

3KV Hi-K CERAMIC DISC CAPACITOR

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Ver:17

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PRODUCT SPECIFICATION

PRODUCT: CERAMIC DISC CAPACITOR

TYPE: 3KV HI-K CERAMIC CAPACITOR

CUSTOMER:

DOC. NO.: POE-D05-00-E-17

Ver.: 17

Date:

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,
HUANGPU DISTRICT ,GUANG ZHOU,CHINA

MAKER : PAN OVERSEAS (GUANGZHOU) ELECTRONIC CO.,LTD.

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Record of change

Date	Version	Description	page												
2008.6.3	1	1. E13-00-E-06(before) → POE-E05-00-E-01(1 st edition)													
2008.8.22	2	1. Revised diameter as below : <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Before</th> <th>After</th> </tr> </thead> <tbody> <tr> <td>YP302272X140*</td> <td>not available</td> </tr> <tr> <td>YP302332X140*</td> <td>not available</td> </tr> <tr> <td>YP302362X150*</td> <td>not available</td> </tr> <tr> <td>YP302392X150*</td> <td>not available</td> </tr> <tr> <td>YP302472X170*</td> <td>not available</td> </tr> </tbody> </table> 2. Remove H (inside kink lead) lead type for 3 KV. 3.Add last SAP code “ H” for halogen and Pb free , epoxy resin.	Before	After	YP302272X140*	not available	YP302332X140*	not available	YP302362X150*	not available	YP302392X150*	not available	YP302472X170*	not available	6 13-14 2
Before	After														
YP302272X140*	not available														
YP302332X140*	not available														
YP302362X150*	not available														
YP302392X150*	not available														
YP302472X170*	not available														
2008.12.12	3	1. Complete the 13 th to 17 th codes of SAP P/N. 2. Page layout adjustment. 3. Added Marking when the coating resin is Halogen and Pb free Epoxy.	4-5												
2009.8.19	4	1.Change PSA & POE logo to Walsin & POE logo.													
2010/9/9	5	1. Review “but Dφ≤6.0 mm shall be omitted.” To “but when the code of body diameter dimension ≤060 shall be omitted.” 2. Add date code on marking (item 7~12).	7 7												
2013/5/6	6	1. Review the Lead diameter φ from 0.60 +/-0.06mm to 0.55+/-0.05mm 2. Review the Solderability temperature from 255(+5/-0)°C to 245±5°C. , Solderability time from 2±0.5s to 5±0.5s.	5,6,8 10												
2013/10/18	7	1. Review the packing specification 2. Delete Z5U 3KV 822/103	11												
2015/8/4	8	1. Review the temp range:Y5P(-25°C ~ +85°C)Change(-25°C ~ +125°C) 2. review the high temperature loading: FOR 1000(+48/-0) HOURS AT 85 ± 2°C AND THEN DRIED FOR 24±2 HOURS AND MEASURED.Change FOR 1000(+48/-0) HOURS AT 125 ± 2°C AND THEN DRIED FOR 24±2 HOURS AND MEASURED.	9 11												
2015/11/25	9	1. Add the YV(Y5V) type 2. Delete the definition about “Old Part No.” 3. Review 4. Marking 4. Review 6. Specification and test method: 5. Review 9. Drawing of internal structure and material list	4,6 7 7 9,10,11 14												
2016/3/3	10	1. Review the Available lead code of Lead Configuration. 2. Review 6. Specification and test method(add Pre-treatment):	5 9-11												
2019/7/26	11	1. Review the Hole-down tape width (W0) from 11.5mm min. to 8.0mm min.	8												
2019/11/12	12	1. Review the temperature characteristic for ZU(Z5U) & YU(Y5U) type	6,9												
2021/9/9	13	1. Delete Walsin & POE logo.	1												
2022/1/8	14	1. Add “Soldering Recommendation”	15												
2022/4/21	15	1. Add 8.8 List of substances that affect the insulation strength of coating	14												
2023/6/15	16	1. The last code “B” is changed from “Epoxy Resin , Pb free” to “Halogen free and Pb free , epoxy resin ”.	4,7												
2025/7/6	17	1. Review the Packing quantity 2. Review the Drawing of Internal Structure and material list	12 16												

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1. Part number for SAP system:

<u>Y P</u>	<u>3 0 2</u>	<u>1 0 2</u>	<u>K</u>	<u>0 9 0</u>	<u>B</u>	<u>2 0</u>	<u>C</u>	<u>7</u>	<u>B</u>
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

(1)Temperature Characteristic : YP=Y5P , ZU=Z5U , YU=Y5U , YV=Y5V

(2)Rate Voltage : 302=3KVDC

(3)Rate Capacitance : ex. 221=220pF, 102=1000pF

(4)Tolerance of Capacitance : K= ±10%, M= ±20%, Z= +80%-20%

(5) Nominal body diameter dimension (Ref. to page.6 Dφ Code spec.) .

(6)Lead Style : Refer to “2. Mechanical”.

(7)Packing mode and lead length (identified by 2-figure code) :

Taping Code	Description
AF	Box and Pitch : 15.0 mm
AM	Box and Pitch : 25.4 mm

Bulk Code	Description
3E	Lead length : 3.5mm
04	Lead length : 4.0mm
4E	Lead length : 4.5mm
20	Lead length : 20.0mm

(8)Length tolerance :

Code	Description	
A	±0.5 mm(Only for short kink lead code “D / X / H”)	Short lead
B	±1.0 mm	Short lead
C	Min.	Long lead
D	Taping special purpose	Taping

(9)Lead Pitch :

Code	Description
7	7.5±1 mm
0	10±1 mm

(10)Epoxy Resin Code :

Code	Description
B	Halogen and Pb free , epoxy resin.
H	

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2. Mechanical:

Available lead code (Epoxy Resin Coating)- (unit: mm)

Lead type	SAP P/N (13-17)digits	Pitch (F)	Lead Length (L)	Packing	Lead Configuration
Lead style : B Straight long lead	B20C7	7.5 ± 1.0	20 MIN.	Bulk	
	B20C0	10 ± 1.0	20 MIN.		
	BAFD7	7.5 ± 1.0	Refer to "5. Taping format"	Tap. Ammo	
	BAMD0	10 ± 1.0			
Lead style : L Straight short lead	L03B7	7.5 ± 1.0	3.0 ± 1.0	Bulk	
	L4EA7	7.5 ± 1.0	3.5 ± 0.5		
	L4EB7	7.5 ± 1.0	4.5 ± 1.0		
	L05B7	7.5 ± 1.0	5.0 ± 1.0		
	L10B7	7.5 ± 1.0	10.0 ± 1.0		
	L03B0	10 ± 1.0	3.0 ± 1.0		
	L4EB0	10 ± 1.0	4.5 ± 1.0		
	L05B0	10 ± 1.0	5.0 ± 1.0		
Lead style : X Outside kink lead	X3EA7	7.5 ± 1.0	3.5 ± 0.5	Bulk	
	X04A7	7.5 ± 1.0	4.0 ± 0.5		
	X05B7	7.5 ± 1.0	5.0 ± 1.0		
	X3EA0	10 ± 1.0	3.5 ± 0.5	Tap. Ammo	
	X04A0	10 ± 1.0	4.0 ± 0.5		
	X05B0	10 ± 1.0	5.0 ± 1.0		
	XAFD7	7.5 ± 1.0	Refer to "5. Taping format"		
XAMD0	10 ± 1.0	Refer to "5. Taping format"			
Lead style : D Vertical kink short lead	D3EA7	7.5 ± 1.0	3.5 ± 0.5	Bulk	
	D04A7	7.5 ± 1.0	4.0 ± 0.5		
	D3EA0	10 ± 1.0	3.5 ± 0.5		
	D04A0	10 ± 1.0	4.0 ± 0.5	Tap. Ammo	
	DAFD7	7.5 ± 1.0	Taping SPEC.		
	DAMD0	10 ± 1.0	Taping SPEC.		
Lead style : H Inside kink lead	H3EA0	10.0±1.0	3.5±0.5 mm	Bulk	
	HAFD0	Refer to "5. Taping format"		Tap. Ammo	
	HAMD0				
Lead style : M Double outside kink lead	M04B7	7.5 ± 1.0	4.0 ± 1.0	Bulk	
	M04B0	10 ± 1.0	4.0 ± 1.0		

* Lead diameter Φd: 0.55 +/-0.05mm

* e (Coating extension on leads): 3.0mmMax for straight lead lead style, not exceed the kink for kink lead.

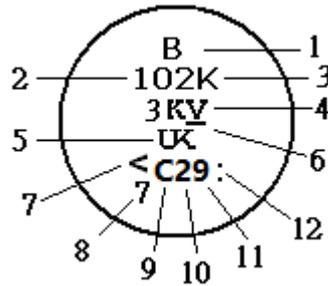
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3. Capacitance value vs. Rate voltage, product diameter :

Manufacturing capacity list Cap. Value vs. Rate voltage, product diameter & type																			
T.C.	Y5P (CLASS II, Temperature: -25°C~+85°C, T.C.C.:±10%)					Y5U (CLASS II, Temperature: -25°C~+85°C, T.C.C.: +22%~-56%)					Z5U (CLASS II, Temperature: +10°C~+85°C, T.C.C.: +22%~-56%)					Y5V (CLASS II, Temperature: -25°C ~+85°C T.C.C.: +22~-82%)			
D φ (Code)	060	070	090	110	130	060	080	100	110	120	060	080	100	110	120	060	080	100	140
D max. (mm)	7.5	8.5	10.5	12.5	14.5	7.5	9.5	11.5	12.5	13.5	7.5	9.5	11.5	12.5	13.5	7.5	9.5	11.5	15.5
T max. (mm)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
100	101																		
150	151																		
220	221																		
330	331																		
470		471																	
560		561																	
680			681																
750			751																
820			821																
1000			102			102					102					102			
1500				152			152					152					152		
2200					222		222					222					222		
3300								332					332					332	
3900									392					392					392
4700										472					472				472
8200																			
10000																			103
φ d (mm)	0.55+/-0.05																		
Packing	TAPING or BULK																		
Coating	Epoxy Resin																		

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4 Marking :



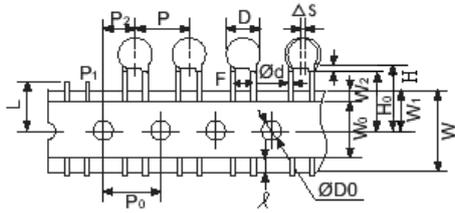
1. Temperature characteristic	2. Nominal capacitance	3. Capacitance tolerance	4. Rated voltage	5. Manufacturer's identification	6. Halogen and Pb free
Y5P : Be marked "B" Z5U / Y5U : Be marked "E" Y5V : Shall be omitted	Identified by 3-figure code when Cap.≥100pF Ex. 1000pF → "102"	K: ±10% (For Y5P) M: ±20% (For Z5U or Y5U) Z: +80%-20% (For Y5V)	3000V : Be marked "3kV"	Shall be marked as "UK", but when the code of body diameter dimension ≤060 shall be omitted.	When the epoxy resin is Halogen and Pb free, there is a "_" marking. (For the last code "H" and "B" of the SAP P/N)
Definition of date code marking:					
7. Supplier of Epoxy	8. No. of test equipment	9. Factory of manufacture	10. Year of manufacture	11. Month of manufacture	12. Week of manufacture by month
< : K-company , : P-company	1~9: No.1~No.9, J: No.10, K: No.11, L: No.12	C: Factory of POEGZ	1:2021, 2:2022, 3:2023, 4:2024, 5:2025, 6:2026, 7:2027, ...	1~9: January~ September, O: October, N: November, D: December	week 1: - week 2: · week 3: : week 4: · week 5: ;

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5. Taping format:

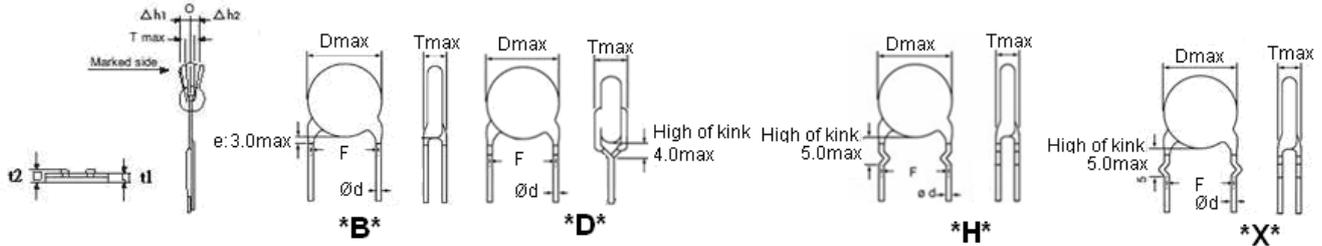
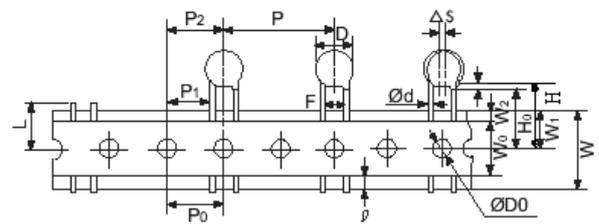
- 15mm pitch/lead spacing 7.5mm taping

Lead Code: ***BAFD7 & *DAFD7 & *HAFD7 & *XAFD7**



- 25.4mm pitch/lead spacing 10.0mm taping

Lead Code: ***DAMD0 & *XAMD0 & *HAMD0 & *BAMD0**



POE Part Number		*BAFD7	*DAFD7 *HAFD7 *XAFD7	*BAMD0 *DAMD0 *HAMD0 *XAMD0
Item	Symbol	Dimensions (mm)		Dimensions (mm)
Pitch of component	P	15.0±1.0	15.0±1.0	25.4±2.0
Pitch of sprocket	P0	15.0±0.3	15.0±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	P2	7.5±1.5	7.5±1.5	12.7 ± 1.5
Length from hole center to lead	P1	3.75±1.0	3.75±1.0	7.7±1.5
Body diameter	D	See the “3. Capacitance value vs. Rate voltage, product diameter”		
Deviation along tape, left or right	Δ S	0±2.0		
Carrier tape width	W	18.0 +1/-0.5		
Position of sprocket hole	W1	9.0±0.5		
Lead distance between the kink and center of sprocket hole	H0	---		18.0+2.0/-0 For: *DAMD0 *HAMD0 *XAMD0
Lead distance between the bottom of body and the center of sprocket hole	H	20.0+1.5/-1.0	---	20.0+1.5/-1.0 For: *BAMD0
Protrusion length	ℓ	2.0max (Or the end of lead wire may be inside the tape.)		
Diameter of sprocket hole	D0	4.0±0.2		
Lead diameter	φd	0.55 +/-0.05		
Total tape thickness	t1	0.6±0.3		
Total thickness, tape and lead wire	t2	1.5 max.		
Deviation across tape	Δ h1	2.0 max.		
	Δ h2	2.0 max.		
Portion to cut in case of defect	L	11.0 max.		
Hole-down tape width	W0	8.0min		
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. Capacitance value vs. Rate voltage, product diameter”		

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6. Specification and test method:

6.1 SCOPE: THIS SPECIFICATION APPLIES TO HIGH VOLTAGE CONSTANT, 3KV CERAMIC CAPACITOR.

6.2 TEST CONDITIONS:

UNLESS OTHERWISE SPECIFIED, ALL TESTS SHALL BE OPERATED AT THE STANDARD TEST CONDITIONS OF TEMPERATURE 5°C TO 35°C AND RELATIVE HUMIDITY 45% TO 85%. WHEN FAILS A TEST, RETEST BE OPERATED AT THE CONDITIONS OF TEMPERATURE 25°C ± 2°C, RELATIVE HUMIDITY OF 60% TO 70% AND BAROMETRIC PRESSURE 860 TO 1060 MBAR.

6.3 HANDLE PROCEDURE: TO AVOID UNEXPECT TESTING RESULTS FROM OCCURING, THE TESTED CAPACITOR MUST BE KEPT AT ROOM TEMPERATURE FOR AT LEAST 30 MINUTES AND COMPLETELY DISCHARGED.

6.4 TEST ITEMS:

ITEM	POST-TEST REQUIREMENTS	TESTING PROCEDURE
TEMP. RANGE	OPERATING TEMPERATURE : -25°C to +125°C	
APPEARANCE STRUCTURE SIZE	NO ABNORMALITIES	
MARKING		AS ITEM 4.MARKING.
WITHSTAND VOLTAGEN	BETWEEN TERMINALS: NO ABNORMALITIES	2 TIMES OF THE RATED VOLTAGE. TEST VOLTAGE : 6KVDC, 1~5 SEC, WITH 50mA MAX. CHARGING CURRENT Pre-treatment: Capacitor shall be stored at 125±3°C for 1hour.then placed at※ room condition for 24±2hours
	BETWEEN TERMINAL AND ENCLOSURE : NO ABNORMALITIES	SMALL METALLIC BALLS WITH 1mm DIAMETERS SHALL BE PUT ON A VESSEL AND THE TEST CAPACITOR SHALL BE SUBMERGED EXCEPT 2mm FROM THE TOP OF ITS COMPONENT BODY. THE TEST VOLTAGE SHALL BE APPLIED BETWEEN THE SHORT-CIRCUITED TERMINALS AND THE METALLIC BALLS. (APPLY 1.3KV DC OF RATED VOLTAGE BETWEEN TERMINALS AND ENCLOSURE FOR 1~5 SEC) Pre-treatment: Capacitor shall be stored at 125±3°C for 1hour.then placed at※ room condition for 24±2hours
INSULATION RESISTANCE	10000 MΩ MIN	INSULATION RESISTANCE SHALL BE MEASURED AT 60±5 SECONDS AFTER RATED VOLTAGE APPLIED. RATED VOLTAGE : 500VDC Pre-treatment: Capacitor shall be stored at 125±3°C for 1hour.then placed at※ room condition for 24±2hours
CAPACITANCE	TOLERANCE : K : ±10% M : ±20% Z: +80% -20%	TESTING FREQUENCY : 1 KHZ ± 20% TESTING TEMPERATURE : 25 ± 2°C, TESTING VOLTAGE : 1.0 VRMS
DISSIPATION FACTOR(D.F.)	Y5P : < 2.5% Z5U/Y5U : BELOW 2.5% Y5V : BELOW 5.0%	Pre-treatment: Capacitor shall be stored at 125±3°C for 1hour.then placed at※ room condition for 24±2hours
TEMPERATURE CHARACTERISTIC	CAP. CHANGE: Y5P : WITHIN ± 10% (-25°C to +85°C) Z5U/Y5U : WITHIN +22,-56% Y5V : WITHIN +22%, -82%	CAPACITANCE SHALL BE MEASURED AT 25°C. AND CLASSIFIED AS CAP. CHANGE : Y5*: -25 ~85C / Z5*: +10~+85C Pre-treatment: Capacitor shall be stored at 125±3°C for 1hour.then placed at※ room condition for 24±2hours

※ "room condition" Temperature: 15~35, Relative humidity: 45~75%, Atmospheric pressure: 86~106kPa

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ITEM	POST-TEST REQUIREMENTS	TESTING PROCEDURE
TERMINAL STRENGTH	TENSIBLE STRENGTH : NO BREAKDOWN	WIRE DIA. 0.5mm, LOADING WEIGHT 0.5KG FOR 10±1 SECONDS. WIRE DIA. 0.6mm, LOADING WEIGHT 1.0KG FOR 10±1 SECONDS.
	BENDING STRENGTH : NO BREAKDOWN.	WIRE DIA.0.5 M/M, LOADING WEIGHT 0.25KG WIRE DIA.0.6 M/M, LOADING WEIGHT 0.5KG (BENDING BACK AND FORTH 90 DEGREE TWICE)
SOLDERABILITY	LEAD WIRE SHALL BE SOLDERED OVER 3/4 OF THE CIRCUMFERENTIAL DIRECTION.	TO COMPLY WITH JIS-C-5102 8.4 SOLDER TEMPERATURE 245±5°C AND DIPPING TIME 5±0.5 SECONDS. FLUX : WEIGHT RATIO OF POSIN 25%
SOLDERING HEAT RESISTANCE	APPEARANCE : NO ABNORMALITIES CAP. CHANGE : Y5P : ±5% MAX Z5U/Y5U : ±15% MAX Y5V : ± 20% MAX WITHSTAND VOLTAGE: (BETWEEN TERMINALS) NO ABNORMALITIES	LEAD WIRE OR TERMINALS SHALL BE IMMERSSED UP TO 2.0 M/M FORM BODY. INTO THE MOLTEN SOLDER OF WHICH TEMPERATURE: 260(+5/-0)°C FOR 5~10 SECONDS.THEN LEAVE AT STANDARD TEST CONDITIONS FOR 4~24 HOURS, THEN MEASURED. ※WHEN SOLDERING CAPACITOR WITH A SOLDERING IRON, IT SHOULD BE PERFORMED IN FOLLOWING CONDITIONS. TEMPERATURE OF IRON-TIP: 350~400 °C SOLDERING IRON WATTAGE : 50W MAX. SOLDERING TIME : 3.5 SEC. MAX.
HUMIDITY CHARACTERISTIC (STABLE SITUATION)	APPEARANCE : NO ABNORMALITIES CAP. CHANGE : Y5P : ± 10% MAX Z5U/Y5U : ± 20% MAX Y5V : ± 30% MAX D.F.: Y5P : 5% MAX Z5U/Y5U : 5% MAX Y5V : 7.5% MAX INSULATION RESISTANCE: 1000MΩ MIN.	CAPACITORS SHALL BE SUBJECTED TO A RELATIVE HUMIDITY OF 90 ~ 95% AT 40±2°C FOR 500(+24/-0) HOURS. THEN DRIED FOR 1~2 HOURS AND MEASURED. Pre-treatment: Capacitor shall be stored at125±3°C for 1hour.then placed at※ ¹ room condition for 24±2hours Post-treatment: Capacitor should be stored for 24±2 hrs. at * ¹ room condition
HUMIDITY LOADING	APPEARANCE : NO ABNORAMLITIES CAP. CHANGE : Y5P : ±10% MAX Z5U/Y5U : ±20% MAX Y5V : ± 30% MAX D.F.: Y5P : 5% MAX Z5U/Y5U : 5% MAX Y5V : 7.5% MAX INSULATION RESISTANCE: 500 MΩ MIN	CAPACITORS SHALL BE SUBJECTED TO A RELATIVE HUMIDITY OF 90 ~ 95% AT 40 ± 2°C FOR 500(+24/-0) HOURS WITH RATED VOLTAGE APPLIED WITH 50mA MAX. THEN DRIED FOR 1~2 HOURS AND MEASURED. Pre-treatment: Capacitor shall be stored at125±3°C for 1hour.then placed at※ ¹ room condition for 24±2hours Post-treatment: Capacitor should be stored for 24±2 hrs. at * ¹ room condition

※¹"room condition" Temperature:15~35, Relative humidity: 45~75%, Atmospheric pressure:86~106kPa

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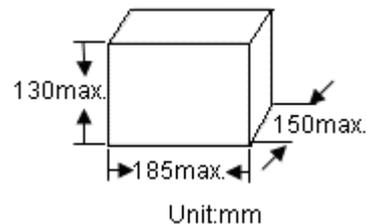
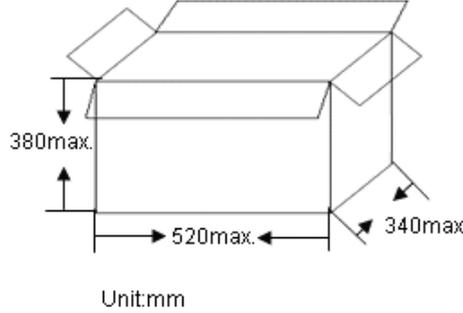
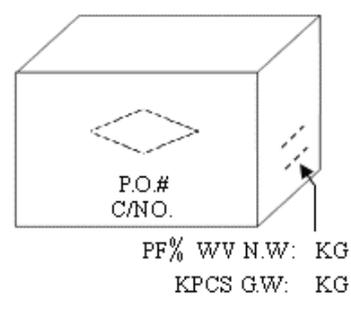
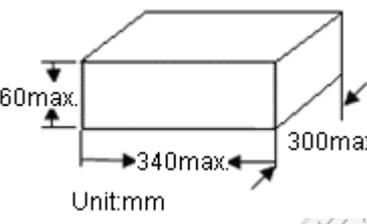
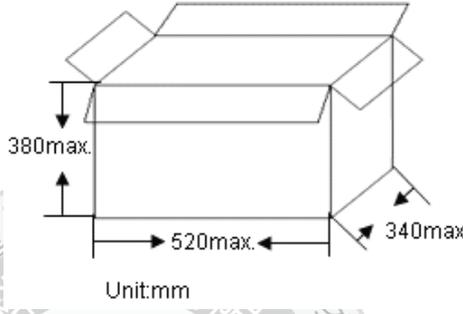
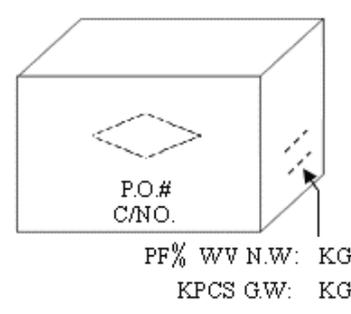
ITEM	POST-TEST REQUIREMENTS	TESTING PROCEDURE
HIGH TEMPERATURE LOADING	APPEARANCE: NO ABNORMALITIES	<p>CAPACITORS SHALL BE SUBJECTED TO A TEST OF 150% RATED VOLTAGE WITH 50mA MAX. FOR 1000(+48/-0) HOURS AT 125 ± 2°C AND THEN DRIED FOR 24±2 HOURS AND MEASURED.</p> <p>Pre-treatment: Capacitor shall be stored at 125±3°C for 1hour. then placed at ※¹room condition for 24±2hours</p> <p>Post-treatment: Capacitor should be stored for 24±2 hrs. at *¹room condition</p>
	CAP. CHANGE : Y5P : ±10% MAX Z5U/Y5U : ±20% MAX Y5V : ± 30% MAX	
	D.F. : Y5P : 4% MAX Z5U/Y5U : 4% MAX Y5V : 7.5% MAX	
	INSULATION RESISTANCE : 1000 MΩ MIN.	
TEMPERATURE CYCLING	APPEARANCE : NO ABNORMALITIES	<p>CAPACITORS SHALL BE SUBJECTED TO : -25±3°C (30±3min) → 25°C (3min) → 85±3°C (30±3min) → 25°C (3min) FOR 5 CYCLE</p> <p>Pre-treatment: Capacitor shall be stored at 125±3°C for 1hour. then placed at ※¹room condition for 24±2hours</p> <p>Post-treatment: Capacitor should be stored for 24±2 hrs. at *¹room condition</p>
	CAP. CHANGE: Y5P : ±10% MAX Z5U/Y5U : ±20% MAX Y5V : ± 30% MAX	
	D.F. : Y5P : 5% MAX Z5U/Y5U : 5% MAX Y5V : 7.5% MAX	
	INSULATION RESISTANCE: 1000 MΩ MIN.	

※¹"room condition" Temperature: 15~35, Relative humidity: 45~75%, Atmospheric pressure: 86~106kPa

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7. Packing Baggage :

7.1 Packing size:

Type	Box	Carton
Bulk	 <p>Unit:mm</p>	  <p>Unit:mm</p>
Ammo taping	 <p>Unit:mm</p>	  <p>Unit:mm</p>

7.2 Packing quantity:

Packing type	The code of 14th to15th in SAP P/N	MPQ(Kpcs/Box)
Taping	AF	1
	AM (The size code ≤ 11)	1
	AM (The size code ≥ 12)	0.5

Packing type	Lead length	Size code of 10th to 12th in SAP P/N	MPQ (Kpcs/Bag)	Kpcs/Box
Bulk	Long lead ($L \geq 16\text{mm}$)	060~100	1	2
		110~120	0.5	1.5
		130~140	0.5	1
	Short lead ($L < 16\text{mm}$)	060	1	6
		070~080	1	4
		090~100	1	3
		110~140	1	2

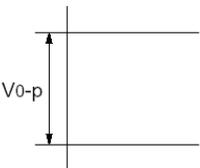
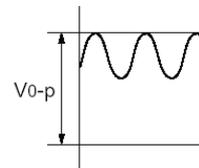
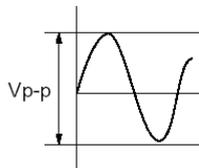
8. Notices:

※**Application:** DC or Low frequency High Voltage circuits. As coupling and decoupling capacitors for such application where higher losses and a reduced capacitance stability are required.

8.1 Operating Voltage:

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

When the voltage is applied to the circuit, starting or stopping may generate irregular voltage for a transit period because of resonance or switching. Be sure to use a capacitor with a rated voltage range that includes these irregular voltages.

Voltage	DC Voltage	DC+AC Voltage	AC Voltage
Positional measurement			

8.2 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. When the capacitor is used in a high frequency current, pulse current or similar current, it may self-generate heat due to dielectric loss. The frequency of the applied sine wave voltage should be less than 100Hz. The applied voltage load (*) should be such that the capacitor's self-generated heat is within 20°C at an atmosphere temperature of 25°C. When measuring, use a thermocouple of small thermal capacity-K of $\phi 0.1\text{mm}$ in conditions where the capacitor is not affected by radiant heat from other components or surrounding ambient fluctuations.

Excessive heat may lead to deterioration of the capacitor's characteristics and reliability. (Never attempt to perform measurement with the cooling fan running. Otherwise, accurate measurement cannot be ensured.)

8.3 Fail-Safe

When capacitor is 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.

8.4 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 degrees centigrade and 15 to 85 % for 6 months maximum and use within the period after receiving the capacitors.

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.

8.5 Vibration and impact

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

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8.6 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 degrees C. max.

Soldering iron wattage : 50W max.

Soldering time : 3.5 sec. max.

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.

8.7 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.

8.8 List of substances that affect the insulation strength of coating :

Epoxy resin solvent

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

Epoxy resin thinner

Category		Model	
Reactive diluentactivated thinner	Simple function group	HK-66 (Alkyl glycidyl ether)	
		501 (Butyl glycidyl ether)	
		690 (Phenyl Glycidyl Ether)	
		AGE (C12-14Aliphatic Polyalcohol Glycidyl Ether)	
		692 (Benzyl Glycidyl Ether)	
	Two functional groups	D-678 (Neopentyl glycol diglycidyl ether)	
		622 (1,4-Butanediol diglycidyl ether)	
		669 (Ethylene glycol diglycidyl ether)	
		X-632 (Polypropylene glycol diglycidyl ether)	
		X-652 (1,6-Hexadiol diglycidyl ether)	
Non-activated thinner	D-691Epoxypropane o-methylphenyl ether		
	Anhydrous ethanol	Toluene	
	Ethyl acetate	Dimethylbenzene	
	Dimethyl formamide	Butyl acetate	
	Acetone	Styrene	
	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

9. Soldering Recommendation:

9.1 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. if temperature exceed 200°C
- Take care with the flow solder not to touch the capacitor body directly at mounting

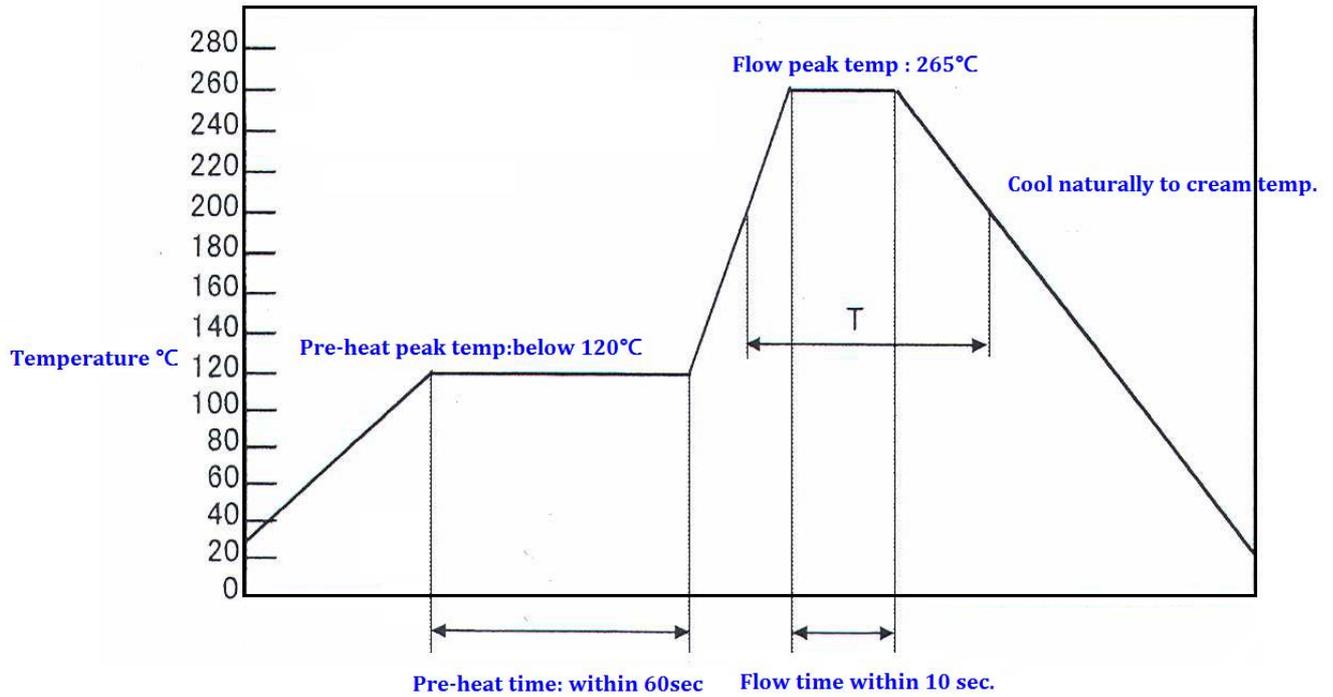


Chart to show flow recommended temp

9.2 Recommended Reworking Conditions with Soldering Iron :

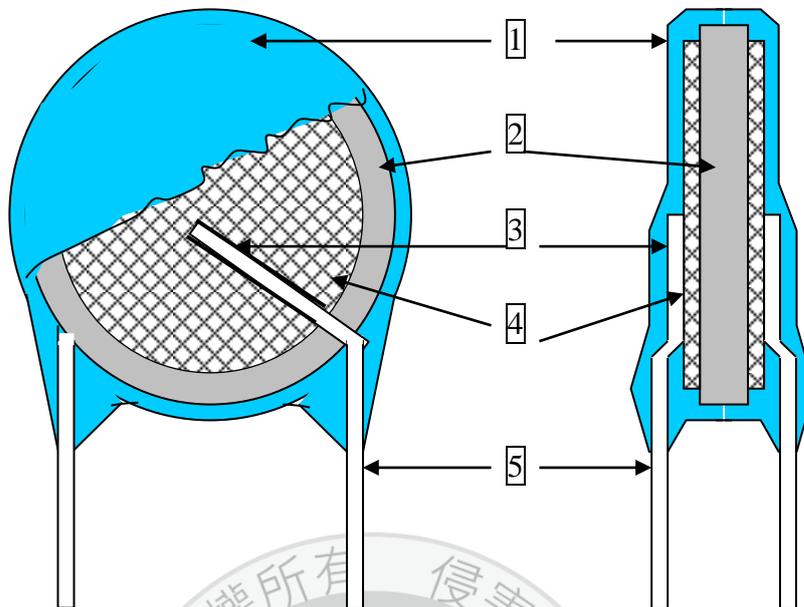
- Temperature of iron-tip: 400 degrees C. max.
- Soldering iron wattage: 50W max.
- Soldering time: 3.5 sec. max.
- Distance from coating body: 2 mm (min.)

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

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10. Drawing of internal structure and material list:

產品結構圖



Remarks :

No.	Material	Description
1	Insulation Coating	Epoxy resins
2	Dielectric Element	Ceramic
3	Solder	Tin-Silver alloy
4	Electrodes	Silver [Ag]
5	Leads wire	Solder coated CP wire (Solder : Tin-Silver alloy)