

规格书 SPECIFICATION SHEET

Customer name:			
BERYL SERIES:	RD	TYPE:	RADIAL
DESCRIPTION:	4.7uF/400V	Φ8*9	
Apply date :	2022-04-12		

BERYL		CUSTOMER			
P/N:RD400M4R7LO8*9TH-2A2	P/N:				
PREPARED	APPROVAL	PREPARED	CHECKED	APPROVAL	
董桂茹	张业维				

After approved, please sign back 1 Approval Sheet before order. If not, we will treat it as tacitly acknowledged and accepted our relative standard and technical index.

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Revise record

NO.	Date	Revise reason	Revise content	Prepared
01	2022.04.12	First issue	First issue	董桂茹

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1, Application

This specification applies to Aluminum electrolytic capacitor (foil type) used in electronic equipment. Designed capacitor's quality meets IEC 60384.

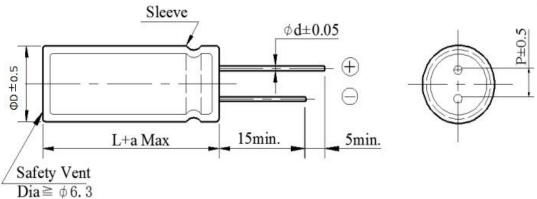
2. Table of specification and characteristics

Series	Cap(uF) 120Hz/20°C	WV(V)	Size	(mm)	Temperature (°C)		Capacitance Tolerance	Life(hours) @105(°C)
	120112/20 C		D	L			Toterance	(6)
RD	4.7	400	8	9	-40~+105		±20%	8000
DF (%)(MAX) 120Hz/20°C		LC(μA)(1 2min/2	·	,	(MAX) Hz/25°C	1	C (mA rms) K)105°C/120Hz	Surge voltage(V)
	≤24 ≤48 -		-		90	440		

Other: /

3, Product Dimensions

Type

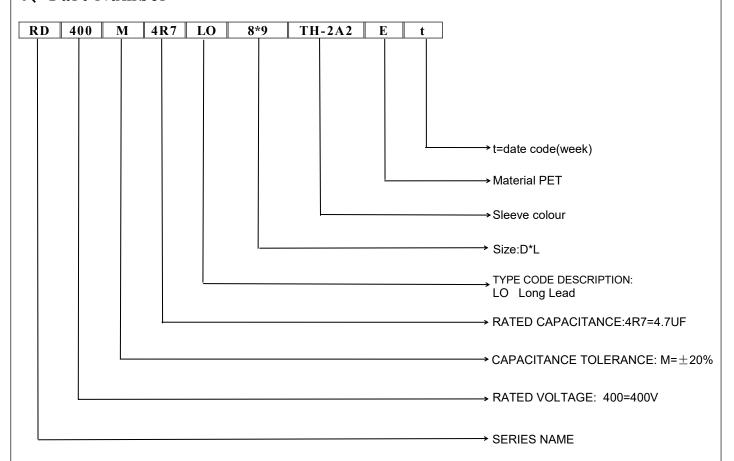


ΦD	5	6.3	8	10	13	16	18	22
P	2	2.5	3.5	5	5	7.5	7.5	10
Фd	0.5	0.5	0.5/0.6	0.6	0.6	0.8	0.8	0.8
а			(L<20)	± 1.5	(L≥2	$0) \pm 2.0$		

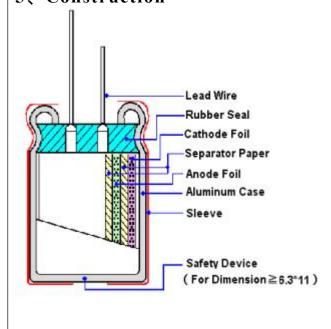
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4. Part Number



5. Construction



Material name	Composition	Supplier name	
Lead	Al and (Fe+Cu+Sn)	NM、JX	
Rubber	EPT / IIR	LHX、LA、TH、LM2	
Case	Aluminum	OX、YJ、HL、LY2	
Paper	Wood / Fibrous plant materials	KE、DF	
Anode foil	$Al + Al_2O_3$	HY1、HY2、HF、HY3、 LD、FQ	
Cathode foil	Aluminum	GY、LY1	
Electrolyte	Glycol + Water +Ammonium salt	XZB、LM1、JZ2、FS	
Sleeve	PET	YL、CY	

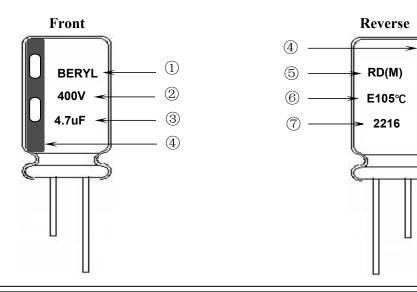
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BERYL 绿宝石

ALUMINUM ELECTROLYTIC CAPACITORS

6. Product Marking

Marking Sample:



Marking Details:

Capacitor shall be marked the following items:

- 1) Trademark (BERYL)
- 2) working voltage(400V)
- 3) Nominal capacitance(4.7uF)
- 4) Cathode marked
- 5) Series symbol & Nominal capacitance tolerance (M: $-20\% \sim +20\%$)
- 6) Sleeve material(E: PET)

Maximum operating temperature(105°C)

7) Date code (2216)

22: Manufactured year 2022

Code	19	20	21	22	23	24	25	26	
Year	2019	2020	2021	2022	2023	2024	2025	2026	

16: Manufactured week (01、02、03、04......52、53)

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7. Characteristics

Standard atmospheric conditions

Unless other specified, the standard range of atmospheric conditions for making measurements and tests is as follows:

Ambient temperature : 15°C to 35°C
Relative humidity : 45% to 85%
Air pressure : 86kPa to 106kPa

If there is any doubt about the results, measurement shall be made within the following conditions:

Ambient temperature : $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Relative humidity : 60% to 70%Air pressure : 86kPa to 106kPa

Operating temperature range

The ambient temperature range at which the capacitor can be operated continuously at rated voltage is $(160\sim400\text{WV})$ -40°C to +105°C $(450\sim500\text{WV})$ -25°C to +105°C

Table

	ITEM	PERFORMANCE
1	Nominal capacitance (Tolerance)	Condition> Measuring Frequency: 120Hz±12Hz Measuring Voltage: Not more than 0.5Vrms +1.5~2.0V.DC Measuring Temperature: 20±2°C Criteria> Shall be within the specified capacitance tolerance.
2	Leakage current	$ \begin{array}{l} \textbf{} \\ \textbf{Connecting the capacitor with a protective resistor } (1k\Omega\pm10\Omega) \text{ in series for} \\ \textbf{2 minutes, and then, measure leakage current.} \\ \textbf{} \\ \textbf{I: Leakage current } (\mu A) \\ \textbf{I } (\mu A) \leqslant 0.02\text{CV} + 10(\mu A) \text{ ,} \\ \textbf{measurement circuit refer to right drawing.} \\ \textbf{C: Capacitance } (\mu F) \\ \textbf{V: Rated DC working voltage } (V) \\ \end{array} $
3	Dissipation factor	Condition> Nominal capacitance, for measuring frequency, voltage and temperature. Criteria> Must be within the parameters (See page 3)

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	ITEM				P	ERF	ORMA	NCE		
4	Impedance	Condition> Measuring frequency:100kHz; Measuring temperature:20±2°C Measuring point: 2mm max. from the surface of a sealing rubber on the lead wire. Criteria> (20°C) Must be within the parameters (See page 3)								
5	Load life test	Maxin currer exceed recover control of the control	rding to IEC60384- mum operating tem nt for Rated life +48 ed the rated working vering time at atmos	peratur 3/0hou g volta spheric neet th No Wit Not	re ±2°(rs. (True) rs.	C with the sum of the	th DC bi m of DC ne products. The rest grequires the spect of initial 200% of	as voltage p C and ripple ct should be sult should r ments. cified value.	lus the rated peak voltage tested after meet the followed walue.	ripple shall not l6 hours
6	Shelf life test	Condition> The capacitors are then stored with no voltage applied at a temperature of Maximum operating temperature±2°C for1000+48/0 hours. Following this period, the capacitors shall be removed from the test chamber and be allowed to stabilized at room temperature for16 hours. measure leakage current Criteria> The characteristic shall meet the following requirements. Leakage current Not more than 200% of the specified value. Capacitance Change Within ±20% of initial value. Dissipation Factor Not more than 200% of the specified value. Appearance There shall be no leakage of electrolyte.								
7	Maximum permissible (ripple current, temperature coefficient)	applied Table- The co voltage Frequence	aximum permissible at maximum opera	C volt rse vol	age an tage.	d the				

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ALUMINUM ELECTROLYTIC CAPACITORS

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	ITEM	PERFORMANCE							
8	Terminal strength	Condition> Tensile strength Fixed the capac seconds. Bendi Fixed the capac 2~3 seconds, an Diameter of 0.5mm 0.6~0. Criteria> No noticeable of	itor, applied for ing strength of t itor, applied for d then bent it for f lead wire and less 8 mm	erminals. ree to benn or 90° to it Tensil (1) 5	the termina s original po e force N kgf) (0.51) 1.02)	Bending for 2.5 (0.5	om the rubbe 2~3 seconds ce N (kgf) .25)	er) for 90° within	
9	Temperature characteristics	1 2 3 4 5 Capacitance, D <criteria> a. At +105°C, ca Dissipation fa The leakage of b. In step 5, cap Dissipation fa</criteria>	apacitance mea lector shall be we current measure acitance measure actor shall be we current shall no pedance (Z) rai	sured at + rithin the 1 ed shall no red at +20 rithin the 1 t more tha	Time to re Time to re Time to re Time to re e measured 20°C shall be imit of Item t more than °C shall be imit of Item n the specific t exceed the	be within $\pm 25\%$ 7.3 10 times of its within $\pm 10\%$ of 7.3 ied value.	quilibrium quilibrium quilibrium quilibrium 6 of its origi s specified v of its origina following ta 0 500	alue. I value.	
10	Surge test						eated		



	ITEM		PERFORMANCE					
		<condition> Temperature cycle: According to IEC60384-4 No according as below:</condition>	.4.7 methods, capacitor	shall be placed in an oven, the cond	ition			
			nperature	Time				
		(1) +20°C		3 Minutes				
	Change of	(2) Rated low temperatu	are (-40°C) (-25°C)	30±2 Minutes				
11	temperature test	(3) Rated high temperate	ure (+105°C)	30±2 Minutes				
		(1) to (3) =1 cycle, total	5 cycle					
		Criteria> The characteristic shall meet t	he following requireme	nt.				
		Leakage current	Not more than the sp					
		Dissipation Factor	Not more than the sp	pecified value.				
		Appearance	There shall be no lea	akage of electrolyte.				
Damp 12 heat test		Humidity test: According to IEC60384-4 No. be exposed for 500±8 hours in 40±2°C, the characteristic cha <criteria> Leakage current Capacitance Change Dissipation Factor Appearance</criteria>	an atmosphere of 90~9	95%R H .at wing requirement. cified value. I value. of the specified value.				
13	Solderability test Soldering temperature : 245 ±5°C Dipping depth : 2mm Dipping speed : 25±2.5mm/s Dipping time : 3±0.5s Soldering wetting time Less than 3s Criteria> A minimum of 95% of the surface being							
		Coating quality	A minimum of 95%	of the surface being				

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	ITEM	PERFORMANCE						
14	Vibration test	directions. Vibration from each to peak amplitude Sweep rate : 10	OHz ~ 55Hz ~ 10Hz in about 1 minute capacitor with diameter greater than 12.5mm or longer than 25mm th a bracket. Within 30° To be soldered g items shall be tested:					
		Inner construction Appearance	No intermittent contacts, open or short circuiting. No damage of tab terminals or electrodes. No mechanical damage in terminal. No leakage of electrolyte or swelling of the case. The markings shall be legible.					
	Resistance to	or400±10°Cfor3 ⁻⁰ seconds shall be left under the norm measurement.	shall be immersed into solder bath at 260±5°Cfor10±1seconds s to 1.5~2.0 mm from the body of capacitor. Then the capacitor nal temperature and normal humidity for 1~2 hours before					
15	solder heat test	Leakage current	Not more than the specified value.					
		Capacitance Change	Within ±5% of initial value.					
		Dissipation Factor	Not more than the specified value. There shall be no leakage of electrolyte.					
		Appearance	There shall be no leakage of electrolyte.					
16	Vent	vent. D.C. test	-					
	test	Diameter (mm)	DC Current (A)					
		Criteria> The vent shall operate vent capacitor and/or can be shall operate vent capacitor.	with no dangerous conditions such as flames or dispersion of pieces of se.					

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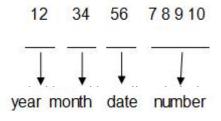


8. Packing Information

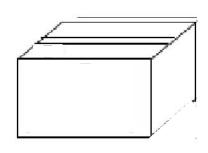
Packing Label Marked (the following items shall be marked on the label) (Inside box or bag)

(1)Clint order number (2)Client part number (3)Beryl part number (4)Capacitance (5)Voltage (6)Dimension (7)Packaging quantity (8)Capacitance tolerance (9) QC Marking (10) Lot number (11) Series

LOT Number:



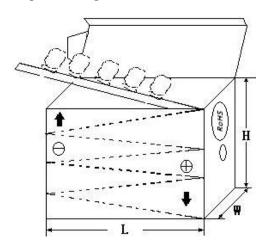
1) Bulk Packing:



3) Outer box



2) Taped Packing:



4) Outer box label:

		Ltd.		
C.S.R:				B UA HE
C.S.R P/0:				ROHS HE
C.S.R P/N:				
S.P.R P/N:			QC	
SPEC:				
QTY:	PCS	TOL:	%	
L/N:		S.P.R:		

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9. Prohibition to Use Environment- related Substances

We are hereby to certify the followings:

Our company hereby warrants and guarantees that all or part of products, including, but not limited to, the peripherals, accessories or package, delivered to your company (including your subsidiaries and affiliated companies) directly or indirectly by our company are free from any of the substances listed below.

The latest version of <Substances Prohibited as per RoHS or <Sony-SS-00259>

	1 ,			
	Cadmium and cadmium compounds			
Accord with	Lead and lead compounds			
heavy metal	Mercury and mercury compounds			
	Hexavalent chromium compounds			
Organic chlorin compounds	Polychlorinated biphenyls (PCB)			
	Polychlorinated naphthalenes (PCN)			
	Polychlorinated terphenyls (PCT)			
	Chlorinated paraffins (CP)			
	Other chlorinated organic compounds			
Organic	Polybrominated biphenyls (PBB)			
bromine	Polybrominated diphenylethers (PBDE)			
compounds	Other brominated organic compounds			
Tributyltin compounds				
Triphenyltin compounds				
Asbestos				
Specific azo com	pounds			
Formaldehyde				
Polyvinyl chloride (PVC) and PVC blends				
F、Cl、Br、I				
REACH				

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NEV4700M50HB NEV.47M100AA NEVH1.0M250AB NEVH3.3M250BB NEVH3.3M450CC KM4700/16 KME50VB100M-8X11.5

SG220M1CSA-0407 ES5107M016AE1DA ESMG160ETD102MJ16S ESX472M16B 227RZS050M 476CKH100MSA 477RZS050M

UVX1V101KPA1FA UVX1V222MHA1CA KME25VB100M-6.3X11 VTL100S10 VTL470S10 VTL470S16A 511D336M250EK5D

052687X ECE-A1CF471 NRE-S560M16V6.3X7TBSTF RGA221M1CTA-0611G ERZA630VHN182UP54N UPL1A331MPH

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NEV2.2M50AA NEV330M63EF NEV4700M35HI NEV4.7M100BA