POE-D21-01-E-08

Ver : 08

Page: 1/20



PRODUCT SPECIFICATION

PRODUCT: CERAMIC DISC CAPACITOR SAFETY RECOGNIZED

TYPE: AC SERIES (Small Size)

CUSTOMER:

DOC. NO.: POE-D21-01-E-08

符合 RoHS&HF 及其他環保要求;金屬電鍍層不含六價鉻 RoHS &HF& Requirements of Environmental; Prohibit containing Cr+6 in the plating with metal

APPROVED BY CUSTOMER

VENDOR:	
☐ WALSIN TECHNOLOGY CORPORATION	
566-1, KAO SHI ROAD,YANG-MEI	
TAO-YUAN, TAIWAN	
☐ PAN OVERSEAS (GUANGZHOU) ELECTRONIC CO.,LTD.	
NO.277,HONG MING ROAD,EASTERN SECTION,	
GUANG ZHOU ECONOMIC AND TECHNOLOGY	
DEVELOPMENT ZONE, CHINA	
☐ DONGGUAN WALSIN TECHNOLOGY ELECTRONICS CO., LTD.	
NO.638, MEI JING WEST ROAD,XINIUPO,ADMINISTRATIVE ZONE,DALANGTOWN,DONGGUAN CIT	Y,
GUANGDONG PROVINCE	
MANUFACTURE SITE:	
V PAN OVERSEAS (GUANGZHOU) ELECTRONIC CO.,LTD.	
NO.277,HONG MING ROAD,EASTERN SECTION,	
GUANG ZHOU ECONOMIC AND TECHNOLOGY	
DEVELOPMENT ZONE CHINA	

POE-D21-01-E-08

Ver : 08



Record of change

Date	Version	Description	page
2017/6/9	00	1. First edition.	All
2019/1/18	01	1. Revised standard NO. of VDE, SEV, SEMKO, FIMKO, NEMKO and ENEC.	9
2019/3/12	02	1. Add "0AC" code for Y2:250V~ marking type.	4,8~9
2019/4/24	03	"Protrusion length": "2.0max (Or the end of lead wire may be inside the tape.)" revised to "+0.5to-1.0 (Or the end of lead wire may be inside the tape.)"	
2019/8/9	04	Delete the lead style "N" (Vertical kink lead)	5,7
2019/12/11	05	 Review the Available lead code of Lead Configuration Add "8.3 Label samples" 	5 14
2021/9/9	06	1. Delete Walsin & POE logo.	1
2022/4/21	07	 Add Applied voltage in 9.3 Test condition for withstanding voltage. Add 10.2 List of substances that affect the insulation strength of coating 	15~16 18
2023/5/26	08	Revised recognized No. of SEMKO and FIMKO.	9



POE-D21-01-E-08

Ver : 08



Table of Contents

No.	Item	Page
1	Part number for SAP system	4
2	Mechanical	5
3	Part numbering/T.C/Capacitance/ Tolerance/Diameter	6
4	Taping Format	7
5	Marking	8
6	Scope	9
7	Specification and test method	10~13
8	Packing specification	14
9	Caution	15~17
10	Notice	17~18
11	Note	18
12	Soldering Recommendation	19
13	Drawing of Internal Structure and material list	20
	WW 350	



CERAMIC DISC CAPACITOR SAFETY RECOGNIZED,

AC SERIES (Small Size)

POE-D21-01-E-08

Ver: 08

Page: 4/ 20

1. Part number for SAP system

(Ex.) \underline{YU} $\underline{1}$ \underline{AC} $\underline{472}$ \underline{M} $\underline{10}$ $\underline{0}$ \underline{G} $\underline{3E}$ \underline{A} $\underline{7}$ \underline{T} (1) (2)-1 (2)-2 (3) (4) (5) (6) (7) (8) (9) (10) (11)

(1) Temperature characteristic (identified code)

CODE	Temperature characteristic	Cap. Change
SL	SL	-1000~+350ppm/°C (+20°C~+85°C)
YP	B (Y5P)	±10%
YU	E (Y5U)	-55% to +20%

- (2)-1 Rated voltage(identified by 1-figure code) : 0= $X1:400V\sim/Y2:250V\sim$, 1= $X1:440V\sim/Y2:300V\sim$
- (2)-2 Type(identified by 2-figure code): AC
- (3) Capacitance (identified by 3-figure code) : ex.221=220pF
- (4) Capacitance tolerance (identified by code) : J:±5%,K:±10%,M:±20%
- (5) Nominal body diameter dimension (Refer to "3. Part numbering/T.C/Capacitance/ Tolerance/Diameter")
- (6) Internal code: 0--Normal, other code--Special control
- (7) Lead Style: Refer to "2. Mechanical".

(8) Packing mode and lead length (identified by 2-figure code): Refer to "2. Mechanical" & "4.Taping Format"

Taping Code	Description () / / /
AF	Ammo box and product pitch: 15.0 mm
AM	Ammo box and product pitch: 25.4 mm

Bulk Code	Description
03	Lead length: 3.0mm PASSIVE SYSTEM ALL
3E	Lead length: 3.5mm
04	Lead length: 4.0mm
20	Lead length: 20mm

(9) Tolerance of lead length

	27/1/2	
Code	Descriptio	in Tology
A	±0.5 mm	Short lead
В	±1.0 mm	Short lead
С	Min.	Long lead
D	Taping special purpose	Taping

(10) Lead space

Code	Description
7	7.5±1.0 mm
M	7.5±0.5 mm
0	10±1.0 mm
A	10±0.5 mm

(11) Epoxy resin code

Code	Description
T	Halogen and Pb free, epoxy resin, for Cu electrode

POE-D21-01-E-08

Ver: 08



2. Mechanical

Encapsulation: Epoxy resin, flammability UL94 V-0

Available lead code(unit: mm)

Lead type	SAP P/N (13-17)digits	Lead space (F)	Lead Length (L)	Packing	Lead Configuration
	L03B7	7.5 ± 1.0	3.0 ± 1.0		D max. T max.
	L4EB7	7.5 ± 1.0	4.5 ± 1.0		· · ·
	L05B7	7.5 ± 1.0	5.0 ± 1.0		
	L03B0	10 ± 1.0	3.0 ± 1.0		
Lead style: L or B	L4EB0	10 ± 1.0 10 ± 1.0	4.5 ± 1.0	Bulk	() For
Zead style Z of Z	L05B0	10 ± 1.0 10 ± 1.0	5.0± 1.0	1	\ \ \ L≧20mm
Straight lead	L20C7	7.5 ±1.0	20 min.	- -	
	L20C0	10 ± 1.0	20 min.		†
	BAFD7	10 ± 1.0	20 111111.		- ` , For
	BAMD7	Refer to "A 7	Taping format"	Tap. Ammo	L<20mm
	BAMD0	Kelel to 4. I	aping format	Tap. Aiiiiio	
	G03B7	7.5 ± 1.0	3.0 ± 1.0		
	G4EB7	7.5 ± 1.0 7.5 ± 1.0	3.0 ± 1.0 4.5 ± 1.0	-	D max. T max.
	G05B7	7.5 ± 1.0 7.5 ± 1.0	5.0 ± 1.0	-	
	G03B0	10 ± 1.0	3.0 ± 1.0 3.0 ± 1.0		
	G4EB0	10 ± 1.0 10 ± 1.0	3.0 ± 1.0 4.5 ± 1.0	Bulk	/ /
I 11- : C	G05B0	10 ± 1.0 10 ± 1.0	5.0± 1.0		()
Lead style: G	G20C7	7.5 ±1.0	20 min.		
Straight lead	G20C0	10 ± 1.0	20 min.	1	· · · · · · · · · · · · · · · · · · ·
Straight lead	GAFD7	设度 芦门		Ž,	(/ \)4
	GAMD7	Refer to "4. 7	Taping format"	Tap. Ammo	F TIT
	GAMD0			144	[] ø α→[]+ [] <u> </u>
	D03A7	7.5 ± 1.0	3.0 ± 0.5	-7/201	
	D3EA7	7.5 ± 1.0	3.5 ± 0.5	Y 11	D max. T max,
	D04A7	7.5 ± 1.0	4.0 ± 0.5		
	D03A0	10 ± 1.0	3.0 ± 0.5	Bulk	
	D3EA0	10±1.0□√∈	SYST 3.5 ± 0.5 LANC	E Duik	
Lead style: D	D04A0	10 ± 1.0	4.0 ± 0.5	と高	1 1 7 1
	D20C7	7.5 ±1.0	20 min.		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Vertical kink lead	D20C0	10 ± 1.0	20 min.		i i i i i i i i i i i i i i i i i i i
vertical kilik icad	DAFD7	a 5		5/85/	# F # + 1 + 144
	DAMD7	Maria Contraction	7700	120	
	/	Refer to "4. T	Taping format"	Tap. Ammo	
	DAMD0	Wira.	DIORA	Hir	U <u>r</u> U
		CLHIMIT	"IUTA GODDON VOI		
	X03A7	7.5 ± 1.0	3.0 ± 0.5		D max. T max.
	X3EA7	7.5 ± 1.0	3.5 ± 0.5		D max. T max.
	X04A7	7.5 ± 1.0	4.0 ± 0.5]	
	X05B7	7.5 ± 1.0	5.0 ± 1.0	Bulk	
	X03A0	10 ± 1.0	3.0 ± 0.5	Zum	V Y
Lead style: X	X3EA0	10 ± 1.0	3.5 ± 0.5		
	X04A0	10 ± 1.0	4.0 ± 0.5		\ \
Outside kink lead	X05B0	10 ± 1.0	5.0 ± 1.0		×*+
Subjuc Kilik lead	XAFD7				X W
	XAMD7	Refer to "4. 7	Taping format"	Tap. Ammo	T
	XAMD0				

^{*} Lead diameter Φ d: 0.55+0.1/-0.05mm

^{*} e (Coating **extension** on leads): 3.0mmMax for straight lead style; Not exceed the kink for kink lead.



3. Part numbering/T.C/Capacitance/ Tolerance/Diameter:

					Dim	ensions (unit: mm)	
SAP Part. No.	T.C.	Capacitance	Tolerance	D (max)	T (max)	Bulk type	F Taping type	φd
SL*AC***J060*T		10,12,15,18,20,22, 24,27,30,33, 36, 39,47,50,51(pF)	±5%	7.0		71	J 1	
SL*AC***J070*T	SL	56,62, 68,75(pF)	±5%	8.0				
SL*AC820J080*T		82pF	±5%	9.0				
SL*AC101J090*T		100pF	±5%	10.0				
YP*AC101K050*T		100 pF	±10%	6.0				
YP*AC151K050*T		150 pF	±10%	6.0				
YP*AC221K060*T		220 pF	±10%	7.0				
YP*AC331K050*T	Y5P	330 pF	±10%	6.0			7.5±1 (AFD7)	
YP*AC471K060*T		470 pF	±10%	7.0		7.5±1,	(AMD7)	0.55
YP*AC561K060*T		560pF	±10%	7.0	4.5	10±1	or	+0.1/-0.05
YP*AC681K060*T		680 pF	月±10%	7.0			10±1	
YP*AC821K070*T		820 pF	±10%	8.0			(AMD0)	
YP*AC102K070*T		1000 pF	±10%	8.0	2			
YU*AC102M050*T		1000 pF	±20%	6.0				
YU*AC152M060*T		1500 pF	±20%	7.0				
YU*AC222M070*T	Y5U	2200 pFassive	SYS±20%LLIA	NC€8.0				
YU*AC332M090*T	130	3300 pF	±20%	10.0				
YU*AC392M100*T		3900 pF	±20%	11.0	2 / J			
YU*AC472M100*T		4700 pF	±20%	11.0				



POE-D21-01-E-08

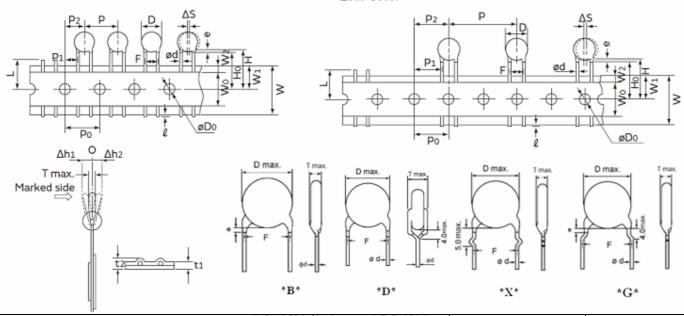
Ver: 08

Page: 7/20

4. Taping Format

15 mm pitch/lead spacing 7.5mm taping
 Lead Code: *BAFD7 & *DAFD7 & *XAFD7 & *GAFD7

 25.4mm pitch/lead spacing 7.5mm & 10.0mm taping Lead Code: *BAMD* & *DAMD* & *XAMD* & *GAMD*



POE Part Number	注	*BAFD7/*DAFD7/ /*GAFD7/*XAFD7	*BAMD7/*DAMD7/ /*GAMD7/*XAMD7	*BAMD0/*DAMD0/ /*GAMD0/*XAMD0		
Item / +A-	Symbol	Dimensions (mm) Dimensions (m		Dimensions (mm)		
Pitch of component	P	15.0±1 25.4±2 25.4				
Pitch of sprocket	P0	15.0±0.3	12.7±0.3	12.7±0.3		
Lead spacing	F	7.5±1.0	7.5±1.0	10.0±1.0		
Length from hole center to component center	#2sive	SYSTEM 7.5±1.5CE	12.7±1.5	12.7±1.5		
Length from hole center to lead	P 1	3.75±1.0	8.95±1.0	7.7±1.5		
Body diameter	D	See the "3. Part numb	pering/T.C/Capacitance/ T	Colerance/Diameter"		
Deviation along tape, left or right	$\triangle S$		0±2.0			
Carrier tape width	W.Ch.	COLA COLA	18.0 +1/-0.5			
Position of sprocket hole	W1	CIORI HIP	9.0±0.5			
Lead distance between the kink and center of sprocket hole	H0	18.0+2.0/-0(For: *D* & *X* & *G* lead type)				
Lead distance between the bottom of body and the center of sprocket hole	Н	20.0+1.5/-1	.0 (only for straight lead	*B* style)		
Length from the terminal of the lead wire to the edge of carrier tape	ℓ	+0.5 to -1.0 (Or the end	of lead wire may be insid	le the hole-down tape.)		
Diameter of sprocket hole	D0		4.0±0.2			
Lead diameter	φd		0.55+0.1/-0.05			
Total tape thickness	t1		0.6±0.3			
Total thickness, tape and lead wire	t2		1.5 max.			
Deviation across tape	△ h1/△ h2		2.0 max.			
Portion to cut in case of defect	L	11.0 max.				
Hole-down tape width	W0	8.0 min				
Hole-down tape distortion	W2	1.5±1.5				
Coating extension on leads	e	3.0 max for straight lead style; Not exceed the kink leads for kink lead.				
Body thickness	T	See the "3. Part numbering/T.C/Capacitance/ Tolerance/Diameter"				

WALSIN TECHNOLOGY CORPORATION			PSA.
CERAMIC DISC CAPACITOR SAFETY RECOGNIZED, AC SERIES (Small Size)	POE-D21-01-E-07	Ver : 07	Page: 8/ 20
5.Marking:			司份処

5.Marking:	
1.Type Designation	AC
2.Nominal Capacitance	Identified by 3-Figure Code. Ex. 47pF→"47", 470pF→"471"
3.Capacitance Tolerance	J:±5%,K:±10%,M:±20%
4.Company Name Code(Trade mark)	UK
5.Class code & Voltage	X1: 400V~ / Y2: 250V~ X1: 440V~ / Y2: 300V~
6. Products ID	Abbreviation ex.
	Manufacture year: ←2 C 0:2020 1:2021 2:2022 Manufactory: 3:2023 C:Pan overseas (Guangzhou) 9:September 0:October N:November D:December
	Marking ex.
	Two sides marking
* Marking by the laser.	1AC (X1: 440V~/Y2: 300V~) X1:400V~ Y2:250V~ 2C61234 X1:440V~ Y2:300V~ 2C61234
* Marking by the laser. * " • ": Individual specification code, i	it is added under the lot no
· murviduai specification code, i	it is added under the lot liu.

CERAMIC DISC CAPACITOR SAFETY RECOGNIZED, AC SERIES (Small Size)	POE-D21-01-E-07	Ver : 07	Page: 9/20
6. Scope			司份迎

THIS SPECIFICATION APPLIES TO CERAMIC INSULATED CAPACITORS DISK TYPE USED IN ELECTRONIC EQUIPMENT.

- VDE/UL/CSA recognized capacitor for Antenna coupling and AC line-by-pass.X1, Y2 Capacitor based on IEC 60384-14 "UL, CSA recognized for across-the-line, line-by-pass" and antenna-isolation.
- 2. Approval Standard and Recognized No.

Safety Standard	Standard No.	Subclass	w.v.	Recognized No.
UL	ANSI/UL 60384-14:2013	X1	400VAC or 440VAC	E146544
UL	ANSI/OL 00304-14.2013	Y2	250VAC or 300VAC	E140344
CSA	CAN/CSA E60384-14:2009	X1	400VAC or 440VAC	2347969
CSA	CAIV CSA L00304-14.2007	Y2	250VAC or 300VAC	2341707
VDE	EN 60384-14:2013/A1:2016 IEC 6.384-14:2013	X1	400VAC or 440VAC	40001829
(ENEC)	IEC 6.384-14:2013/AMD1:2016	Y2	250VAC or 300VAC	40001029
SEV	EN 60384-14:2013 + A1:16	月X1 1	400VAC or 440VAC	21.0555
DL V	EN 00304 14.2013 1 A1.10	Y2/7	250VAC or 300VAC	21.0333
SEMKO	EN 60384-14:2013+A1	7.11X1/12	400VAC or 440VAC	SE-S-1811994R1
DLIVINO	EIV 00304-14.2013 (A)	Y2	250VAC or 300VAC	5L-5-101177+K1
FIMKO	EN 60384-14:2013 + A1:16	X1	400VAC or 440VAC	FI/41696
THVIKO	EN 00384-14.2013 + A1.10	Y2	250VAC or 300VAC	11/41090
NEMKO	EN 60384-14:2013;A1 PASSIV	-X1	400VAC or 440VAC	P18222947
NEWIKO	LIV 00304-14.2013,A1	Y2	250VAC or 300VAC	1 10222947
ENEC	EN 60384-14:2013/ A1:2016,	X1	400VAC or 440VAC	ENEC-01962-A1
(Demko)	EN 60384-14:2013	Y2	250VAC or 300VAC	ENEC-01902-A1
DEMKO	EN 60384-14:2013/A1:2016	X1	400VAC or 440VAC	D-07617
DEMIKO	EN 60384-14:2013///	70 Y25	250VAC or 300VAC	D-0/01/
CQC	GB/T6346.14-2015	////X1:40	0VAC /Y2:250VAC	CQC08001026519
cqc	IEC60384-14:2013	X1: 44	40VAC/Y2:300VAC	CQC15001121984
	VC40294 1/2015 00) :	X1	400VAC	SU03065-14004A
KTL	KC60384-1(2015-09); KC60384-14(2015-09)	X1	440VAC	SU03065-14001A
KIL	14(2013-07)	Y2	250VAC	SU03065-14002A
	IEC 60384-14(ed.3)	Y2	300VAC	SU03065-14003A

POE-D21-01-E-07

Ver: 07



7. Specification and test method

7.1 Operating Temperature Range: -40 to +125°C

7.2 Test condition:

Test and measurement shall be made at the standard condition. (temperature 15~35°C, relative humidity 45~75% and atmospheric pressure 860~1060hpa). Unless otherwise specified herein.

If doubt occurred on the value of measurement, and measurement was requested by customer capacitors shall be measured at the reference condition. (temperature $20\pm2^{\circ}\text{C}$ or $25\pm2^{\circ}\text{C}$, relative humidity $60\sim70\%$ and atmospheric pressure $860\sim1060$ hpa.)

7.3 Performance:

No	Ite	em	,	Specification	Testing Method						
1	Appearance ar	nd dimensions	No marke	d defect on appearance	ance The capacitor should be inspected by naked eyes for visible evidence			ole evidence of			
			form and o	dimensions.	defect.						
	Please refer to [Part number list].			Dimensions s	should be	measur	ed with s	lide calip	ers.		
2	Marking		To be easi	ily legible.	The capacito	r should l	be inspe	cted by n	aked eye	s.	
3	Dielectric Strength	Between terminals	No failure.		The capacito applied betwee (Charge/Disc	een the le	ead wires	Ū		2600V(r.n	n.s.) <50/60Hz> is
		Body Insulation		发展所有 放放 排 用	Finally, AC26	I togethe al foil shound the b be of about I. Then, to tho a cont f about 1 if 500V (r.m.	r. uld be cloody of the capacitainer fillomm diam	osely ne capacit mm from citor shou ed with neter. 60Hz> is	tor Me	or 60 s be	about 3 to 6mm Metal Balls etween the current ≤ 50mA.)
4	Insulation Resi	stance(I.R.)	10000ΜΩ	min. PASSIVE SYST	The insulation resistance should be measured with DC500 \pm 50V within 60 \pm 5 s of charging. The voltage should be applied to the capacitor through a resistor of 1M Ω						
5	Capacitance		Within spe	cified tolerance	Y5P&Y5U&Y5V: The capacitance shall be measured at 20±2°C with			0+2°⊂ with			
6	Dissipation Fa Q	ctor(D.F.)	SI	Specifications 2.5% max. Q≥400+20C*,(C<30pF) Q≥1000 (C≥30pF)	1kHz±20% and 5V(ms.) or less. SL: The capacitance shall be measured at 25°C with 1MHz±20% and 1.0±0.2Vrms						
7	Temperature C	Characteristic	Char.	Capacitance Change Within ± 10%	The capacitance measurement shall be made at each step specified in table			p specified in			
			E(Y5U) Within +20/-55%		Step	1	2	3	4	5	
	(Temp. range: -25 Char. Capac			Temp.(°C)	+20±2	-25±2	+20±2	+85±2	+20±2		
			SL	Capacitance Change -1000~+350 ppm/°C ge: +20 to +85°C)	Pr-treatment Capacitor sha condition*2 fo	all be sto				Then plac	ced at room

[&]quot;C" expresses nominal capacitance value (pF).

[&]quot;room condition" temperature: 15~35°C, humidity: 45~75%, atmospheric pressure: 86~106kPa

POE-D21-01-E-07

Ver: 07

	.		g .g			
No	Iten		Specification	Testing Method		
8	Robustness of terminations	Tensile	Lead wire shall not cut off capacitor shall not be broken.	As shown in the figure at right, fix the body of the capacitor and apply a tensile weight gradually to each lead wire in the radial direction of the capacitor up to 10N and keep it for 10±1 sec.		
		Bending	Lead wire shall not cut off capacitor shall not be broken.	citor With the termination in its normal position, the specimen is held by its box such a manner that the axis of the termination is vertical; a mass applyiforce of 5N is then suspended from the end of the termination. The body of specimen is then inclined, within a period of 2 to 3sec, through an angle approximately 90 in the vertical plane and then returned to its initial post over the same period of time; this operation constitutes one bend. One immediately followed by a second bend in the opposite direction.		
9	Soldering Effect	Appearance	No marked defect	As shown in figure, the lead wires should be immersed in solder of 350 \pm 10 $^{\circ}$ C		
	(Non-Preheat)	I.R.	1000MΩ min.	or 260 ± 5 °C up to 1.5 to 2.0mm from the root of		
		Dielectric	D. F. 2	Terminal for 3.5 ± 0.5 sec (10 ± 1 sec for 260 ± 5 °C)		
		Strength	Per Item 3.	Thermal Capacitor		
		Capacitance Change	B(Y5P),E(Y5U): Within ±10% SL: Within±2.5% or ±0.25pF,Whichever is large.	Pre-treatment: Capacitor shall be stored at 125±2°C for 1hour.then placed * ¹room condition for 24±2hours before initial measuremer Post-treatment: Capacitor shall be stored for 1 to 2hours at * ¹room condit		
10	Soldering Effect	Appearance	No marked defect.	First the capacitor should be stored at $120 + 0 / -5$ °C for $60 + 0 / -5$ sec.		
	(On-Preheat)	I.R.	1000MΩ min.	Then, as in figure, the lead wires should be immersed solder of 260 + / -5 $^{\circ}$ C		
	Dielectric Strength Per Item 3. Capacitance Change B(Y5P),E(Y5U): Within ±10% SL: Within±2.5% or ±0.25pF, Whichever is large.			up to 1.5 to 2.0 mm from the root of terminal for 7.5 +0 / -1 sec. Thermal Screen 1.5		
			B(Y5P),E(Y5U): Within ±10% SL: Within±2.5% or ±0.25pF,	Pre-treatment: Capacitor shall be stored at 125±2°C for 1hour then placed at *1room condition for 24±2hours before initial measurements. Post-treatment: Capacitor shall be stored for 1 to 2hours at *1room condition.		
11	Solderability of lead	ds	uniform coating on the axial direction over 3/4 of the	The lead wire of capacitor should be dipped into molten solder for 5 ± 0.5 sec. The depth of immersion is up to about 1.5 to 2.0 mm from the root of lead wires. Temp. of solder : Lead free solder (Sn97 -Cu3) $245\pm5~\text{°C}$		
12	12 Passive Flammability			The capacitor under test shall be held in the flame in the position, which best promotes burning. Each specimen shall only be exposed once to the flame. Time of exposure to flame: 30 sec Length of flame: 12±1 mm Gas burner: Length 35 mm min. Inside Dia.: 0.5±0.1 mm Outside Dia.: 0.9 mm max. Gas: Butane gas Purity 95% min. Fig. Test specimen Test specimen		

[&]quot;room condition" temperature : $15\sim35^{\circ}$ C, humidity : $45\sim75\%$, atmospheric pressure : $86\sim106$ kPa

[&]quot;C" expresses nominal capacitance value (pF).

Appearance

Capacitance

Change

I.R.

Active Flammability

Dielectric

Strength

Item

No

13

Life



CERAMIC DISC CAPACITOR SAFETY RECOGNIZED, **AC SERIES** (Small Size)

No marked defect.

Specification

B(Y5P),E(Y5U): Within $\pm 20\%$

SL: Within $\pm 3\%$ or ± 0.3 pF,

Whichever is large.

B(Y5P),E(Y5U): 3000 $M\Omega$ min.

The cheesecloth shall not be on

SL: 1000MΩ min

Per Item 3.

fire.

POE-D21-01-E-07

Ver: 07

After the capacitors are applied to life test. The waveform will be determined by the test circuit parameters. Details of

Each individual capacitor shall be subjected to a 5kv impulses for three times.

Testing Method

the test circuit are given in IEC 60384-14 Annex A.

100 (%)		
90		
50 //	\rightarrow	
// 11		
30-		
Ŭ 		t
+ 		
+ ''-		
T2		

Impulse Voltage:

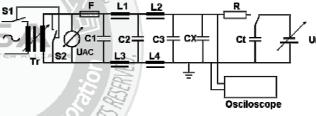
Front time (T₁) = $1.2\mu s = 1.67T$ Time to half-value (T2) =50µs

The specimen capacitors are placed in a circulating air oven for a period of 1000 hrs. The air in the oven is maintained at a temperature of $125\pm2^{\circ}$ C. Throughout the test. The capacitors are subjected to an AC510Vrms.(for 1AC type) alternating voltage of mains frequency

Pre-treatment: Capacitor shall be stored at $125\pm2^{\circ}\text{C}$ for 1hour then placed at ¹room condition for 24±2hours before initial measurements.

Post-treatment: Capacitor shall be stored for 1 to 2hours at * 1room condition.

The specimens shall be individually wrapped in at least one but more then two complete layers of cheesecloth. The specimens shall be subjected to 20 discharges. The interval between successive discharges shall be 5sec. The Uac shall be maintained for 2 min. after the last discharge.



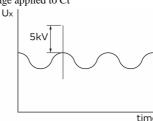
C3: 0.033uF±5% 10KV C1.2: 1uF±10%

L1-4: 1.5mH±20% 16A Rod core choke

R : 100Ω±2% Ct : 3uF±5% 10KV Uac: Ur±5% Ur: Rated working voltage

: Capacitor F : Fuse, Rated 10A

Ut : Voltage applied to Ct



[&]quot;room condition" temperature: 15~35°C, humidity: 45~75%, atmospheric pressure: 86~106kPa

[&]quot;C" expresses nominal capacitance value (pF). *

PSA 7 Page: 13/20

CERAMIC DISC CAPACITOR SAFETY RECOGNIZED, AC SERIES (Small Size)

POE-D21-01-E-07

Ver: 07

No	Iter	n	Specification	Testing Method			
15	Humidity	Appearance	No marked defect	Set the capacitor for 500 ± 12 hours at $40\pm2^{\circ}$ C, in 90 to 95% humidity.			
	(Under Steady State)	Capacitance Change	B(Y5P): Within ±10% E(Y5U): Within ±20% SL: Within ±2.5% or ±0.25pF, Whichever is large.	Pre-treatment: Capacitor shall be stored at 125±2°C for 1hour.then placed at * 1 room condition for 24±2 hours before initial measurements.			
		D.F. Q		Post-treatment: Capacitor shall be stored for 1 to 2hours at *1room condition.			
		I.R.	B(Y5P),E(Y5U) : 3000MΩ min. SL : 1000 MΩ min.				
		Dielectric strength	Per Item 3				
16	Humidity Loading		No marked defect	Apply the rated voltage for 500±12 hours at 40±2°C, in 90 to 95%			
		Capacitance Change	B(Y5P): Within ±10% E(Y5U): Within ±20% SL: Within±2.5% or ±0.25pF, Whichever is large.	humidity.			
		D.F. Q	Char. Specifications $B(Y5P) = 5.0\% \text{ max}.$ $SL \qquad Q \ge 100 + 10 \times \text{C/3}^{*2} (\text{C<30pF})$ $Q \ge 200 \text{ (C} \ge 30\text{pF})$	Pre-treatment: Capacitor shall be stored at 125±2°C for 1hour then placed at *1 room condition for 24±2hours before initial measurements. Post-treatment: Capacitor shall be stored for 1 to 2hours at *1 room condition.			
		I.R.	B,E: 3000 M Ω min. SL: 1000 M Ω min.	Su Su			
		Dielectric strength	Per Item 3				
17	Temperature	Appearance	No marked defect PASSIVE SYSTEM	The capacitor should be subjected to 100 temperature cycles,			
	Cycle	Capacitance Change	Char. Capacitance Change B(Y5P) Within ± 10% E(Y5U) Within ± 20% SL Within ± 10%	CTemperature Cycle time: 100 cycles> Step Temperature(°C) Time(min) 1 -40+0/-3 30 2 Room temp. 3 3 125+3/-0 30			
		D.F. Q	Char. Specifications B(Y5P) 5.0% max. E(Y5U) 7.5% max. SL Q≥275+5/2C *² (C<30pF)	Pre-treatment: Capacitor shall be stored at 125±2°C for 1hour.then placed at *1room condition for 24±2hours. Post-treatment: Capacitor shall be stored for 1 to 2hours at *1room condition.			
		I.R.	3000MΩ min.	condition.			
		Dielectric	Per Item 3				

 [&]quot;room condition" temperature : 15~35℃, humidity : 45~75%, atmospheric pressure : 86~106kPa

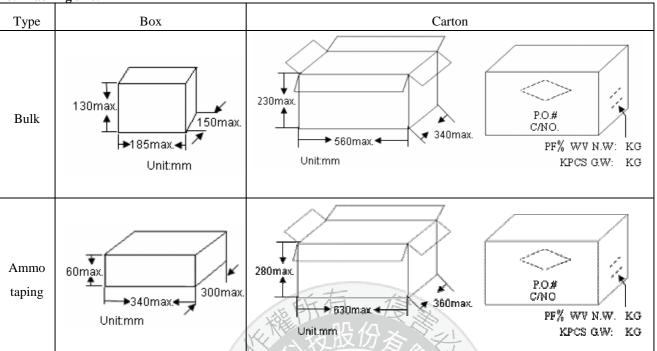
strength

[&]quot;C" expresses nominal capacitance value (pF).



8. Packing Baggage:

8.1 Packing size:



8.2 Packing quantity:

Taping AF PASSIVE SYSTEM ALLIANCE 1 0.5	Packing type	The code of 14th to 15th in SAP P/N	믜	MPQ	(Kpcs/Box)
	т :	AF PASSIVE SYSTEM ALLIANCE		.D.	1
AM 0.5	Taping	AM	10/		0.5

D1-i 4	I 4 1 41-	The March Alexania CADDA	The state of the s	MPQ
Packing type	Lead length	The code of 14th to 15th in SAP P/N	Kpcs / Bag	Kpcs / Box
D 11	Long lead (L≥20mm)	05~11	0.5	1.5
Bulk	Short lead (L < 20mm)	05~11	0.5	2

8.3 Label samples:



POE-D21-01-E-07

Ver: 07

Page: 15/20

9. Caution:

9.1 Operating voltage

When DC-rated capacitors are to be used in AC or ripple current circuits, be sure to maintain the Vp-p value of the applied voltage or the Vo-p which contains DC bias within the rated voltage range.

When the voltage is started to apply to the circuit or it is stopped applying, the irregular voltage may be generated for a transit period because of resonance or switching. Be sure to use a capacitor within rated voltage containing these irregular voltage.

Voltage	DC Voltage	DC+AC Voltage	AC Voltage
Positional measurement	V0-p	V0-p	Vp-p

9.2 Operating temperature and self-generated heat

Keep the surface temperature of a capacitor below the upper limit of its rated operating temperature range. Be sure to take into account the heat generated by the capacitor itself.

9.3 Test condition for withstanding voltage

(1) Test equipment

Test equipment for AC withstanding voltage should be used with the performance of the wave similar to 50/60 Hz sine wave.

If the distorted sine wave or over load exceeding the specified voltage value is applied, the defective may be caused.

(2) Voltage applied method

When the withstanding voltage is applied, capacitor's lead or terminal should be firmly connected to the out-put of the withstanding voltage test equipment, and then the voltage should be raised from near zero to the test voltage.

If the test voltage without the raise from near zero voltage would be applied directly to capacitor, test voltage should be applied with the *zero cross. At the end of the test time, the test voltage should be reduced to near zero, and then capacitor's lead or terminal should be taken off the out-put of the withstanding voltage test equipment.

If the test voltage without the raise from near zero voltage would be applied directly to capacitor, the surge voltage may arise, and therefore, the defective may be caused.

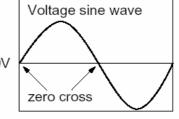
*ZERO CROSS is the point where voltage sine wave pass 0V.

- See the right figure -

(3) Applied voltage

The voltages of Table shall be applied between the respective measuring points of 1 min for qualification approval and periodic testing and for a period of not less than 1 s for lot-by-lot quality conformance testing, a voltage proof test such as Test C shall be carried out only for qualification approval tests and periodic tests;

Attention is drawn to the fact that repetition of the voltage proof test by the user may damage the capacitor. If repetition of the voltage proof test is made by the user, the applied voltage should not be greater than 66 % of the test voltage specified in Table .



WALSIN TECHNOLOGY CORPORATION			
CERAMIC DISC CAPACITOR SAFETY RECOGNIZED, AC SERIES (Small Size)	POE-D21-01-E-07	Ver : 07	Page: 16/20
			司份処

Table -Voltage proof

Class	Range of rated voltages	Test A	Test B or Test C
X1	≤ 1 000 V	4,3 UR (d.c.) c	2 UR + 1 500 V (a.c.) with a minimum of 2 000 V (a.c.) a
Y2	≥ 150 V ≤ 500 V	UR + 1 200 V (a.c.) with a minimum of 1 500 V (a.c.) b	2 UR + 1 500 V (a.c.) with a minimum of 2 000 V (a.c.) b

a For Delta and T-connected capacitor units according to Figures 5b and 5c, the test voltage for terminals to case shall be the appropriate test voltage for the Y-capacitors.

Note:

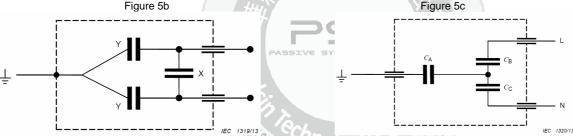
Test A - Between terminations

Test B - Internal insulation

Test C - External insulation (applicable only to insulated capacitors in nonmetallic case or in insulated metal case)

Figure 5b - Delta by-pass capacitor (in metallic housing)

Figure 5c – Example of a T-connected by-pass capacitor (in non-metallic housing)
Figure 5b



*For capacitors with non-metallic housings, the earth connection is brought out as a separate termination as is shown in Figure 5c.

9.4 Fail-Safe

When capacitor would be broken, failure may result in a short circuit. Be sure to provide an appropriate fail-safe function like a fuse on your product if failure would follow an electric shock, fire or fume.

9.5 Vibration and impact

Do not expose a capacitor or its leads to excessive shock or vibration during use.

9.6 Soldering

When soldering this product to a PCB/PWB, do not exceed the solder heat resistance specification of the capacitor. Subjecting this product to excessive heating could melt the internal junction solder and may result in thermal shocks that can crack the ceramic element.

When soldering capacitor with a soldering iron, it should be performed in following conditions.

Temperature of iron-tip: 400 °C max.

Soldering iron wattage: 50W max.

Soldering time: 3.5s max.

_b For lot-by-lot tests of Class Y2 capacitors, the a.c. test voltage may be replaced by a d.c. voltage of 1,5 times the prescribed a.c. voltage.

 $_{\text{c}}$ The U_{R} in this d.c. test is the rated a.c.voltage value.

POE-D21-01-E-07

Ver: 07

Page: 17/20

9.7 Bonding, resin molding and coating

In case of bonding, molding or coating this product, verify that these processes do not affect the quality of capacitor by testing the performance of the bonded, molded or coated product in the intended equipment.

In case of the amount of applications, dryness / hardening conditions of adhesives and molding resins containing organic solvents (ethyl acetate, methyl ethyl ketone, toluene, etc.) are unsuitable, the outer coating resin of a capacitor is damaged by the organic solvents and it may result, worst case, in a short circuit.

The variation in thickness of adhesive, molding resin or coating may cause a outer coating resin cracking and/or ceramic element cracking of a capacitor in a temperature cycling.

9.8 Treatment after bonding, resin molding and coating

When the outer coating is hot (over 100 $^{\circ}$ C) after soldering, it becomes soft and fragile.

So please be careful not to give it mechanical stress.

Failure to follow the above cautions may result, worst case, in a short circuit and cause fuming or partial dispersion when the product is used.

9.9 Operating and storage environment

The insulating coating of capacitors does not form a perfect seal; therefore, do not use or store capacitors in a corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are present. And avoid exposure to moisture. Before cleaning, bonding, or molding this product, verify that these processes do not affect product quality by testing the performance of a cleaned, bonded or molded product in the intended equipment. Store the capacitors where the temperature and relative humidity do not exceed -10 to 40 °C and 15 to 85%.

Use capacitors within 6 months after delivered. Check the solderability after 6 months or more.

9.10 Limitation of applications

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property.

- 1. Aircraft equipment
- 2. Aerospace equipment
- Undersea equipment
- 4. Power plant control equipment
- 5. Medical equipment
- 6. Transportation equipment (vehicles, trains, ships, etc.)
- 7. Traffic signal equipment
- 8. Disaster prevention / crime prevention equipment
- 9. Data-processing equipment exerting influence on public
- 10. Application of similar complexity and/or reliability requirements to the applications listed in the above.

10. Notices:

10.1 Cleaning (ultrasonic cleaning):

To perform ultrasonic cleaning, observe the following conditions.

Rinse bath capacity: Output of 20 watts per liter or less.

Rinsing time: 5 min maximum.

Do not vibrate the PCB/PWB directly.

Excessive ultrasonic cleaning may lead to fatigue destruction of the lead wires.



Epoxy resin solvent

Category	Model			
Ketone	Acetone	Butanone	Cyclohexanone	
Esters	Ethyl acetate	Dibutyl phthalate		
Chlorinated hydrocarbons	Dichloromethane			

Epoxy resin thinner

Category		Model	
		HK-66 (Alkyl glycidyl ether)	
		501 (Butyl glycidyl ether)	
	Simple function group	690 (Phenyl Glycidyl Ether)	
		AGE (C12-14Aliphatic Polyalcohol Glycidyl Ether)	
		692 (Benzyl Glycidyl Ether)	
Reactive diluentactivated thinner		D-678 (Neopentyl glycol diglycidyl ether)	
		622 (1,4-Butanediol diglycidyl ether)	
	T ft'1	669 (Ethylene glycol diglycidyl ether)	
	Two functional groups	X-632 (Polypropylene glycol diglycidyl ether)	
		X-652 (1,6-Hexadiol diglycidyl ether)	
		D-691Epoxypropane o-methylphenyl ether	
		- Anhydrous ethanol	Toluene
	45 8	Ethyl acetate	Dimethylbenzene
Non-activated thi	inner	Dimethyl formamide	Butyl acetate
	E YY	Acetone	Styrene
	TYM LIN	Polyol	Benzyl alcohol

Note: The above substances should not contact the coating of the product body, otherwise it will affect the insulation strength of the product

10.3 Capacitance change of capacitors

Class 1 capacitors

Capacitance might change a little depending on a surrounding temperature or an applied voltage.

Please contact us if you use for the strict time constant circuit.

Class 2 and 3 capacitors

Class 2 and 3 capacitors like temperature characteristic B, E and F have an aging characteristic, whereby the capacitor continually decreases its capacitance slightly if the capacitor leaves for a long time. Moreover, capacitance might change greatly depending on a surrounding temperature or an applied voltage. So, it is not likely to be able to use for the time constant circuit.

Please contact us if you need a detail information.

10.4 Performance check by equipment

Before using a capacitor, check that there is no problem in the equipment's performance and the specifications.

Generally speaking, CLASS 2 ceramic capacitors have voltage dependence characteristics and temperature dependence characteristics in capacitance. So, the capacitance value may change depending on the operating condition in a equipment. Therefore, be sure to confirm the apparatus performance of receiving influence in a capacitance value change of a capacitor, such as leakage current and noise suppression characteristic.

Moreover, check the surge-proof ability of a capacitor in the equipment, if needed, because the surge voltage may exceed specific value by the inductance of the circuit.

11. Note

- 11.1 Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.
- You are requested not to use our product deviating from this specification.
- Do not use these products in any Automotive Power train or Safety equipment including Battery charger for Electric Vehicles and Plug-in Hybrid.

12. Soldering Recommendation:

12.1 Wave Soldering Profile:

- Temperature conditions of the flow is recommended as shown in the chart
- Must implement the pre-heat
- Maximum peak flow temperature is recommended 265°C
- Time "T" implement in the chart recommended within 20 sec. it temperature exceed 200°C
- Take care with the flow solder not to touch the capacitor body directly at mounting

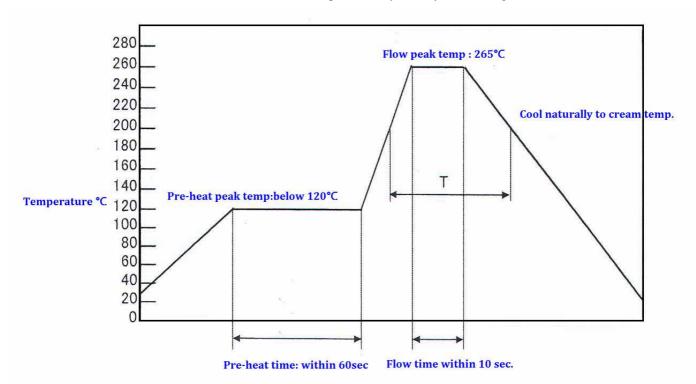


Chart to show flow recommended temp



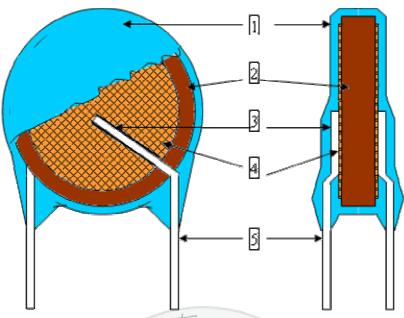
12.2 Recommended Reworking Conditions with Soldering Iron:

- Temperature of iron-tip: 400 degrees C. max.
- Soldering iron wattage: 50W max.
- Soldering time: 3.5 sec. max.
- Distance from coating body: 2 mm (min.)

12.3 Reflow-Soldering: Lead Ceramic Cap. should not be soldered by reflow-soldering.



13. Drawing of internal structure and material list:



Remarks:

No.	Part name	Material	Model/Type	Component
1	Insulation Coating	Epoxy polymer	1.EF-150 2.ECP-357 3.PCE-300	Pyromellitic dianhydride15 \ Silica20 \ Resins (Epoxy)65 (Blue / UL 94 V-0)
2	Dielectric Element	Ceramic	SL/Y5P/Y5U	SL: SrCO3/TiO2/Bi2O3/CaCO3 Y5P: BaTiO3/Bi2O3/SnO2/CeO2 Y5U: Y5U: BaTiO3/ZrO2/ CaCO3
3	Solder	Tin-Cu	Sn-Cu solder	Confidentiality
4	Electrodes	Cu	Confidentiality	Confidentiality
5	Leads wire	Tinned copper clad	0,55+0.1/-0.05mm	Sn2.5 [Surface plating: Sn 100%(3~7μm)] \ Cu5 & Fe92.5 [Substrate metal]

*Constituent structure chart of lead

