

规 格书

SPECIFICATION SHEET

Customer	name:
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BERYL SERIES:	RD	TYPE:	RADIAL
DESCRIPTION:	2.2uF/400V	Ф6.3*11	
Apply date :	2022-04-12		

BERYL			CUSTOMER	
P/N:RD400M2R2LO6.3*11TH-2	B2Et	P/N:		
PREPARED	APPROVAL	PREPARED	CHECKED	APPROVAL
董桂茹	张业维			
202001955			•	

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



1、 Application

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

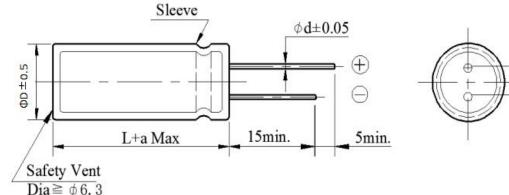
2. Table of specification and characteristics

Series	Cap(uF) 120Hz/20°C	WV(V)	Size	(mm)	Temperature (°C)																														Capacitance Tolerance	Life(hours) @105(°C)
	120112/20 C		D	L			()				Toterance	(105(0)																								
RD	2.2	400	6.3	11	-40~+1	05	$\pm 20\%$	6000																												
	DF (%)(MAX) 120Hz/20°C)(MAX) Hz/25°C	RC (mA rms) (MAX)105°C/120Hz		Surge voltage(V)																												
	≤24 ≤28 -			72	440																															

Other: /

3、 Product Dimensions

Туре



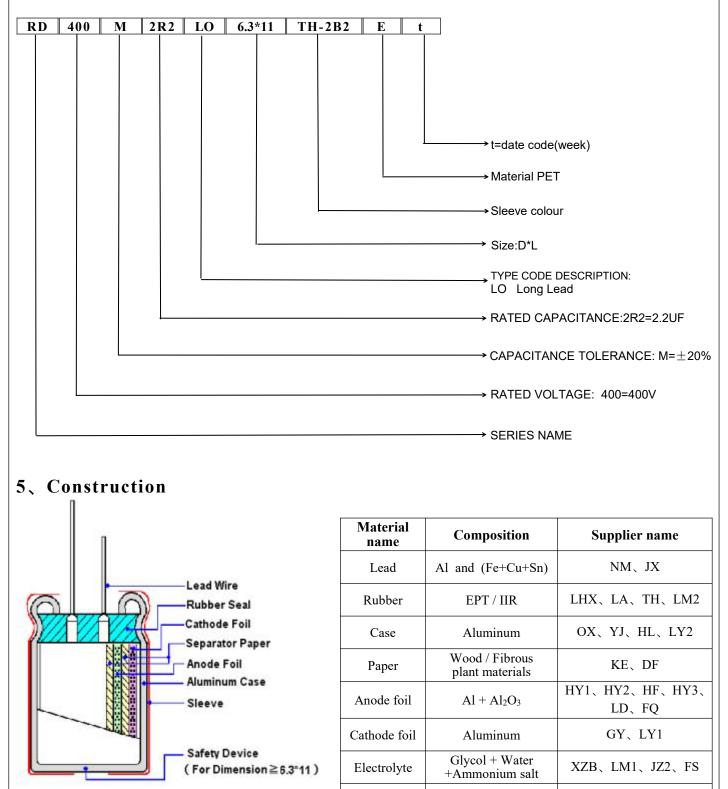
ΦD	5	6.3	8	10	13	16	18	22
Р	2	2.5	3.5	5	5	7.5	7.5	10
Фd	0.5	0.5	0.5/0.6	0.6	0.6	0.8	0.8	0.8
а			(L<20)	± 1.5	(L≥2	$0) \pm 2.0$		

Sheet NO.: 20220412

P±0.5



4、Part Number



Sleeve

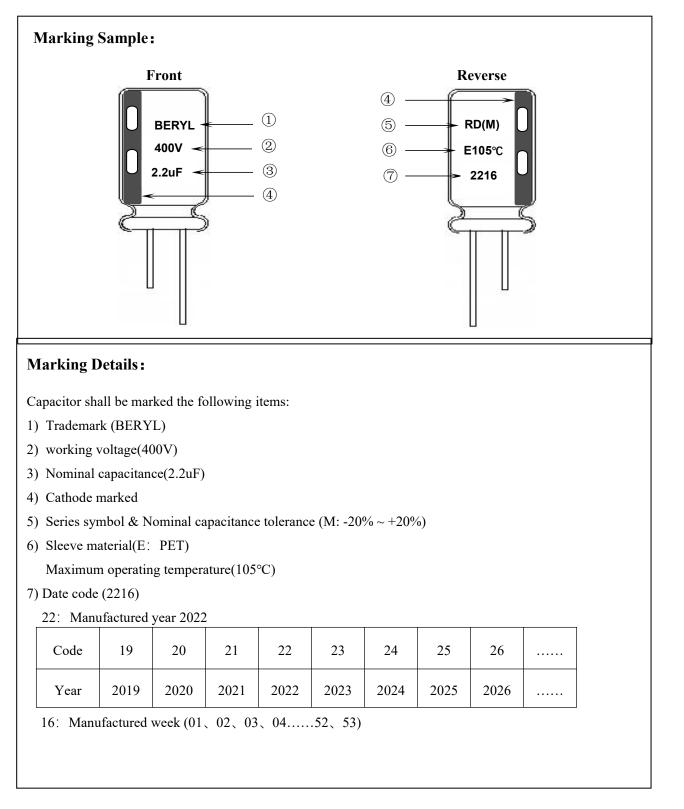
Sheet NO.: 20220412

PET

YL、CY



6、Product Marking





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°CRelative 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 : $20^{\circ}C \pm 2^{\circ}C$ 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 $(160 \sim 400 \text{WV}) - 40^{\circ}\text{C}$ to $+105^{\circ}\text{C}$ $(450 \sim 500 \text{WV}) - 25^{\circ}\text{C}$ to $+105^{\circ}\text{C}$

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.</criteria></condition>
2	Leakage current	$\begin{array}{c} <\!\! \textbf{Condition}\!\!> \\ \text{Connecting the capacitor with a protective resistor } (1k\Omega\pm10\Omega) \text{ in series for} \\ 2 \text{ minutes, and then, measure leakage current.} \\ <\!\! \textbf{Criteria}\!\!> \\ \text{I: Leakage current } (\mu\text{A}) \\ \text{I} (\mu\text{A}) \leq 0.02\text{CV}+10(\mu\text{A}), \\ \text{measurement circuit refer to right drawing.} \\ \text{C: Capacitance } (\mu\text{F}) \\ \text{V: Rated DC working voltage (V)} \end{array}$
3	Dissipation factor	<condition> Nominal capacitance, for measuring frequency, voltage and temperature. Must be within the parameters (See page 3)</condition>



	ITEM			PE	RFORMA	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	<condition> According to IEC603 Maximum operating current for Rated life exceed the rated wor recovering time at a <criteria> The characteristic sh Leakage current Capacitance Chang</criteria></condition>	temperat +48/0ho rking volt tmospher all meet t N e W	ure $\pm 2^{\circ}$ C urs. (The age) The ic conditi he follow ot more t ithin $\pm 20^{\circ}$	with DC bi e sum of DC n the produ- ons. The res- ring requires han the spec- % of initial	as voltage pl 2 and ripple p ct should be sult should m ments. cified value. value.	us the rated beak voltage tested after 1 beet the follo	ripple shall not 6 hours			
		Dissipation Factor Appearance		Not more than 200% of the specified value.There shall be no leakage of electrolyte.							
6	Shelf life test	<condition> The capacitors are the temperature±2°C f from the test cham- leakage current <criteria> The characteristic shal Leakage current Capacitance Change Dissipation Factor Appearance</criteria></condition>	l meet the Not With Not	48/0 hour be allowed followin more that hin ±20% more that	s. Following d to stabiliz <u>g requirem</u> <u>n 200%of th</u> of initial va <u>n 200%of th</u>	g this period, ed at room te ents. ne specified v	the capacito emperature f value. value.	ors shall be remov			
7	Maximum permissible (ripple current, temperature coefficient)	<condition> The maximum permiss applied at maximum of Table-3 The combined value of voltage and shall not frequency Multipliers: Freq (F Cap. (μF) 2.2 Temperature Coefficient Temperature Factor</condition>	Iz) It contractions for the second s	temperati ltage and	ıre						



	ITEM				PE	RFC	ORMANO	CE			
8	Terminal strength	Fixed the original seconds. If Fixed the original seconds are consistent of the original second seco	capacito Bending capacito ds, and t eter of le 5mm and 0.6~0.8 t	strength of r, applied fo hen bent it t ead wire d less mm	ed force to the termin th of terminals. ed force to bent the terminals nu it for 90° to its origin re Tensile force (kgf) 5 (0.51) 10 (1.02)			ll (1~4 m osition wi Bendin 2 5	um from f ithin 2~3 g force N 2.5 (0.25) (0.51)	the rubbe seconds N (kgf)	er) for 90° within
			able cha	nges shall b	e found,	10 bi	reakage o	r loosene	ess at the	terminal	
		<condition> STEP</condition>	Testi	ng temperat	ure (°C)			Tim	e]
			1050	20±2		T	Time to rea			ibrium	-
		2		-40 -25±3	3		Time to rea		-		-
		3		20±2		-	Time to rea		-		-
		4		105±2		Т	Time to reach thermal equilibrium			-	
		5	20±2			Т	Time to reach thermal equilibrium			-	
9	Temperature characteristics	<criteria> a. At +105 Dissipat The leal b. In step 5 Dissipat The leal c. At - 40° Voltage Z-40°C/Z-</criteria>	°C, capa tion fact cage cur 5, capaci tion fact cage cur C, Impe (V)	and impeda acitance mea or shall be v rent measur itance measur or shall be v rent shall no dance (Z) ra 160 2 6	asured at vithin the ed shall n ured at + vithin the ot more the tio shall	+20° limi ot m 20°C limi an ti	°C shall b it of Item nore than shall be it of Item he specifi	e within 7.3 10 times within ±1 7.3 ed value	±25% of of its sp 10% of it	ecified va s origina	alue. l value.
10	Surge test	series for 30± 1000 times. T before measu CR : Nomin <criteria> Leakage cr Capacitanc Dissipation Appearanc Attention:</criteria>	5 second then the rement al Capac urrent ce Chang n Factor re mulates	ds in every s capacitors s citance (μF) ge Wi No ge No The over voltag	5 ± 0.5 min hall be let t more the thin $\pm15^{\circ}$ t more the ere shall	an th 6 of 6 of 6 of	s at 15~35 nder norm ne specific initial val ne specific o leakage	ed value. lue. of electro	edure sha ity for 1- olyte.	ll be repo	Ω) resistor in eated e to such over
She	et NO.: 20220	_						Page	: 8,	/ 12	



	ITEM	PERFORMANCE							
		Tempo Accor	<condition> Temperature cycle: According to IEC60384-4 No.4.7 methods, capacitor shall be placed in an over according as below:</condition>						
			Tem	perature		Time			
			(1) +20°C		3	Minutes			
	Change of		(2) Rated low temperatu	re (- 40°C) (-25°C)	30±2	Minutes			
11	temperature test		(3) Rated high temperatu	are (+105°C)	30±2	Minutes			
			(1) to (3) =1 cycle, total	5 cycle					
		Criteria	a> haracteristic shall meet t	he following requireme	nt.				
			Leakage current	Not more than the sp		value.			
			Dissipation Factor	Not more than the sp	pecified	value.			
			Appearance	There shall be no lea	akage of	electrolyte.			
	Damp heat	-	-	According to IEC60384-4 N be exposed for 500±8 hours 40±2°C, the characteristic ch <criteria></criteria>		an atmosphere of 90~9	95%R H	.at	
12	-	<criteria< td=""><td>a></td><td></td><td>_</td><td>-</td><th></th></criteria<>	a>		_	-			
12	-	<criteria< td=""><td>a> akage current</td><td>Not more than the spec</td><td>cified va</td><td>-</td><th></th></criteria<>	a> akage current	Not more than the spec	cified va	-			
12	heat	<criteria Le Ca</criteria 	a> akage current pacitance Change	Not more than the spec Within ±10% of initial	cified va	ilue.			
12	heat	<criteria Le Ca Dis</criteria 	a> akage current	Not more than the spec	cified va value.	alue. ecified value.			
12	heat	<criteria Le Ca Dis</criteria 	a> akage current pacitance Change ssipation Factor	Not more than the spec Within ±10% of initial Not more than 120% c	cified va value.	alue. ecified value.			
12	heat	<criteria Le Ca Dia Ap <condit The ca Solder Dippin Dippin</condit </criteria 	a> akage current apacitance Change ssipation Factor opearance tion> apacitor shall be tested u ring temperature : 245 ng depth : 2m ng speed : 25± ng time : 3±0	Not more than the spec Within $\pm 10\%$ of initial Not more than 120% of There shall be no leak ander the following cond $\pm 5^{\circ}C$ m ± 2.5 mm/s	cified value. of the sp age of e	alue. ecified value.			
	heat test Solderability	<criteria Le Ca Dia Ap <condit The ca Solder Dippin Dippin Oippin Criteria</condit </criteria 	a> akage current apacitance Change ssipation Factor opearance tion> apacitor shall be tested u ring temperature : 245 ng depth : 2m ng speed : 25± ng time : 3±0 a>	Not more than the spec Within $\pm 10\%$ of initial Not more than 120% of There shall be no leak ander the following cond $\pm 5^{\circ}C$ m ± 2.5 mm/s	cified value. of the sp age of e	alue. ecified value.			



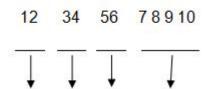
	ITEM	PERFORMANCE
14	Vibration test	<condition> The following conditions shall be applied for 2 hours in each 3 mutually perpendicular directions. Vibration frequency range : 10Hz ~ 55Hz each to peak amplitude : 1.5mm Sweep rate : 10Hz ~ 55Hz ~ 10Hz in about 1 minute Mounting method: The capacitor with diameter greater than 12.5mm or longer than 25mm must be fixed in place with a bracket. 4mm or less Within 30° 4mm or less Within 30° Criteria> To be soldered After the test, the following items shall be tested: Inner construction 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.</condition>
15	Resistance to	<condition> Terminals of the capacitor shall be immersed into solder bath at 260±5°Cfor10±1seconds or400±10°Cfor3⁻⁰ seconds to 1.5~2.0 mm from the body of capacitor. Then the capacitor shall be left under the normal temperature and normal humidity for 1~2 hours before measurement. <criteria> Leakage current Not more than the specified value.</criteria></condition>
10	solder heat test	Capacitance Change Within ±5% of initial value.
		Dissipation Factor Not more than the specified value.
		Appearance There shall be no leakage of electrolyte.
16	Vent test	<condition> The following test only apply to those products with vent products at diameter ≥∅6.3 with vent. D.C. test The capacitor is connected with its polarity reversed to a DC power source. Then a current selected from Table 2 is applied. <table 2=""> Diameter (mm) DC Current (A) 22.4 or less 1 <criteria> The vent shall operate with no dangerous conditions such as flames or dispersion of pieces of the capacitor and/or case.</criteria></table></condition>



8、 Packing Information

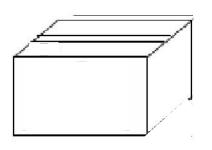
Packing Label Marked (the following items shall be marked on the label)
(Inside box or bag)
(1)Clint order number (2)Client part number (3)Beryl part number (4)Capacitance (5)Voltage (6)Dimension
(7)Packaging quantity (8)Capacitance tolerance (9) QC Marking (0) Lot number (1) Series

LOT Number :

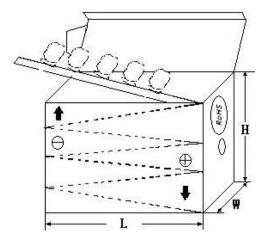


year month date number

1) Bulk Packing:



2) Taped Packing:



3) Outer box



外箱

4) Outer box label:

BERYL	Zhao Qin	g Beryl Elec Ltd.	ctronic	c Technology Co.,
C.S.R:				
C.S.R P/C	:			ROHS HE
C.S.R P/N				
S.P.R P/N				QC
SPEC:				
QTY:	PCS	TOL:	%	
L/N:		S.P.R:		\$



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.

Accord with heavy metal	Cadmium and cadmium compounds
	Lead and lead compounds
	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 compounds	
Formaldehyde	
Polyvinyl chloride (PVC) and PVC blends	
F、Cl、Br、I	
REACH	

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

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