 ▪ Frequency Characteristics of ESL (nH)

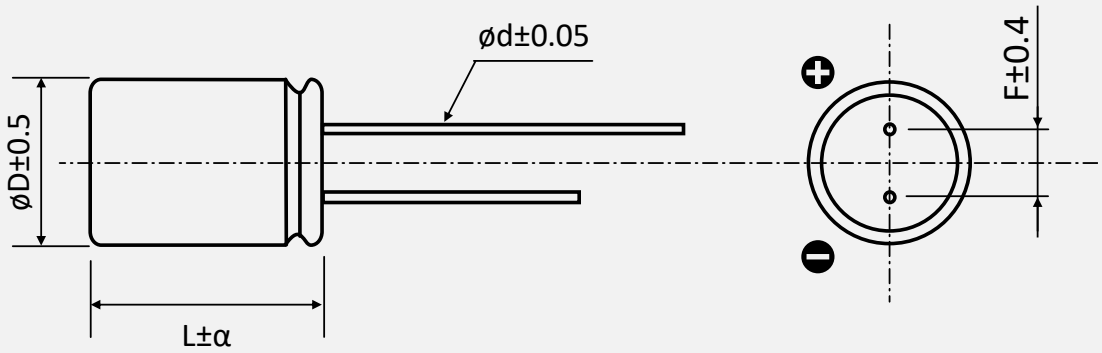


FREQUENCY CORRECTION FACTOR

Frequency Correction Factor of Permissible Ripple Current					
Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 50kHz	50kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	0.85	1

PACKAGE OUTLINE ▲ All dimensions in mm

Dimensions



Size Code	ØD ± 0.5 max.	L	α	Ød ± 0.05	F ± 0.4
06X5	6.3	5.0	-0.5 to +1.0	0.45	2.5
06X8	6.3	8.0	-0.5 to +1.0	0.60	2.5
08X8	8.0	8.0	-0.5 to +1.0	0.60	3.5
08A2	8.0	12.0	-0.5 to +1.0	0.60	3.5
10A2	10.0	12.0	-0.5 to +1.0	0.60	5.0

PRODUCT CODE

Example: AREA series ▲ 560µF ▲ 6.3V_{DC} ▲ ±20% ▲ D=6.3mm ▲ L=5mm ▲ F=2.5mm ▲ Tape/Ammo

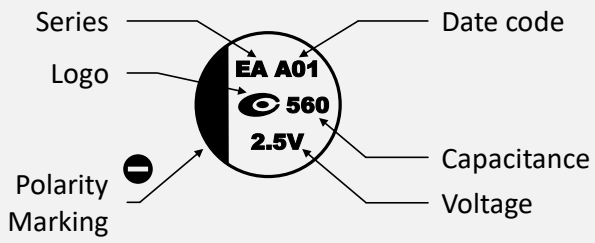
2R5		AREA		561		M		06X5		T	
Rated Voltage (V_{DC})		Series		Capacitance Code Note 1 (µF)		Capacitance Tolerance (%)		Package Code		Packaging Type	
Code	VDC	Code	Series	Code	µF	Code	Tol.	Code	D x L	Code	Type
2R5 6R3 160	2.5 6.3 16.0	AREA	AREA	101 471 821 102	100 470 820 1000	M	±20	06X5 06X8 08X8 08A2 10A2	6.3 x 5.0 6.3 x 8.0 8.0 x 8.0 8.0 x 12.0 10.0 x 12.0	Blank T	Bulk Tape/Ammo

Note:

1 Capacitance code expressed in µF. The first two digits represent significant figures. The last digit specifies the total number of zeros to be added.

PRODUCT MARKING

Marking	Details



Marking	Description
Logo	Manufacturer Logo
Series	EA = AREA
Date code	See date code table
Capacitance	560 = 560µF
Voltage	2.5V = 2.5V
⊖	Polarity (-) marking

DATE CODE

Example:

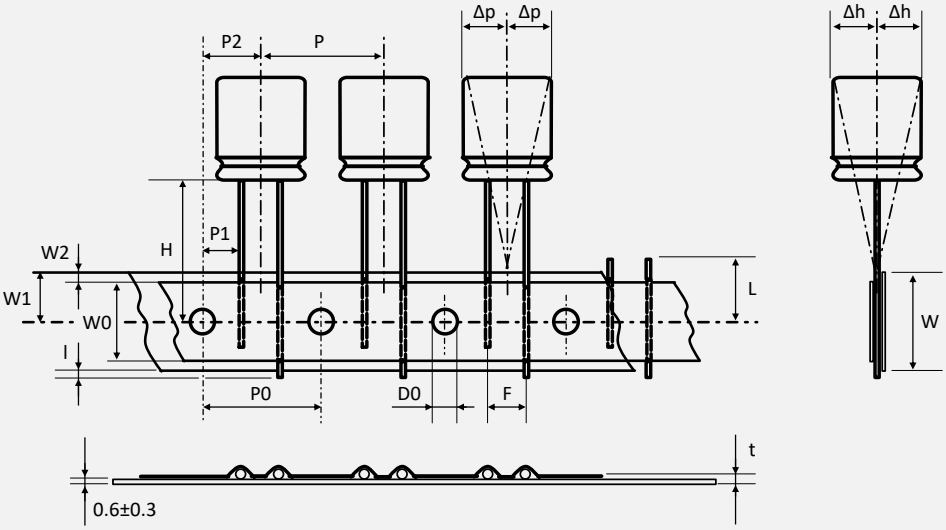
Date code

A01: A01 = 1st week of 2020

A		01	
Year		Week	
A	2019	01	1st
B	2020	02	2nd
…	…	…	…
Z	2030	53	53rd

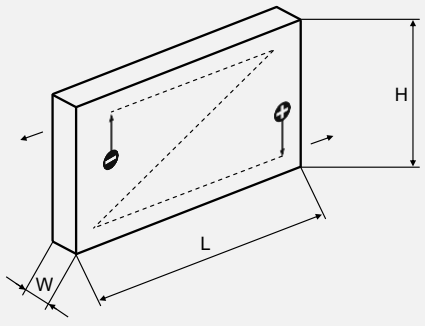
TAPING SPECIFICATION ▲ THT TYPE

Dimensions in mm



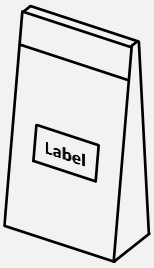
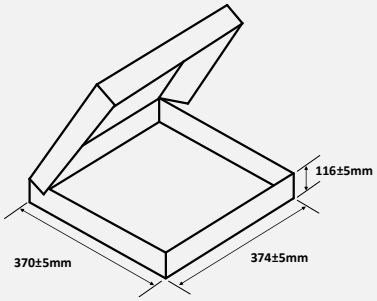
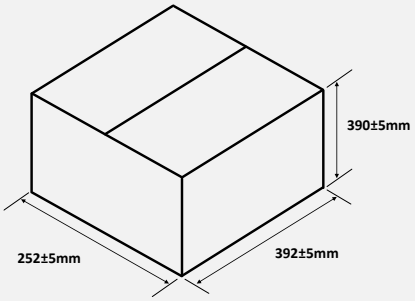
Size Code	F	P	P0	P1	P2	Δp	Δh	W	W0	W1	W2	H	ØD0	t	l	L
Tolerance	+0.8 -0.2	±1.0	±0.2	±0.5	±1.0	±1.0	±1.0	±0.5	Min	±0.5	Max	±0.75	±0.2	±0.3	Max	max
06X5	2.5	12.7	12.7	5.1	6.35	0	0	18	9.5	9	2.5	18.5	4	0.6	0	11
06X8	2.5	12.7	12.7	5.1	6.35	0	0	18	9.5	9	2.5	18.5	4	0.6	0	11
08X8	3.5	12.7	12.7	4.6	6.35	0	0	18	9.5	9	2.5	18.5	4	0.6	0	11
08A2	3.5	12.7	12.7	4.6	6.35	0	0	18	9.5	9	2.5	18.5	4	0.6	0	11
10A2	5	12.7	12.7	3.85	6.35	0	0	18	9.5	9	2.5	18.5	4	0.6	0	11

AMMO PACKAGING QUANTITIES ▲ THT TYPE

Carton	Diameter (mm)	Length (mm)	Size Code	L max. (mm)	W max. (mm)	H max. (mm)	Qty per carton (pcs)
	Ø 6.3	5.0	06X5	335	39	260	2000
	Ø 6.3	8.0	06X8	335	42	260	2000
	Ø 8.0	8.0	08X8	335	42	260	1200
	Ø 8.0	12.0	08A2	335	45	260	1200
	Ø 10.0	12.0	10A2	335	45	260	650

BULK PACKAGING ▲ THT TYPE

Code	Capacitor Dimensions		Quantity / Bag	Quantity / Inner Box		Quantity outer box	
	ØD	L					
06X5	6.3	5.0	500 pcs	6 bags	3000 pcs	5 inner boxes	15000 pcs
06X8	6.3	8.0	500 pcs	6 bags	3000 pcs	5 inner boxes	15000 pcs
08X8	8.0	8.0	500 pcs	4 bags	2000 pcs	5 inner boxes	10000 pcs
08A2	8.0	12.0	400 pcs	4 bags	1600 pcs	5 inner boxes	8000 pcs
10A2	10.0	12.0	300 pcs	4 bags	1200 pcs	5 inner boxes	6000 pcs

Bag	Inner Box	Outer Carton
		
Label content **Size L x W = 70mm x 50mm** **1. P/N:** Customer part number **2. R-ID:** CCF1001290001 CCF: Fix 10: e.g., 2010 01: e.g., January 29: e.g., Day 29th 0001: Running number **3. DESC:** Customer specification **4. SPEC:** Manufacturer part number **5. COO:** Country of origin **6. MAKER:** Manufacturer **7. VENDOR:** Manufacturer **8. DC:** Date code **9. LOT/NO:** Production lot	**Label on the inner box** **Size L x W = 70mm x 35mm** **1. P/N:** Customer part number **2. DESC:** Customer specification **3. SPEC:** Manufacturer part number **4. COO:** Country of origin **5. QTY:** Quantity (pcs) **6. MAKER:** Manufacturer **7. VENDOR:** Manufacturer **8. DC:** Date code **9. LOT/NO:** Production lot	**Label on the outer carton** **Size L x W = 100mm x 90mm** **1. CUSTOMER:** Customer name **2. P/O:** Customer order number **3. P/N:** Customer part number **4. DESCRIPTION:** Manufacturer part number **5. QTY:** Quantity (pcs) and shipping date **6. COO:** Country of origin

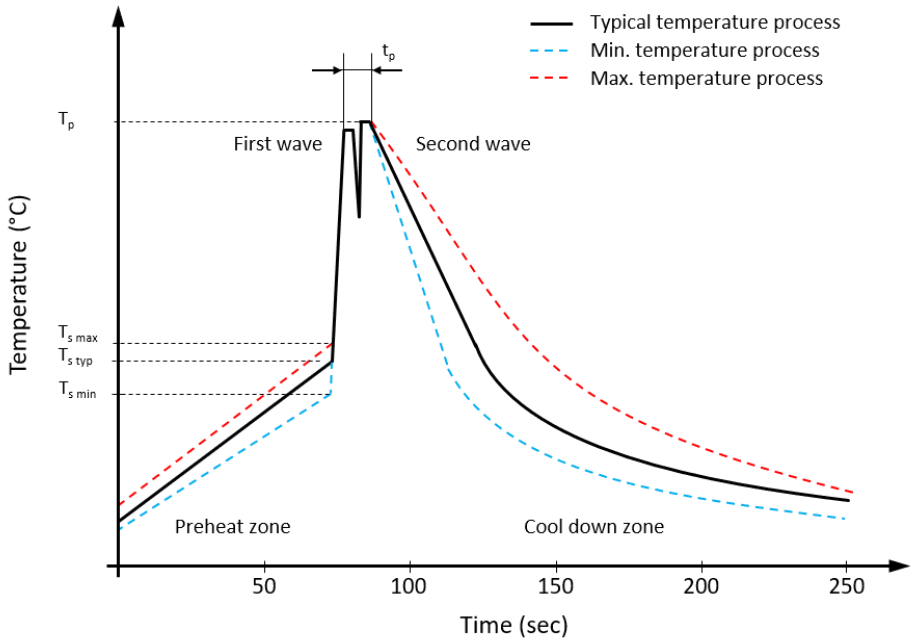
BULK PACKAGING ▲ THT TYPE WITH CUTTED LEADS NOTE 1

Code	Capacitor Dimensions		Quantity / Bag	Quantity / Inner Box		Quantity outer box	
	ØD	L					
06X5	6.3	5.0	500 pcs	12 bags	6000 pcs	5 inner boxes	30000 pcs
06X8	6.3	8.0	500 pcs	8 bags	4000 pcs	5 inner boxes	20000 pcs
08X8	8.0	8.0	500 pcs	6 bags	3000 pcs	5 inner boxes	15000 pcs
08A2	8.0	12.0	500 pcs	4 bags	2000 pcs	5 inner boxes	10000 pcs
10A2	10.0	12.0	500 pcs	4 bags	2000 pcs	5 inner boxes	10000 pcs

Note:

1 **Please consult MGT for possible lead length, drawing and ordering code.**

RECOMMENDED WAVE SOLDERING PROFILE ▲ THT PACKAGE



Profile Features		Value ▲ Sn-Pb Assembly	Value ▲ Pb-free Assembly
Preheat temperature min.	$T_{s\,min}$	100 °C	100 °C
Preheat temperature typical	$T_{s\,typ}$	120 °C	120 °C
Preheat temperature max.	$T_{s\,max}$	130 °C	130 °C
Preheat time t_s from $T_{s\,min}$ to $T_{s\,max}$	t_s	70 seconds	70 seconds
Peak temperature	T_p	235 °C to 260 °C	245 °C to 260 °C
Time of actual peak temperature	t_p	Max. 10 seconds Max. 5 second each wave	Max. 10 seconds Max. 5 second each wave
Ramp-down date min.		~ 2 °C/second	~ 2 °C/second
Ramp-down rate typical		~ 3.5 °C/second	~ 3.5 °C/second
Ramp-down rate max.		~ 5 °C/second	~ 5 °C/second
Time 25°C to 25°C		4 minutes	4 minutes

SOLDERING SUGGESTIONS

When solder a capacitor, heat in soldering is conducted to the element of the capacitor from wire lead and an enclosure, and hence it should be noted that soldering under high temperature and a long period may cause deterioration of breakdown of capacitors. Be sure to solder within the recommended temperature condition range.

HAND SOLDERING

a.) Soldering iron top temperature: ≤ 350°C

b.) Soldering time: ≤ 3sec

If re-work or dipping twice in necessary, it should be done after the capacitor returned to the normal temperature.

Suggestion time is 24 hours.

THT capacitors are not suitable for reflow soldering.

When SMD components are used together with film capacitor, the film capacitor should not pass into the SMD adhesive curing oven. The film capacitor should be assembled after the SMD process.

REVISION TABLE

Revision	Date	Status	Notes
001	01/10/2021	Initial release	Initial publication

DISCLAIMER

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It is subject to the user's duty of care to design and validate his products in such a way that appropriate measures are taken, such as protective circuits or redundant systems to ensure the safety standards required in the application.

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