

# ALUMINUM ELECTROLYTIC CAPACITORS



Snap-in Terminal Type, Wide Temperature Range

Series



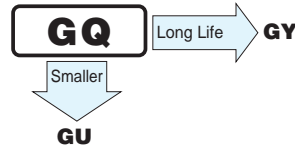
RCJ Approved



Anti-Solvent Feature  
(Through 100V only)

Approved by Reliability Center for Electronic Component. Japan-Certification No.RCJ-03-24D

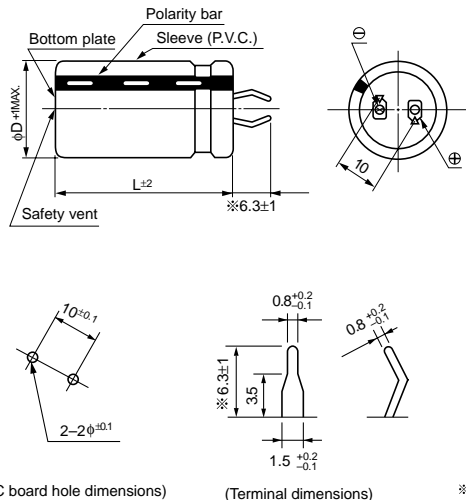
- Standard snap-in terminal series.
- Extended capacitance ranges based on the numerical values in E12 series under JIS.



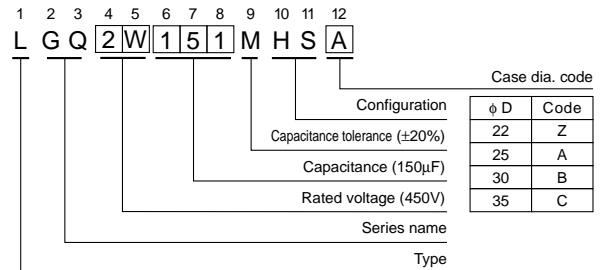
## Specifications

Item	Performance Characteristics																													
Operating Temperature Range	—40 ~ + 105°C (16 ~ 250V), —25 ~ + 105°C (315 ~ 450V)																													
Voltage Range	16 ~ 450V																													
Capacitance Range	56 ~ 47000μF																													
Capacitance Tolerance	±20% at 120Hz, 20°C																													
Leakage Current	$I \leq 3\sqrt{CV}$ (μA)(After 5 minutes' application of rated voltage)[C : Capacitance(μF), V : Voltage(V)]																													
tan δ	Measurement frequency : 120Hz, Temperature : 20°C																													
	<table border="1"> <thead> <tr> <th>Rated voltage(V)</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>80</th> <th>100</th> <th>160</th> <th>180</th> <th>200</th> <th>250</th> <th>315</th> <th>400</th> <th>450</th> </tr> </thead> <tbody> <tr> <td>tan δ (MAX.)</td> <td>0.50</td> <td>0.40</td> <td>0.35</td> <td>0.30</td> <td>0.25</td> <td>0.20</td> <td>0.20</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.25</td> <td>0.25</td> <td>0.25</td> </tr> </tbody> </table>	Rated voltage(V)	16	25	35	50	63	80	100	160	180	200	250	315	400	450	tan δ (MAX.)	0.50	0.40	0.35	0.30	0.25	0.20	0.20	0.15	0.15	0.15	0.15	0.25	0.25
Rated voltage(V)	16	25	35	50	63	80	100	160	180	200	250	315	400	450																
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Stability at Low Temperature	Measurement frequency : 120Hz																													
	<table border="1"> <thead> <tr> <th>Rated voltage(V)</th> <th>16 ~ 100</th> <th>160 ~ 250</th> <th>315 ~ 450</th> </tr> </thead> <tbody> <tr> <td>Impedance ratio Z—25°C/Z + 20°C</td> <td>4</td> <td>3</td> <td>8</td> </tr> <tr> <td>ZT/Z20(MAX.) Z—40°C/Z + 20°C</td> <td>15</td> <td>12</td> <td>—</td> </tr> </tbody> </table>	Rated voltage(V)	16 ~ 100	160 ~ 250	315 ~ 450	Impedance ratio Z—25°C/Z + 20°C	4	3	8	ZT/Z20(MAX.) Z—40°C/Z + 20°C	15	12	—																	
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Impedance ratio Z—25°C/Z + 20°C	4	3	8																											
ZT/Z20(MAX.) Z—40°C/Z + 20°C	15	12	—																											
Load Life	After an application of DC voltage (in the range of rated DC voltage even after over-lapping the specified ripple current) for 2000 hours at 105°C, capacitors shall meet the characteristics requirements indicated at right.																													
	<table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>tan δ</td> <td>200% or less of initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>Initial specified value or less</td> </tr> </tbody> </table>	Capacitance change	Within ±20% of initial value	tan δ	200% or less of initial specified value	Leakage current	Initial specified value or less																							
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Leakage current	Initial specified value or less																													
Shelf Life	After leaving capacitors under no load at 105°C for 1000 hours they meet the requirements listed at right.																													
	<table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>Within ±15% of initial value</td> </tr> <tr> <td>tan δ</td> <td>150% or less of initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>Initial specified value or less</td> </tr> </tbody> </table>	Capacitance change	Within ±15% of initial value	tan δ	150% or less of initial specified value	Leakage current	Initial specified value or less																							
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Leakage current	Initial specified value or less																													
Marking	Printed with white color letter on dark brown sleeve.																													
Applicable Standards	JIS C 5141 and JIS C 5102.																													

## Drawing



## Type numbering system (Example : 450V 150μF)



※ Shorter terminal(4.0±0.5) is also available upon request.  
Please refer page 163(GU series) for schematic of dimensions.

## Frequency coefficient of allowable ripple current

Frequency(Hz)	50	60	120	1 k	10k ~
16 ~ 100V	0.88	0.90	1.00	1.15	1.15
160 ~ 250V	0.85	0.88	1.00	1.15	1.20
315 ~ 450V	0.88	0.90	1.00	1.10	1.15

Minimum order quantity : 50pcs.

Dimension table in next page.



## ■ Dimensions

D×L(mm)

Cap.(μF)	V(Code) φD Code	16V(1C)				25V(1E)				35V(1V)				50V(1H)			
		22	25	30	35	22	25	30	35	22	25	30	35	22	25	30	35
1800	182													22×25			
														1.31			
2700	272													22×30	25×25		
														1.70	1.70		
3300	332									22×25				22×35	25×30		
										1.43				1.98	2.00		
3900	392									22×30				22×40	25×35	30×25	
										1.65				2.25	2.28	2.22	
4700	472					22×25				22×35	25×25			22×45	25×40	30×30	
						1.55				1.89	1.78			2.56	2.61	2.58	
5600	562					22×30				22×35	25×30	30×25		22×50	25×40	30×35	
						1.76				2.02	2.04	2.12		2.89	2.81	2.95	
6800	682	22×25				22×30	25×25			22×40	25×35				25×50	30×40	35×30
		1.60				1.91	1.91			2.28	2.31				3.37	3.39	3.31
8200	822	22×30				22×35	25×30	30×25		22×50	25×40	30×30				30×45	35×35
		1.85				2.14	2.16	2.25		2.67	2.60	2.56				3.71	3.66
10000	103	22×30	25×25			22×40	25×35				25×45	30×35				30×50	35×40
		1.99	1.99			2.40	2.44				2.92	2.92				4.09	4.07
12000	123	22×35	25×30	30×25		22×45	25×40	30×30			25×50	30×40	35×30				35×45
		2.28	2.30	2.38		2.69	2.74	2.70			3.26	3.28	3.20				4.50
15000	153	22×40	25×35				25×45	30×35	35×30			30×45	35×35				
		2.64	2.68				3.15	3.13	3.22			3.74	3.69				
18000	183	22×45	25×40	30×30			25×50	30×40					35×40				
		2.98	3.04	3.00			3.54	3.54					4.16				
22000	223		25×45	30×35				30×45	35×35				35×50				
			3.40	3.39				4.24	3.96				4.92				
27000	273		25×50	30×40	35×30				35×45								
			3.81	3.83	3.74				4.75								
33000	333			30×45	35×35				35×50								
				4.30	4.24				5.39								
39000	393			30×50	35×40												
				4.74	4.72												
47000	473				35×45												
					5.27												

Cap.(μF)	V(Code) φD Code	63V(1J)				80V(1K)				100V(2A)			
		22	25	30	35	22	25	30	35	22	25	30	35
560	561									22×25			
										1.07			
820	821					22×25				22×30	25×25		
						1.11				1.35	1.35		
1000	102					22×30	25×25			22×35	25×30		
						1.29	1.29			1.54	1.56		
1200	122	22×25				22×30	25×25			22×40	25×35	30×25	
		1.25				1.39	1.39			1.74	1.76	1.71	
1500	152	22×30	25×25			22×35	25×30			22×45	25×40	30×30	
		1.44	1.44			1.61	1.62			1.99	2.03	2.00	
1800	182	22×30	25×25			22×40	25×35	30×25			25×45	30×35	
		1.52	1.52			1.83	1.86	1.81			2.28	2.27	
2200	222	22×35	25×30			22×45	25×35	30×30			25×50	30×40	35×30
		1.73	1.75			2.09	2.01	2.10			2.57	2.59	2.52
2700	272	22×40	25×35	30×25			25×45	30×35				30×45	35×35
		1.97	1.99	1.93			2.43	2.43				2.94	2.90
3300	332	22×50	25×40	30×30			25×50	30×40	35×30			30×50	35×40
		2.32	2.27	2.24			2.76	2.78	2.71			3.32	3.31
3900	392		25×45	30×35				30×45	35×35				35×45
			2.54	2.55				3.12	3.07				3.69
4700	472		25×50	30×40	35×30			30×50	35×40				35×50
			2.88	2.90	2.83			3.52	3.50				4.14
5600	562			30×45	35×35				35×45				
				3.28	3.24				3.87				
6800	682			30×50	35×40				35×50				
				3.73	3.71				4.19				
8200	822				35×45								
					4.16								
10000	103				35×50								
					4.69								

Allowable Ripple (A rms) at 105°C 120Hz



Dimensions

D × L (mm)

Cap.(μF)	V(Code) Code φ D	160V(2C)				180V(2Z)				200V(2D)				250V(2E)			
		22	25	30	35	22	25	30	35	22	25	30	35	22	25	30	35
150	151													22×25 0.65			
180	181													22×25 0.75			
220	221													22×30 0.85	25×25 0.85		
270	271	22×25 0.90				22×25 0.90				22×25 0.90				22×35 1.00	25×30 1.00	30×25 1.00	
330	331	22×25 1.00				22×30 1.05				22×30 1.05	25×25 1.05			22×40 1.10	25×30 1.10	30×25 1.10	
390	391	22×30 1.15				22×30 1.20	25×25 1.20			22×35 1.25	25×30 1.25			22×45 1.25	25×40 1.25	30×30 1.25	
470	471	22×35 1.30	25×25 1.30			22×35 1.30	25×30 1.30			22×40 1.35	25×30 1.35	30×25 1.35		22×50 1.30	25×40 1.30	30×35 1.30	35×25 1.55
560	561	22×40 1.45	25×30 1.45			22×40 1.40	25×35 1.40	30×25 1.40		22×45 1.50	25×35 1.50	30×30 1.50			25×50 1.55	30×35 1.55	35×30 1.55
680	681	22×45 1.65	25×35 1.65	30×25 1.65		22×45 1.65	25×40 1.65	30×30 1.65		22×50 1.70	25×45 1.70	30×30 1.70	35×25 1.70			30×45 1.80	35×35 1.80
820	821	22×50 1.80	25×40 1.80	30×30 1.80	35×25 1.80	22×50 1.85	25×45 1.85	30×35 1.85	35×25 1.85		25×50 1.90	30×35 1.90	35×30 1.90				35×40 1.95
1000	102		25×45 2.00	30×35 2.00	35×30 2.00		25×50 2.05	30×40 2.05	35×30 2.05			30×45 2.15	35×35 2.15				35×45 2.30
1200	122		25×50 2.30	30×40 2.30	35×30 2.30			30×45 2.30	35×35 2.30			30×50 2.30	35×35 2.30				35×50 2.65
1500	152			30×45 2.65	35×35 2.65			30×50 2.70	35×40 2.70					35×45 2.75			
1800	182			30×50 3.05	35×45 3.05				35×45 3.15					35×50 3.25			
2200	222				35×50 3.50				35×50 3.60								

Cap.(μF)	V(Code) Code φ D	315V(2F)				400V(2G)				450V(2W)			
		22	25	30	35	22	25	30	35	22	25	30	35
56	560									22×25 0.41			
68	680					22×25 0.40				22×30 0.48	25×25 0.48		
82	820	22×25 0.46				22×30 0.50	25×25 0.50			22×35 0.56			
100	101	22×30 0.55				22×35 0.55	25×30 0.55			22×40 0.64	25×30 0.61	30×25 0.63	
120	121	22×30 0.60	25×25 0.60			22×40 0.60	25×30 0.60	30×25 0.60		22×45 0.72	25×35 0.71		
150	151	22×35 0.70	25×30 0.70	30×25 0.70		22×45 0.70	25×35 0.70	30×30 0.70		22×50 0.83	25×40 0.81	30×30 0.80	35×25 0.82
180	181	22×40 0.83	25×30 0.78	30×25 0.82		22×50 0.85	25×40 0.85	30×30 0.85	35×25 0.85		25×45 0.92	30×35 0.91	
220	221	22×45 0.90	25×35 0.90	30×30 0.90			25×45 0.90	30×35 0.90	35×30 0.90		25×50 1.05	30×40 1.05	35×30 1.03
270	271	22×50 1.00	25×40 1.00	30×35 1.00	35×25 1.00		25×50 1.00	30×40 1.00	35×30 1.00			30×45 1.21	35×35 1.19
330	331		25×50 1.25	30×35 1.25	35×30 1.25			30×45 1.25	35×35 1.25			30×50 1.38	35×40 1.38
390	391			30×40 1.35	35×35 1.35			30×50 1.35	35×40 1.35				35×45 1.55
470	471			30×50 1.45	35×40 1.45				35×45 1.45				35×50 1.74
560	561				35×45 1.65				35×50 1.65				
680	681				35×50 1.90								

Case size  
Allowable ripple

Allowable Ripple (A rms) at 105°C 120Hz