



Electric Double Layer Capacitors **“DYNACAP”, “POWERCAP”**

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■ Type List for DYNACAP

★ : New series
☆ : Upgrade

Category		Series	Category temp. range °C		Max.operating voltage V.DC	Capacitance range F	Color of sleeve	Page	Applications	Remarks
			Max.	Min.						
For memory backup	Standard type	DB	+70	−25	5.5	0.047 to 1.5	Indigo	130	Ideal for backing up of CMOS IC's, microcomputers, RAM's, RTC's and the like used in VIDEO's, tuners, TV sets, telephone sets, DVD and others.	☆
	Low ESR type	DBN	+70	−25	5.5	0.1	Indigo	130		
	Low profile High temperature type	DBJ	+85	−10	5.5	0.047 to 1.0	Black	131		
	Miniaturized Standard type	DX	+70	−25	5.5	0.047 to 1.5	Indigo	132	Ideal for backing up of CMOS IC's, microcom-puters, RAM's, RTC's and the like used in VIDEO's, tuners, TV sets, telephone sets, DVD, pager units, cameras, personal wireless items and others.	☆
	Miniaturized High temperature type	DXJ	+85	−10	5.5	0.047 to 1.0	Black	133	Ideal for backing up of CMOS IC's, microcom-puters, RAM's, RTC's and the like used in VIDEO's, tuners, TV sets, telephone sets, DVD, pager units, cameras, personal wireless items and others.	☆
	High voltage tolerance type	DK	+70	−25	6.3	0.047 to 1.0	Indigo	134	Ideal for backing up of Li -batterybacked equipment such as cameras, VIDEO's and telephone sets.	
	High temperature type	DH	+85	−25	5.5	0.047 to 1.0	Indigo	135	Ideal for backing up of controls, electronic rice cooking jars, home bakeries and others.	
	Coin type	DC (614)	+70	−25	2.5	0.2	Silver	136	Ideal for backing up of pager, solar watches, solar calculators, solar remote control units, camaras and the like.	
		DCK (614)	+60	−10	3.3	0.2				
		DC	+70	−25	2.5	0.22		—		
		DCK	+60	−10	3.3	0.22				
	Reflow soldering Coin type	DSK (414)	+70	−10	3.3	0.07	Silver	137	Mountable on board with best suited for mainly memory and time functions as well as memory backup for PDA and DSC.	
		DS (614)	+70	−25	2.5	0.2		138		
		DSK (614)	+60	−10	3.3	0.2				
		DS	+70	−25	2.5	0.22				
		DSK	+60	−10	3.3	0.22				
For power	Standard type	DZ	+70	−25	2.5	1.0 to 200	Black	139	Ideal for power supplies of LED displays, personal wireless items, backup for power supplies, and the storage battery of solar battery.	
	Large capacitance type	DZH	+60	−25	2.5	50 to 300	Black	139	Ideal for power supplies of LED displays, personal wireless items, backup for power supplies, and the storage battery of solar battery.	★
	High power type	DZN	+70	−25	2.5 / 2.7	0.7 to 100	Blue	140	Ideal for actuator of moters and electromagnetic coil drives.	

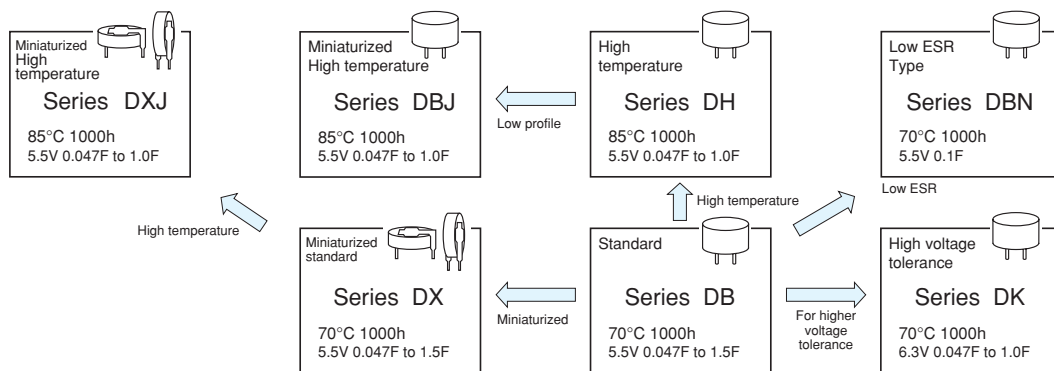
NOTE

Design, Specifications are subject to change without notice.
Ask factory for technical specifications before purchase and/or use.

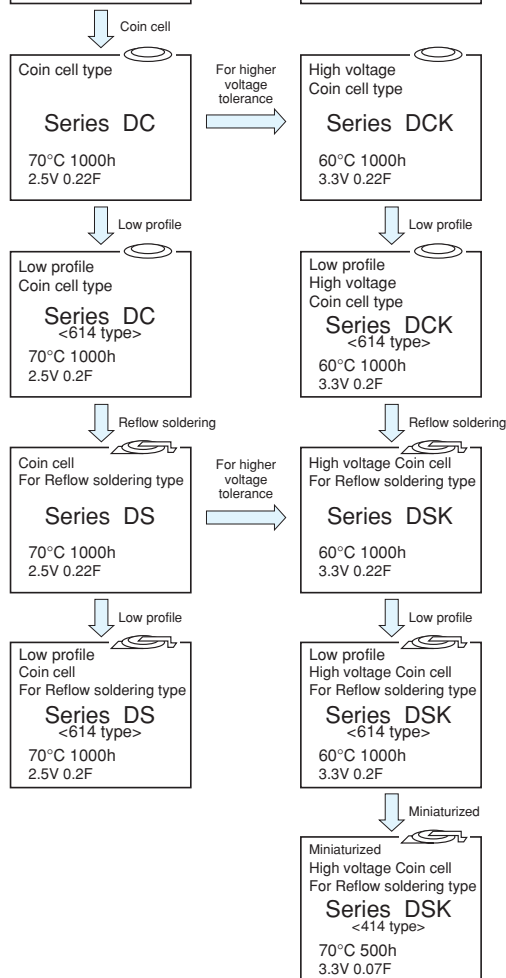
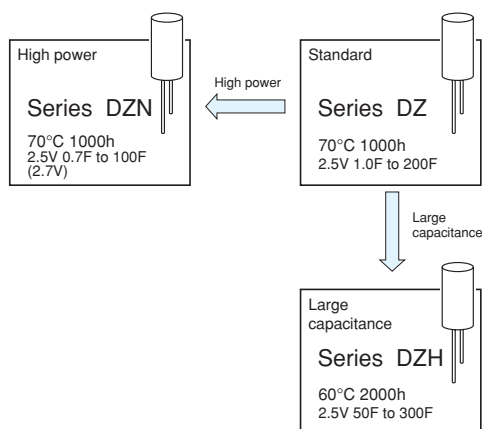
Systematized Classification of Electric Double Layer Capacitors

DYNACAP

For memory backup



For power



NOTE

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Product Symbol System for Electric Double Layer Capacitors

□ □ □ — □ □ □

Series code

Voltage
Symbol

□ □ □ □ □ □ □

Shape
Symbol

Capacitance
Symbol

□ □ □ □ □ □ □

Additional
Symbol

Taping,
Lead-forming

Refer to the examples on the
page describing a particular
series.

Leave the boxes blank when
no particular designation is
made.

Max. voltage (V)	Voltage symbol
2.5	2R5
2.7	2R7
3.3	3R3
5.5	5R5
6.3	6R3

Capacitance (F)	Capacitance symbol
0.047	473
0.1	104
0.2	204
0.22	224
0.33	334
0.47	474
0.68	684
1	105
3.3	335
4.7	475
10	106
20	206
50	506
100	107
200	207
1200	128

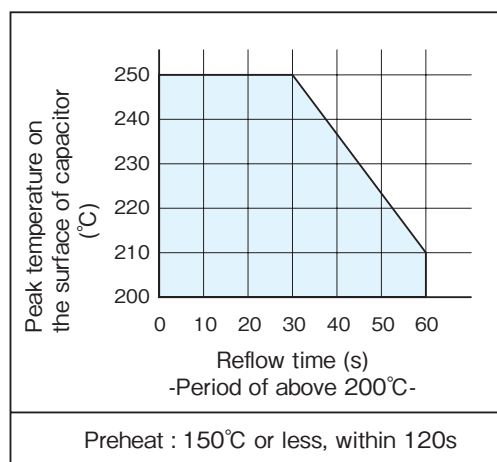
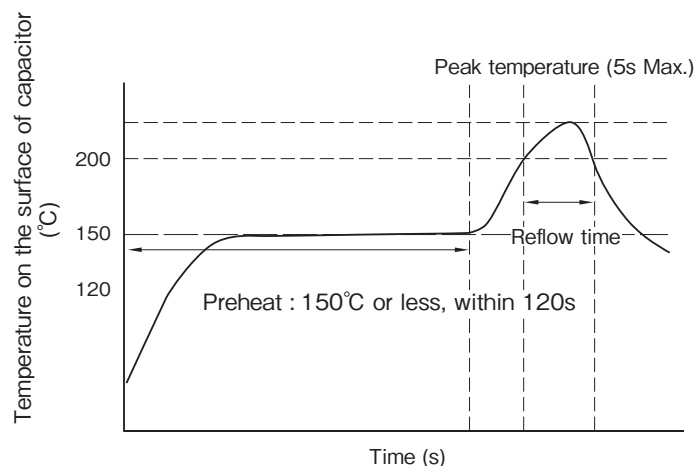
Write down one of the forming
symbols for taping and lead-
forming capacitors.

When taping or lead-forming is
not necessary, leave the boxes
blank.

Recommended soldering method (series DS, DSK)

Method	Reflow soldering	Soldering iron	Flow soldering
Advisability	○	○	×

Reflow soldering conditions.



Attention : Carry out soldering work at low temperature and in the shortest time within above conditions.
Do NOT reflow solder, when cell voltage is above 0.3V.

*Please consult with us about reflow soldering conditions other than the above.

Cautions for Using Electric Double Layer Capacitor (DYNACAP, POWERCAP)

■ Usage

1. Electric double layer capacitors (EDLC) use a conductive organic electrolyte.

The use at excessive mounting temperature or exceeding the upper category temperature can cause the electrolyte to leak. Especially, coin and multilayer coin types for the memory backup (DB, DBN, DBJ, DX, DXJ, DXL, DH, DK, DC, DCK, DS, and DSK series) excluding the DZ, DZH, DZN and DP series use a low elastic plastic as the sealant in the cell construction like coin batteries; therefore, avoid using such capacitors in the vicinity of automotive equipment with steep temperature change, and heating element such as motor, relay, transformer, power IC, etc. because of the risk of leakage of electrolyte.

2. Since EDLC is polarized, do not apply a reversed voltage.

EDLC is polarized. If a reversed voltage is applied for a long time, the leakage current will increase abruptly, which may cause a decrease in the capacity, an increase in the internal resistance, and causing leakage or damage to the product in some cases.

3. Do not apply any voltage higher than the operating maximum voltage (this means the surge voltage in the case of short-time charge).

If an overvoltage is applied to the product, the leakage current will increase abruptly and the product will become overheated, which may cause a decrease in the capacity, an increase in the internal resistance, and causing leakage or damage to the product in some cases.

4. Do not use smoothing a power supply (for absorbing its ripple).

Since the internal resistance of EDLC is high, the product will be overheated if it is used for smoothing a power supply (for absorbing its ripple), which may cause a decrease in the capacity, an increase in the internal resistance, and causing leakage or damage to the product in some cases.

5. Do not use in a circuit where quick charge and discharge are repeated very often.

In a circuit where quick charge and discharge are repeated very often, the product will become overheated, which may cause a decrease in the capacity, an increase in the internal resistance, and causing leakage or damage to the product in some cases.

Reduce the charge and discharge currents while selecting a product with low internal resistance, and make sure that the product surface temperature does not rise.

6. EDLC life depends heavily on the ambient temperature.

①The lifetime of EDLC is seriously affected by change in ambient temperature. If the temperature is lowered by 10°C, the lifetime will be approximately doubled. Therefore, the product should be used at a temperature lower than the guaranteed maximum value for maximum life.

②If the capacitor is used at a temperature exceeding its maximum guaranteed temperature,

not only is its life shortened, but increased vapor pressure of electrolyte or electrochemical reactions may increase the internal pressure, and causing leakage or damage to the product in some cases.

7. Note that a voltage drop in EDLC occurs during backup.

In a case where discharge current is large, or a large current flows instantaneously, an electric double layer capacitor may not operate at the start of discharge because of a large voltage drop (IR drop) caused by the product with the DC internal resistance.

Please consult us for a large discharge current (in the case of other series except DZ, DZH, DZN and DP series: when larger than $I [\text{mA}] = 1 \times C [\text{F}]$) as the internal resistance varies by each series. (Recommendation discharge current: less than 1 mA/F at 20°C)

8. Do not use the product in an ambient atmosphere containing waterdrops (condensation) or toxic gases.

Although EDLC is sealed, water droplets or toxic gases may do degradation characteristics, a leakage and corrode the lead wires and the case, which may cause a breaking of the wires.

Avoid abrupt temperature changes, which may cause water droplets, resulting in product deterioration and electrolyte leakage.

9. Contact us before connecting the products in series.

A series connection will cause an imbalance in the voltage, charged to the capacitors and an overvoltage may be charged to one or more them. This may cause a decrease in the capacity, an increase in the internal resistance and causing leakage or damage to the product in some cases.

When using series connection for several capacitors, please derate the applied voltage from the operating maximum voltage or use balancing circuits (bleeder resistor, etc.) to compensate for the imbalance in the applied voltage for each capacitor. Moreover, please ensure the arrangement does not cause temperature fluctuation between capacitors.

10. About vibration.

A terminal blank, a terminal bend, and a crease may occur by adding too much vibration to a capacitor.

Moreover, depending on the case, an EDLC may do degradation of the characteristic, breakage, and a leakage.

When you become too much vibration, please contact us.

11. When used on a double sided printed circuit board, do not overlap the wiring patterns on the mounted part.

A short circuit may be created by certain wiring conditions. Should the electrolyte leaks, the circuit pattern may cause a short circuit, resulting in tracking or migration.

12. Do not keep in high temperature and high humidity atmospheres.

①Avoid high temperature or high humidity or direct rays when storing capacitors.

NOTE

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②Keep the product in a place where the temperature is 5°C~30°C and the humidity is lower than 60%. Avoid an abrupt temperature change, which may cause condensation or deterioration of the product or liquid leakage.

③Do not store EDLC at a place where there is a possibility that they may get water, salt or oil spill.

④Do not store EDLC at place where the air contains dense hazardous gas (hydrogen sulfide, sulfurous acid, nitrous acid, chlorine ammonia, etc.).

⑤Do not store EDLC at a place where it gets ultraviolet ray or radioactive ray.

13. Capacitors fitted with a relief valve

①The relief valve is provided with a valve function with part of the case made thin to avoid explosion by increased internal pressure when the capacitor is under abnormal load such as overvoltage or reverse voltage. After activation of the relief valve, the capacitor must be replaced as it does not restore.

②For the capacitors with a case relief valve, provide a void on the top of the relief valve so as not to hamper its activation. Make a void of 2 mm or more for the product of $\phi 18$ or less in diameter, and a void of 3 mm or more for the product of $\phi 20$ to $\phi 35$ mm in diameter on the top.

■Mounting

1. Do not overheat when soldered.

Depending on the type and size of the board, the product may be subjected to overheat, leading to loss of airtightness. This may greatly shorten the product life or cause liquid leakage.

In case of a 1.6mm-thick and single side printed board, for example, keep the following soldering conditions: temperature lower than 260°C, time shorter than 5 seconds.

When a board thinner than 1.6 mm or multi-layer printed board is used, contact us.

In the case of hand soldering, the iron tip temperature is lower than 360°C, time is shorter than 3 seconds.

The coin types and multilayer coin types excluding the DZ and reflow-compatible coin types use polypropylene as the packing material for sealing and therefore susceptible to excessive heat. Note that the component body temperature shall be controlled so as not to exceed 90°C including preheating.

2. When soldering the capacitor to the wiring board, do not attach the body of the capacitor to the circuit board.

If the body of the capacitor is attached directly to the circuit board, the flux or solder can blow through the through holes in the circuit board, negatively impacting the capacitor.

Moreover, the heat influence at the time of soldering can be reduced by floating the body.

3. Contact us when cleaning is necessary after soldering.

Certain types of solvents are not compatible and may cause damage.

4. Contact us when the product is attached by adhesive bonding.

Certain types of adhesives are not compatible.

Paste bond partially between the product and the board so that the product will not adhere completely to the board.

Do not raise the temperature over the guaranteed value while the bond is hardening.

5. Heating conditions of adhesive curing oven

During heating of the adhesive curing oven, application of excessive heat may significantly shorten the product life or cause liquid leakage. Control the body temperature so as not to exceed 90°C during work while setting the allowable atmospheric temperature below 110°C, and allowable heating time within 30 seconds.

For the heating conditions deviating from the above, consult with us providing your temperature profile conditions.

6. Be careful not to apply an excessive force to the capacitor body, terminals or lead wires.

①Mount the capacitor while making sure that the terminal spacing of the capacitor and the spacing of the holes in the printed wiring board are aligned.

②If the capacitor body is subjected to stress such as grabbing, falling, bend, pushing or twisting after mounted, its terminals may come off, leading to open, short or liquid leakage.

■Other cautions

1. Emergency procedures

If the EDLC overheats or starts to smell, immediately switch off the units main power supply to stop operation.

Keep your face and hands away from the EDLC, since the temperature may be high enough to cause the EDLC to ignite and burn.

2. Periodical inspections should be established for the EDLC used in industrial appliances.

The following items should be checked:

①Appearance : Check if there is leakage.

②Electronic performance : Check the leakage current, the electrostatic, the internal resistance and other items described in the catalog or the product specifications.

3. Disposing of EDLC.

①Punch a hole or crush the EDLC (to prevent explosion) before incineration at approved facility.

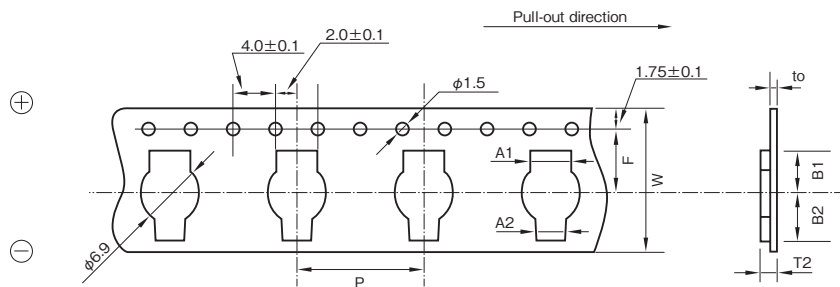
②If they are not to be incinerated, bring them to a professional industrial waste disposal company.

4. Other notes.

Please refer to the following literature for anything not described in the product specifications or the catalog. (Technical Report of Japan Electronics and Information Technology Industries Association #EIAJ RCR-2370A "Guideline of notabilia for fixed electric double layer capacitors")

■ Taping

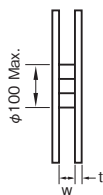
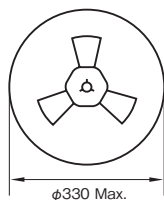
■ Carrier tape dimensions (Series DS, DSK) polarity L



(Unit : mm)

Outside size	W	P	F	A1	A2	B1	B2	T2	to	φD
φ6.8×1.4~2.1L	24±0.2	12.0	11.5	4.4	3.4	5.9	6.5	3.2	0.3	6.9
φ4.8×1.4L (Terminal shaped : HL)	16±0.2	8.0	7.5	2.4	3.6	5.0	5.1	2.45	0.3	4.9
φ4.8×1.4L (Terminal shaped : HR)	↑	↑	↑	3.6	2.4	5.1	5.0	↑	↑	↑

■ Reel dimensions



(Unit : mm)

Outside size	Real dimension	
	W	t
φ6.8×1.4~2.1L	26	3
φ4.8×1.4L	18	3

■ Packing quantity

Outside size	Quantity
φ6.8×2.1L	1500PCS.
φ6.8×1.4L	1500PCS.~2000PCS.
φ4.8×1.4L	2000PCS.

NOTE

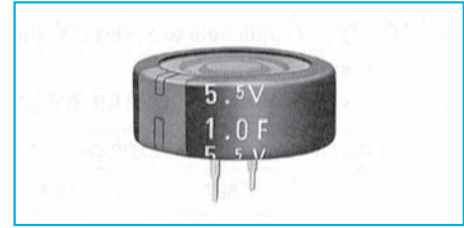
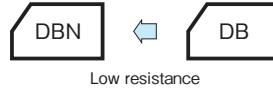
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5.5V Standard Capacitors Series DB

GREEN
CAP

70°C

- Small-sized, large capacity, excellent voltage holding.
- For all ratings, uniform 5mm pitch of terminal spacing.
- Wider temperature range (−25~+70°C) than battery.
- $\phi 21.5 \times 7.5$ L size can encase up to 1.5F.
- Ideal for backing up of CMOS's, IC's, microcomputers, RAM's, RTC's and the like used in Video's, tuners, TV sets, telephone sets and others.



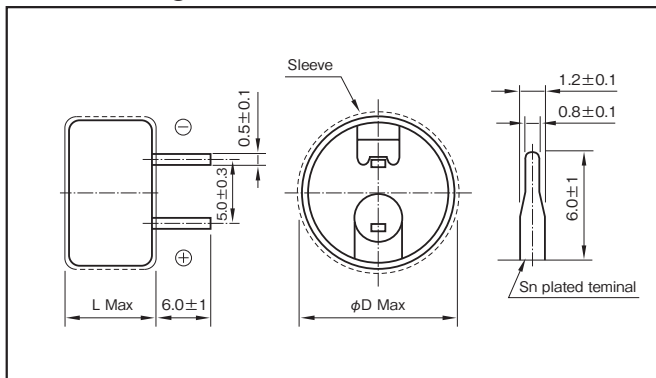
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Specifications

Item	Performance							
Category temperature range (°C)	−25 to +70							
Tolerance at rated capacitance (%)	−20 to +80							
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.22	0.33	0.47	1.0	1.5
	Internal resistance (Ω)	120	75	75	75	30	30	30
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C						
	Internal resistance	Less than five times of the value at 20°C						
Endurance (70°C)	Test time	1000 hours						
	Percentage of capacitance change	Within ±30% of the initial measured value						
	Internal resistance	Within four times of the initial specified value						
Shelf life (70°C)	Test time : 1000 hours ; Same as endurance.							
Applicable standards	Conforms to JEITA RC-2377 (EIAJ RC-2377)							

Outline Drawing

Unit : mm



Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
5.5	0.047	DB-5R5D473T	13.5×7.5
5.5	0.1	DB-5R5D104T	13.5×7.5
5.5	0.22	DB-5R5D224T	13.5×7.5
5.5	0.33	DB-5R5D334T	13.5×7.5
5.5	0.47	DB-5R5D474T	21.5×8.0
5.5	1.0	DB-5R5D105T	21.5×8.0
5.5	1.5	DB-5R5D155T	21.5×8.0

Part numbering system (example : 5.5V0.1F)

DB	—	5R5	D	104	T
Series code		Rated voltage symbol		Rated capacitance symbol	

Part number is refer to above table.

5.5V Low Resistance Series DBN

GREEN
CAP

70°C

Low
ESR

- Internal resistance was reduced to 1/3 to DB series.
- It excels in rapid charge.

Specifications

Item	Performance	
Category temperature range (°C)	−25 to +70	
Tolerance at rated capacitance (%)	−20 to +80	
Internal resistance at 1 kHz	Rated capacitance (F)	0.1
	Internal resistance (Ω)	25
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C
	Internal resistance	Less than five times of the value at 20°C
Endurance (70°C)	Test time	1000 hours
	Percentage of capacitance change	Within ±30% of the initial measured value
	Internal resistance	Within four times of the initial specified value
Shelf life (70°C)	Test time : 1000 hours ; Same as endurance.	
Applicable standards	Conforms to JEITA RC-2377 (EIAJ RC-2377)	

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
5.5	0.1	DBN-5R5D104T	13.5×7.5

Part numbering system

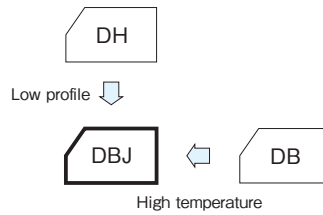
DBN	—	5R5	D	104	T
Series code		Rated voltage symbol		Rated capacitance symbol	

5.5V Low profile and high temperature Capacitors

GREEN
CAP

85°C

- High temperature type of series DB.
- Small-sized, large capacity, excellent voltage holding.
- For all ratings, uniform 5mm pitch of terminal spacing.
- $\phi 13.5 \times 7.5$ e size can encase up to 0.33F.
- Ideal for backing up of CMOS's, IC's, microcomputers, RAM's, RTC's and the like used in Video's, tuners, TV sets, telephone sets and others.



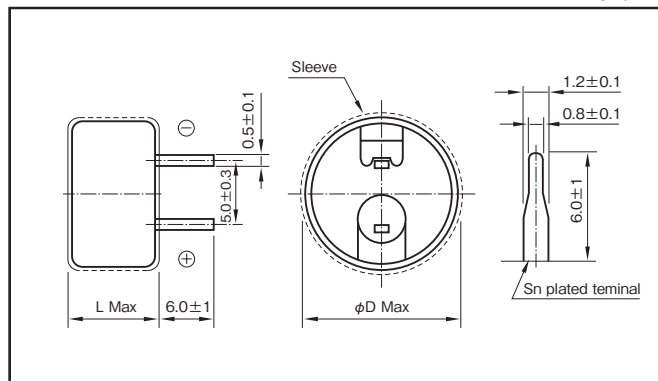
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Specifications

Item	Performance						
Category temperature range (°C)	−10 to +85						
Tolerance at rated capacitance (%)	−20 to +80						
Internal resistance at 1 kHz	Rated Capacitance (F)	0.047	0.1	0.22	0.33	0.47	1.0
	Internal resistance (Ω)	200	150	150	150	100	75
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C					
	Internal resistance	Within four times of the initial specified value					
Endurance (85°C)	Test time	1000 hours					
	Percentage of capacitance change	Within ±30% of the initial measured value					
	Internal resistance	Within five times of the initial specified value					
Shelf life (85°C)	Test time : 1000 hours ; Same as endurance.						
Applicable standards	Conforms to JEITA RC-2377 (EIAJ RC-2377)						

Outline Drawing

Unit : mm



Part numbering system (example : 5.5V0.1F)

DBJ	—	5R5	D	104	T
Series code		Rated voltage symbol		Rated capacitance symbol	

Part number is refer to below table.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
5.5	0.047	DBJ-5R5D473T	13.5×7.5
5.5	0.1	DBJ-5R5D104T	13.5×7.5
5.5	0.22	DBJ-5R5D224T	13.5×7.5
5.5	0.33	DBJ-5R5D334T	13.5×7.5
5.5	0.47	DBJ-5R5D474T	21.5×8.0
5.5	1.0	DBJ-5R5D105T	21.5×8.0

NOTE

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5.5V Miniaturized Standard Capacitors

GREEN
CAP

70°C

- Smaller and lighter than Series DB.
- 5mm tall. Max. thin profile (H-shaped).
- Miniaturized but can encase up to 0.33F in 11.5×5mm case, and 1.5F in 19.0×20.5mm case.



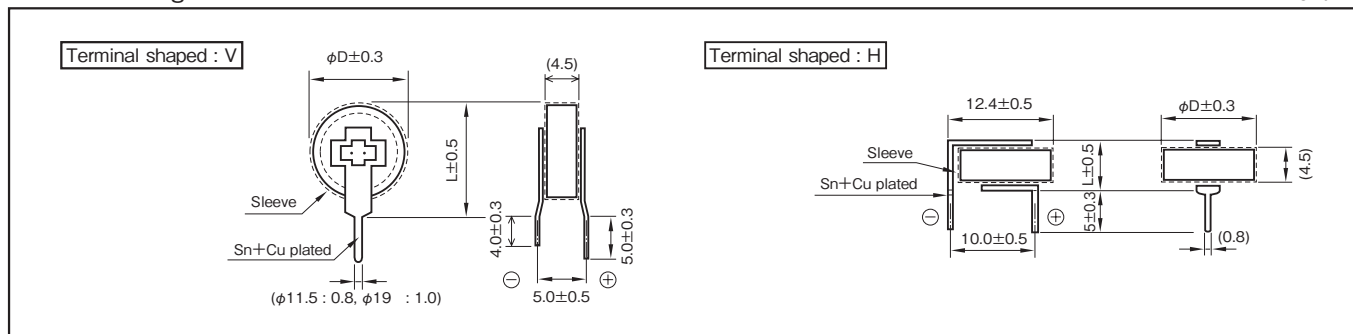
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Specifications

Item	Performance						
Category temperature range (°C)	−25 to +70						
Tolerance at rated capacitance (%)	−20 to +80						
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.22	0.33	1.0	1.5
	Internal resistance (Ω)	120	75	75	75	30	30
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C					
	Internal resistance	Less than five times of the value at 20°C					
Endurance (70°C)	Test time	1000 hours					
	Percentage of capacitance change	Within ±30% of the initial measured value					
	Internal resistance	Within four times of the initial specified value					
Shelf life (70°C)	Test time : 1000 hours ; Same as endurance.						
Applicable standards	Conforms to JEITA RC-2377 (EIAJ RC-2377)						

Outline Drawing

Unit : mm



Part numbering system (example : 5.5V0.1F)

DX	—	5R5	□	104	□
Series code		Rated voltage symbol	Terminal shaped	Capacitance tolerance symbol	Additional symbol

Part number is refer to below table.

Note

Do not apply external force to products or terminals as stress such as twisting, bending, pushing, or falling of such products or terminals may remove the terminals, resulting in an open/short circuit or liquid leakage. Avoid applying excessive heat to capacitors during heating of an adhesive curing oven. For details, refer to the precautions in use of DYNACAP.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
5.5	0.047	DX-5R5V473U	11.5×13.0
		DX-5R5H473U	11.5× 5.0
5.5	0.1	DX-5R5V104U	11.5×13.0
		DX-5R5H104U	11.5× 5.0
5.5	0.22	DX-5R5V224U	11.5×13.0
		DX-5R5H224U	11.5× 5.0
5.5	0.33	DX-5R5V334U	11.5×13.0
		DX-5R5H334U	11.5× 5.0
5.5	1.0	DX-5R5V105U	19.0×20.5
5.5	1.5	DX-5R5V155U	19.0×20.5

NOTE

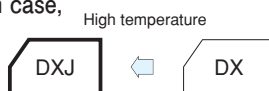
Design, Specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.

5.5V Miniaturized High temperature Capacitors

GREEN
CAP

85°C

- High temperature type of Series DX.
- 5mm tall. Max. thin profile (H-shaped).
- Miniaturized but can encase up to 0.33F in 11.5×5mm case, and 1.0F in 19.0×20.5mm case.



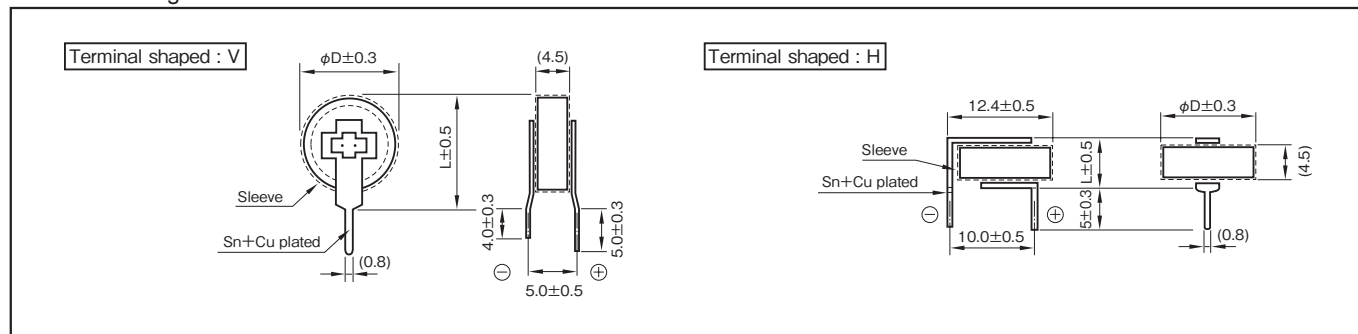
Marking color : White print on a black sleeve

Specifications

Item	Performance																							
Category temperature range (°C)	−10 to +85																							
Tolerance at rated capacitance (%)	−20 to +80																							
Internal resistance at 1 kHz	<table><tr><td>Rated capacitance (F)</td><td>0.047</td><td>0.1</td><td>0.22</td><td>0.33</td><td>1.0</td></tr><tr><td>Internal resistance (Ω)</td><td>200</td><td>150</td><td>150</td><td>150</td><td>75</td></tr></table>						Rated capacitance (F)	0.047	0.1	0.22	0.33	1.0	Internal resistance (Ω)	200	150	150	150	75						
	Rated capacitance (F)	0.047	0.1	0.22	0.33	1.0																		
Internal resistance (Ω)	200	150	150	150	75																			
Characteristics at high and low temperature	<table><tr><td>Percentage of capacitance change</td><td colspan="5">Within ±30% of the value at 20°C</td></tr><tr><td>Internal resistance</td><td colspan="5">Within four times of the initial specified value</td></tr></table>						Percentage of capacitance change	Within ±30% of the value at 20°C					Internal resistance	Within four times of the initial specified value										
	Percentage of capacitance change	Within ±30% of the value at 20°C																						
Internal resistance	Within four times of the initial specified value																							
Endurance (85°C)	<table><tr><td>Test time</td><td colspan="5">1000 hours</td></tr><tr><td>Percentage of capacitance change</td><td colspan="5">Within ±30% of the initial measured value</td></tr><tr><td>Internal resistance</td><td colspan="5">Within four times of the initial specified value</td></tr></table>						Test time	1000 hours					Percentage of capacitance change	Within ±30% of the initial measured value					Internal resistance	Within four times of the initial specified value				
	Test time	1000 hours																						
	Percentage of capacitance change	Within ±30% of the initial measured value																						
Internal resistance	Within four times of the initial specified value																							
Shelf life (85°C)	Test time : 1000 hours ; Same as endurance.																							
Applicable standards	Conforms to JEITA RC-2377 (EIAJ RC-2377)																							

Outline Drawing

Unit : mm



Part numbering system (example : 5.5V0.1F)

DXJ	—	5R5	□	104	□
Series code		Rated voltage symbol	Terminal shaped	Capacitance tolerance symbol	Additional symbol

Part number is refer to below table.

Note

Do not apply external force to products or terminals as stress such as twisting, bending, pushing, or falling of such products or terminals may remove the terminals, resulting in an open/short circuit or liquid leakage.
Avoid applying excessive heat to capacitors during heating of an adhesive curing oven.
For details, refer to the precautions in use of DYNACAP.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
5.5	0.047	DXJ-5R5V473U	11.5×13.0
		DXJ-5R5H473U	11.5× 5.0
5.5	0.1	DXJ-5R5V104U	11.5×13.0
		DXJ-5R5H104U	11.5× 5.0
5.5	0.22	DXJ-5R5V224U	11.5×13.0
		DXJ-5R5H224U	11.5× 5.0
5.5	0.33	DXJ-5R5V334U	11.5×13.0
		DXJ-5R5H334U	11.5× 5.0
5.5	1.0	DXJ-5R5V105U	19.0×20.5

NOTE

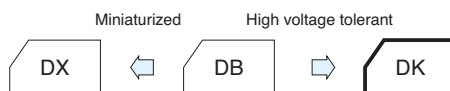
Design, Specifications are subject to change without notice.
Ask factory for technical specifications before purchase and/or use.

High Voltage Tolerance Capacitors

GREEN
CAP

70°C

- High voltage tolerant (6.3V guaranteed) and highly reliable.
- Ideal for backing up of Li-battery-backed equipment such as cameras, video and telephone sets.



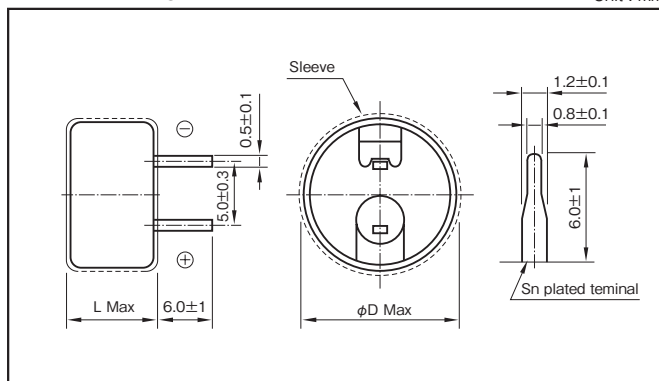
Marking color : White print on an indigo sleeve

Specifications

Item	Performance																							
Category temperature range (°C)	−25 to +70																							
Tolerance at rated capacitance (%)	−20 to +80																							
Internal resistance at 1 kHz	<table><tr><td>Rated Capacitance (F)</td><td>0.047</td><td>0.1</td><td>0.47</td><td>0.68</td><td>1.0</td></tr><tr><td>Internal resistance (Ω)</td><td>300</td><td>200</td><td>50</td><td>50</td><td>30</td></tr></table>						Rated Capacitance (F)	0.047	0.1	0.47	0.68	1.0	Internal resistance (Ω)	300	200	50	50	30						
	Rated Capacitance (F)	0.047	0.1	0.47	0.68	1.0																		
Internal resistance (Ω)	300	200	50	50	30																			
Characteristics at high and low temperature	<table><tr><td>Percentage of capacitance change</td><td colspan="5">Within ±30% of the value at 20°C</td></tr><tr><td>Internal resistance</td><td colspan="5">less than five times of the value at 20°C</td></tr></table>						Percentage of capacitance change	Within ±30% of the value at 20°C					Internal resistance	less than five times of the value at 20°C										
	Percentage of capacitance change	Within ±30% of the value at 20°C																						
Internal resistance	less than five times of the value at 20°C																							
Endurance (70°C)	<table><tr><td>Test time</td><td colspan="5">1000 hours</td></tr><tr><td>Percentage of capacitance change</td><td colspan="5">Within ±30% of the initial measured value</td></tr><tr><td>Internal resistance</td><td colspan="5">Within four times of the initial specified value</td></tr></table>						Test time	1000 hours					Percentage of capacitance change	Within ±30% of the initial measured value					Internal resistance	Within four times of the initial specified value				
	Test time	1000 hours																						
	Percentage of capacitance change	Within ±30% of the initial measured value																						
Internal resistance	Within four times of the initial specified value																							
Shelf life (70°C)	Test time : 1000 hours ; Same as endurance.																							
Applicable standards	Conforms to JEITA RC-2377 (EIAJ RC-2377)																							

Outline Drawing

Unit : mm



Part numbering system (example : 6.3V0.1F)

DK	—	6R3	D	104	T
Series code		Rated voltage symbol		Rated capacitance symbol	

Part number is refer to below table.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
6.3	0.047	DK-6R3D473T	13.5×9.5
6.3	0.1	DK-6R3D104T	13.5×9.5
6.3	0.47	DK-6R3D474T	21.5×9.5
6.3	0.68	DK-6R3D684T	21.5×9.5
6.3	1.0	DK-6R3D105T	21.5×9.5

NOTE

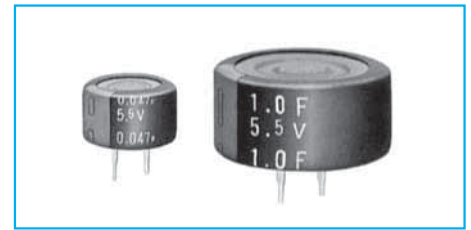
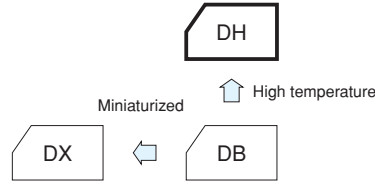
Design, Specifications are subject to change without notice.
Ask factory for technical specifications before purchase and/or use.

High-Temperature Capacitors

GREEN
CAP

85 °C

- High temperature tolerant ($-25 \sim +85^{\circ}\text{C}$) and highly reliable.
- Ideal for backing up of controls, electronic rice cooking jars, home bakeries and the like.



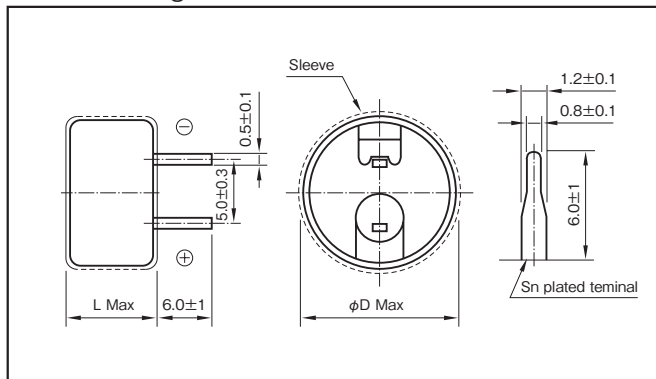
Marking color : White print on an indigo sleeve

Specifications

Item	Performance						
Category temperature range (°C)	−25 to +85						
Tolerance at rated capacitance (%)	−20 to +80						
Internal resistance at 1 kHz	Rated Capacitance (F)	0.047	0.1	0.22	0.47	0.68	1.0
	Internal resistance (Ω)	300	200	120	50	50	30
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C					
	Internal resistance	less than five times of the value at 20°C					
Endurance (85°C)	Test time	1000 hours					
	Percentage of capacitance change	Within ±30% of the initial measured value					
	Internal resistance	Within four times of the initial specified value					
Shelf life (85°C)	Test time : 1000 hours ; Same as endurance.						
Applicable standards	Conforms to JEITA RC-2377 (EIAJ RC-2377)						

Outline Drawing

Unit : mm



Part numbering system (example : 5.5V0.1F)

DH	—	5R5	D	104	T
Series code		Rated voltage symbol		Rated capacitance symbol	

Part number is refer to below table.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	$\phi D \times L$ (mm)
5.5	0.047	DH-5R5D473T	13.5×9.5
5.5	0.1	DH-5R5D104T	13.5×9.5
5.5	0.22	DH-5R5D224T	13.5×9.5
5.5	0.47	DH-5R5D474T	21.5×9.5
5.5	0.68	DH-5R5D684T	21.5×9.5
5.5	1.0	DH-5R5D105T	21.5×9.5

NOTE

Design, Specifications are subject to change without notice.
Ask factory for technical specifications before purchase and/or use.

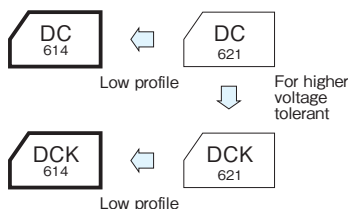
DC, DCK-614 ELECTRIC DOUBLE LAYER CAPACITORS "DYNACAP"

ELNA®

Coin Cell Capacitors

GREEN
CAP 60°C
70°C

- Unlike batteries, the number of charging / discharging cycles unlimited and rapid charging / discharging is possible.
- High reliability, Safe and unlike secondary batteries, this is pollution free devices.
- 1.8mm height type made lineup in the DC, DCK Series.

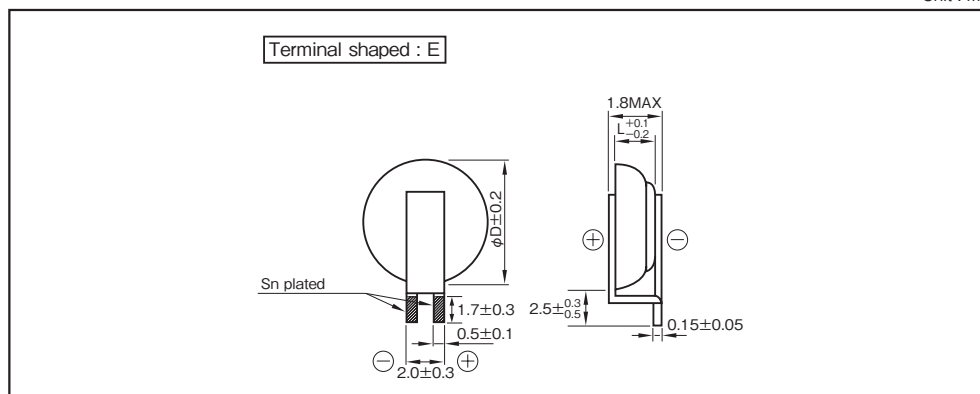


Specifications

Item	Performance	
Series Name	DC series	DCK series
Rated voltage (V)	2.5	3.3
Category temperature range (°C)	-25 to +70	-10 to +60
Tolerance at rated capacitance (%)	-20 to +80	-20 to +80
Rated capacitance (F)	0.2	0.2
Internal resistance (Ω) at 1 kHz	100	200
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C
	Internal resistance	Less than five times of the value at 20°C
Endurance	Test temperature	70°C
	Test time	1000 hours
Endurance	Percentage of capacitance change	Within ±30% of the initial measured value
	Internal resistance	2kΩ Max.
Shelf life	Test time : 1000 hours ; Same as endurance.	
Applicable standards	Conforms to JEITA RC-2377 (EIAJ RC-2377)	

Outline Drawing

Unit : mm



Part numbering system (example : 2.5V0.2F, terminal shaped : E)

DC	—	2R5	E	204	T 614	—	E
Series code		Rated voltage symbol		Rated capacitance symbol	Additional symbol		

Part numbering system (example : 3.3V0.2F, terminal shaped : E)

DCK	—	3R3	E	204	T 614	—	E
Series code		Rated voltage symbol		Rated capacitance symbol	Additional symbol		

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
2.5	0.2	DC-2R5E204T614-E	6.8×1.4
3.3	0.2	DCK-3R3E204T614-E	6.8×1.4

NOTE

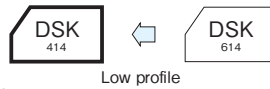
Design, Specifications are subject to change without notice.
Ask factory for technical specifications before purchase and/or use.

Coin Cell Capacitors

GREEN
CAP

70°C

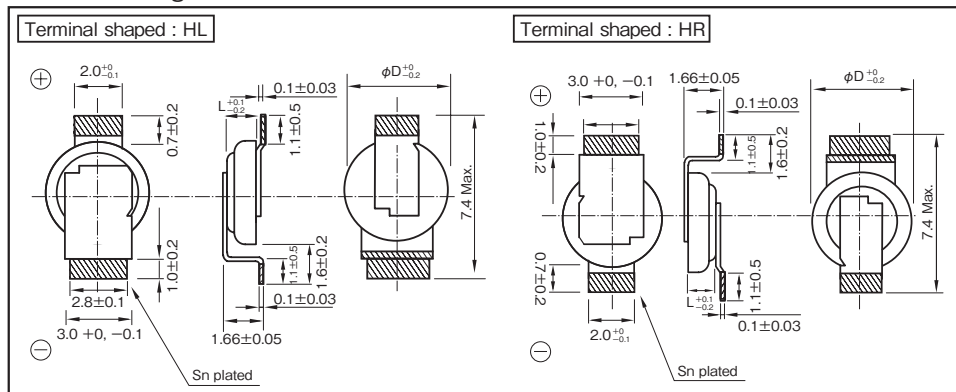
- Reflow soldering method available.
- Unlike batteries, the number of charging / discharging cycles unlimited and rapid charging / discharging is possible.
- Unlike batteries, excellent charge and discharge characteristics with no chemical reactions.
- $\phi 4.8 \times 1.74$ mm Max height type made lineup in the DSK series.



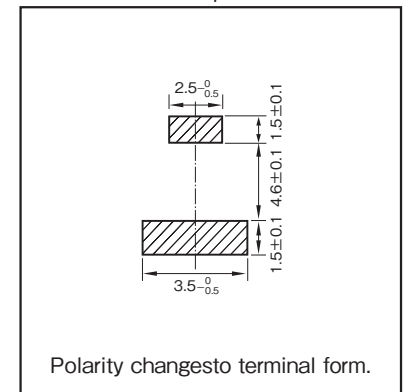
Specifications

Item	Performance	
Series Name	DSK series	
Rated voltage (V)	3.3	
Category temperature range (°C)	-10 to +70	
Tolerance at rated capacitance (%)	-20 to +80	
Rated Capacitance (F)	0.07	
Internal resistance (Ω) at 1 kHz	100	
Characteristics at high and low temperature	Percentage of capacitance change	Within $\pm 50\%$ of the value at 20°C
	Internal resistance	Within ten times the initial specified value
Endurance	Test temperature	70°C
	Test time	500 hours
	Percentage of capacitance change	Within $\pm 30\%$ of the initial measured value
	Internal resistance	5k Ω or less
Shelf life	Test time : 500 hours ; Same as endurance.	
Applicable standards	Conforms to JEITA RC-2377 (EIAJ RC-2377)	

Outline Drawing



Recommended land pattern size



*Please consult with us about other terminal form

Part numbering system (3.3V0.07F, terminal shaped : HL)

DSK	—	3R3	H	703	T414	—	HL	L
Series code		Rated voltage symbol		Rated capacitance symbol	Additional symbol		Terminal shaped	Taping

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	$\phi D \times L$ (mm)
3.3	0.07	DSK-3R3H703T414-HLL	4.8×1.4
		DSK-3R3H703T414-HRL	

*Reflow soldering condition : 126 page.

NOTE

Design, Specifications are subject to change without notice.
Ask factory for technical specifications before purchase and/or use.

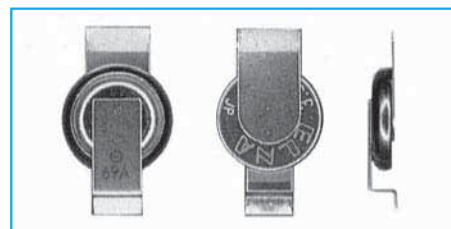
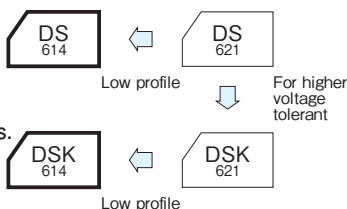
DS,DSK-614 ELECTRIC DOUBLE LAYER CAPACITORS "DYNACAP"

ELNA®

Coin Cell Capacitors

GREEN
CAP 60°C
70°C

- Reflow soldering method available.
- Unlike batteries, the number of charging/ discharging cycles unlimited and rapid charging/ discharging is possible.
- Unlike batteries, excellent charge and discharge characteristics with no chemical reactions.
- 1.8mm height type made lineup in the DS, DSK series.

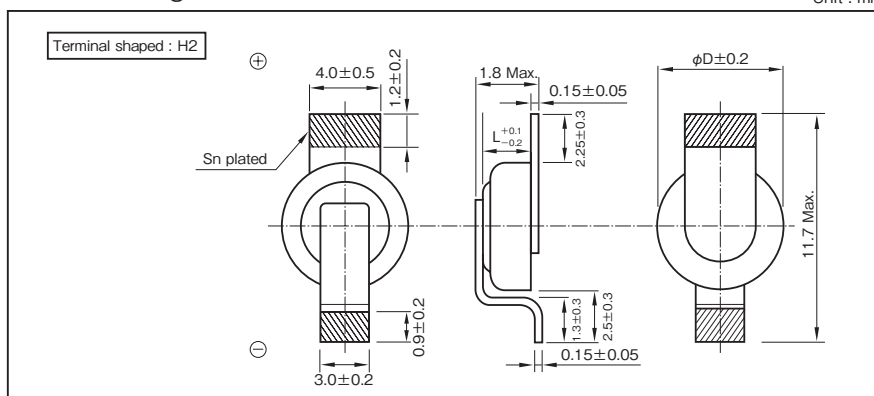


Specifications

Item	Performance	
Series Name	DS series	DSK series
Rated voltage (V)	2.5	3.3
Category temperature range (°C)	-25 to +70	-10 to +60
Tolerance at rated capacitance (%)	-20 to +80	-20 to +80
Rated capacitance (F)	0.2	0.2
Internal resistance (Ω) at 1 kHz	100	200
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C
	Internal resistance	Less than five times of the value at 20°C
Endurance	Test temperature	70°C
	Test time	1000 hours
Shelf life	Percentage of capacitance change	Within ±30% of the initial measured value
	Internal resistance	2kΩ or less
Applicable standards	Conforms to JEITA RC-2377 (EIAJ RC-2377)	

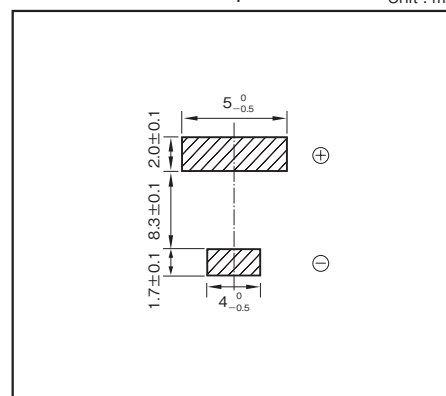
Outline Drawing

Unit : mm



Recommended land pattern size

Unit : mm



* Please consult with us about other terminal form.

Part numbering system (2.5V0.2F, terminal shaped : H2)					
DS	—	2R5	H	204	T614 — H2 L
Series code		Rated voltage symbol	Rated capacitance symbol	Additional symbol	Terminal shaped Taping

Part numbering system (3.3V0.2F, terminal shaped : H2)					
DSK	—	3R3	H	204	T614 — H2 L
Series code		Rated voltage symbol	Rated capacitance symbol	Additional symbol	Terminal shaped Taping

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
2.5	0.2	DS-2R5H204T614-H2L	6.8×1.4
3.3	0.2	DSK-3R3H204T614-H2L	6.8×1.4

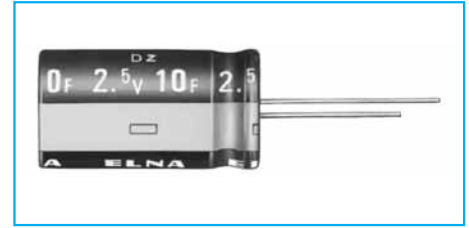
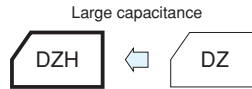
* Reflow soldering condition : 126 page.

Standard, Large capacitance type Capacitors

GREEN
CAP

60°C
70°C

- Pollution-Free ; with no pollutants such as Cd or Pb.
- Unlike batteries ; excellent charge and discharge characteristics with no chemical reactions



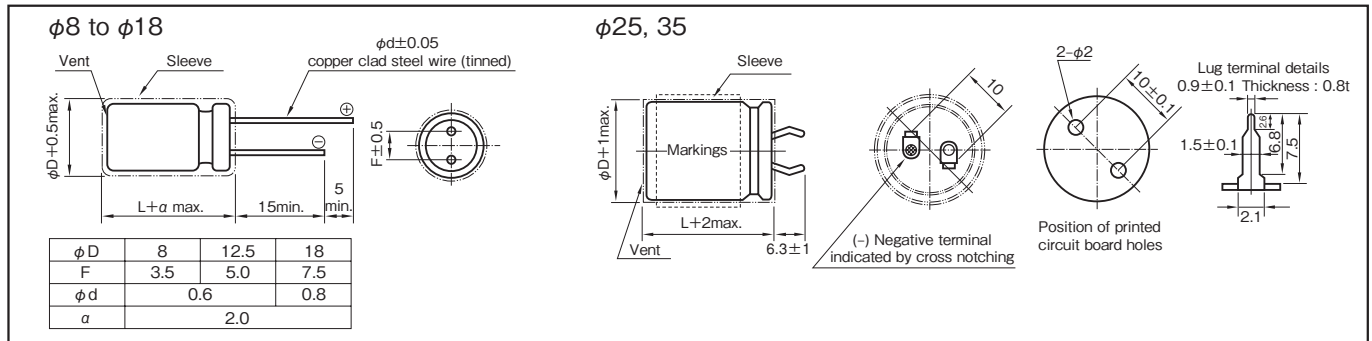
Marking color : White print on a black sleeve

Specifications

Item	Performance														
Series name	Series DZ							Series DZH							
Category temperature range (°C)	−25 to +70							−25 to +60							
Tolerance at rated capacitance (%)	−20 to +80							−20 to +80							
Internal resistance at 1kHz	Rated capacitance (F)	1.0	2.7	3.3	4.7	6.6	10	20	30	50	100	200	300		
	Internal resistance (Ω)	1.0	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.08	0.08	0.08	0.08		
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C					Percentage of capacitance change							Within ±30% of value at 20°C	
	Internal resistance	Less than five times of the value at 20°C					Internal resistance							Less than eight times of the value at 20°C	
Endurance	Test temperature	70°C					Test temperature							60°C	
	Test time	1000 hours					Test time							2000 hours	
	Percentage of capacitance change	Within ±30% of the initial measured value					Percentage of capacitance change							Within ±30% of the initial measured value	
	Internal resistance	Less than four times of the initial specified value					Internal resistance							Less than four times of the initial specified value	
Shelf life	Same as endurance							Same as endurance							
Applicable standards	Conforms to JEITA RC-2377 (EIAJ RC-2377)														

Outline Drawing

Unit : mm



Standard Ratings (Series DZ)

Max. operating voltage (V)	Rated capacitance (F)	Max. Leakage Current (mA) after 24h	ELNA Parts No.	φD×L (mm)	*Internal resistance (mΩ) at 1kHz (measurement value)
2.5	1.0	0.1	DZ-2R5D105G4T	8.0×15.0	300
2.5	1.0	0.1	DZ-2R5D105T	8.0×22.0	200
2.5	2.7	0.2	DZ-2R5D275G5T	8.0×22.0	150
2.5	3.3	0.2	DZ-2R5D335T	12.5×23.0	70
2.5	4.7	0.3	DZ-2R5D475T	12.5×31.5	50
2.5	6.6	0.4	DZ-2R5D665Z6T	12.5×23.0	60
2.5	10	0.5	DZ-2R5D106Z7T	12.5×31.5	50
2.5	10	0.5	DZ-2R5D106T	18.0×35.0	30
2.5	20	0.8	DZ-2R5D206K8T	18.0×35.0	30
2.5	20	0.8	DZ-2R5D206T	18.0×40.0	30
2.5	30	0.8	DZ-2R5D306K9T	18.0×40.0	30
2.5	50	1.0	DZ-2R5D506T	25.0×40.0	30
2.5	100	1.0	DZ-2R5D107S37T	25.0×50.0	20
2.5	100	1.0	DZ-2R5D107T	35.0×50.0	20
2.5	200	2.0	DZ-2R5D207S57T	35.0×50.0	20

Standard Ratings (Series DZH)

Max. operating voltage (V)	Rated capacitance (F)	Max. Leakage Current (mA) after 24h	ELNA Parts No.	φD×L (mm)	*Internal resistance (mΩ) at 1kHz (measurement value)
2.5	50	1.0	DZH-2R5D506K9T	18.0×40.0	30
2.5	100	2.0	DZH-2R5D107S35T	25.0×40.0	20
2.5	300	5.0	DZH-2R5D307S57T	35.0×50.0	20

* Internal resistance are not guaranteed values, but measurement value.

We tailor packaged product in series and parallel arrangements according to voltage and capacitance as required.

Part numbering system (example : 2.5V10F)

DZ	—	2R5	D	106	□□	T
Series code		Rated voltage symbol		Rated capacitance symbol	Casing symbol	

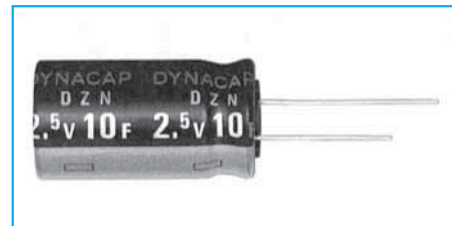
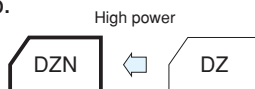
NOTE

Design, Specifications are subject to change without notice.
Ask factory for technical specifications before purchase and/or use.

High power type Capacitors

GREEN CAP 70 °C Low ESR 2.5V / 2.7V

- Low internal resistance allows boosting charge and heavy-current discharge. (ampere level)
- Pollution-Free ; with no pollutants such as Cd or Pb.
- Unlike batteries, excellent charge and discharge characteristics with no chemical reaction



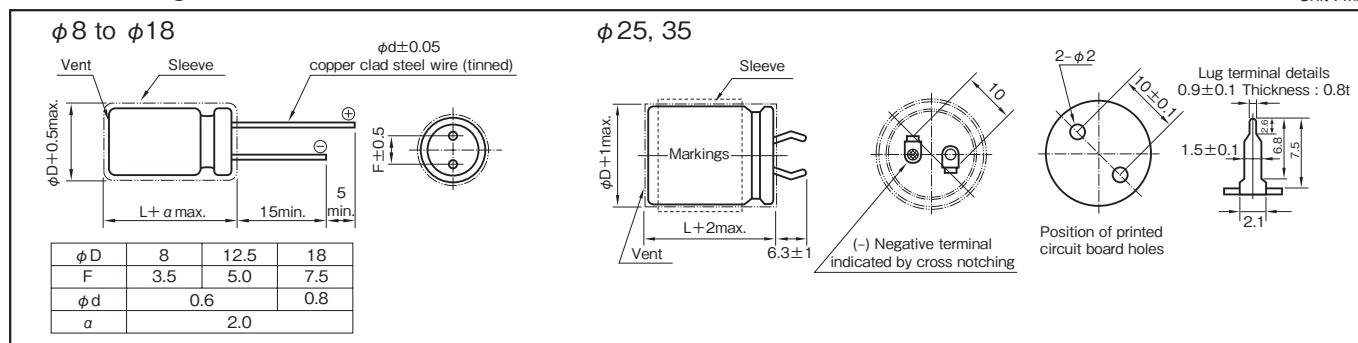
Marking color : White print on a blue sleeve

Specifications

Item	Performance									
Category temperature range (°C)	−25 to +70									
Tolerance at rated capacitance (%)	−20 to +80									
Internal resistance at 1 kHz	Rated capacitance (F)		0.7	1.0	3.3	4.7	10	20	50	100
	Internal resistance (Ω)		0.4	0.3	0.2	0.10	0.10	0.10	0.03	0.03
Characteristics at high and low temperature	Percentage of capacitance change		Within ±30% of value at 20°C							
	Internal resistance		Less than five times of the value at 20°C							
Endurance (70°C)	Test time		1000 hours							
	Percentage of capacitance change		Within ±30% of the initial measured value							
	Internal resistance		Within four times of the initial specified value							
Shelf life (70°C)	Test time : 1000 hours ; Same as endurance.									
Applicable standards	Conforms to JEITA RC-2377 (EIAJ RC-2377)									

Outline Drawing

Unit : mm



Standard Ratings (2.5V)

Max. operating voltage (V)	Rated capacitance (F)	Max. Leakage Current (mA) after 24h	ELNA Parts No.	φD×L (mm)	*Internal resistance (mΩ) at 1kHz (measurement value)
2.5	0.7	0.1	DZN-2R5D704G4T	8.0×15.0	200
2.5	1.0	0.1	DZN-2R5D105T	8.0×22.0	100
2.5	3.3	0.2	DZN-2R5D335T	12.5×23.0	40
2.5	4.7	0.3	DZN-2R5D475T	12.5×31.5	30
2.5	10	0.5	DZN-2R5D106T	18.0×35.0	20
2.5	20	0.8	DZN-2R5D206T	18.0×40.0	20
2.5	50	1.0	DZN-2R5D506T	25.0×40.0	15
2.5	100	1.0	DZN-2R5D107T	35.0×50.0	8

Standard Ratings (2.7V)

Max. operating voltage (V)	Rated capacitance (F)	Max. Leakage Current (mA) after 24h	ELNA Parts No.	φD×L (mm)	*Internal resistance (mΩ) at 1kHz (measurement value)
2.7	1.0	0.2	DZN-2R7D105G5T	8.0×22.0	120
2.7	3.3	0.3	DZN-2R7D335Z6T	12.5×23.0	50
2.7	4.7	0.4	DZN-2R7D475Z7T	12.5×31.5	40
2.7	10	0.6	DZN-2R7D106K8T	18.0×35.0	20

*Internal resistance are not guaranteed values, but measurement value.

We tailor packaged product in series and parallel arrangements according to voltage and capacitance as required.

Part numbering system (example : 2.5V10F)

DZN	—	2R5	D	106	□□	T
Series code		Rated voltage symbol		Rated capacitance symbol	Casing symbol	

NOTE

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1 Description of Electric Double Layer Capacitor

1-1 Basic Concepts

Generally capacitors are constructed with a dielectric placed between opposed electrodes, functioning as capacitors by accumulating charges in the dielectric material. Aluminum electrolytic and tantalum electrolytic capacitors, for example, use an aluminum oxide film and a tantalum oxide film as the dielectric, respectively.

On the other hand, Electric Double Layer Capacitors have no visible dielectric in a general sense but utilize the state referred to as the electric double layer, which is developed naturally on the interface between substances, as the function of dielectric.

1-2 Operating Principle

The Electric Double Layer represents the state in which positive and negative charges exist at a very short distance on the boundary where contact occurs between two different substances (e.g. solid and liquid). By externally applying a voltage below a certain voltage to the boundary, higher charges can be accumulated. Accordingly, charge and discharge of electric double layer capacitors utilize adsorption and desorption of ions to the ionic adsorption layer (Electric Double Layer) formed on the electrode surface of the activated carbon used for electrodes.

Applying DC voltage externally across the electrodes of the Electric Double Layer allows almost no passage of current up to a certain voltage, exhibiting a condition like insulation.

However, the application of voltages exceeding the certain voltage causes electrolysis to occur in the electrolyte, resulting in abrupt passage of current.

This voltage determines the resistance of voltage of an Electric Double Layer Capacitor. We use an organic electrolyte and its standard electrolysis occurs at the voltage of about 2.5~3V.

1-3 Advantages and Disadvantages of Electric Double Layer Capacitor

[Advantages]

- (1) Small size and capacitance in farads (F) available by utilizing the activated carbon electrode with a large surface area
- (2) No special charging circuit and constraints during discharge are required.
- (3) No effect on the life through overcharging and overdischarging
- (4) Environmentally clean energy

[Disadvantage]

- (1) The life is limited due to the use of electrolyte.
- (2) Series connection is required when used with a low resistance of voltage at a high voltage.
- (3) Cannot be used in AC circuits due to high internal resistance unlike aluminum electrolytic capacitors.

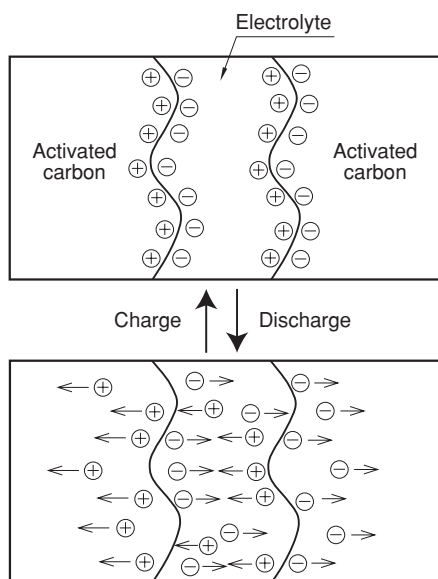


Fig.1 Schematic of Principle of Electric Double Layer Capacitor

1-4 Construction of DYNACAP

The basic cell construction of the DB, DBN, DX, DXJ, DH, DK, DBJ, DC, DCK, DS, and DSK series is similar to that of coin-type batteries as shown in Fig.2. DYNACAP contains a single cell or two to three cells stacked in series.

Since these series have a large electrode-to-electrode distance and a small electrode area exhibiting a large internal resistance, they are suitable for the memory backup application that involves microcurrent discharge.

The cylindrical cell construction as seen in the DZ and DZN series has the construction similar to that of aluminum electrolytic capacitors as shown in Fig.3.

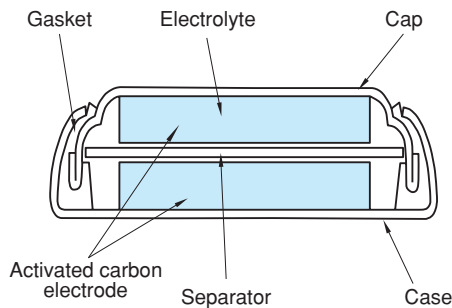


Fig.2 Example of Basic Construction of Coin Cell

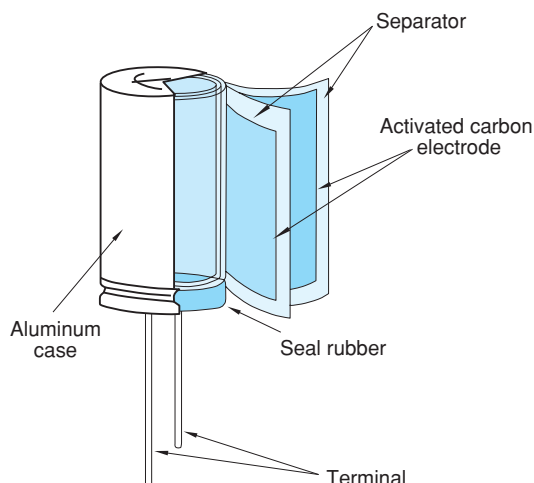


Fig.3 Example of Basic Construction of Cylindrical Cell

These series have a small electrode-to-electrode distance, allowing a large electrode area because of the winding structure. This decreases the internal resistance, which is primary suitable for applications requiring high-power such as motor drive and LED lighting that need high currents.

2 Description of Life Expectancy

Generally, the life of Electric Double Layer Capacitors is largely affected by the ambient temperature.

The expected life is approximated by the equation as shown below:

$$L = L_0 \times 2^{\left(\frac{T_0 - T}{10} \right)}$$

Where,

L : Expected lifetime at temperature T

L₀ : Lifetime at temperature T₀

T : Expected working temperature

T₀ : Upper category temperature

Note that the above equation does not cover charge and discharge. In the case of charge and discharge, heat generation occurs inside a capacitor; the temperature rise by this heat generation must also be considered.

NOTE

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3 Calculation Method of Discharge Time

3-1 Approximating the Discharge Time of Basic Constant Current Discharge

The discharge time at the constant current of a capacitor can be calculated by the following equation.

$$t = (C \times \Delta V) / I$$

Where,

- t : Discharge time (sec.)
- C : Capacitor capacitance (F)
- ΔV : Working voltage range (V)
- I : Discharge current (A)

As an example, we calculate the discharge time when a capacitor of the DB series 5.5V 1F is charged with 5V and discharged to 3V at a constant current of 1 mA. Since the working voltage range ΔV is 2V from 5 – 3V, $t = (1F \times 2V) / 0.001A$ from the above equation, and the discharge time can be calculated as 2,000 seconds (about 33 minutes). Note that the actual discharge time may be different because this equation does not cover the effect of the self-discharge and the IR drop by internal resistance described below.

3-2 Effect of Self-discharge at Microcurrents

When backup is made by discharge with a micro-current below some μA especially for the memory backup application and the like, the discharge time must be determined while taking into account the self-discharge as shown in Fig.4.

The value closer to the actual discharge curve is obtained by adding the voltage drop through the self-discharge determined from the voltage retention characteristic test to the discharge curve given by calculation.

Note that the value of self-discharge varies by the charge time, charging current and an ambient temperature.

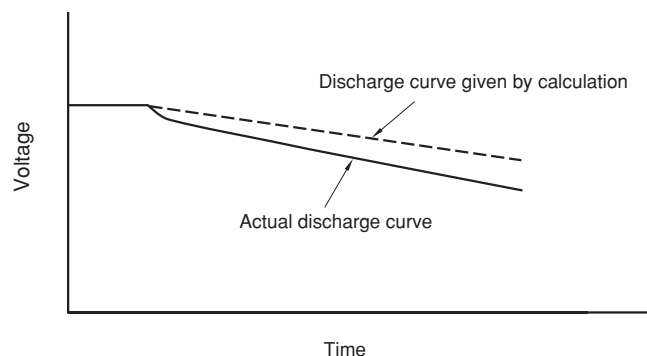


Fig.4 Example of Discharge Curve involving Self-Discharge

3-3 Effect of IR Drop at Large Currents

When a large Current discharge and a capacitor with a high internal resistance are used, the effect of IR drop by the product of the internal resistance and the current must be considered as shown in Fig.5.

When a large current is required in a very short time, or a large instantaneous current flows at the start of discharge, the voltage drop indicated with $\Delta V1$ counts. However, when the discharge continues as it is, the discharge curve indicates in a manner showing a slow diffusion and then keeps a constant straight line.

We also make calculation including $\Delta V2$ of the intersection extending from the initial discharge and the discharge straight line section including the diffusion curve when indicating the DC internal resistance.

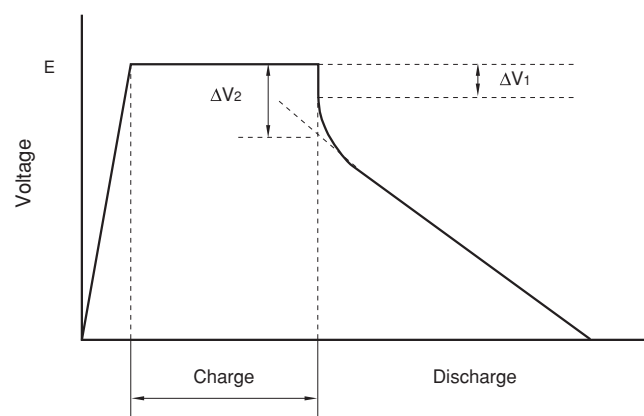


Fig.5 Example of Discharge Curve involving IR Drop

Due to IR drop, the shape of the discharge curve varies by the internal resistance and ambient temperature for each series.

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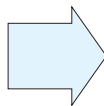
4 Series-parallel connection packaged products.

Electric Double Layer Capacitors have a low operating voltage per cell.

To deal with this, ELNA is ready to offer series packaging for high operating voltages to meet to various needs.

Please consult with us on optimization and design.

Packaged item



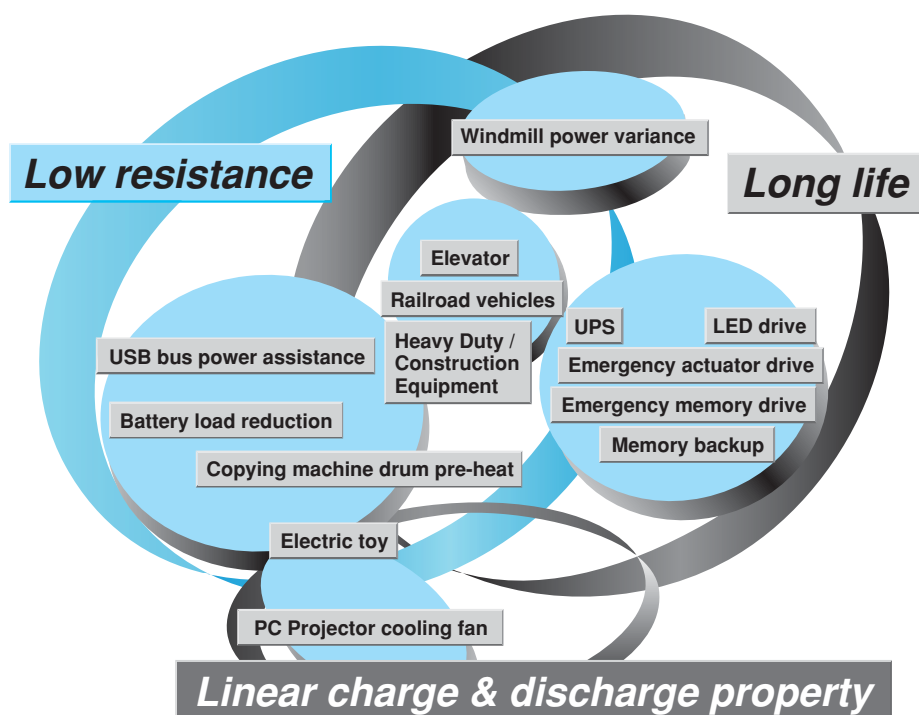
Example of packaged item

In case of a low voltage (up to about 24 V) for the DZ and DZN series with relatively low capacitance, we are preparing simple packaged products.

No full-scale voltage equalization circuit has been equipped yet, but comparatively low cost and flexible layout can be realized.

5 Applications

Features & Benefits of Electric Double Layer Capacitor

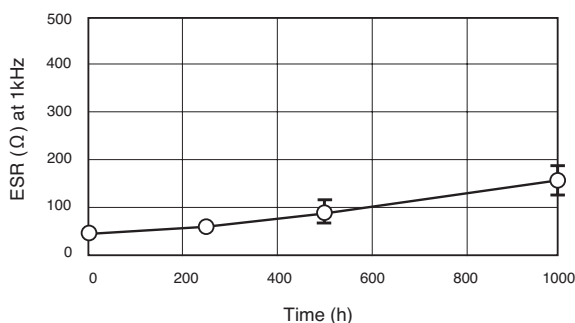
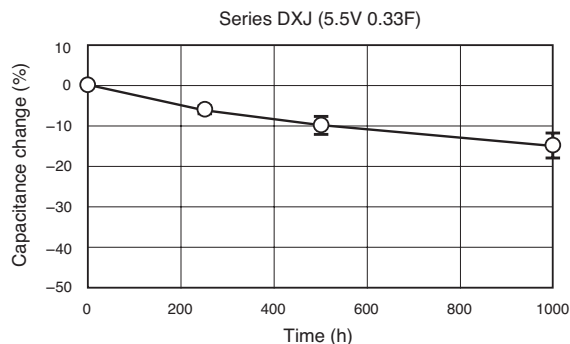


6 Electric Characteristics Data

6-1 Coin type for memory back-up

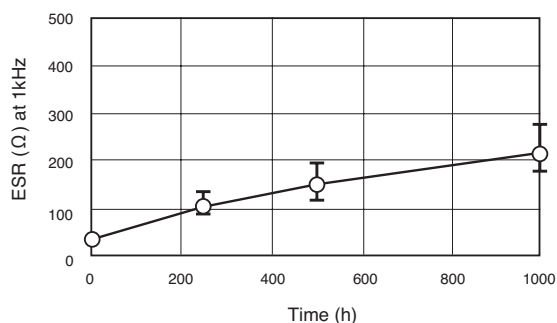
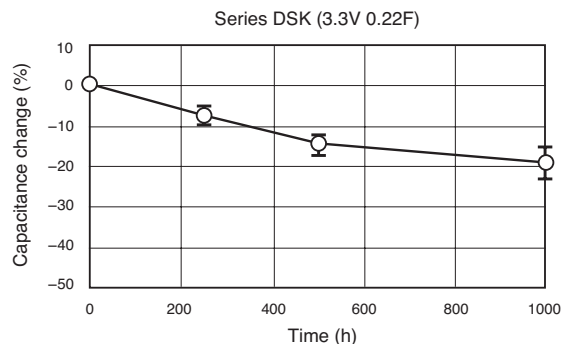
DYNACAP Series DXJ
5.5V 0.33F/DXJ-5R5H334 $\phi 11.5 \times 5L$ (mm)

■ Endurance (85°C 5.5V.DC)

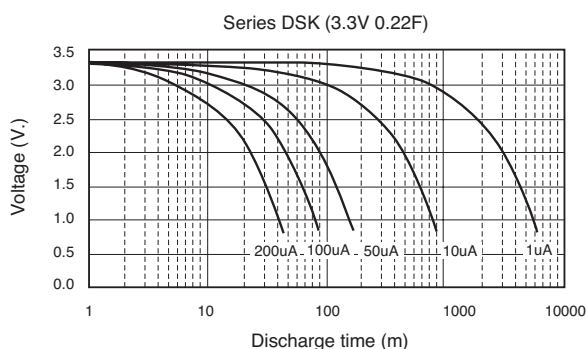
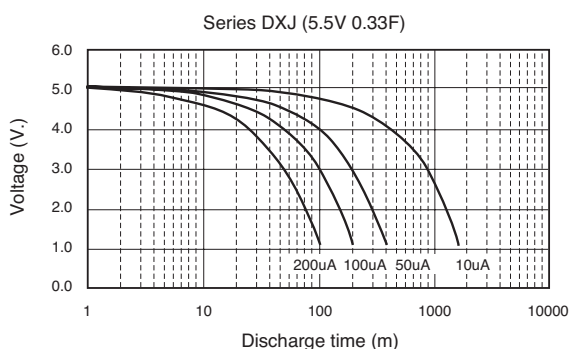


DYNACAP Series DSK
3.3V 0.22F/DSK-3R3H224 $\phi 6.8 \times 2.1L$ (mm)

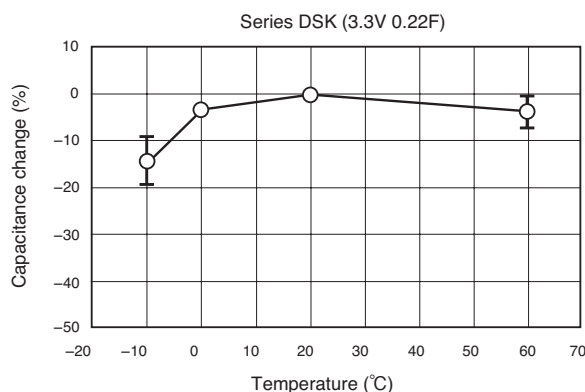
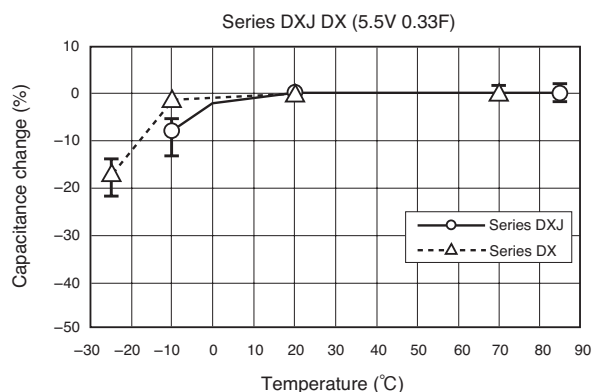
■ Endurance (60°C 3.3V.DC)



■ Discharge characteristics



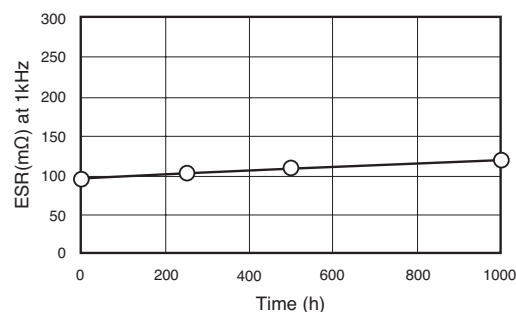
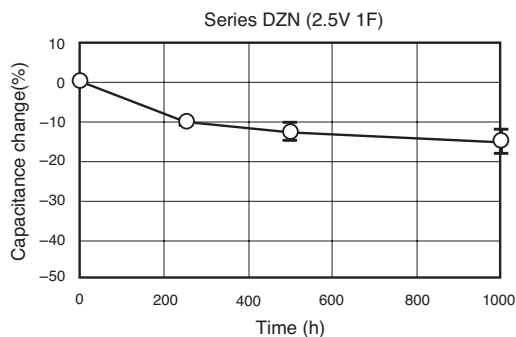
■ Characteristics at high and low temperature



6-2 Cylindrical type for power

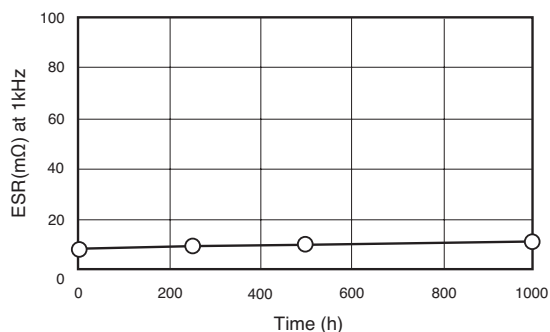
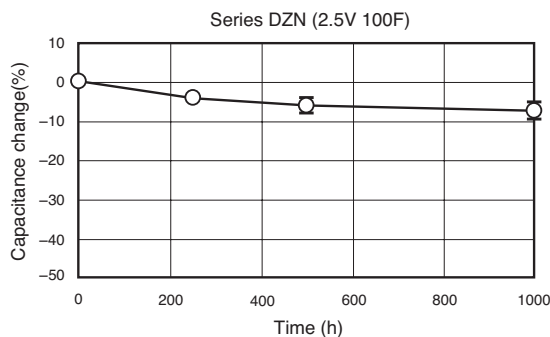
DYNACAP Series DZN
2.5V 1F/DZN-2R5D105T $\phi 8 \times 22$ L (mm)

■ Endurance (70°C 2.5V.DC)

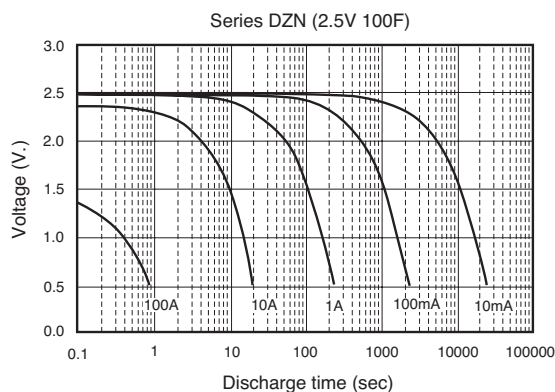
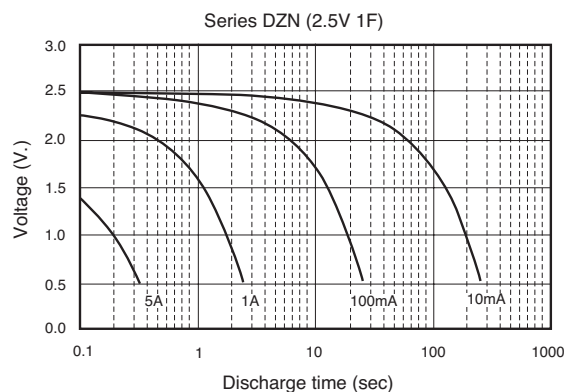


DYNACAP Series DZN
2.5V 100F/DZN-2R5D107T $\phi 35 \times 50$ L (mm)

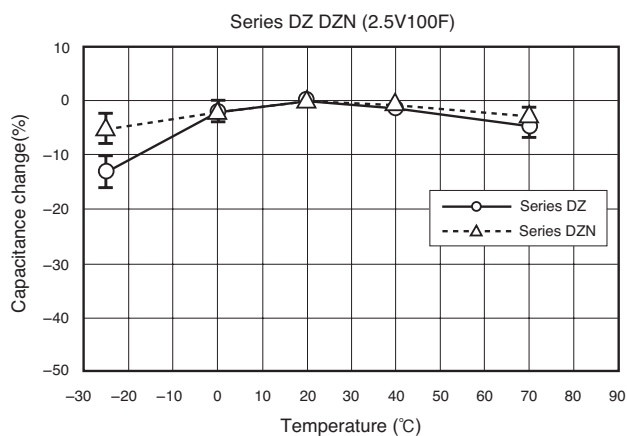
■ Endurance (70°C 2.5V.DC)



■ Discharge characteristics



■ Characteristics at high and low temperature



NOTE

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2. In order to ensure that products are used correctly and safely, always make sure to read the cautions for using prior to using the product.

NOTE

1. Since the contents contained are subject to changes in specifications, dimensions and so forth without notice due to modification, please confirm the contents when placing an order.
If any of the matters described here are unclear, please inquire at one of our nearby sales offices.
2. The contents of this catalog are valid as of October 2008. The expiration date of this catalog is September 2009.