

# ALUMINUM ELECTROLYTIC CAPACITORS

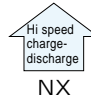
**QR** series

Screw Terminal Type, 85°C High speed charge-discharge



- Suited for high frequency regenerative voltage for AC servomotor, general inverter.
- Suited for equipment used at voltage fluctuating area.
- Suited for rectifier circuit of voltage doubler
- Compliant to the RoHS directive (2002/95/EC).

QR

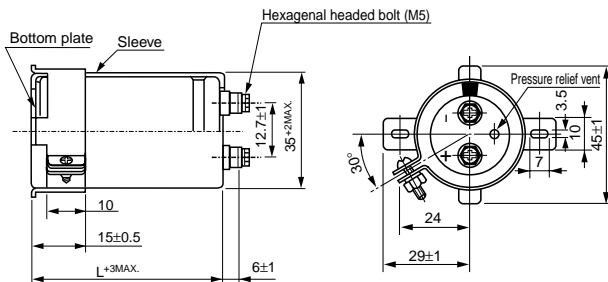


## Specifications

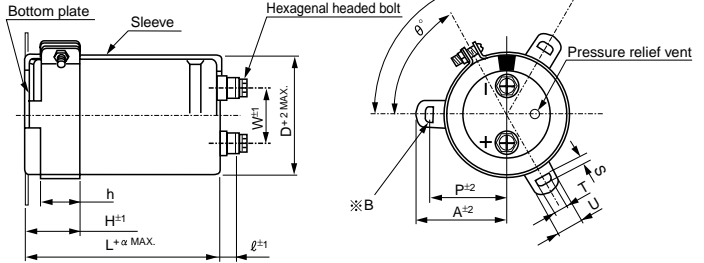
Item	Performance Characteristics							
Category Temperature Range	- 25 to +85°C							
Rated Voltage Range	350 to 450V							
Rated Capacitance Range	680 to 15000μF							
Capacitance Tolerance	±20% at 120Hz, 20°C							
Leakage Current	After 5 minutes' application of rated voltage, leakage current is not more than $3\sqrt{CV}$ (μA) or 5 mA, whichever is smaller (at 20°C). [C: Rated Capacitance(μF), V: Voltage (V)]							
Tangent of loss angle (tan δ)	(Measurement frequency:120Hz, Temperature:20°C)							
	<table border="1"> <tr> <td>Rated voltage (V)</td> <td>350</td> <td>400</td> <td>450</td> </tr> <tr> <td>tan δ (MAX.)</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> </tr> </table>	Rated voltage (V)	350	400	450	tan δ (MAX.)	0.15	0.15
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Stability at Low Temperature	Measurement frequency : 120Hz							
	<table border="1"> <tr> <td>Rated voltage (V)</td> <td>350 to 450</td> </tr> <tr> <td>Impedance ratio ZT/Z20(MAX.)</td> <td>Z - 25°C / Z+20°C 8</td> </tr> </table>	Rated voltage (V)	350 to 450	Impedance ratio ZT/Z20(MAX.)	Z - 25°C / Z+20°C 8			
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Endurance of charge-discharge behavior	After an application of charge-discharge voltage for 20million times (charge-discharge voltage difference(ΔV)=rated voltage × 0.3, cycle 3Hz)capacitors shall meet the characteristics requirement listed at right							
	Capacitance change	Within ±20% of the initial capacitance value						
	tan δ	300% or less than the initial specified value						
	Leakage current	Less than or equal to the initial specified value						
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after D.C. bias plus rated ripple current is applied for 5000 hours at 85°C, the peak voltage shall not exceed the rated voltage.							
	Capacitance change	Within ±20% of the initial capacitance value						
	Leakage current	Less than or equal to the initial specified value						
Shelf Life	After storing the capacitors under no load at 85°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified value for endurance characteristics listed above.							
Marking	Printed with white color letter on darkbrown sleeve.							

## Drawing

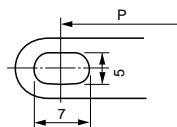
φ35 Screw terminal type



φ51 to 90 Screw terminal type

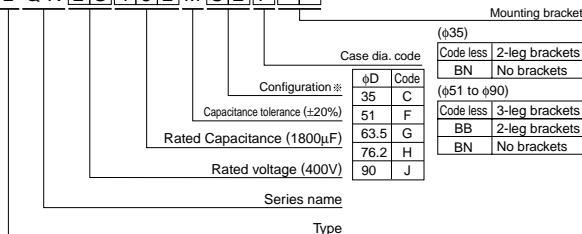


※ B  
3-leg brackets for φ90 capacitors have different hole shapes from the ordinary ones illustrated below.



Type numbering system (Example : 400V 1800μF)

1 2 3 4 5 6 7 8 9 10 11 12 13 14  
L Q R 2 G 1 8 2 M S E F



※ Configuration

Cr (III) Plating (RoHS compliant)  
SE

Resin bushing available upon request.  
※ Please contact us if PVCless products are required

● Dimension of terminal pitch (W) and length (ℓ) and Nominal dia. of bolt (mm)

φD	W	ℓ	α	Nominal dia. of bolt
51	22.0	6	3	M5
63.5	28.6	6	3	M5
76.2	31.8	6	3	M5
90	31.8	6	3	M5

● Dimension of mounting bracket (mm)

Symbol	Leg shape	3-Leg				2-Leg			
		φD	51	63.5	76.2	90	51	63.5	76.2
P		32.5	38.1	44.5	50.8	33.2	40.5	46.5	53
A		38.5	43	49.2	58.5	40	46.5	53	59
T		7.5	8.0	7.0	8.0	6.0	7.0	6.0	6.0
S		5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5
U		12	14	14	18	14	14	14	14
θ°		60	60	60	60	30	30	30	30
H		20	25	30	35	25	35	35	35
h		15	20	24	25	15	20	20	20

● Dimension table in next page.



## ■ Dimensions

350V (2V)					
Cap. (μF)	Size φD × L(mm)	Rated ripple (Arms)	tan δ	Leakage Current (mA)	Code
820	35 × 80	3.3	0.15	1.60	LQR2V821MSEC
1000	35 × 100	4.3	0.15	1.77	LQR2V102MSEC
1800	51 × 80	7.2	0.15	2.38	LQR2V182MSEF
2200	51 × 100	9.1	0.15	2.63	LQR2V222MSEF
2700	51 × 110	10.8	0.15	2.91	LQR2V272MSEF
	63.5 × 80	10.6	0.15	2.91	LQR2V272MSEG
3300	51 × 130	12.4	0.15	3.22	LQR2V332MSEF
	63.5 × 90	11.9	0.15	3.22	LQR2V332MSEG
3900	63.5 × 110	14.6	0.15	3.50	LQR2V392MSEG
	76.2 × 80	14.1	0.15	3.50	LQR2V392MSEH
4700	51 × 170	17.0	0.15	3.84	LQR2V472MSEF
	76.2 × 90	16.4	0.15	3.84	LQR2V472MSEH
5600	63.5 × 150	20.4	0.15	4.20	LQR2V562MSEG
	76.2 × 110	19.7	0.15	4.20	LQR2V562MSEH
6800	63.5 × 170	23.5	0.15	4.62	LQR2V682MSEG
	76.2 × 130	22.9	0.15	4.62	LQR2V682MSEH
	90 × 100	22.5	0.15	4.62	LQR2V682MSEJ
8200	63.5 × 190	27.1	0.15	5.00	LQR2V822MSEG
	76.2 × 150	26.4	0.15	5.00	LQR2V822MSEH
10000	76.2 × 170	31.1	0.15	5.00	LQR2V103MSEH
	90 × 130	30.2	0.15	5.00	LQR2V103MSEJ
12000	76.2 × 190	35.7	0.15	5.00	LQR2V123MSEH
15000	90 × 190	40.5	0.15	5.00	LQR2V153MSEJ

400V (2G)					
Cap. (μF)	Size φD × L(mm)	Rated ripple (Arms)	tan δ	Leakage Current (mA)	Code
680	35 × 80	3.2	0.15	1.56	LQR2G681MSEC
820	35 × 100	4.1	0.15	1.71	LQR2G821MSEC
1500	51 × 80	7.5	0.15	2.32	LQR2G152MSEF
1800	51 × 90	9.1	0.15	2.54	LQR2G182MSEF
2200	51 × 110	10.4	0.15	2.81	LQR2G222MSEF
2700	63.5 × 90	11.5	0.15	3.11	LQR2G272MSEG
3300	51 × 150	13.7	0.15	3.44	LQR2G332MSEF
	63.5 × 110	13.2	0.15	3.44	LQR2G332MSEG
3900	63.5 × 130	16.0	0.15	3.74	LQR2G392MSEG
	76.2 × 90	15.3	0.15	3.74	LQR2G392MSEH
4700	63.5 × 150	18.7	0.15	4.11	LQR2G472MSEG
	76.2 × 110	18.3	0.15	4.11	LQR2G472MSEH
5600	63.5 × 170	22.0	0.15	4.49	LQR2G562MSEG
	76.2 × 130	21.4	0.15	4.49	LQR2G562MSEH
6800	76.2 × 150	25.4	0.15	4.94	LQR2G682MSEH
8200	76.2 × 170	28.6	0.15	5.00	LQR2G822MSEH
	90 × 130	27.8	0.15	5.00	LQR2G822MSEJ
10000	90 × 150	32.7	0.15	5.00	LQR2G103MSEJ
12000	90 × 170	37.6	0.15	5.00	LQR2G123MSEJ
15000	90 × 220	43.0	0.15	5.00	LQR2G153MSEJ

450V (2W)					
Cap. (μF)	Size φD × L(mm)	Rated ripple (Arms)	tan δ	Leakage Current (mA)	Code
680	35 × 100	3.5	0.15	1.65	LQR2W681MSEC
820	35 × 110	3.9	0.15	1.82	LQR2W821MSEC
1200	51 × 80	5.2	0.15	2.20	LQR2W122MSEF
1500	51 × 100	6.3	0.15	2.46	LQR2W152MSEF
1800	51 × 110	7.4	0.15	2.70	LQR2W182MSEF
	63.5 × 80	7.9	0.15	2.70	LQR2W182MSEG
2200	51 × 130	8.7	0.15	2.98	LQR2W222MSEF
	63.5 × 100	8.6	0.15	2.98	LQR2W222MSEG
2700	51 × 150	10.2	0.15	3.30	LQR2W272MSEF
	76.2 × 80	10.0	0.15	3.30	LQR2W272MSEH
3300	63.5 × 130	12.4	0.15	3.65	LQR2W332MSEG
	76.2 × 100	11.8	0.15	3.65	LQR2W332MSEH
3900	63.5 × 150	13.7	0.15	3.97	LQR2W392MSEG
	76.2 × 110	14.1	0.15	3.97	LQR2W392MSEH
	90 × 90	13.6	0.15	3.97	LQR2W392MSEJ
4700	63.5 × 170	16.5	0.15	4.36	LQR2W472MSEG
	76.2 × 130	16.3	0.15	4.36	LQR2W472MSEH
	90 × 110	15.8	0.15	4.36	LQR2W472MSEJ
5600	63.5 × 190	19.4	0.15	4.76	LQR2W562MSEG
	90 × 130	19.1	0.15	4.76	LQR2W562MSEJ
6800	76.2 × 170	23.3	0.15	5.00	LQR2W682MSEH
8200	90 × 150	26.1	0.15	5.00	LQR2W822MSEJ
10000	90 × 190	31.3	0.15	5.00	LQR2W103MSEJ
12000	90 × 220	35.5	0.15	5.00	LQR2W123MSEJ

Rated ripple current (Arms) at 85°C 120Hz

## ● Frequency coefficient of rated ripple current

Frequency (Hz)	60	120	360	1k	10k or more
Coefficient	0.82	1.00	1.20	1.35	1.40