To.   DATE : 20   .   .   .

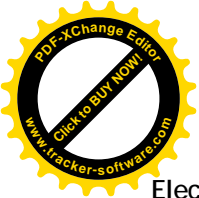| RoHS	Halogen Free

SPECIFICATION

PRODUCT : STARCAP

MODEL : DCL Series

WRITTEN	CHECKED	APPROVED
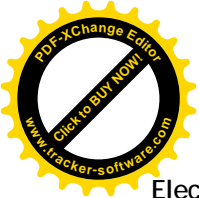
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Revision History

No.	Documentation	Check	Description of Revision	Approval	Date
1	W.S. Kang (R&D)	K.B. Chung (Q.A.)	Initial Release	B.I. Lim (R&D)	Feb. 20, 2018

1. Scope

This specification applies to STARCAP(Electric Double Layer Capacitor), submitted to specified customer in cover page.

2. Part Number System

DCL	5R5	105	V	F	(Example)
①	②	③	④	⑤	

① Series Name

② Rated Voltage : 5.5VDC

③ Capacitance : 1.0 F (105 = 10 × 10^{+5} uF)

④ Terminal Type : V-type

⑤ Pb-Free

3. Photo

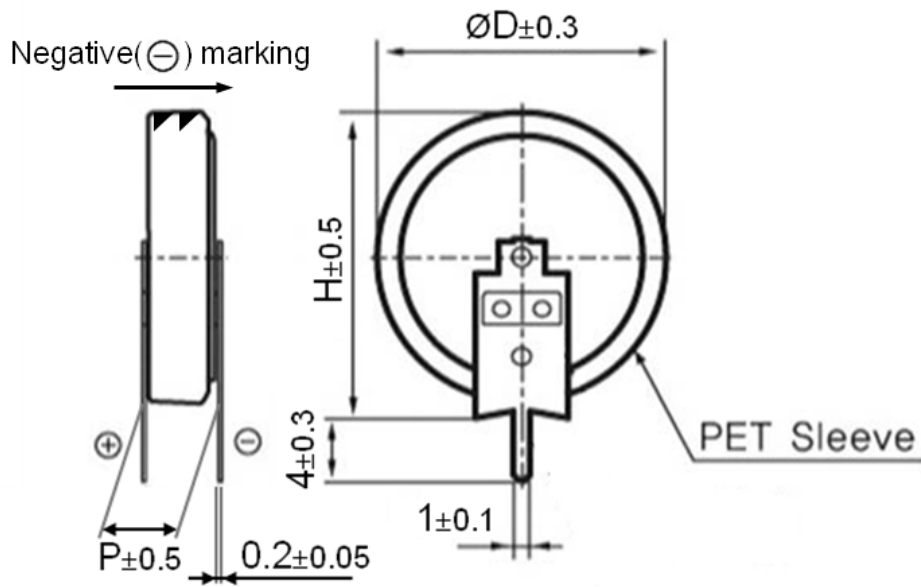**V-TYPE**   **H-TYPE**   **C-TYPE**

(Example)

4. General Specifications

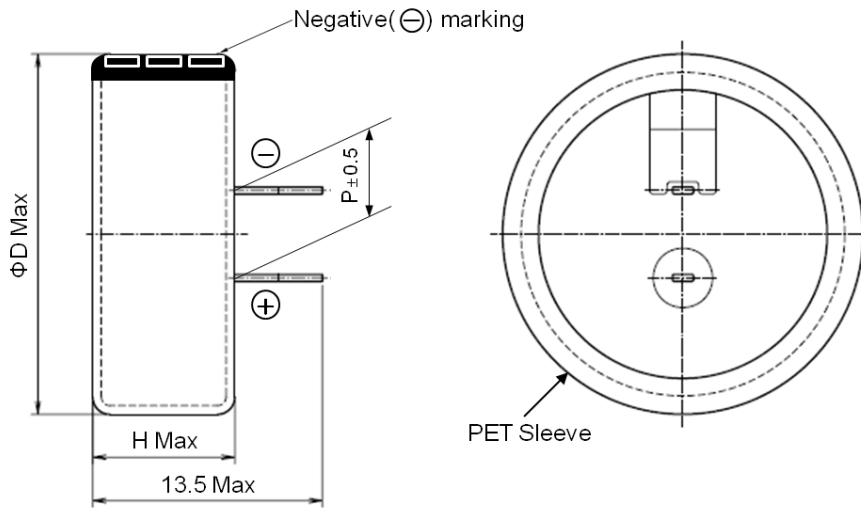| ITEMS	DCL5R5105	DCL5R5155
Rated Voltage	5.5 VDC	5.5 VDC
Operating Temp.	-25 ~ +70 ℃	-25 ~ +70 ℃
Capacitance	1.0 F	1.5 F
Capacitance Tolerance	-20 ~ 80 %	-20 ~ 80 %
Equivalent Series Resistance (ESR)	Less than 30Ω	Less than 30Ω
Leakage Current (LC, 30min.)	Less than 1.5㎃	Less than 1.5㎃

4

5. Product Construction and Dimension (V-type)

Part No.	Dimensions (mm)		
	ØD	H	P
DCL5R5105VF	19.0	19.5	5.0
DCL5R5155VF	19.0	19.5	5.0

5. Product Construction and Dimension (H-type)
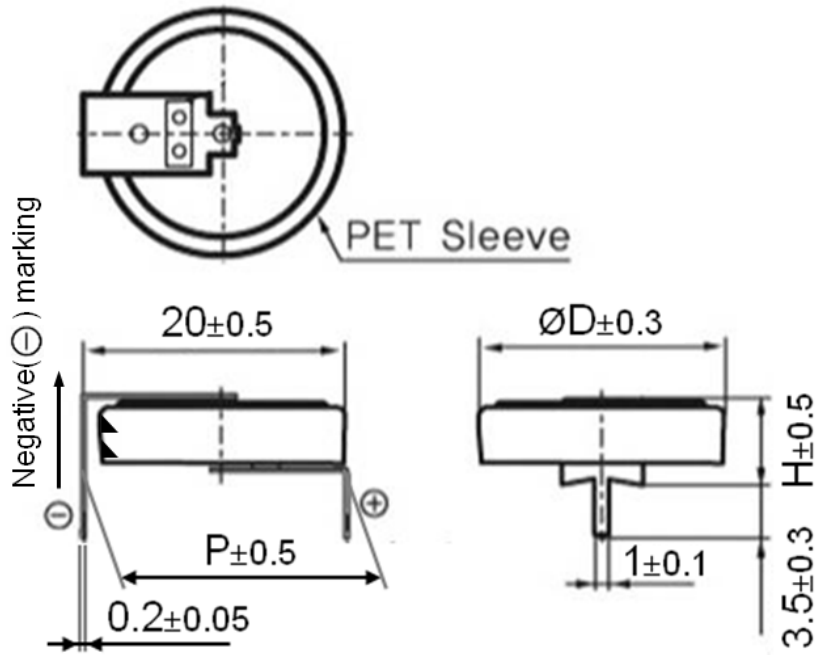
Part No.	Dimensions (mm)		
	ØD	H	P
DCL5R5105HF	19.0	6.5	20.0
DCL5R5155HF	19.0	6.5	20.0

5. Product Construction and Dimension (C-type)

Negative(⊖) marking

ΦD Max

H Max

13.5 Max

P±0.5

PET Sleeve

There is no plating on the cut surface

1.2±0.1   1.2±0.1

0.8±0.1   0.8±0.1

5.0±0.5   2.5±0.2   (2.5±0.5)

Height gap between
(+) and (-) terminal
tips is 0.5mm Max.

(+)   (-)

Terminal Tips
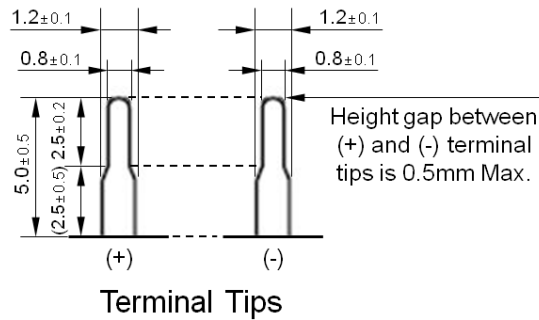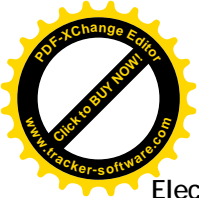
Part No.	Dimensions (mm)		
	ØD	H	P
DCL5R5105CF	21.5	7.5	5.0
DCL5R5155CF	21.5	7.5	5.0

7
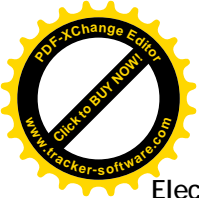
6. Reliability Specifications

Item			Specification	Test Condition (JISC5102)	
Temperature Characteristics	Capacitance Change	Step 2	Within ± 30% of Initial Value	Measure electrical characteristics after exposing STARCAP Capacitor to each temperature atmosphere for one(1) hour	
	ESR		5Times or less than Initial Value		
	Capacitance Change	Step 4	Within ± 30% of Initial Value		
	ESR		4Times or less than Initial Value		
	LC(30min.)		4Times or less than Initial Value		
	Capacitance Change	Step 5	Within ± 10% of Initial Value	Step	Temperature
	ESR Change		Within ± 10% of Initial Value	1	20±2℃
				2	-25±2℃
	LC Change (30min.)		Within ± 10% of Initial Value	3	20±2℃
				4	70±2℃
				5	20±2℃
Humidity Resistance	Capacitance Change		± 30% of Initial Value	Temp. : 40±2℃ Humidity : 90 ~ 95%RH Time : 240±8 Hours **No Voltage Applied**	
	ESR		3Times or less than Spec. Value		
	LC(30min.)		2Times or less than Spec. Value		
	Appearance		No Marked Defect		
Self Discharge Characteristics	Voltage		More than 4.2Vdc	Charging Condition	Voltage : 5.5Vdc Current : 50㎃ Charge Time : 24 Hours
				Self Discharge Condition	Duration : 24 Hours Temp. : Less than 25℃ Humidity : Less than 70%RH
Vibration Resistance	Capacitance		Spec. Value	Amplitude : 1.5㎜ Frequency : 10 ~ 55㎐ Direction : X, Y, Z 3 Directions Test Time : 6 Hours	
	ESR		Spec. Value		
	LC(30min.)		Spec. Value		
	Appearance		No Marked Defect		
Terminal Strength	Appearance		Terminals shall not be separated	Load 1kg , 10±1 Sec.	
Terminal Bend Strength				Load 1kg , Angle 90º , 1Cycle	
Endurance	Capacitance Change		Within ± 30% of Initial Value	Temp. : 70±2℃ Test Time : 1,000(+24,-0) Hours Applied Voltage : 5.5Vdc	
	ESR		4Times or less than Initial Value		
	LC(30min.)		Spec. Value		
	Appearance		No Marked Defect		
Cycle Characteristics	Capacitance Change		Within ± 30% of Initial Value	Temp. : 25±2℃ Cycle No. : 10,000 Charge Voltage : 5.5Vdc Resistance : 100Ω, Time : 9min. Discharge Resistance:100Ω, Time:1min.	
	ESR		4Times or less than Initial Value		
	LC(30min.)		Spec. Value		
	Appearance		No Marked Defect		

7. Packing Specification

Part No.	Quantity (PCS)			Size (W × L × H mm)		Type
	Tray	Inner Box	Outer Box	Inner Box	Outer Box	
DCL5R5105(V,H,C)	50	350	700	295×230×140	485×305×150	Tray
DCL5R5155(V,H,C)	50	350	700	295×230×140	485×305×150	Tray

8. Labeling Standards

```
OOOOOOO  1000   140317
(Part number) (Amount) (Date of issue)
|||||||||||||||||||||||||||

[LOT NUMBER & QUANTITY]
1] |||||||||||||||||||||||
   SXBAC001  500
2] |||||||||||||||||||||||
   SXBAC002  500

KORCHIP CORPORATION    RoHS
                       Compliant
```
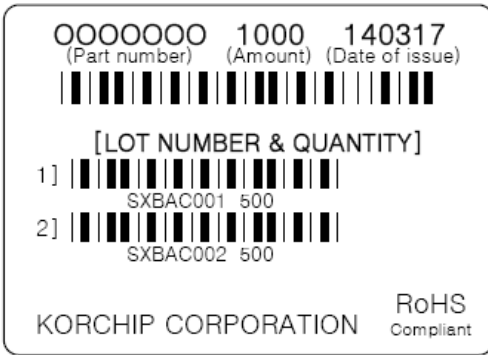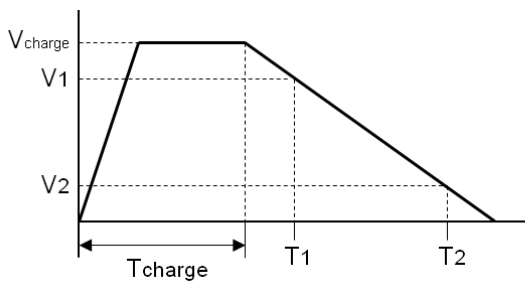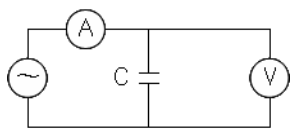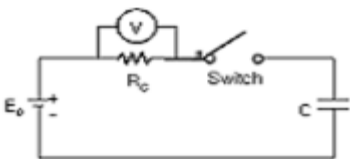
← (Example)
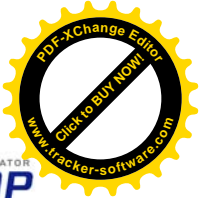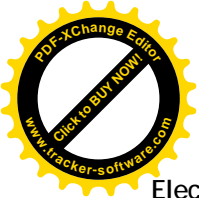
Lot No. System

Ex.) S   C   X   A   C   002
      ①   ②   ③   ④   ⑤   ⑥

① Product Code : S (STARCAP)

② Production Year Code : A (2016), B (2017), C (2018), D (2019)…

③ Factory Identification Code : X (Factory X)

④ Production Month Code : A (Jan.), B (Feb.), … , J (Oct.), K (Nov.), L (Dec.)

⑤ Production Date Code : 1 (1st), 2 (2nd), … , 9 (9th), A (10th), B (11th), C (12th) …

Q (26th), R (27th), S (28th), … , V (31th)

⑥ Lot Issuing Serial Code : 001 (First lot of a specific day), 002 (Second lot of a specific

day), 003 (Third lot of a specific day)…
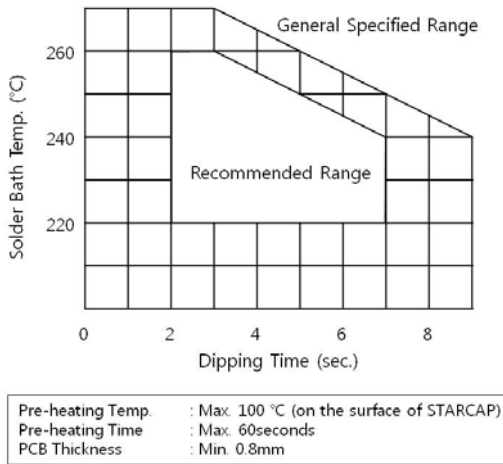
9. Measuring Method of Characteristics

Capacitance	1) Charge the STARCAP with constant current I_{charge}(=0.05A) to V_{charge}(=5.0V) then keep charging for T_{charge}(=1800sec.)
	2) Discharge the STARCAP with constant current I_{disch}(=0.003A) while measure the discharge time T_1, T_2 between V_1(=4.4V) and V_2(=2.2V).
	3) Calculate capacitance using the following formula.

$$C = \frac{I_{disch} \times (T_1 - T_2)}{V_1 - V_2}$$

Equivalent Series Resistance (ESR @1kHz)

● Measure ESR by the LCR meter. (Frequency:1kHz, Bias Voltage : $0^{+0.05}$V) or

● Calculate ESR using the following formula.

$$ESR[\Omega] = V / i$$

$R[\Omega] = V[V] / I[A]$ * i[mA] = I[A] x 10^{-3}

R : Internal resistance(ESR) [Ω]

V : Measured voltage between terminals [V]

i : Current 1mA(A.C.)

Leakage Current

1) Apply 5.5±0.1V to the STARCAP.(E_0)
2) Measure V_R after 30±0.5 min.
3) Calculate current using the following formula.

$$LC = (V_R/R_C) \times 10^3 \ [mA]$$

V_R = Measured value

R_C = 100Ω (0.47F)

1000Ω (1F, 1.5F)

☞ The STARCAP should be shorted before each measurement as follows ;

Capacitance : 60 min. , ESR : 15 min. , LC : 15 min.

10. Mounting

When you solder STARCAP to a printed circuit board, excessive thermal stress could cause the STARCAP's electrical characteristics to deteriorate, compromise the integrity of the seal or cause the electrolyte to leak due to increased internal pressure.

① Recommended condition of flow soldering

|	
Pre-heating Temp.	: Max. 100 ℃ (on the surface of STARCAP)
Pre-heating Time	: Max. 60seconds
PCB Thickness	: Min. 0.8mm

② Recommended condition of manual soldering

- Soldering Tip Temp. : 350℃ or less
- Soldering Time : 3 sec. or less
- Times : Three times or less at intervals of 9 sec. or more
※ Do not touch the metal case of STARCAP with a soldering iron.

③ It is not allowed to go through reflow (IR, Atmosphere heating methods etc.) process.

④ The terminals are plated for good solderability. Rasping terminals may damage the plating layer and degrade the solderability.
Do not apply a large force to the terminals. Otherwise, they may break or come off or the STARCAP characteristics may be deteriorated.
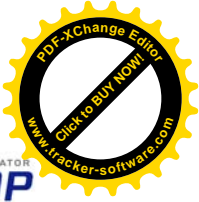
11. Cautions for Use

Please be careful for following points when you use STARCAP.

1) Do not apply more than rated voltage.

If you apply more than rated voltage, STARCAP's electrolyte will be decomposed and its ESR increase. At the worst, it may be broken.

2) Do not use STARCAP for ripple absorption.

3) Polarity

Please mount it in accordance with its polarity.

4) Operating temperature and life

Generally, STARCAP has a lower leakage current, longer back-up time and longer life in the low temperature i.e. the room temperature. But it has a higher leakage current, shorter back-up time and shorter life in the high temperature.

Please design to keep STARCAP away from calorific parts.

5) Humid Environment

Operation in high humid environment above 60%RH accelerate the degradation of STARCAP and may cause electrolyte leakage. If the product is supposed to be used in highly humid environment, please consult us.
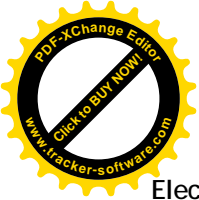
6) Cleaning

Some detergent or high temperature drying causes deterioration of STARCAP. If you wash STARCAP, Consult us.

7) Following figure shows the general back-up circuit.
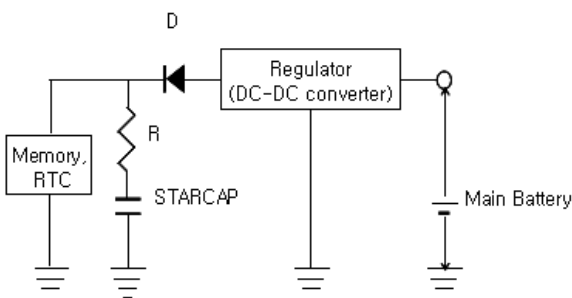
D : Diode to prevent the reverse current

R : Resistor to control the charging current

8) Short-circuit STARCAP

DO NOT short-circuit between terminals of STARCAP without resistor.

9) Storage

In long term storage, please store STARCAP in following condition;

① TEMP. : 15 ~ 35 ℃

② HUMIDITY : 45 ~ 75 %RH

③ Non-dust, non-acidic and/or non-alkaline atmosphere

④ Avoid direct sun light, strong magnetic field

Storage period limit is one(1) year when a STARCAP is stored in the above condition. Storage in improper condition may cause some damage on terminal surface or on outer tube of STARCAP.

10) Do not disassemble STARCAP. It contains electrolyte.

11) Series connection of STARCAP

Over-rated voltage may be applied to a single STARCAP in series connection due to the deviation of capacitance and ESR of each STARCAP. Please inform us if you are using STARCAP in series connection and please design so as not to apply over-rated voltage to each STARCAP, and use STARCAPs from same lot.

12) The tips of STARCAP terminals are very sharp. Please handle with care.
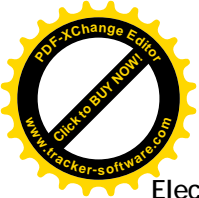
12. Environmental Management

All STARCAP products are RoHS compliant, Halogen Free and environment friendly.

Series	RoHS directive (Pb, Cr+6, Hg, Cd, PBB,PBDE)	ELV directive (Pb, Cr+6, Hg, Cd)	PVC	Halogen Flame Retardant Free (Cl, Br)	etc.
DCL	N.D.	N.D.	N.D.	N.D.	

* N.D. : Not detected or Within Permitted Range

单击下面可查看定价，库存，交付和生命周期等信息

>>Korchip(高奇普)