NIPPON CHEMI-CON

DLCAP™
Electric Double Layer Capacitors

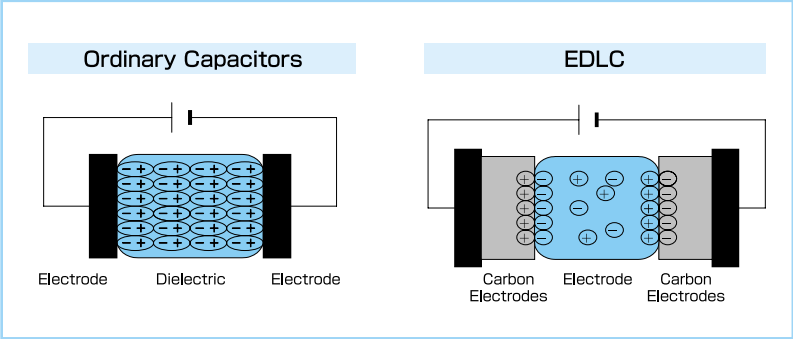
ELECTRIC DOUBLE LAYER CAPACITOR

1. Introduction

Compared to the commonly used rechargable batteries, Electric Double Layer Capacitor (EDLC), which is capable of charge - discharge with high current, is an excellent energy storage device with its charge - discharge cycle life. In the recent years, with energy issues (reducing of oil use・consumer electric power・$C0_2$ emission・effective utilization of new energy) being emphasized towards loading EDLC with a completely new application is considered. Also, installation of EDLC in hybrid or fuel vehicle is considered.
Nippon Chemi-Con has strongly pursued towards a product development of an energy conservation・low environmental load, within this, EDLC is a representative product which is environmental friendly. We hold and provide several hundred F to large capacity of more than 3100F, holding wide specification, meeting user needs.
In this issue, we will introduce our product "DLCAP™".

2. EDLC Principal

Ordinary capacitors have a dielectric sandwiched electrode, which when a voltage is applied, dipoles are oriented, thus an electric charge is stored. EDLC has a phenomenon that electric charges are oriented at close locations to the boundary of the electrolyte and electrodes (called "electric double-layer"), physically charged (Figure 1). Large activated carbon with large specific surface is used for EDLC terminals.



(Figure1) EDLC Principal

3. Characteristic

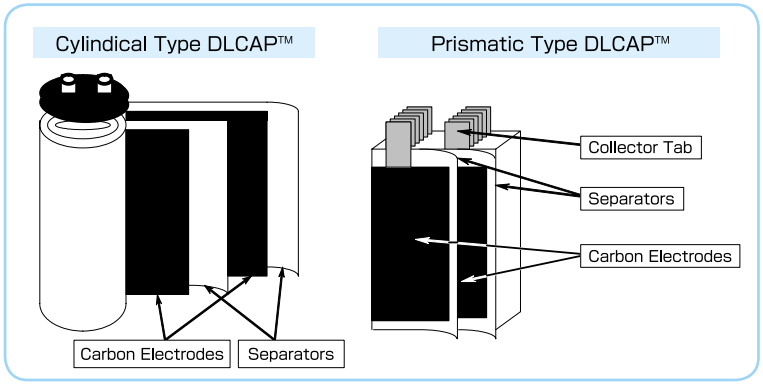
As mentioned above, EDLC differs from rechargable batteries, not causing chemical reaction,
with surface of activated carbon with energy accumulation by ionic physical attachment only, therefore it holds the characteristics stated below ;

- With low degradation, multimillion cycles of charge - discharge is capable.
- With a high output density, rapid (high current) charge - discharge is capable.
- With a high charge - discharge efficiency, an output efficiency of over 95% with an output density 1kW/kg is obtained.
- Environmental friendly without using heavy metal for its structure material.
- High in safety during abnormal time, and no malfunction occurs due to short outer circulation.

4. Structure

Nippon Chemi-Con is developing a cylindrical type and prismatic type DLCAP™ (Photo 1).
Standard structure is made by both pasting a terminal onto the aluminum foil, prismatic type in laminated layer-type, and cylindrical type in roll-type (Figure 2).
Using a large activated carbon with large specific surface for the terminal, with our original high-densified terminal development technology the energetic characterized terminal, is excellent with both high volume・low resistance.
Prismatic type DLCAP™ holds an original collector tab technology and by using our production made high density low resistance terminal, lowering the products resistance, making high current charge - discharge possible, which will be a product capable for a more high power use compared to the cylindrical type.

(Photo1) DLCAP™



(Figure2) DLCAP™ Structure

NIPPON CHEMI-CON **Engineering Bulletin** No.779A / Aug.2006 Electric Double Layer Capacitor

DLCAP™ DLA Series

2.5V Standard type

- With the original electrode process, high energy density implementation is possible
- Charge/discharge efficiency are higher than in batteries
- Environment-friendly
- Suited for electricity storage, battery assistance, short-term backups, etc.

◆SPECIFICATIONS

Items	Specifications		
Operating Temperature	-25℃ to +60℃		
Rated Voltage	2.5Vdc		
Capacitance Tolerance	±10% (K)		(at 20℃)
Temperature Characteristics	Capacitance change	≦±30% of the initial measured value at 20℃	
	Internal Resistance	≦600% of the value given in the Ratings Tables	(at -25℃)
Load Life Test	After the capacitors are subjected to the rated DC voltage at 60℃ for 2,000 hours, the following specifications shall be satisfied when the capacitors are restored to 20℃.		
	Capacitance change	≦±30% of the initial measured value	
	Internal Resistance	≦200% of the value given in the Ratings Table	
Bias Humidity Test	After the capacitors are subjected to the rated DC voltage at 40℃ and 90 to 95%RH for 500 hours, the following specifications shall be satisfied when restoring to 20℃.		
	Capacitance change	≦±30% of the initial measured value	
	Internal Resistance	≦200% of the value given in the Ratings Tables	

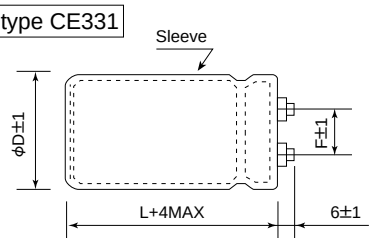
◆STANDARD RATINGS

Rated Voltage [V]	Capacitance [F]	Case Size φD [mm]	Case Size L [mm]	F [mm]	Internal Resistance* [mΩ]	Part No.
2.5	350	35	65	12.7	11	DDLA2R5LGN351KA65S
	630		95		7	DDLA2R5LGN631KA95S
	900	40	105	17.0	5	DDLA2R5LGN901KBA5S
	1,400		150		3.5	DDLA2R5LGN142KBF0S

* typical data (at 20℃)

◆DIMENSIONS [mm]

Terminal type CE331



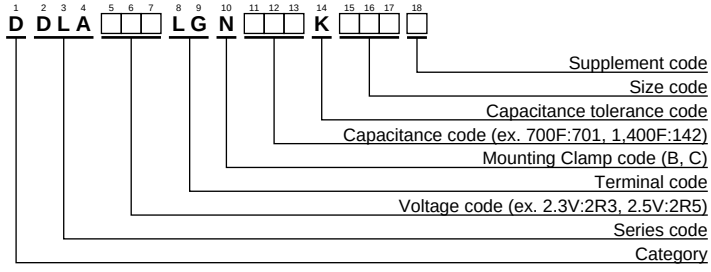
<Screw specification>

Plus hexagon-headed screw

M5×0.8×10

Maximum screw tightening torque:3.23Nm

◆PART NUMBERING SYSTEM



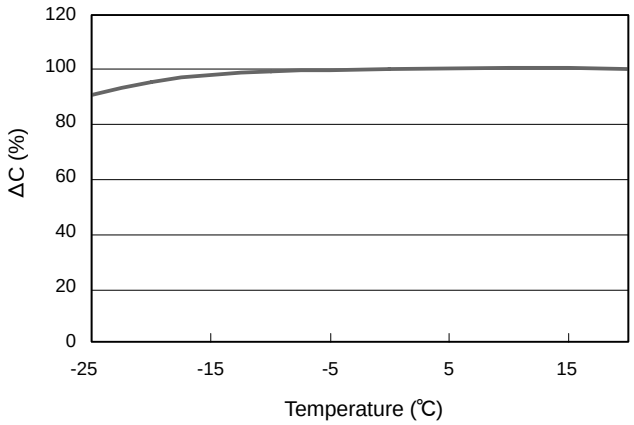
Please refer to "A guide to global code (screw-mount terminal type)"

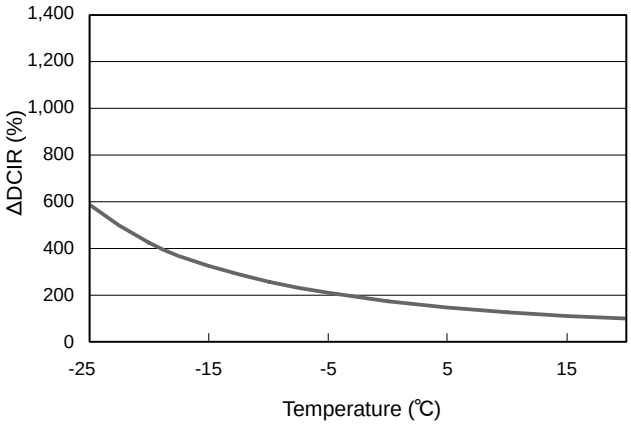
Special designs are available on requests.

Note : The specifications are subject to change without notice

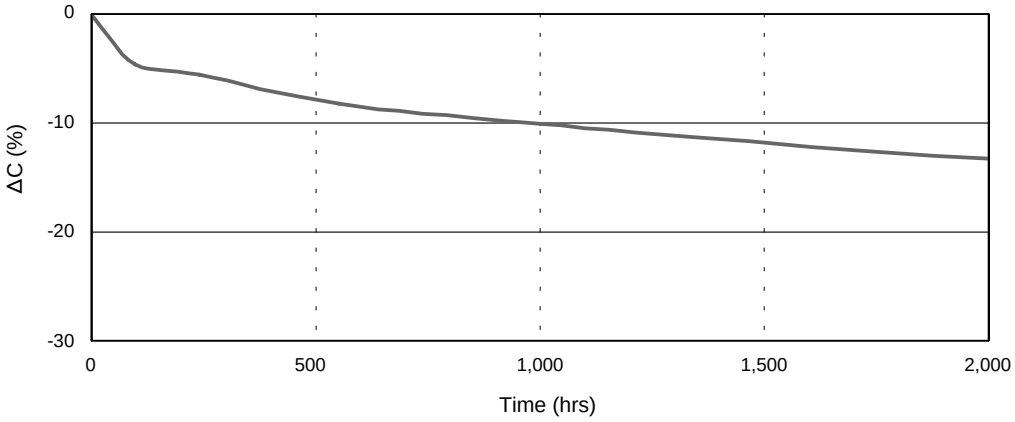
DLCAP™ DLA Series

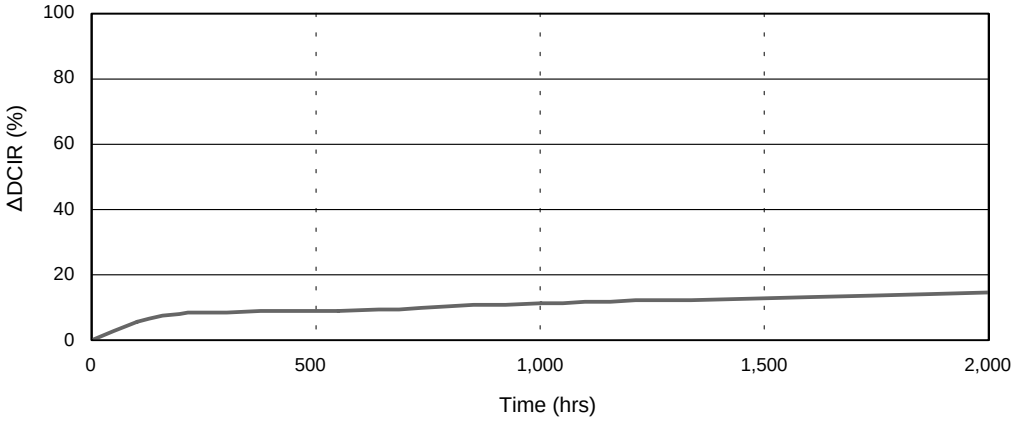
◆Temperature dependance of Capacitance & DCIR





◆60℃ Load Life Test





Special designs are available on requests.

Note : The specifications are subject to change without notice

NIPPON CHEMI-CON **Engineering Bulletin** No.772A / Aug.2006 Electric Double Layer Capacitor

DLCAP™ DLB Series

2.5V Energy type

- With the original electrode process, high energy density implementation is possible
- Charge/discharge efficiency are higher than in batteries
- Environment-friendly
- Suited for electricity storage, battery assistance, short-term backups, etc.

◆SPECIFICATIONS

Items	Specifications		
Operating Temperature	-25℃ to +60℃		
Rated Voltage	2.5Vdc		
Capacitance Tolerance	±10% (K)		(at 20℃)
Temperature Characteristics	Capacitance change	≦±30% of the initial measured value at 20℃	
	Internal Resistance	≦600% of the value given in the Ratings Tables	(at -25℃)
Load Life Test	After the capacitors are subjected to the rated DC voltage at 60℃ for 2,000 hours, the following specifications shall be satisfied when the capacitors are restored to 20℃.		
	Capacitance change	≦±30% of the initial measured value	
	Internal Resistance	≦200% of the value given in the Ratings Table	
Bias Humidity Test	After the capacitors are subjected to the rated DC voltage at 40℃ and 90 to 95%RH for 500 hours, the following specifications shall be satisfied when restoring to 20℃.		
	Capacitance change	≦±30% of the initial measured value	
	Internal Resistance	≦200% of the value given in the Ratings Tables	

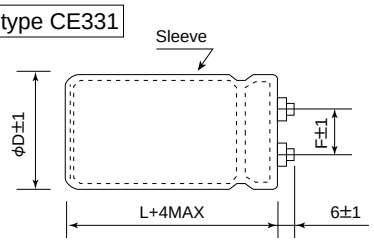
◆STANDARD RATINGS

Rated Voltage [V]	Capacitance [F]	Case Size ϕD [mm]	Case Size L [mm]	F [mm]	Internal Resistance* [mΩ]	Part No.
2.5	400	35	65	12.7	40	DDLB2R5LGN401KA65S
	740		95		22	DDLB2R5LGN741KA95S
	1,100	40	105	17.0	15	DDLB2R5LGN112KBA5S
	1,700		150		10	DDLB2R5LGN172KBF0S
	1,700	50	105	22.4	10	DDLB2R5LGN172KCA5S
	2,700		150		7	DDLB2R5LGN272KCF0S

* typical data (at 20℃)

◆DIMENSIONS [mm]

Terminal type CE331



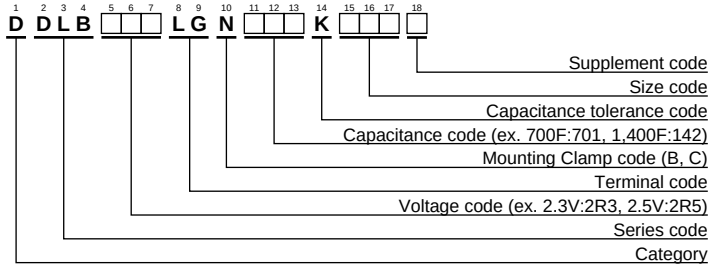
<Screw specification>

Plus hexagon-headed screw

M5×0.8×10

Maximum screw tightening torque:3.23Nm

◆PART NUMBERING SYSTEM



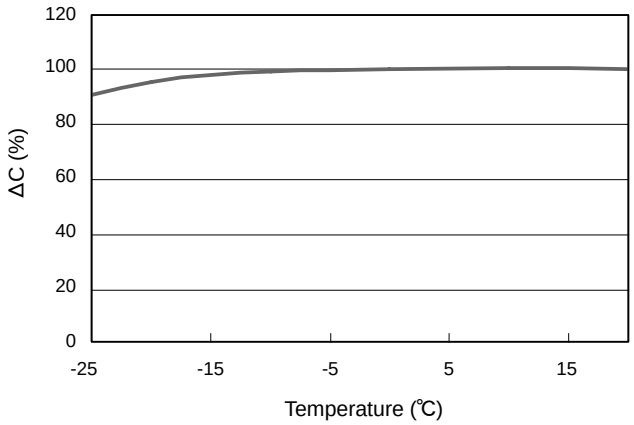
Please refer to "A guide to global code (screw-mount terminal type)"

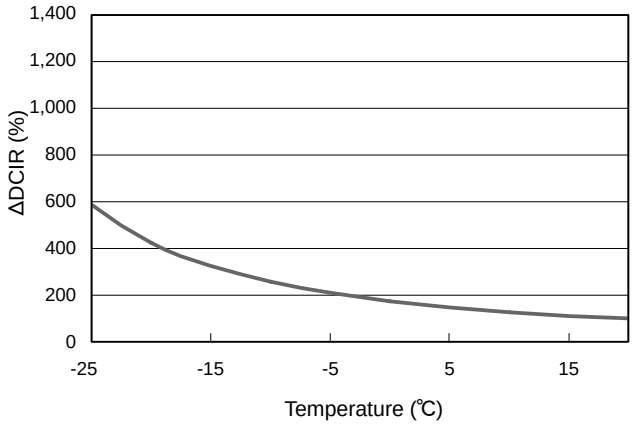
Special designs are available on requests.

Note : The specifications are subject to change without notice

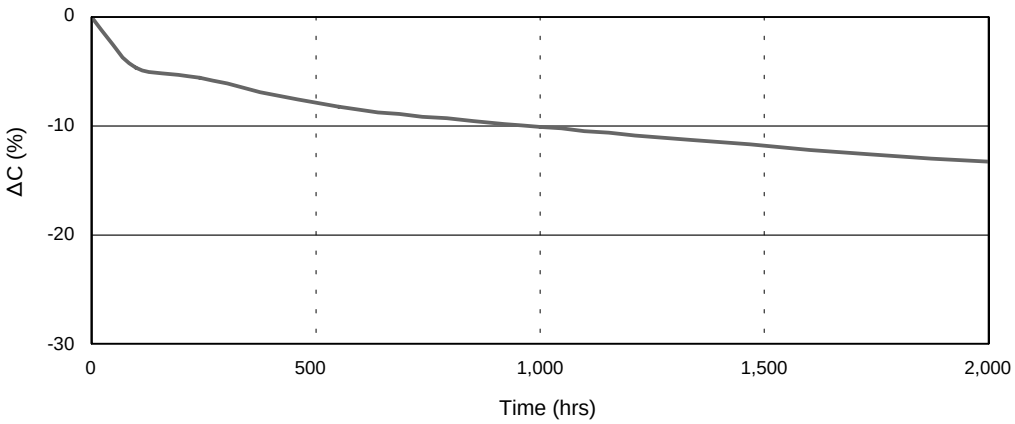
DLCAP™ DLB Series

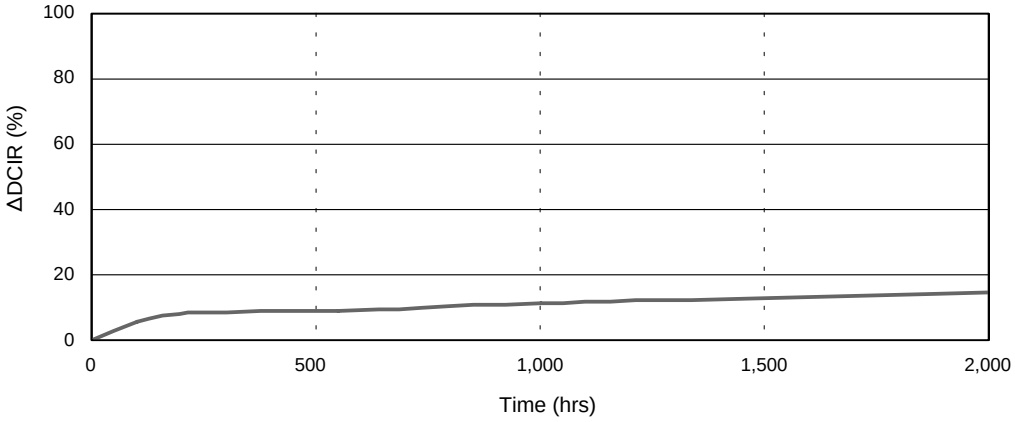
◆Temperature dependance of Capacitance & DCIR





◆60℃ Load Life Test





Special designs are available on requests.

Note : The specifications are subject to change without notice

NIPPON CHEMI-CON **Engineering Bulletin** No.773A / Aug.2006 Electric Double Layer Capacitor

DLCAP™ DLC Series

2.5V Power type

- With the original electrode process, high energy density implementation is possible
- Charge/discharge efficiency are higher than in batteries
- Environment-friendly
- Suited for electricity storage, battery assistance, short-term backups, etc.

◆SPECIFICATIONS

Items	Specifications		
Operating Temperature	-25℃ to +60℃		
Rated Voltage	2.5Vdc		
Capacitance Tolerance	±10% (K)		(at 20℃)
Temperature Characteristics	Capacitance change	≦±30% of the initial measured value at 20℃	
	Internal Resistance	≦600% of the value given in the Ratings Tables	(at -25℃)
Load Life Test	After the capacitors are subjected to the rated DC voltage at 60℃ for 2,000 hours, the following specifications shall be satisfied when the capacitors are restored to 20℃.		
	Capacitance change	≦±30% of the initial measured value	
	Internal Resistance	≦200% of the value given in the Ratings Table	
Bias Humidity Test	After the capacitors are subjected to the rated DC voltage at 40℃ and 90 to 95%RH for 500 hours, the following specifications shall be satisfied when restoring to 20℃.		
	Capacitance change	≦±30% of the initial measured value	
	Internal Resistance	≦200% of the value given in the Ratings Tables	

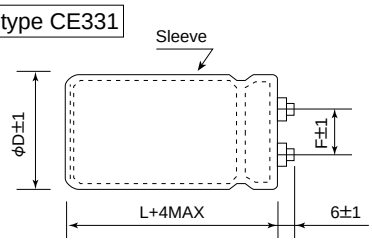
◆STANDARD RATINGS

Rated Voltage [V]	Capacitance [F]	Case Size φD [mm]	Case Size L [mm]	F [mm]	Internal Resistance* [mΩ]	Part No.
2.5	350	35	65	12.7	8	DDLC2R5LGN351KA65S
	640		95		5	DDLC2R5LGN641KA95S
	950	40	105	17.0	3.5	DDLC2R5LGN951KBA5S
	1,400		150		2.5	DDLC2R5LGN142KBF0S

* typical data (at 20℃)

◆DIMENSIONS [mm]

Terminal type CE331



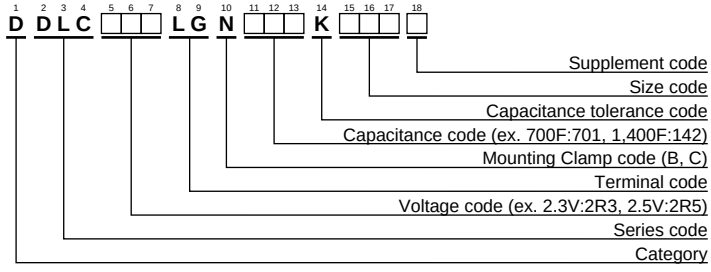
<Screw specification>

Plus hexagon-headed screw

M5×0.8×10

Maximum screw tightening torque:3.23Nm

◆PART NUMBERING SYSTEM



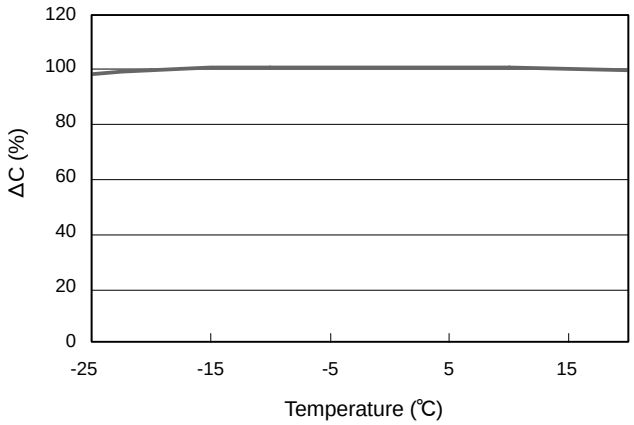
Please refer to "A guide to global code (screw-mount terminal type)"

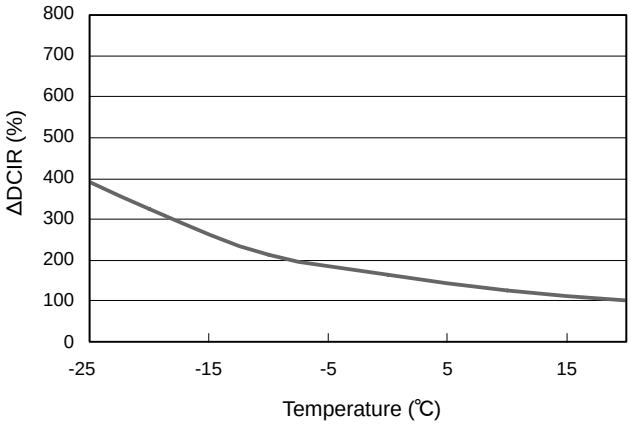
Special designs are available on requests.

Note : The specifications are subject to change without notice

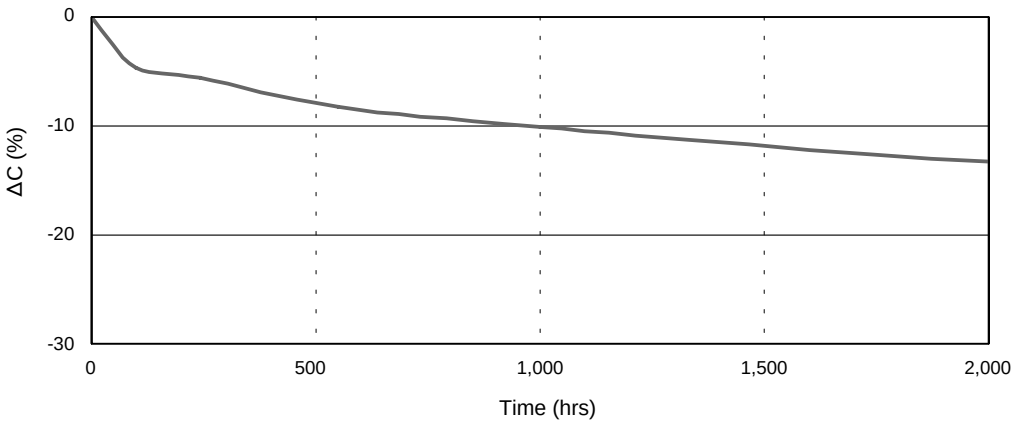
DLCAP™ DLC Series

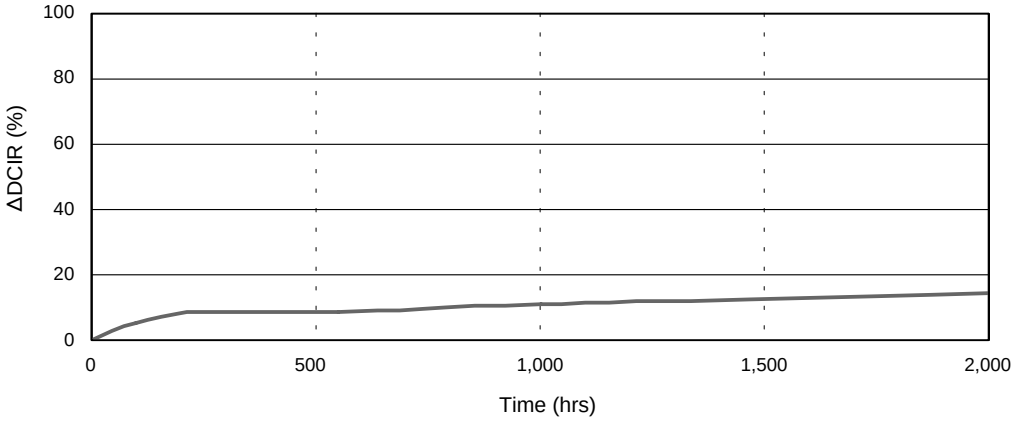
◆Temperature dependance of Capacitance & DCIR





◆60℃ Load Life Test





Special designs are available on requests.

Note : The specifications are subject to change without notice

NIPPON CHEMI-CON **Engineering Bulletin** No.774A / Aug.2006 Electric Double Layer Capacitor

DLCAP™ DMA Series

2.3V High capacity standard type

- With the original electrode process, high energy density implementation is possible
- Charge/discharge efficiency are higher than in batteries
- Environment-friendly
- Suited for electricity storage, battery assistance, short-term backups, etc.

◆SPECIFICATIONS

Items	Specifications		
Operating Temperature	-25℃ to +60℃		
Rated Voltage	2.3Vdc		
Capacitance Tolerance	±10% (K)		(at 20℃)
Temperature Characteristics	Capacitance change	≦±30% of the initial measured value at 20℃	
	Internal Resistance	≦600% of the value given in the Ratings Tables	(at -25℃)
Load Life Test	After the capacitors are subjected to the rated DC voltage at 60℃ for 2,000 hours, the following specifications shall be satisfied when the capacitors are restored to 20℃.		
	Capacitance change	≦±30% of the initial measured value	
	Internal Resistance	≦200% of the value given in the Ratings Table	
Bias Humidity Test	After the capacitors are subjected to the rated DC voltage at 40℃ and 90 to 95%RH for 500 hours, the following specifications shall be satisfied when restoring to 20℃.		
	Capacitance change	≦±30% of the initial measured value	
	Internal Resistance	≦200% of the value given in the Ratings Tables	

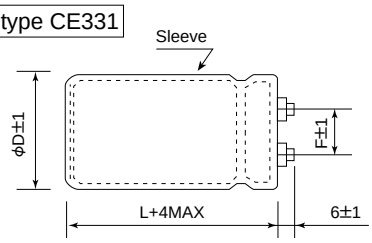
◆STANDARD RATINGS

Rated Voltage [V]	Capacitance [F]	Case Size ϕD [mm]	Case Size L [mm]	F [mm]	Internal Resistance* [mΩ]	Part No.
2.3	400	35	65	12.7	12	DDMA2R3LGN401KA65S
	720		95		7.5	DDMA2R3LGN721KA95S
	1,000	40	105	17.0	5.5	DDMA2R3LGN102KBA5S
	1,600		150		4	DDMA2R3LGN162KBF0S

* typical data (at 20℃)

◆DIMENSIONS [mm]

Terminal type CE331



<Screw specification>

Plus hexagon-headed screw

M5×0.8×10

Maximum screw tightening torque:3.23Nm

◆PART NUMBERING SYSTEM

1 D 2 D 3 M 4 A 5 6 7 8 L 9 G 10 N 11 12 13 14 K 15 16 17 18

- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 700F:701, 1,400F:142)
- Mounting Clamp code (B, C)
- Terminal code
- Voltage code (ex. 2.3V:2R3, 2.5V:2R5)
- Series code
- Category

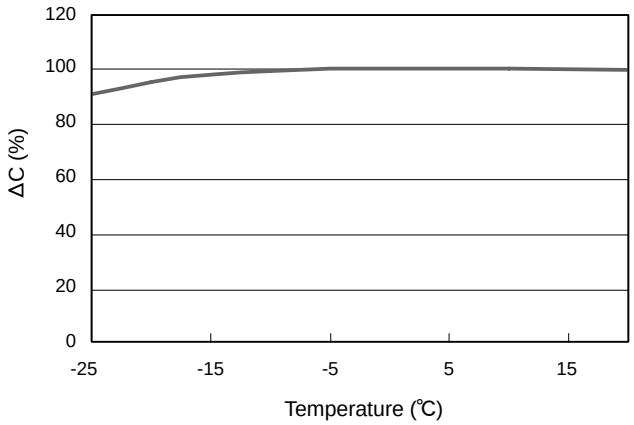
Please refer to "A guide to global code (screw-mount terminal type)"

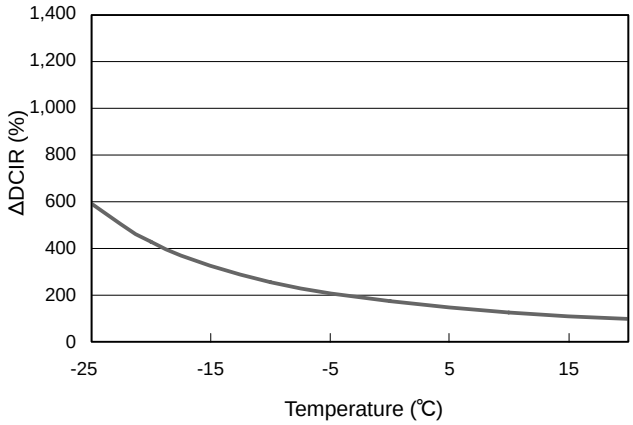
Special designs are available on requests.

Note : The specifications are subject to change without notice

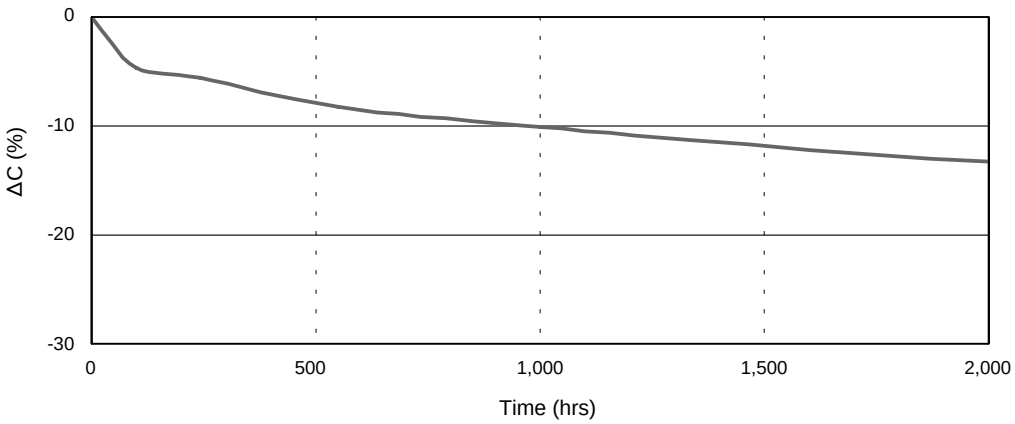
DLCAP™ DMA Series

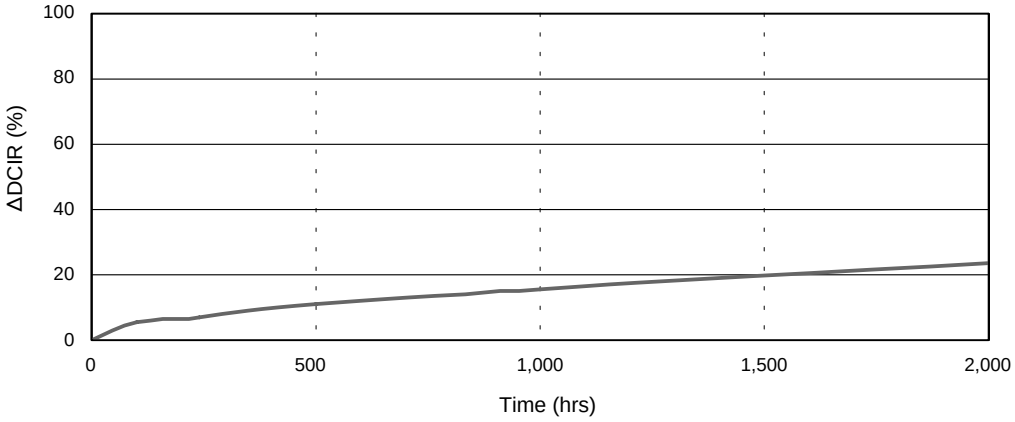
◆Temperature dependance of Capacitance & DCIR





◆60℃ Load Life Test





Special designs are available on requests.

Note : The specifications are subject to change without notice

NIPPON CHEMI-CON **Engineering Bulletin** No.775A / Aug.2006 Electric Double Layer Capacitor

DLCAP™ DMB Series

2.3V High capacity energy type

- With the original electrode process, high energy density implementation is possible
- Charge/discharge efficiency are higher than in batteries
- Environment-friendly
- Suited for electricity storage, battery assistance, short-term backups, etc.

◆SPECIFICATIONS

Items	Specifications		
Operating Temperature	-25℃ to +60℃		
Rated Voltage	2.3Vdc		
Capacitance Tolerance	±10% (K)		(at 20℃)
Temperature Characteristics	Capacitance change	≦±30% of the initial measured value at 20℃	
	Internal Resistance	≦600% of the value given in the Ratings Tables	(at -25℃)
Load Life Test	After the capacitors are subjected to the rated DC voltage at 60℃ for 2,000 hours, the following specifications shall be satisfied when the capacitors are restored to 20℃.		
	Capacitance change	≦±30% of the initial measured value	
	Internal Resistance	≦200% of the value given in the Ratings Table	
Bias Humidity Test	After the capacitors are subjected to the rated DC voltage at 40℃ and 90 to 95%RH for 500 hours, the following specifications shall be satisfied when restoring to 20℃.		
	Capacitance change	≦±30% of the initial measured value	
	Internal Resistance	≦200% of the value given in the Ratings Tables	

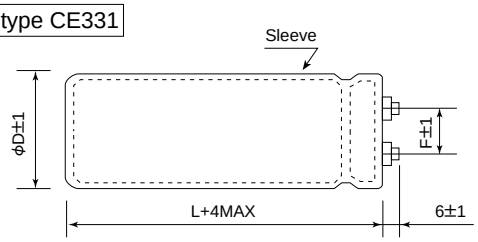
◆STANDARD RATINGS

Rated Voltage [V]	Capacitance [F]	Case Size ϕD [mm]	Case Size L [mm]	F [mm]	Internal Resistance* [mΩ]	Part No.
2.3	500	35	65	12.7	45	DDMB2R3LGN501KA65S
	870		95		25	DDMB2R3LGN871KA95S
	1,300	40	105	17.0	20	DDMB2R3LGN132KBA5S
	2,000		150		11	DDMB2R3LGN202KBF0S
	2,000	50	105	22.4	11	DDMB2R3LGN202KCA5S
	3,100		150		7.5	DDMB2R3LGN312KCF0S

* typical data (at 20℃)

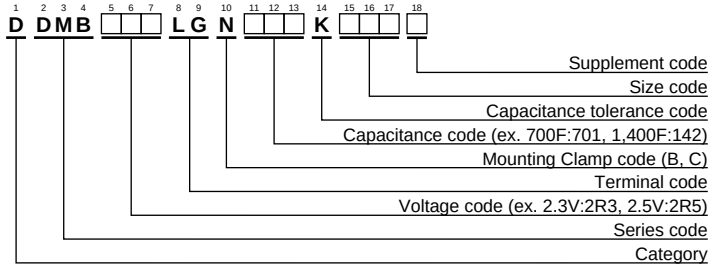
◆DIMENSIONS [mm]

Terminal type CE331



<Screw specification>
Plus hexagon-headed screw
M5×0.8×10
Maximum screw tightening torque:3.23Nm

◆PART NUMBERING SYSTEM



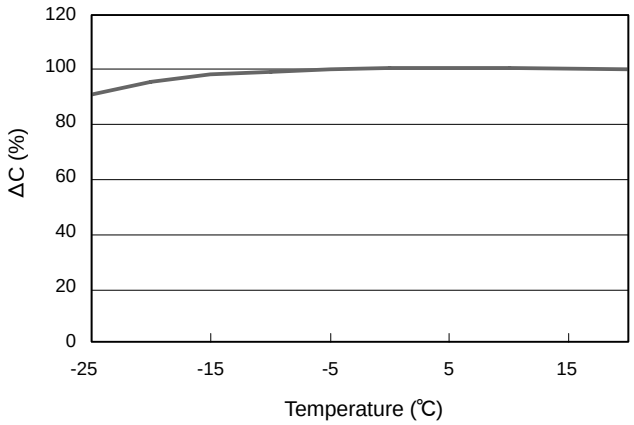
Please refer to "A guide to global code (screw-mount terminal type)"

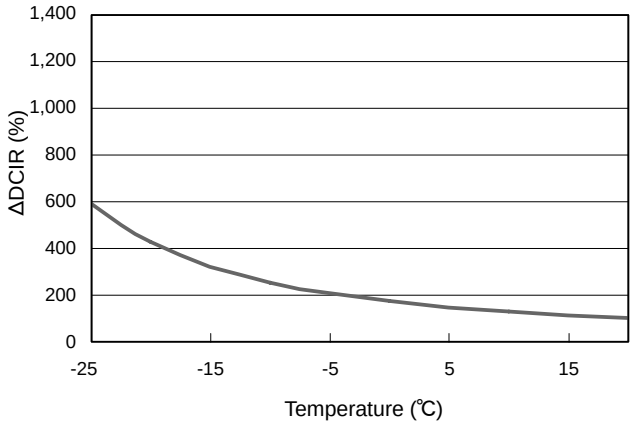
Special designs are available on requests.

Note : The specifications are subject to change without notice

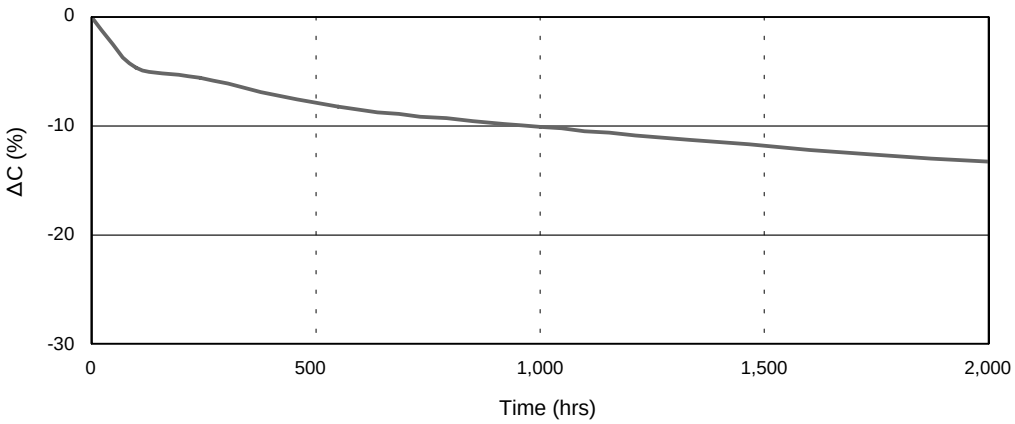
DLCAP™ DMB Series

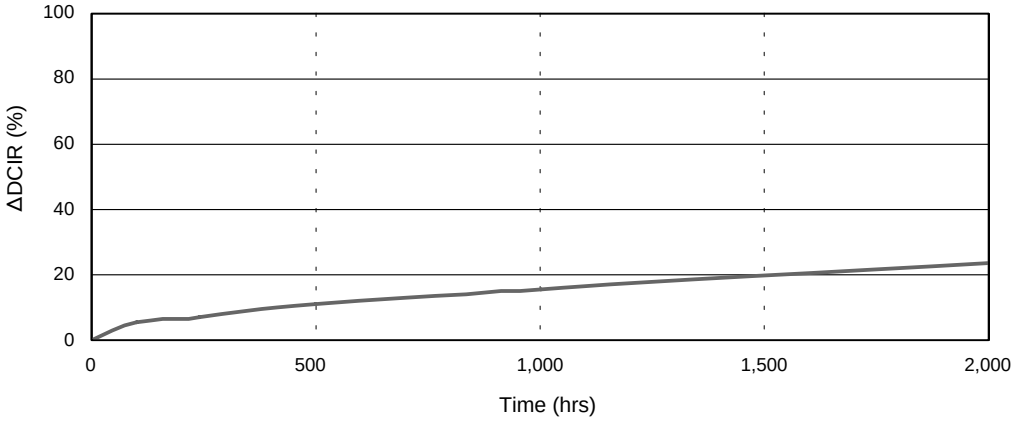
◆Temperature dependance of Capacitance & DCIR





◆60℃ Load Life Test





Special designs are available on requests.

Note : The specifications are subject to change without notice

NIPPON CHEMI-CON **Engineering Bulletin** No.776A / Aug.2006 Electric Double Layer Capacitor

DLCAP™ DMC Series

2.3V High capacity power type

- With the original electrode process, high energy density implementation is possible
- Charge/discharge efficiency are higher than in batteries
- Environment-friendly
- Suited for electricity storage, battery assistance, short-term backups, etc.

◆SPECIFICATIONS

Items	Specifications		
Operating Temperature	-25℃ to +60℃		
Rated Voltage	2.3Vdc		
Capacitance Tolerance	±10% (K)		(at 20℃)
Temperature Characteristics	Capacitance change	≦±30% of the initial measured value at 20℃	
	Internal Resistance	≦600% of the value given in the Ratings Tables	(at -25℃)
Load Life Test	After the capacitors are subjected to the rated DC voltage at 60℃ for 2,000 hours, the following specifications shall be satisfied when the capacitors are restored to 20℃.		
	Capacitance change	≦±30% of the initial measured value	
	Internal Resistance	≦200% of the value given in the Ratings Table	
Bias Humidity Test	After the capacitors are subjected to the rated DC voltage at 40℃ and 90 to 95%RH for 500 hours, the following specifications shall be satisfied when restoring to 20℃.		
	Capacitance change	≦±30% of the initial measured value	
	Internal Resistance	≦200% of the value given in the Ratings Tables	

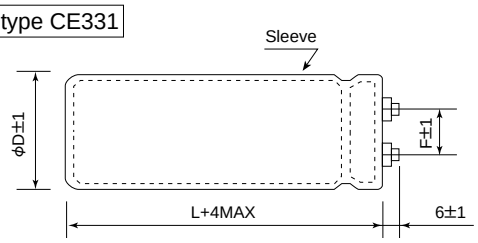
◆STANDARD RATINGS

Rated Voltage [V]	Capacitance [F]	Case Size ϕD [mm]	Case Size L [mm]	F [mm]	Internal Resistance* [mΩ]	Part No.
2.3	450	35	65	12.7	8.5	DDMC2R3LGN451KA65S
	760		95		5.5	DDMC2R3LGN761KA95S
	1,100	40	105	17.0	4	DDMC2R3LGN112KBA5S
	1,700		150		2.7	DDMC2R3LGN172KBF0S

* typical data (at 20℃)

◆DIMENSIONS [mm]

Terminal type CE331



<Screw specification>

Plus hexagon-headed screw

M5×0.8×10

Maximum screw tightening torque:3.23Nm

◆PART NUMBERING SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D	D	M	C				L	G	N				K				

Supplement code
Size code
Capacitance tolerance code
Capacitance code (ex. 700F:701, 1,400F:142)
Mounting Clamp code (B, C)
Terminal code
Voltage code (ex. 2.3V:2R3, 2.5V:2R5)
Series code
Category

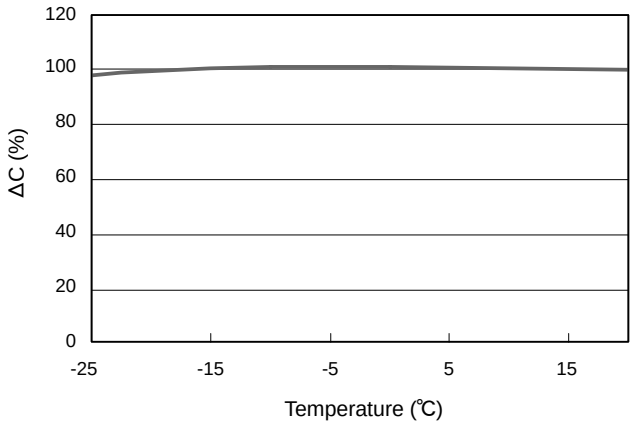
Please refer to "A guide to global code (screw-mount terminal type)"

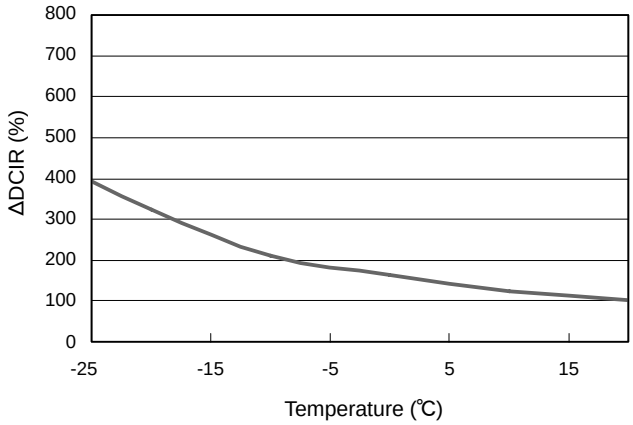
Special designs are available on requests.

Note : The specifications are subject to change without notice

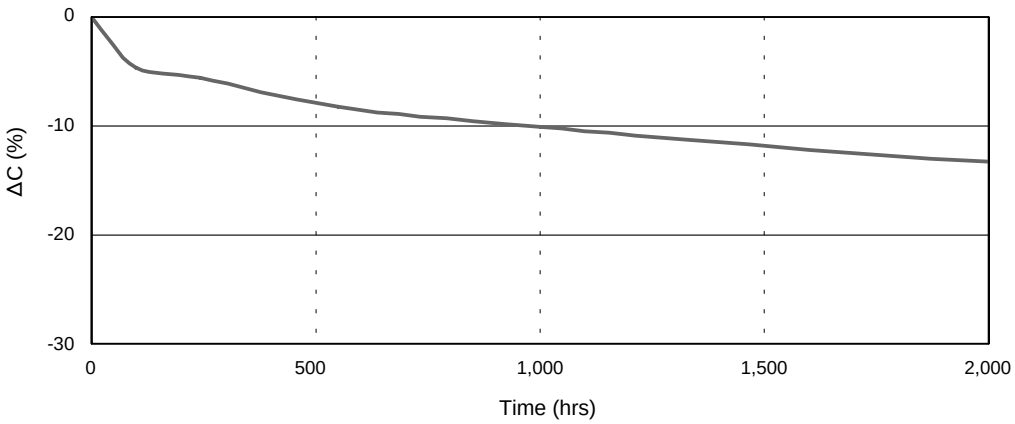
DLCAP™ DMC Series

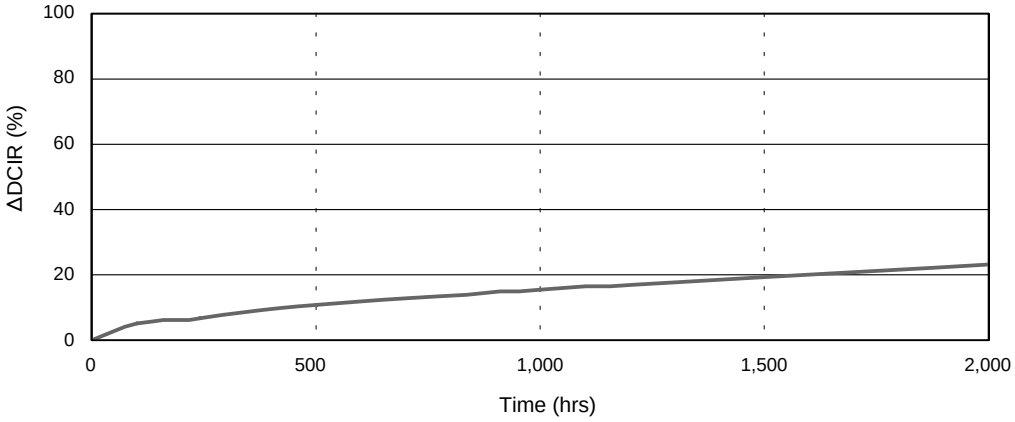
◆Temperature dependance of Capacitance & DCIR





◆60℃ Load Life Test





Special designs are available on requests.

Note : The specifications are subject to change without notice

NIPPON CHEMI-CON **Engineering Bulletin** No.778A / Aug.2006 Electric Double Layer Capacitor

DLCAP™ DSC Series

2.5V Super low resistance type

- With the original electrode process, high energy density implementation is possible
- Charge/discharge efficiency are higher than in batteries
- Environment-friendly
- Suited for electricity storage, battery assistance, short-term backups, etc.

◆SPECIFICATIONS

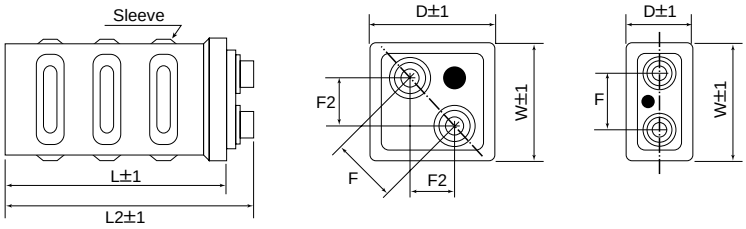
Items	Specifications		
Operating Temperature	-30℃ to +60℃		
Rated Voltage	2.5Vdc		
Capacitance Tolerance	±10% (K)		(at 20℃)
Temperature Characteristics	Capacitance change	≦±30% of the initial measured value at 20℃	
	Internal Resistance	≦600% of the value given in the Ratings Tables	(at -25℃)
Load Life Test	After the capacitors are subjected to the rated DC voltage at 60℃ for 2,000 hours, the following specifications shall be satisfied when the capacitors are restored to 20℃.		
	Capacitance change	≦±30% of the initial measured value	
	Internal Resistance	≦200% of the value given in the Ratings Table	
Bias Humidity Test	After the capacitors are subjected to the rated DC voltage at 40℃ and 90 to 95%RH for 500 hours, the following specifications shall be satisfied when restoring to 20℃.		
	Capacitance change	≦±30% of the initial measured value	
	Internal Resistance	≦200% of the value given in the Ratings Tables	

◆STANDARD RATINGS

Rated Voltage [V]	Capacitance [F]	Case Size			F [mm]	F2 [mm]	Internal Resistance* [mΩ]	Part No.
		W×D [mm]	L [mm]	L2 [mm]				
2.5	1,800	54×54	98	109	27.15	19.5	0.9	DDSC2R5LGN182K54AS
	2,400		128	139			0.7	DDSC2R5LGN242K54BS
	900	54×30	98	107	27.4	–	1.8	DDSC2R5LGN901K30AS
	1,200		128	135			1.4	DDSC2R5LGN122K30BS

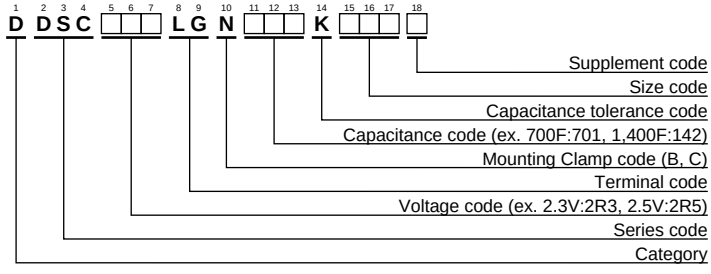
* typical data (at 20℃)

◆DIMENSIONS [mm]



<Screw specification>
Plus hexagon-headed screw
54×54type M6×1.0×12 54×30type M5×0.8×10
Maximum screw tightening torque :3.23Nm

◆PART NUMBERING SYSTEM



Please refer to "A guide to global code (screw-mount terminal type)"

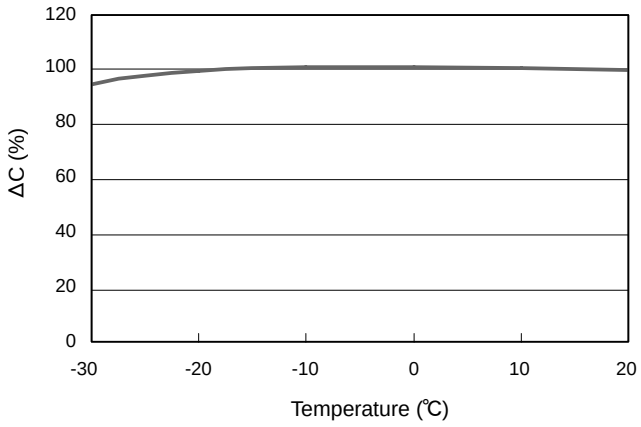
Special designs are available on requests.

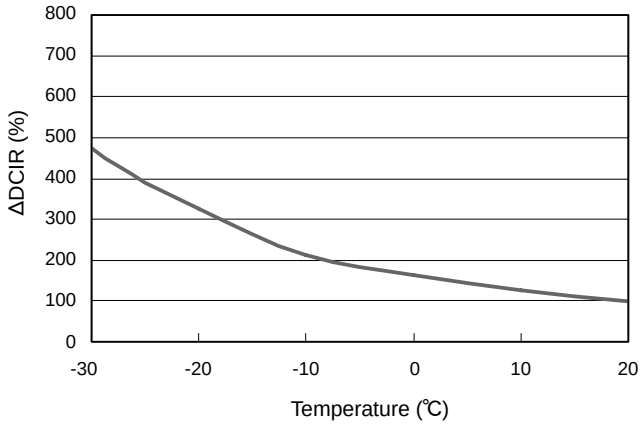
Note : The specifications are subject to change without notice

NIPPON CHEMI-CON Engineering Bulletin No.778A / Aug.2006 Electric Double Layer Capacitor

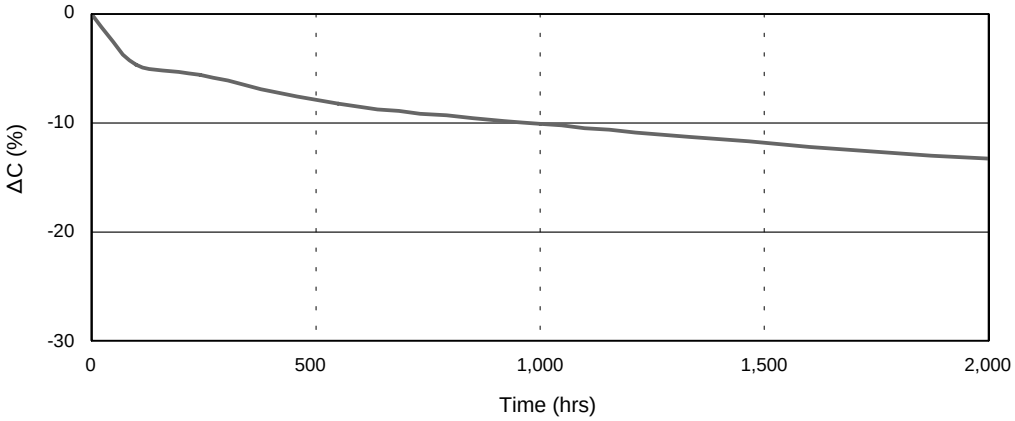
DLCAP™ DSC Series

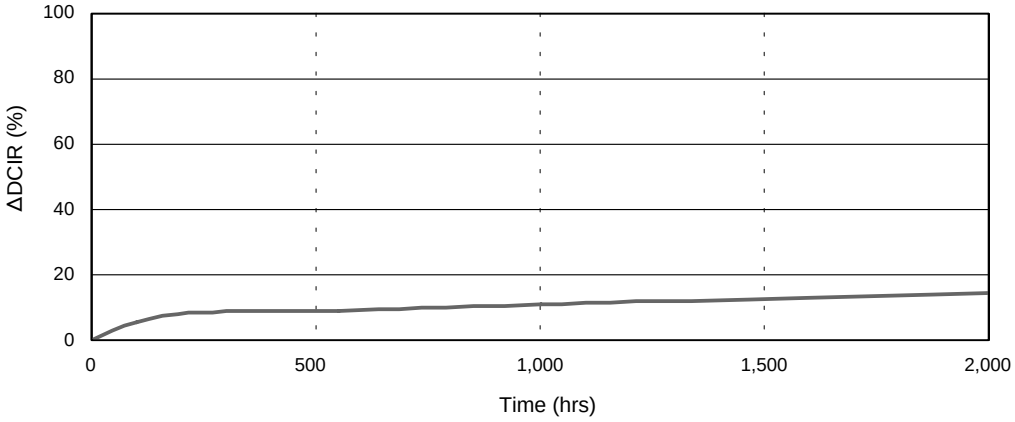
◆Temperature dependance of Capacitance & DCIR





◆60℃ Load Life Test





Special designs are available on requests.

Note : The specifications are subject to change without notice

NIPPON CHEMI-CON **Engineering Bulletin** No.777A / Aug.2006 Electric Double Layer Capacitor

DLCAP™ DTC Series

2.3V High capacity super low resistance

- With the original electrode process, high energy density implementation is possible
- Charge/discharge efficiency are higher than in batteries
- Environment-friendly
- Suited for electricity storage, battery assistance, short-term backups, etc.

◆SPECIFICATIONS

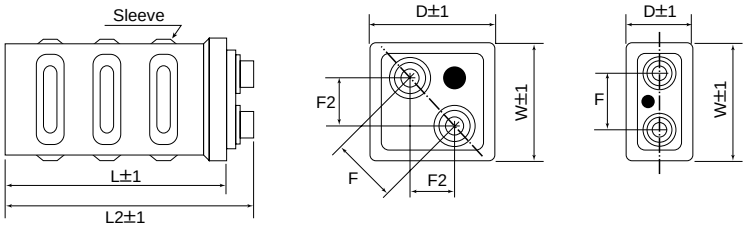
Items	Specifications		
Operating Temperature	-30℃ to +60℃		
Rated Voltage	2.3Vdc		
Capacitance Tolerance	±10% (K)		(at 20℃)
Temperature Characteristics	Capacitance change	≦±30% of the initial measured value at 20℃	
	Internal Resistance	≦600% of the value given in the Ratings Tables	(at -25℃)
Load Life Test	After the capacitors are subjected to the rated DC voltage at 60℃ for 2,000 hours, the following specifications shall be satisfied when the capacitors are restored to 20℃.		
	Capacitance change	≦±30% of the initial measured value	
	Internal Resistance	≦200% of the value given in the Ratings Table	
Bias Humidity Test	After the capacitors are subjected to the rated DC voltage at 40℃ and 90 to 95%RH for 500 hours, the following specifications shall be satisfied when restoring to 20℃.		
	Capacitance change	≦±30% of the initial measured value	
	Internal Resistance	≦200% of the value given in the Ratings Tables	

◆STANDARD RATINGS

Rated Voltage [V]	Capacitance [F]	Case Size W×D [mm]	Case Size L [mm]	Case Size L2 [mm]	F [mm]	F2 [mm]	Internal Resistance* [mΩ]	Part No.
2.3	2,100	54×54	98	109	27.15	19.5	0.9	DDTC2R3LGN212K54AS
	2,800		128	139			0.7	DDTC2R3LGN282K54BS
	1,100	54×30	98	107	27.4	–	1.8	DDTC2R3LGN112K30AS
	1,400		128	135			1.4	DDTC2R3LGN142K30BS

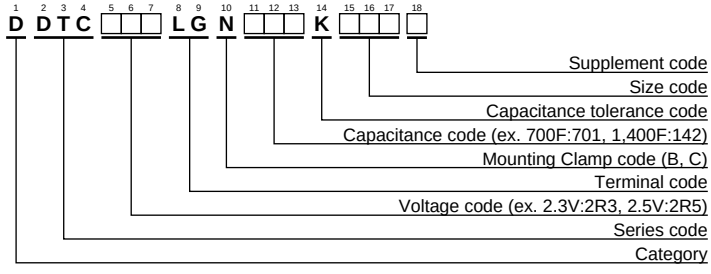
* typical data (at 20℃)

◆DIMENSIONS [mm]



<Screw specification>
Plus hexagon-headed screw
54×54type M6×1.0×12 54×30type M5×0.8×10
Maximum screw tightening torque :3.23Nm

◆PART NUMBERING SYSTEM



Please refer to "A guide to global code (screw-mount terminal type)"

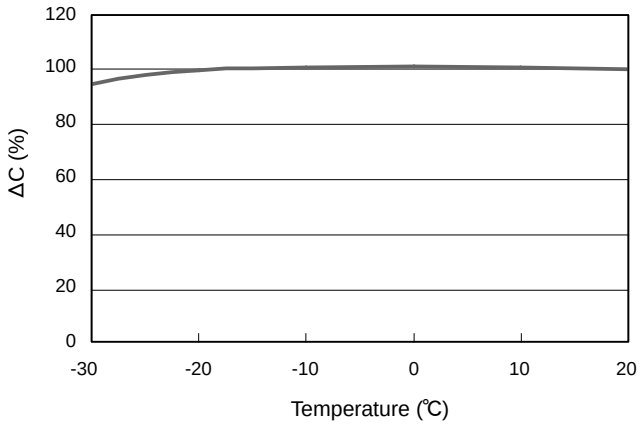
Special designs are available on requests.

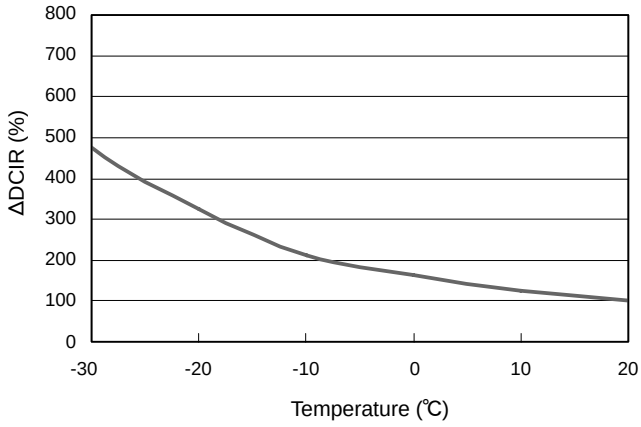
Note : The specifications are subject to change without notice

NIPPON CHEMI-CON Engineering Bulletin No.777A / Aug.2006 Electric Double Layer Capacitor

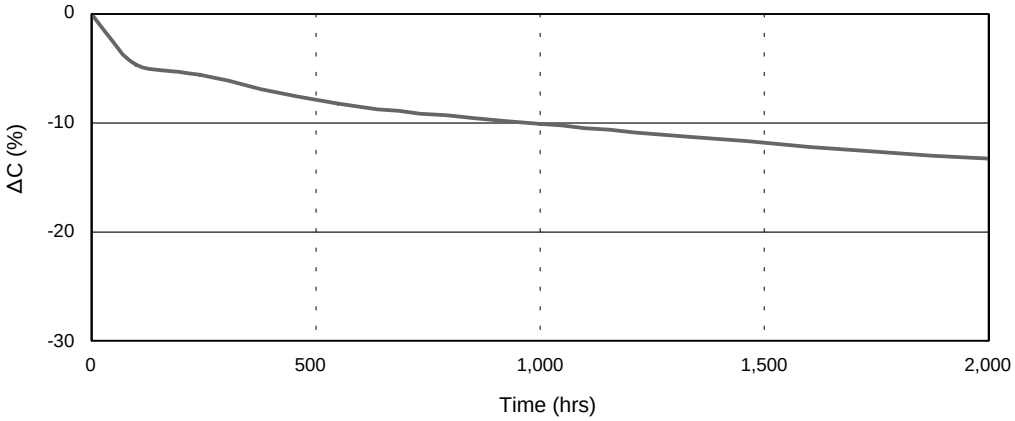
DLCAP™ DTC Series

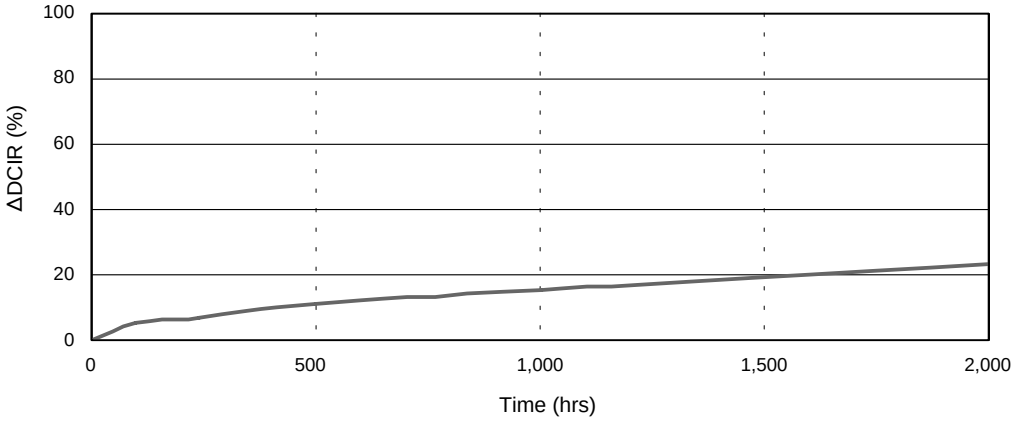
◆Temperature dependance of Capacitance & DCIR





◆60℃ Load Life Test





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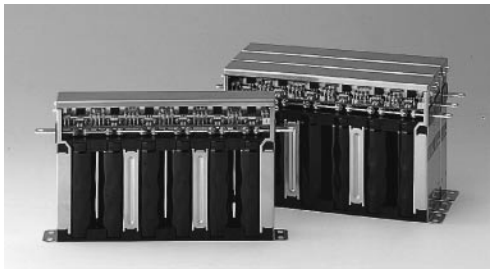
Note : The specifications are subject to change without notice

NIPPON CHEMI-CON
Engineering Bulletin Tentative No.785A / Oct.2006
Electric Double Layer Capacitor

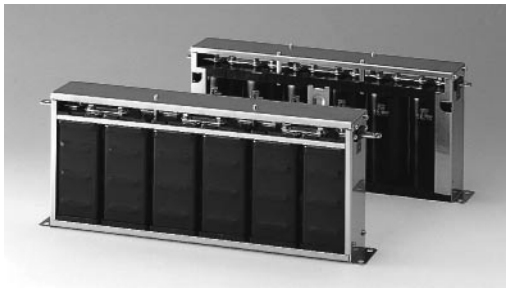
Electric Double Layer Capacitor

DLCAP™ Module

For an easy usage of Electric Double Layer Capacitor DLCAP™, we have prepared a standard module.
By connecting several of these modules, composing a higher voltage, larger volumed module will be possible.



Rated 15V 100F (Inner Resistance 38mΩ)



(Up front photo)
Rated 15V 400F (Inner Resistance 6mΩ)
(Rear photo)
Rated 13.8V 500F (Inner Resistance 44mΩ)

● Application Examples

- Solar energy generation charge
- Wind electric generator buffer
- Battery assistance
- Vehicle regenerative energy charge
- UPS battery alternative

● DLCAP Standard Module

◆ Features

- Voltage balance circuit installed

◆Product List

Rated Voltage [V]	Capacitance [F]	Size [mm]			Inner Resistance [mΩ]	Weight [kg]	Part No.
		A	B	C			
15	58	282	37	98	68	0.95	MDLA15R0V050F
	100	282	37	138	38	1.40	MDL-15R0V100F
	233	318	44	177	17	2.40	MDLC15R0V233F
13.8	500	377	54	163	44	3.20	MDMB13R8V500F
15	150	261	66	132	12	2.30	MDSC15R0V150F
	400	401	58	162	6	4.16	MDSC15R0V400F

◆Environmental Conditions

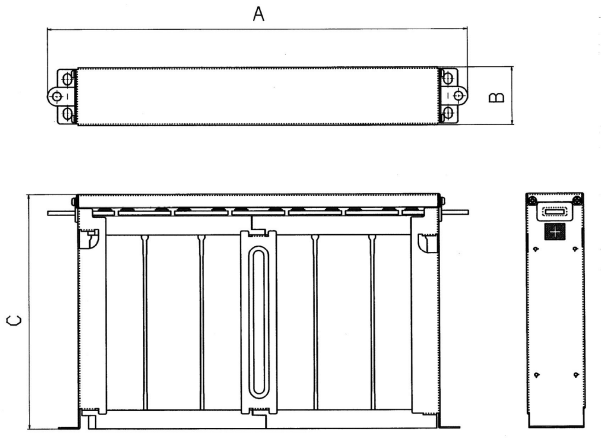
Item	Performance
Operation Temperature[℃]	-30 to +60
Operation Humidity[%RH]	20 to 90 (non condensing)
Storage Temperature[℃]	-40 to +60
Storage Humidity[%RH]	15 to 95 (non condensing)

* The specifications are subject to change without notice.

● DLCAP Custom Module Responses

◆Information

- High voltage application response
- Lagre volume application response
- High current application response
- Proper balance circuit recommendation
- Uncommon circuit or controlled charge discharge circuit response
- Expected life estimation



Standard Bank Dimention Outline Drawing

Due to upgrading, this bulletin may change without notice

NIPPON CHEMI-CON **Engineering Bulletin** Tentative No.786A / Oct.2006 Electric Double Layer Capacitor

Electric Double Layer Capacitor

DLCAP™ Standard Rack

- Rack type for fixed energy storage.
- Suitable for industrial machine high voltage use.
- Serieal / Parallel lining of the rack is possible.

◆Application Example

- Instant low voltage electricity (less than 1 sec) measuring equipment energy storage use.
- Regenerative Energy Storage use for cranes, etc.

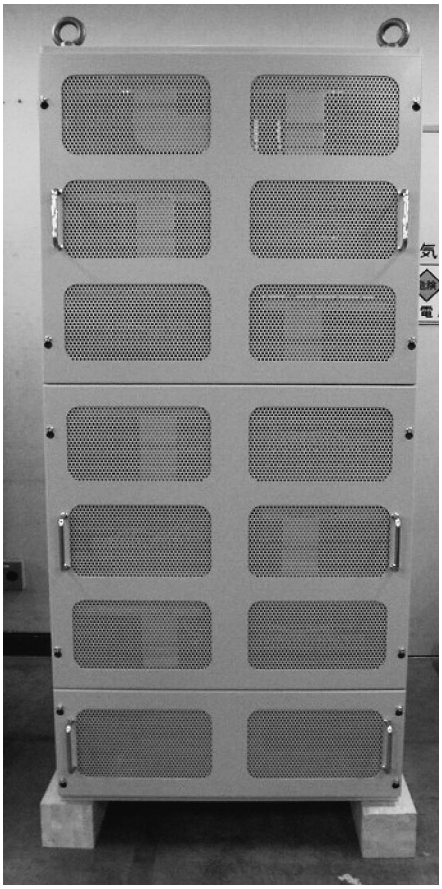
* By connecting several racks, composing a high voltage • high volume bank will be possible.

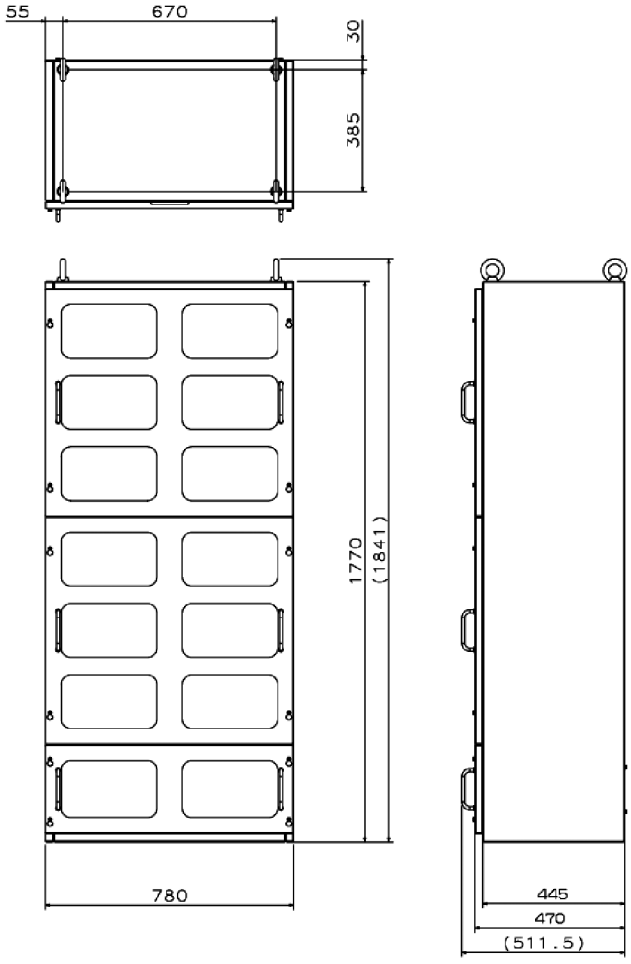
* Forced cooling fan (24 pieces) may be attached as an option.

◆Specification Chart

Item		Specifications		Others
Product Number		MDLC210V116F	MDLC105V466F	
Rated Voltage(Maximum charged voltage)		210 [V]	105 [V]	
Electric Capacitance(typ.)		116 [F]	466 [F]	20℃ Defalt
Direct Inner Resistence(typ.)		32 [mΩ]	8[mΩ]	20℃ Defalt
Dimention		780 × 470 × 1770(H) [mm]		
Weight		445 [kg]		
Environmental Requirements	Operation	-25～+60 [℃] 20～90 [%RH]		(non condensing)
	Storage	-40～+60 [℃] 15～90 [%RH]		(non condensing)
Insulation Resistance		Over 100 [MΩ]		DC500V 1min
Insulation Voltage		Over 2.5 [KV]		AC 1min

◆Aspect/ Dimention Outline Drawing





Special designs are available on requests.

Note : The specifications are subject to change without notice