

# 规格书 SPECIFICATION SHEET

Customer name:				
BERYL SERIES:	RG		TYPE:	RADIAL
DESCRIPTION:	100uF/16V	Ф5*11		
Apply date :	2022-04-13			

BERYL		CUSTOMER				
P/N:RG016M101LO5*11TA-1A	P/N:					
PREPARED CHECKED	APPROVAL	PREPARED	CHECKED	APPROVAL		
董桂茹    廖梅君	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.

# Zhao Qing Beryl Electronic Technology Co., Ltd.

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# Revise record

NO.	Date	Revise reason	Revise content	Prepared
01	2022.04.13	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

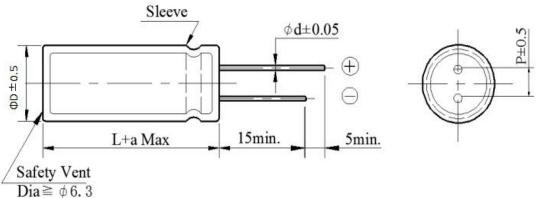
Series	Cap(uF) 120Hz/20°C	WV(V)	Size (	(mm) Temperature		Capacitance Tolerance	Life(hours) @105(°C)	
	120112/20 C		D	L		1 ofer affec		
RG	100	16	5	11	-40~ +105	±20%	6000	

DF (%)(MAX) 120Hz/20°C	LC(μA)(MAX) 2min/20°C	ESR(Ω)(MAX) 100KHz/25°C	RC (mA rms) (MAX)105°C/100KHz	Surge voltage(V)
≤16	≤16	≤0.75	250	18

Other: /

### 3, Product Dimensions

Type

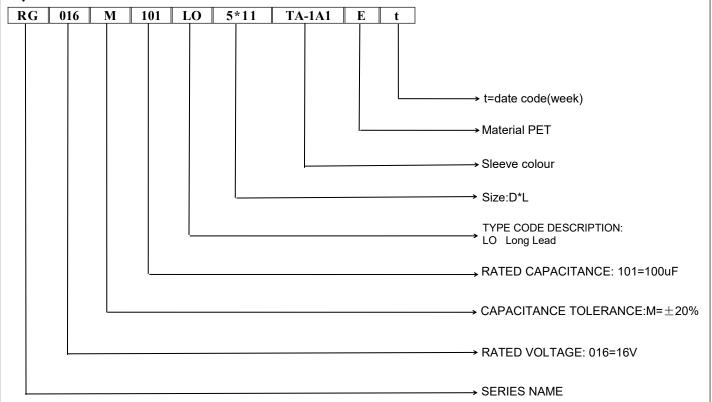


ФD	5	6.3	8	10	13	16	18	22
P	2	2.5	3.5	5	5	7.5	7.5	10
Фd	0.5	0.5	0.5/0.6	0.6	0.6	0.8	0.8	0.8
а			(L< 20)	± 1.5	(L≥2	$0) \pm 2.0$		

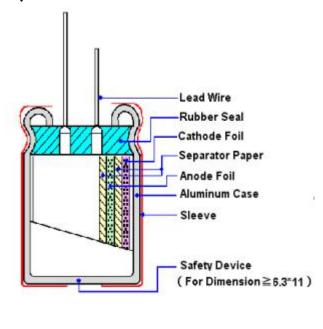
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### 4. Part Number



### 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** 緑宝石

### **ALUMINUM ELECTROLYTIC CAPACITORS**

# 6. Product Marking

# | Reverse | Group | Reverse | Group |

### **Marking Details:**

Capacitor shall be marked the following items:

- 1) Trademark (BERYL)
- 2) working voltage(16V)
- 3) Nominal capacitance(100uF)
- 4) Cathode marked
- 5) Series symbol & Nominal capacitance tolerance (M: -20% ~ +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  $(6.3\sim100\text{WV})$  -40°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.</criteria></condition>
2	Leakage current	Condition>     Connecting the capacitor with a protective resistor (1kΩ±10Ω) in series for 2 minutes, and then, measure leakage current. ⟨Criteria>     I: Leakage current (μA)     I (μA) ≤0.01CVor 3 (μA) whichever is greater, measurement circuit refer to right drawing. C: Capacitance (μF)     V: Rated DC working voltage (V)
3	Dissipation factor	<condition>    Nominal capacitance, for measuring frequency, voltage and temperature. <criteria>    Must be within the parameters (See page 3)</criteria></condition>

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	ITEM			PER	FORMA	NCE			
4	Impedance	<b>Condition&gt;</b> Measuring frequency:100kHz; Measuring temperature:20±2°C Measuring point: 2mm max. from the surface of a sealing rubber on the lead wire. <b>Criteria&gt;</b> (20°C) Must be within the parameters (See page 3)							
5	Load life test	According to IEC60384-4No. 4.13 methods, the capacitor is stored at a temperat Maximum operating temperature ±2°C with DC bias voltage plus the rated ripple current for Rated life +48/0hours. (The sum of DC and ripple peak voltage shall exceed the rated working voltage) Then the product should be tested after 16 ho recovering time at atmospheric conditions. The result should meet the following <criteria>  The characteristic shall meet the following requirements.  Leakage current Not more than the specified value.  Capacitance Change Within ±25% of initial value.  Dissipation Factor Not more than 200% of the specified value.  Appearance There shall be no leakage of electrolyte.</criteria>							
6	Shelf life test	Condition> The capacitors are then stored with no voltage applied at a temperature of Maximum operat temperature±2°C for1000+48/0 hours. Following this period, the capacitors shall be remove from the test chamber and be allowed to stabilized at room temperature for16 hours. meas leakage current  Criteria> The characteristic shall meet the following requirements. Leakage current Not more than 200% of the specified value. Capacitance Change Within ±25% of initial value. Dissipation Factor Not more than 200% of the specified value. Appearance There shall be no leakage of electrolyte.						s shall be removed	
7	Maximum permissible (ripple current, temperature coefficient)	Condition> The maximum permissible ripple current is the maximum A.C current at 100kHz and capplied at maximum operating temperature Table-3 The combined value of D.C voltage and the peak A.C voltage shall not exceed the rate voltage and shall not reverse voltage. Frequency Multipliers: Freq (Hz) 120 1k 10k 10k 100k Cap. (μF) 100 0.40 0.75 0.90 1.00 Temperature Coefficient: Temperature (°C) 60 85 95 105 Factor 2.23 1.73 1.41 1.00							

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	ITEM				PER	FORMAN	CE				
		Fixed the c seconds. F Fixed the c	Tensile strength of terminals  Fixed the capacitor, applied force to the terminal in lead out direction for 30+5-0 seconds. Bending strength of terminals.  Fixed the capacitor, applied force to bent the terminal (1~4 mm from the rubber) 2~3 seconds, and then bent it for 90° to its original position within 2~3 seconds.								
8	Terminal strength	Diame	eter of lead wi	ire		e force N kgf)	Bendin	g force N	(kgf)		
		0.5	mm and less		5	(0.51)	2	.5 (0.25)			
		0	0.6~0.8 mm		10 (	(1.02)	5	(0.51)			
		<criteria> No noticea</criteria>	able changes s	shall be	found, no	breakage	or loosene	ess at the te	erminal		
		<condition></condition>								-	
		STEP	Testing ten	_	re (°C)		Tim				
9		1	2	0±2		Time to 1	each thern	nal equilib	rium		
		2	-40	-25±3		Time to 1	ne to reach thermal equilibrium				
		3	2		Time to 1	each thern	nal equilib	rium			
		4	10	)5±2		Time to 1	each thern	nal equilib	rium		
		5	2	0±2		Time to 1	each thern	nal equilib	rium		
	Temperature characteristics	a. At +105 Dissipat The leak b. In step 5 Dissipat The leak c. At- 40°C	ce, DF, and in °C, capacitance ion factor shatage current manager current shatage current shat	ce meas Il be wi neasure measur Il be wi hall not (Z) rati	sured at + thin the l d shall no red at +20 thin the l more tha io shall no	20°C shall imit of Iter of more than 0°C shall be imit of Iter on the special	be within m 7.3 m 10 times e within ±1 m 7.3 fied value the value of 50 0	±25% of its spec	cified v origina	alue. 1 value.	
10	Surge test	series for 30± 1000 times. To before measur CR: Nomina <criteria>  Leakage cu Capacitance Dissipation Appearance  Attention: This test sin</criteria>	hen the capac rement al Capacitance arrent e Change a Factor	very 5± itors sh e (μF)  Not With Not Ther	more than the shall be	n the species of initial very the species on leakage	Fied value. Fied value. Fied value. Fied value. Fied value. Fied of electron	edure shall ity for 1-2	be rep hours		

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	ITEM	PERFORMANCE								
		<condition> Temperature cycle: According to IEC60384-4 N according as below:</condition>	Io.4.7 methods, capacito	r shall be placed in an oven, the condition						
		Te	emperature	Time						
		(1) +20°C		3 Minutes						
	Change of	(2) Rated low tempera	ture (- 40°C) (-25°C)	30±2 Minutes						
11	temperature test	(3) Rated high temper	ature (+105°C)	30±2 Minutes						
		(1) to $(3) = 1$ cycle, tot	al 5 cycle							
		Criteria> The characteristic shall mee Leakage current	t the following requirem  Not more than the s							
		Dissipation Factor	Not more than the s	specified value.						
		Appearance	There shall be no le	eakage of electrolyte.						
12	or shall 95%R H .at owing requirement. ecified value. al value. of the specified value. kage of electrolyte.									
13	Solderability test    Soldering temperature : 245 ±5°C   Dipping depth   : 2mm   Dipping speed   : 25±2.5mm/s   Dipping time   : 3±0.5s									

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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. Within 30°				
		Critaria> To be soldered				
		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.				
		Appearance No mechanical damage in terminal. No leakage of electrolyte or swelling of the case. The markings shall be legible.				
	Resistance to solder heat test	<b>Condition&gt;</b> Terminals of the capacitor shall be immersed into solder bath at 260±5°Cfor10±1seconds or400±10°Cfor3 <sup>-0</sup> 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. <b>Criteria&gt;</b>				
15		Leakage current Not more than the specified value.				
		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	<b>Condition&gt;</b> The following test only apply to those products with vent products at diameter ≥Ø6.3 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. <b>Table 2&gt;</b>				
16	test	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>				

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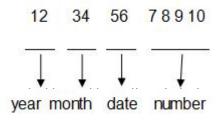


### 8. Packing Information

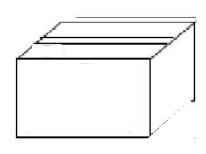
Packing Label Marked (the following items shall be marked on the label) (Inside box or bag)

(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:



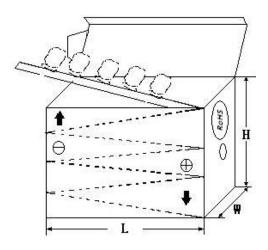
### 1) Bulk Packing:



### 3) Outer box



### 2) Taped Packing:



### 4) Outer box label:

C.S.R:		277.7979		
C.S.R P/O:	66 92	ROHS HF		
C.S.R P/N:	27			
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>

	Cadmium and cadmium compounds					
Accord with	Lead and lead compounds					
heavy metal	Mercury and mercury compounds					
	Hexavalent chromium compounds					
	Polychlorinated biphenyls (PCB)					
Oussuis ablasis	Polychlorinated naphthalenes (PCN)					
Organic chlorin	Polychlorinated terphenyls (PCT)					
compounds	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						

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NCD681K10KVY5PF NEV1000M25EF-BULK NEV100M35DC NEV100M63DE NEV220M25DD-BULK NEV.33M100AA

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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