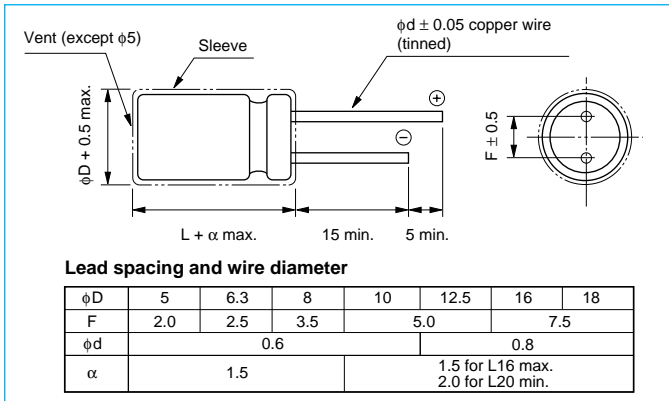


ROB Miniature Aluminum Electrolytic Capacitors For Audio

■ **TONEREX**

- Adopting the newly developed formation method and composite electrolytic paper for audio application has reduced distortion, achieving high-quality sound.
- Gold-printing on a black sleeve. (labeled "TONEREX")
- All lead wires are oxygen-free copper wires to reduce distortion.

Outline Drawing



Unit: mm

Photo



Specifications

No.	Item	Performance																		
1	Temperature range (°C)	-40 to +85																		
2	Leakage current (μA)	Less than 0.01 CV or 4 whichever is larger (after five minutes) C: Capacitance (μF), V Voltage (V)																		
3	Capacitance tolerance (%)	±20 (20°C, 120 Hz)																		
4	Tangent of loss angle (tan δ)	<table border="1"> <thead> <tr> <th>Rated voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>tan δ</td> <td>0.24</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> <td>0.08</td> </tr> </tbody> </table> <p>0.02 is added to each 1000 μF increase over 1000 μF</p>	Rated voltage (V)	6.3	10	16	25	35	50	63	100	tan δ	0.24	0.20	0.16	0.14	0.12	0.10	0.09	0.08
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5	Endurance (85°C) (Applied ripple current)	<table border="1"> <thead> <tr> <th>Test time</th> <th>1000 hrs</th> </tr> </thead> <tbody> <tr> <td>Leakage current</td> <td>Initial specified value or less</td> </tr> <tr> <td>Change in capacitance</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>tan δ</td> <td>150% or less of initial specified value</td> </tr> </tbody> </table>	Test time	1000 hrs	Leakage current	Initial specified value or less	Change in capacitance	Within ±20% of initial value	tan δ	150% or less of initial specified value										
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6	Max. storage temp. (85°C)	Test time 500 hrs. Others have same as endurance in No. 5. Voltage application treatment.																		
7	Applicable Standards	JIS C 5101-1, 5101-4 1998 (IEC 60384-1 1992, 60384-4 1985)																		

Coefficients of Frequency for Ripple Current

Rated Voltage (V)	Frequency (Hz)					
	Rated Voltage (V)	50 • 60	120	1 k	10 k	100 k
6.3 to 16	All CV value	0.8	1	1.1	1.2	1.2
	≤1000	0.8	1	1.5	1.7	1.7
25 to 35	1000 <	0.8	1	1.2	1.3	1.3
	≤1000	0.8	1	1.6	1.9	1.9
50 to 100	≤1000	0.8	1	1.2	1.3	1.3
	1000 <	0.8	1	1.2	1.3	1.3

Coefficients of Temperature for Ripple Current

Temperature (°C)	+70 or less	+85
Coefficients	1.35	1

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Case size by working voltage & capacitance (in mm)

(mm)

wv(V) Cap.(µF)	6.3	10	16	25	35	50	63	100
0.47						5 x 11		5 x 11
1						5 x 11		5 x 11
2.2						5 x 11		5 x 11
3.3						5 x 11		5 x 11
4.7				5 x 11		5 x 11	5 x 11	6.3 x 11
10			5 x 11	5 x 11	5 x 11	5 x 11	6.3 x 11	8 x 11.5
22		5 x 11	5 x 11	5 x 11	6.3 x 11	6.3 x 11	8 x 11.5	10 x 12.5
33	5 x 11	5 x 11	5 x 11	6.3 x 11	6.3 x 11	8 x 11.5	8 x 11.5	10 x 16
47	5 x 11	5 x 11	6.3 x 11	6.3 x 11	8 x 11.5	8 x 11.5	10 x 12.5	10 x 20
100	6.3 x 11	6.3 x 11	8 x 11.5	8 x 11.5	10 x 12.5	10 x 16	10 x 20	12.5 x 20
220	8 x 11.5	8 x 11.5	10 x 12.5	10 x 16	10 x 20	12.5 x 20	12.5 x 20	16 x 25
330	10 x 12.5	10 x 12.5	10 x 16	10 x 20	12.5 x 20	12.5 x 20	12.5 x 25	16 x 31.5
470	10 x 12.5	10 x 16	10 x 20	12.5 x 20	12.5 x 25	16 x 25	16 x 25	18 x 35.5
1000	10 x 20	12.5 x 20	12.5 x 25	16 x 25	16 x 25	16 x 31.5	18 x 35.5	
2200	12.5 x 25	16 x 25	16 x 25	16 x 35.5	18 x 35.5			
3300	16 x 25	16 x 31.5	16 x 35.5	18 x 40				
4700	16 x 31.5	16 x 35.5	18 x 35.5					
6800	16 x 35.5	18 x 40						
10000	18 x 40							

Standard Ratings

ELNA PART NO. / WV (V)	CAP. (µF)	SIZE (φx L) (mm)	tan δ	Ripple Current (mArms)
6.3 V				
ROB-6V330ME3	33	5 x 11	0.24	55
ROB-6V470ME3	47	5 x 11	0.24	65
ROB-6V101MF3	100	6.3 x 11	0.24	110
ROB-6V221MG3	220	8 x 11.5	0.24	185
ROB-6V331MH3	330	10 x 12.5	0.24	265
ROB-6V471MH3	470	10 x 12.5	0.24	315
ROB-6V102MH5	1000	10 x 20	0.24	550
ROB-6V222MI6	2200	12.5 x 25	0.26	980
ROB-6V332MJ6	3300	16 x 25	0.28	1300
ROB-6V472MJ7	4700	16 x 31.5	0.30	1700
ROB-6V682MJ8	6800	16 x 35.5	0.34	2100
ROB-6V103MK9	10000	18 x 40	0.42	2800
10 V				
ROB-10V220ME3	22	5 x 11	0.20	50
ROB-10V330ME3	33	5 x 11	0.20	65
ROB-10V470ME3	47	5 x 11	0.20	75
ROB-10V101MF3	100	6.3 x 11	0.20	120
ROB-10V221MG3	220	8 x 11.5	0.20	200
ROB-10V331MH3	330	10 x 12.5	0.20	290
ROB-10V471MH4	470	10 x 16	0.20	380
ROB-10V102MI5	1000	12.5 x 20	0.20	670

ELNA PART NO. / WV (V)	CAP. (µF)	SIZE (φx L) (mm)	tan δ	Ripple Current (mArms)
ROB-10V222MJ6	2200	16 x 25	0.22	1200
ROB-10V332MJ7	3300	16 x 31.5	0.24	1600
ROB-10V472MJ8	4700	16 x 35.5	0.26	1900
ROB-10V682MK9	6800	18 x 40	0.30	2600
16 V				
ROB-16V100ME3	10	5 x 11	0.16	35
ROB-16V220ME3	22	5 x 11	0.16	60
ROB-16V330ME3	33	5 x 11	0.16	70
ROB-16V470MF3	47	6.3 x 11	0.16	95
ROB-16V101MG3	100	8 x 11.5	0.16	150
ROB-16V221MH3	220	10 x 12.5	0.16	265
ROB-16V331MH4	330	10 x 16	0.16	350
ROB-16V471MH5	470	10 x 20	0.16	460
ROB-16V102MI6	1000	12.5 x 25	0.16	810
ROB-16V222MJ6	2200	16 x 25	0.18	1350
ROB-16V332MJ8	3300	16 x 35.5	0.20	1800
ROB-16V472MK8	4700	18 x 35.5	0.22	2400
25 V				
ROB-25V4R7ME3	4.7	5 x 11	0.14	25
ROB-25V100ME3	10	5 x 11	0.14	40
ROB-25V220ME3	22	5 x 11	0.14	60
ROB-25V330MF3	33	6.3 x 11	0.14	80

Note: Allowable Ripple Current 120 Hz at 85°C

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Standard Ratings

ELNA PART NO. / WV (V)	CAP. (μF)	SIZE (φx L) (mm)	tan δ	Ripple Current (mArms)
ROB-25V470MF3	47	6.3 x 11	0.14	100
ROB-25V101MG3	100	8 x 11.5	0.14	165
ROB-25V221MH4	220	10 x 16	0.14	310
ROB-25V331MH5	330	10 x 20	0.14	410
ROB-25V471MI5	470	12.5 x 20	0.14	550
ROB-25V102MJ6	1000	16 x 25	0.14	1000
ROB-25V222MJ8	2200	16 x 35.5	0.16	1650
ROB-25V332MK9	3300	18 x 40	0.18	2100
35 V				
ROB-35V100ME3	10	5 x 11	0.12	45
ROB-35V220MF3	22	6.3 x 11	0.12	75
ROB-35V330MF3	33	6.3 x 11	0.12	90
ROB-35V470MG3	47	8 x 11.5	0.12	120
ROB-35V101MH3	100	10 x 12.5	0.12	210
ROB-35V221MH5	220	10 x 20	0.12	365
ROB-35V331MI5	330	12.5 x 20	0.12	500
ROB-35V471MI6	470	12.5 x 25	0.12	640
ROB-35V102MJ6	1000	16 x 25	0.12	1050
ROB-35V222MK8	2200	18 x 35.5	0.14	1900
50 V				
ROB-50VR47ME3	0.47	5 x 11	0.10	5
ROB-50V010ME3	1	5 x 11	0.10	10
ROB-50V2R2ME3	2.2	5 x 11	0.10	20
ROB-50V3R3ME3	3.3	5 x 11	0.10	25
ROB-50V4R7ME3	4.7	5 x 11	0.10	35
ROB-50V100ME3	10	5 x 11	0.10	50
ROB-50V220MF3	22	6.3 x 11	0.10	80
ROB-50V330MG3	33	8 x 11.5	0.10	110
ROB-50V470MG3	47	8 x 11.5	0.10	130
ROB-50V101MH4	100	10 x 16	0.10	250
ROB-50V221MI5	220	12.5 x 20	0.10	440
ROB-50V331MI5	330	12.5 x 20	0.10	540
ROB-50V471MJ6	470	16 x 25	0.10	800
ROB-50V102MJ7	1000	16 x 31.5	0.10	1200
63 V				
ROB-63V4R7ME3	4.7	5 x 11	0.09	35
ROB-63V100MF3	10	6.3 x 11	0.09	60

ELNA PART NO. / WV (V)	CAP. (μF)	SIZE (φx L) (mm)	tan δ	Ripple Current (mArms)
ROB-63V220MG3	22	8 x 11.5	0.09	100
ROB-63V330MG3	33	8 x 11.5	0.09	115
ROB-63V470MH3	47	10 x 12.5	0.09	165
ROB-63V101MH5	100	10 x 20	0.09	285
ROB-63V221MI5	220	12.5 x 20	0.09	470
ROB-63V331MI6	330	12.5 x 25	0.09	620
ROB-63V471MJ6	470	16 x 25	0.09	840
ROB-63V102MK8	1000	18 x 35.5	0.09	1500
100 V				
ROB-100VR47ME3	0.47	5 x 11	0.08	10
ROB-100V010ME3	1	5 x 11	0.08	15
ROB-100V2R2ME3	2.2	5 x 11	0.08	25
ROB-100V3R3ME3	3.3	5 x 11	0.08	30
ROB-100V4R7MF3	4.7	6.3 x 11	0.08	40
ROB-100V100MG3	10	8 x 11.5	0.08	70
ROB-100V220MH3	22	10 x 12.5	0.08	120
ROB-100V330MH4	33	10 x 16	0.08	160
ROB-100V470MH5	47	10 x 20	0.08	210
ROB-100V101MI5	100	12.5 x 20	0.08	340
ROB-100V221MJ6	220	16 x 25	0.08	620
ROB-100V331MJ7	330	16 x 31.5	0.08	820
ROB-100V471MK8	470	18 x 35.5	0.08	1000

Note: Allowable Ripple Current 120 Hz at 85°C