

# Vitzrocap

Electric Double Layer Capacitor



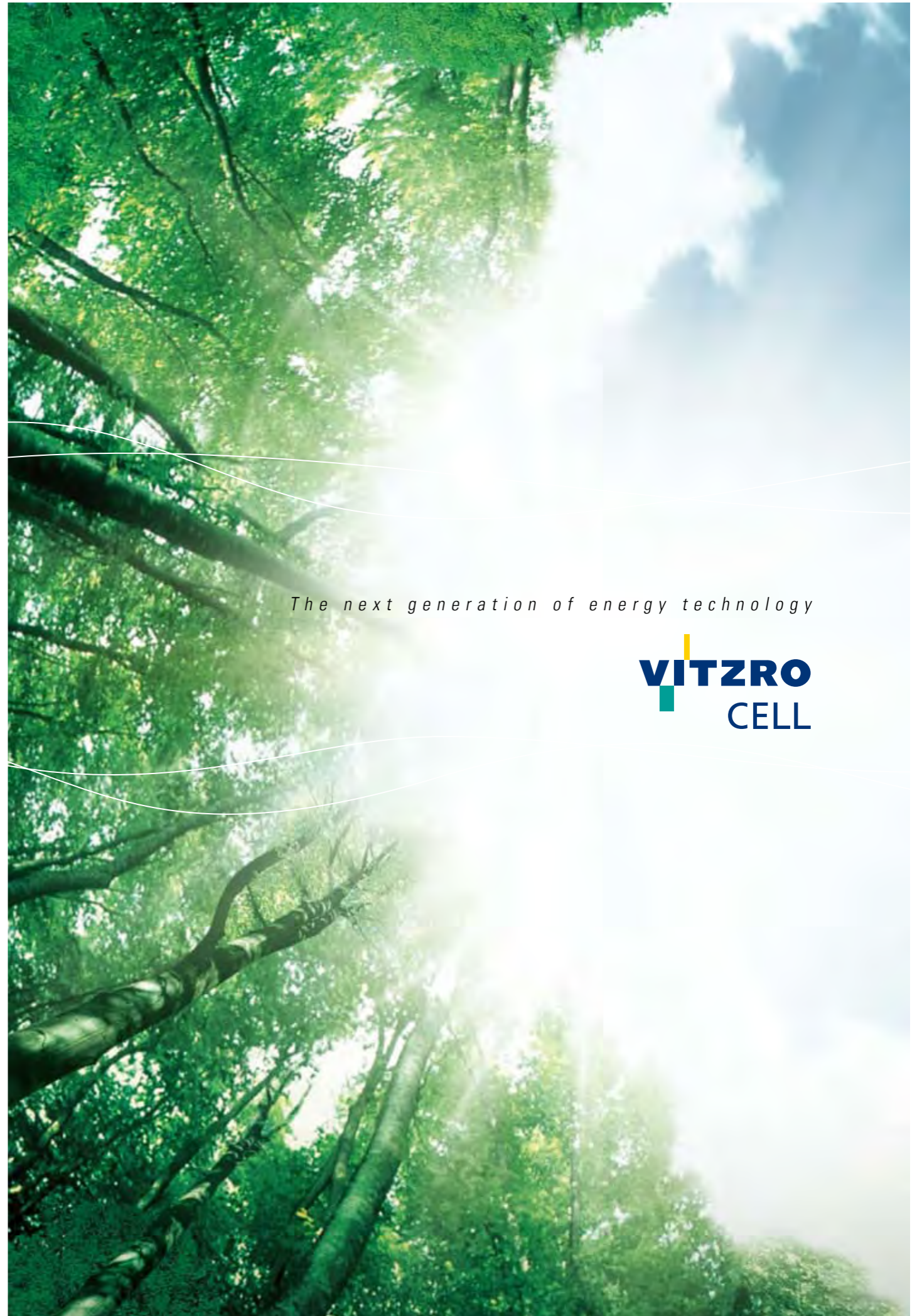
Every where in life VITZROCAP always with you



**Vitzrocap**



Vitrocell (Tekcell, VITZROCAP Brand, a Korean Manufacturer) has been recognized as one of the best power solution providers of Lithium Primary Batteries in the world. We are proud of full-fledged range of products suitable for various applications such as Smart Meter, Black Box, Memorial-Backup, Toy, Solar, Wind Energy & UPS. Based on more than 25 years of accumulated expertise equipped with ISO9001, ISO14001, UL and others, we have achieved a leading position in the global markets through creative R&D resources, vertically integrated production facilities, reliable products, on-time delivery, and superb technical service. In this context, we do have very close relationship with lots of valuable partners and customers in more than 100 countries.



*The next generation of energy technology*

**VITZRO**  
CELL


## CEO MESSAGE

### “Vitzrocell, a world-class portable power solution provider!”

Vitzrocell has been recognized as one of the best power providers and the most reliable manufactures of Lithium Primary Batteries in the world. We're proud of the full-fledged range of products suitable for various application.

And our teammates of R&D, Marketing & Sales, Factory, and so on is duly ready and resourceful enough to offer the added value which you have not had taste before. Based on more than 25 years of accumulated know-how, we are glad to have achieved a leading position in the world wide markets.

Considering the remarkable growing demand for portable power solutions and our continuous innovation activities, we're convinced Vitzrocell will be able to make our valuable customers, partners, and the stakeholders happy with the enduring profitable growth with Vitzrocell. We humbly would like to invite you to enjoy and share the promising business opportunity with us as a strategic Partner.

VITZROCELL president **Paul Jang** 

### Core Value

Longing for happy and great workplace of Vitzrocell family and the stakeholders.

### Mission

To Enhance Smart, Safe, and Green World as a dedicated power solution provider.

### Golden rule(3C1I)

Creativity,  
Change,  
Challenge,  
Innovation

## COMPANY HISTORY

### 1987 ~ 1993 \_ Establishment

Oct. 1987 Founded the Company  
May. 1988 Technical Alliance with Wilson Greatbatch USA for Lithium Battery  
Oct. 1993 Won the contract as a Sole Manufacturer for the Korean Military

### 1994 ~ 2004 \_ Development

Jul. 2000 Enlisted Venture Company with new Technology  
Jun. 2002 Launched New Company name as “VITZROCELL”  
Jun. 2004 Granted USD 10Million Exportation Prize

### 2005 ~ 2009 \_ Growth

Apr. 2005 Awarded “Advanced Technology and R&D center(ATC)” by Ministry of Commerce in Korea  
Mar. 2006 ISO 14001 Approval  
Sep. 2006 Starting R&D of EDLC  
Nov. 2007 Certificate of Defense Quality Management System by Defense Agency for Technology and Quality(DTaQ)  
Nov. 2009 Awarded “the Technology Fast 500” by Deloitte Touche Tohmatsu

### 2010 ~ Now \_ Globalization

Sep. 2010 Awarded “Enterprise with Best Labor Management Culture 2010” from Ministry of Labor  
Sep. 2010 Granted USD 20Million Exportation Prize  
Dec. 2010 NEP Approval of High Temperature Battery(Mistry of Knowledge & Economy)  
Dec. 2007 Mass Production of EDLC  
May. 2012 Awarded “World Class 300 Company”(Ministry of Knowledge & Economy)  
Aug. 2012 Acquisition of Exium Technologies., Inc.  
Sep. 2012 Establishment of 2nd factory and the expansion of 1st factory

Electric Double Layer Capacitor  
EDLC  
VSCS SERIES

Part number

VSCS 005R4 305 ■■■■

>>> Internal Code

Special code	S : Standard U : Unique, etc
Terminal type	S : Snap in C : Screw L : Lead W : Welding, etc.
Terminal number	2 or 4 PIN
Internal code	A, B, C given in case of make-to-order

>>> Nominal Capacitance

Capacitance	Symbol	Capacitance	Symbol
3F	305	50F	506
5F	505	100F	107
10F	106	120F	127
25F	256	350F	357

>>> Rated Voltage

Rated Voltage	5.4V	12.5V	100V
Symbol	005R4	012R5	100R0

>>> Serial Name

V	Simplified form of Vitzro
S	S : Standard H : High temp. P : High power L : Leakage intension
C	C : Cylindrical P : Prismatic H : Pouch N : Coin etc.
S	Cell(S) or Module(M)

Electric Double Layer Capacitor  
EDLC  
VSCS SERIES

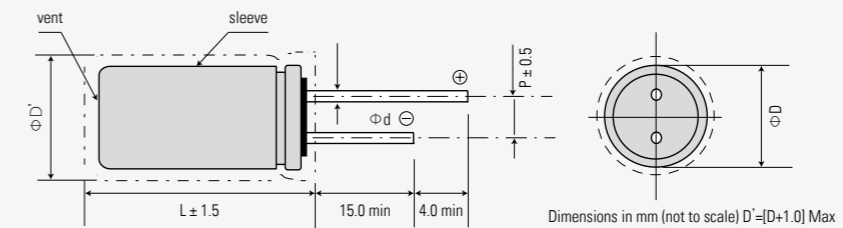


>>> Features

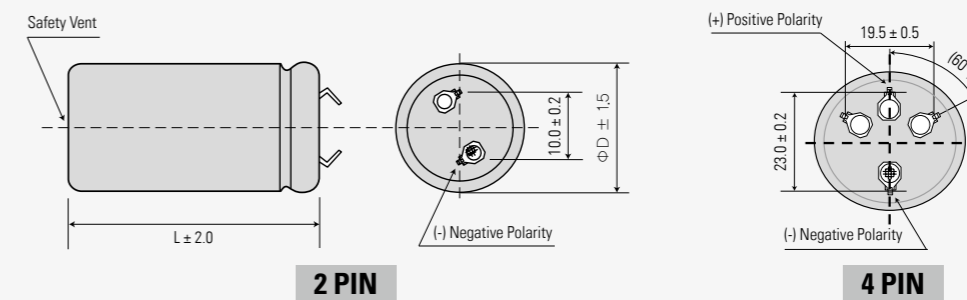
- Cylindrical Cell
- Radial Lead / Lug Terminals
- Very low ESR(High-power density)
- High-capacitance
- RoHS Compliant

D	P	d
8	4	0.6
10	5.5	0.6
16.18	8.0	0.8

>>> Lead Type



>>> Lug Type



>>> Standard Products

Item		Performance	
Rated Voltage(V <sub>R</sub> )		2.5 volts	2.7 volts
Nominal Capacitance Range		3 to 350 F	3 to 350 F
Capacitance Tolerance		-20 % to +30% (at 25°C)	-20 % to +30% (at 25°C)
Operating Temperature Range		-25°C to 70°C	-40°C to 60°C
Endurance		After 1,000 hours at rated voltage loaded under +60°C, +70°C the capacitor shall meet the specified endurance limits : Capacitance change ≤ 30% of initial value Internal resistance ≤ 2 times of specified value	
Temperature characteristics	Measure at	At -25, +25, 70°C	At -40, +25, 60°C
	ΔC	≤ 30% of initial value	
Cycle Life Characteristics	Internal resistance	≤ 2 times of specified value	
	500,000 cycles	Capacitance Change ≤ 30% of initial value Internal resistance ≤ 2 times of specified value	
Shelf life		After 1,000 hours storage at +60°C(2.7 V), +70°C(2.5V) without load, the capacitor shall meet the specified endurance limits of endurance.	

Electric Double Layer Capacitor  
EDLC  
VSCS SERIES

>>> Lead Terminal

Part number	Rated Voltage (V)	Capacitance (F)	Internal resistance (mΩ)		Leakage current (mA, 72hr)	Size (mm) D × L	Energy density (Wh/kg)
			AC(1kHz)	DC			
VSCS 002R5 305	2.5	3	≤ 150	≤ 215	0.008	08 × 20	1.7
VSCS 002R5 505		5	≤ 125	≤ 190	0.012	10 × 20	1.7
VSCS 002R5 705		7	≤ 80	≤ 120	0.020	10 × 20	2.3
VSCS 002R5 106(U)		10	≤ 70	≤ 100	0.030	10 × 25	2.5
VSCS 002R5 106		10	≤ 70	≤ 100	0.030	10 × 30	2.5
VSCS 002R5 156		15	≤ 60	≤ 90	0.035	13 × 25	3.2
VSCS 002R5 256		25	≤ 40	≤ 60	0.065	16 × 25	2.4
VSCS 002R5 606		60	≤ 25	≤ 35	0.120	18 × 40	3.3
VSCS 002R7 305	2.7	3	≤ 60	≤ 70	0.008	08 × 20	2.0
VSCS 002R7 505		5	≤ 40	≤ 50	0.012	10 × 20	2.2
VSCS 002R7 705		7	≤ 35	≤ 45	0.020	10 × 20	2.5
VSCS 002R7 106(U)		10	≤ 30	≤ 35	0.030	10 × 25	3.2
VSCS 002R7 106		10	≤ 25	≤ 30	0.030	10 × 30	3.2
VSCS 002R7 156		15	≤ 30	≤ 33	0.060	13 × 25	3.2
VSCS 002R7 256		25	≤ 20	≤ 25	0.068	16 × 25	3.8
VSCS 002R7 506		50	≤ 15	≤ 20	0.105	18 × 40	4.5

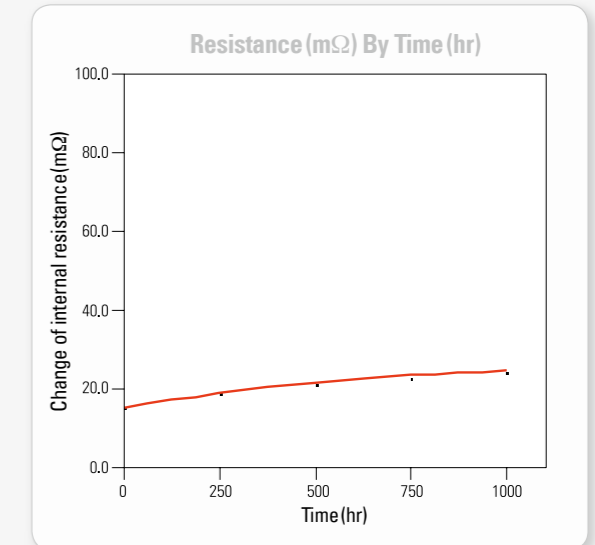
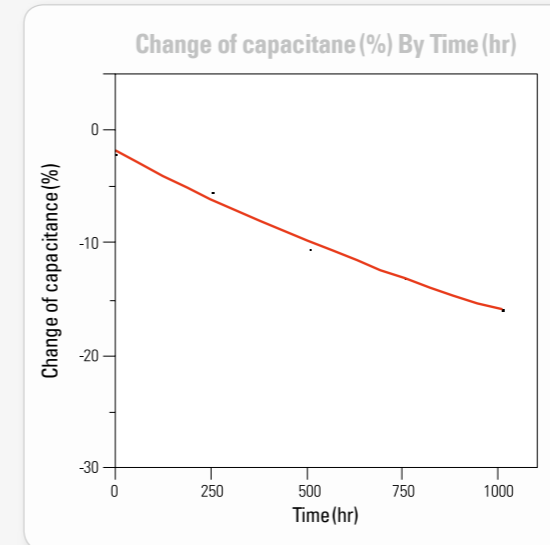
>>> Lug Terminal

Part number	Rated Voltage (V)	Capacitance (F)	Internal resistance (mΩ)		Leakage current (mA, 72hr)	Size (mm) D × L	Energy density (Wh/kg)	PIN
			AC(1kHz)	DC				
VSCS 002R5 127	2.5	120	≤ 18	≤ 25	0.250	22 × 45	3.8	2
VSCS 002R5 357		350	≤ 6	≤ 10	0.950	35 × 60	4.3	2, 4
VSCS 002R7 107	2.7	100	≤ 9	≤ 12	0.550	25 × 45	4.8	2
VSCS 002R7 357		350	≤ 3.2	≤ 3.5	1.500	35 × 60	5.4	2, 4

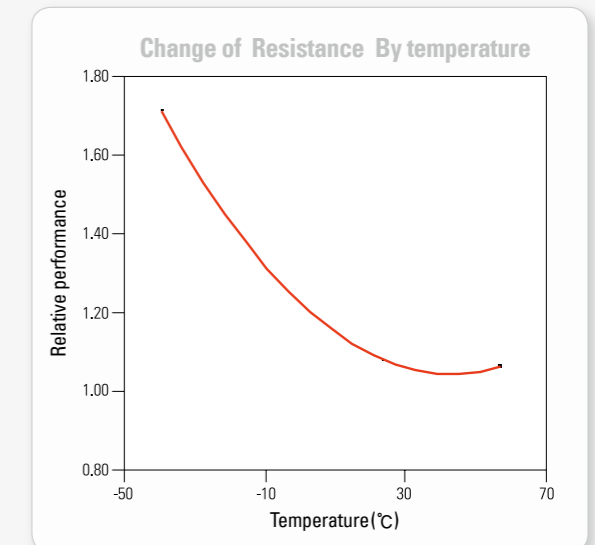
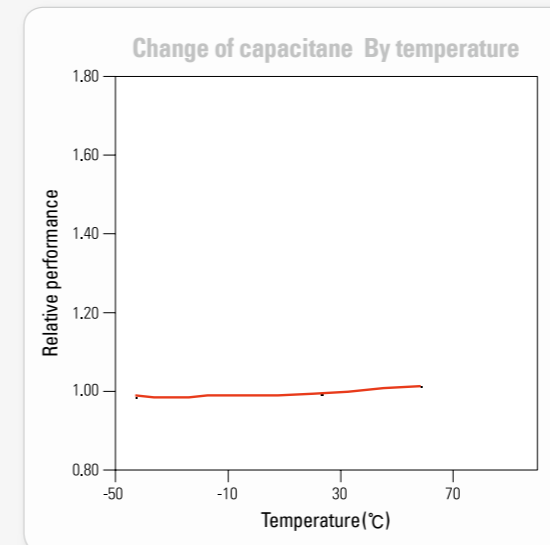
Electric Double Layer Capacitor  
EDLC  
VSCS SERIES

Performance Data

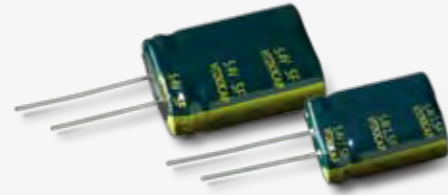
>>> Endurance(2.7V, 60°C) : 10 × 25 mm (10F)



>>> Temperature characteristic



Electric Double Layer Capacitor  
EDLC  
VSCM SERIES

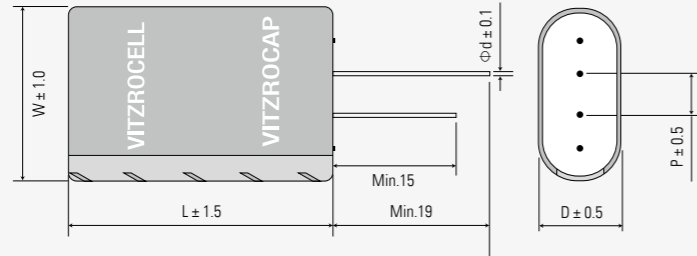


>>> Features

- Two lead terminals and Cylindrical Cell
- Very low ESR(High-power density)
- High-capacitance
- RoHS Compliant

D	P	d
8.5	5	0.6
10.5	5	0.6
12.5	7	0.6

>>> Drawing



>>> Standard Products

Item	Performance	
Rated Voltage(V <sub>R</sub> )	5.0 volts	5.4 volts
Nominal Capacitance Range	1.5 to 5 F	1.5 to 5F
Capacitance Tolerance	-20% to +30% (at 25°C)	-20% to +30% (at 25°C)
Operating Temperature Range	-25°C to 70°C	-40°C to 60°C
Endurance	After 1,000 hours at rated voltage loaded under +60°C, +70°C the capacitor shall meet the specified endurance limits :	
	Capacitance change ≤ 30% of initial value	
	Internal resistance ≤ 2 times of specified value	
Temperature characteristics	Measure at	At -25, +25, 70°C      At -40, +25, 60°C
	Δ C	≤ 30% of initial value
	Internal resistance	≤ 2 times of specified value
Cycle Life Characteristics	500,000 cycles	Capacitance Change ≤ 30% of initial value
		Internal resistance ≤ 2 times of specified value
Shelf life	After 1,000 hours storage at +60°C(2.7 V), +70°C(2.5V) without load, the capacitor shall meet the specified endurance limits of endurance.	

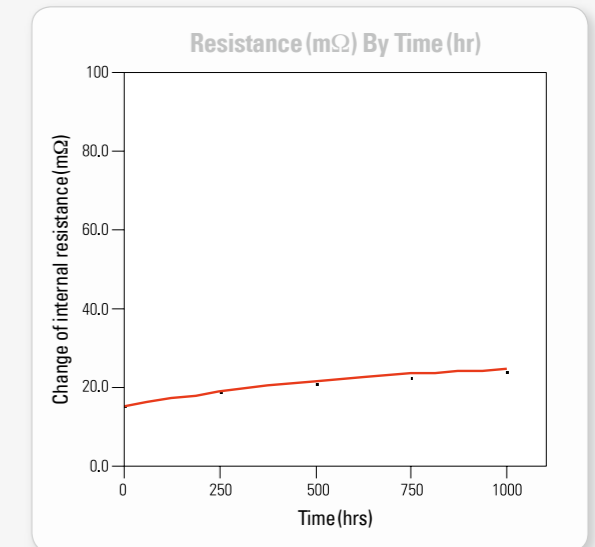
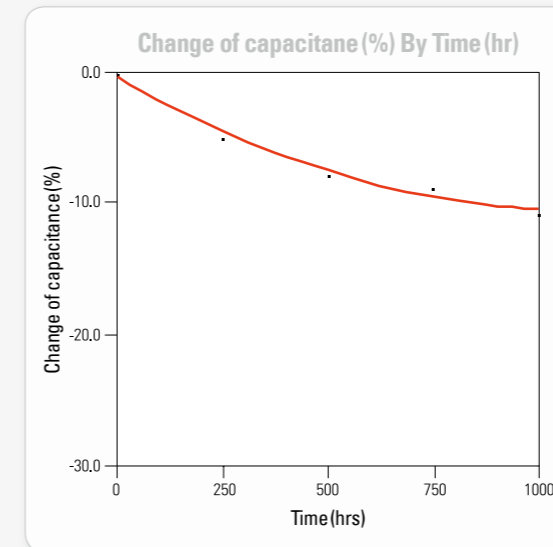
>>> Dimensions(mm)

Part number	Rated Voltage (V)	Capacitance (F)	Internal resistance (mΩ)		Leakage current (mA, 72hr)	Size (mm) D × L × W
			AC(1kHz)			
VSCM 005R0 155	5.0	1.5	≤ 300		0.020	8.5 × 22.0 × 17.0
VSCM 005R0 255		2.5	≤ 240		0.030	10.5 × 22.5 × 21.0
VSCM 005R0 355		3.5	≤ 180		0.040	10.5 × 22.5 × 21.0
VSCM 005R0 505		5	≤ 225		0.050	10.5 × 32.0 × 21.0
VSCM 005R0 755		7.5	≤ 120		0.060	13.0 × 28.0 × 25.5
VSCM 005R4 155	5.4	1.5	≤ 130		0.020	8.5 × 22.0 × 17.0
VSCM 005R4 255		2.5	≤ 90		0.030	10.5 × 22.5 × 21.0
VSCM 005R4 355		3.5	≤ 70		0.040	10.5 × 22.5 × 21.0
VSCM 005R4 505(U)		5	≤ 70		0.050	10.5 × 27.0 × 21.0
VSCM 005R4 505		5	≤ 60		0.050	10.5 × 32.0 × 21.0
VSCM 005R4 755		7.5	≤ 60		0.060	13.0 × 28.0 × 25.5

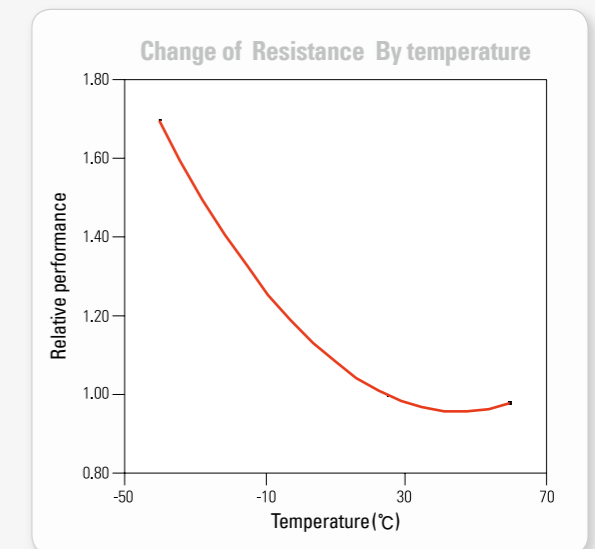
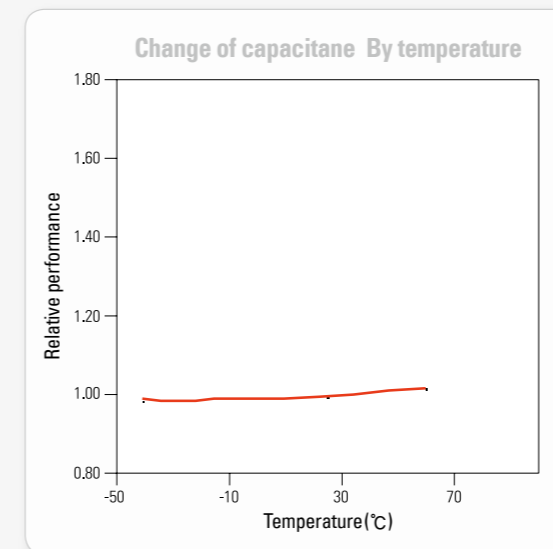
Electric Double Layer Capacitor  
EDLC  
VSCM SERIES

Performance Data

>>> Endurance(5V, 60°C) : 5.4V, 5F



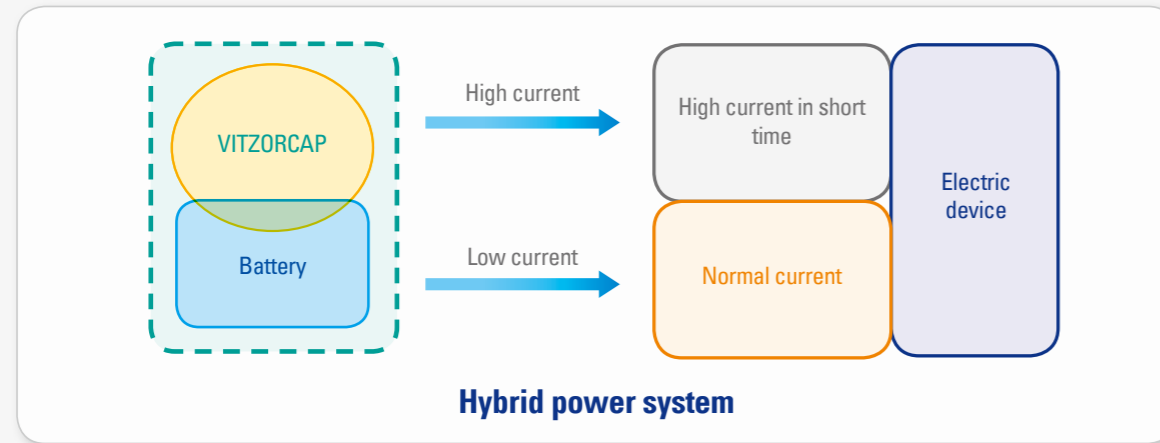
>>> Temperature characteristic



# Electric Double Layer Capacitor EDLC

## Enhancement of Product Competitiveness

- Provision of Hybrid Module Solution
- Product of Pluses Plus (80% preoccupancy in the Smart Meter market)
- Improvement in the customer convenience
- Product quality and Delivery Control system



## Electric double layer capacitor

- **Provision** : Semi-permanent cycle life characteristics (over 500,000 times), high power (10,000W/kg)
- **Application** : Memory-back up and power supply for AMR, household appliances, electric tools, industrial robots with electromagnetic valve, etc.

**APPLICATION**

High capacitance and voltage

**Backup**

**Power assist**

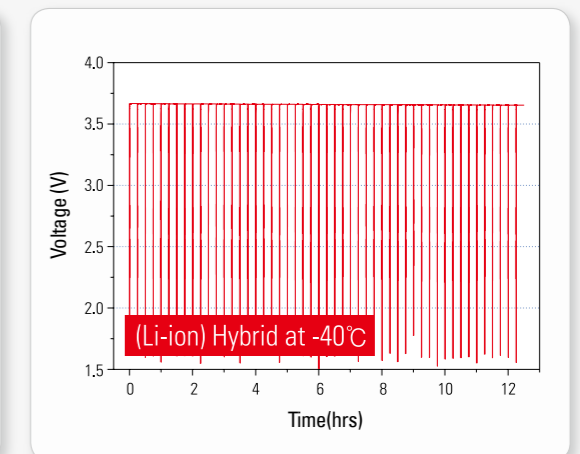
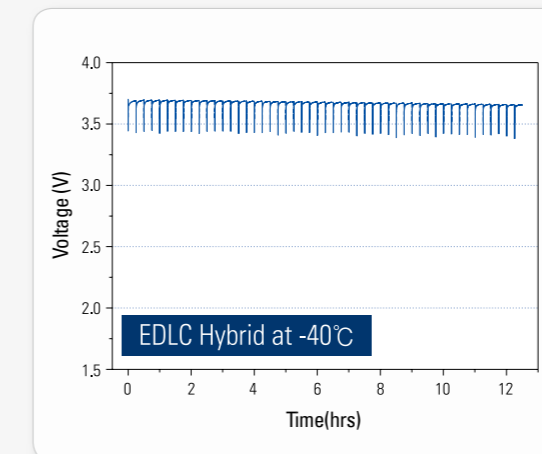
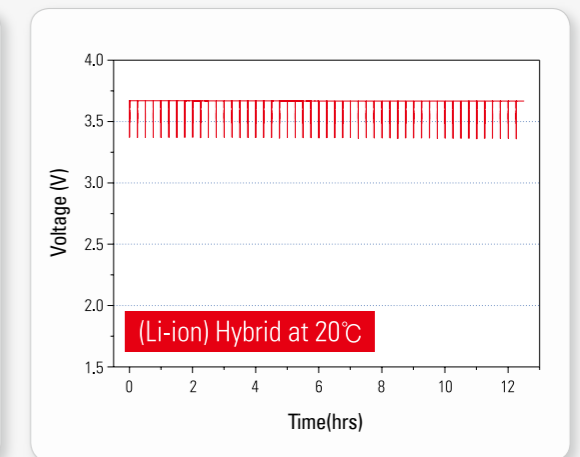
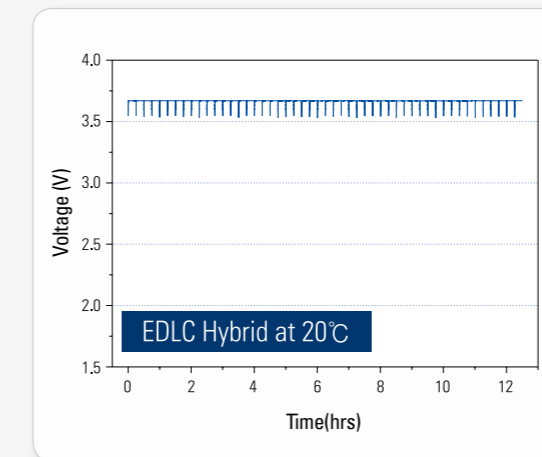
**Energy harvesting, Smart grid**

# Electric Double Layer Capacitor EDLC

### >>> Test Condition

- Test Sample : Li/SOCl<sub>2</sub>(Bobbin D) + EDLC(5V, 1F) vs Li/SOCl<sub>2</sub>(Bobbin D) + Secondary battery
- Load Condition : 300mA/80ms and 1,100mA/30ms every 15min
- Temp. Condition : 20°C and -40°C

### >>> Test Results



# Vitzrocell's Product Lineup



High Temperature Battery



Thermal Battery



Ampoule Battery



EDLC(Radial & Lug Type)



LiSOCl<sub>2</sub> & Hybrid type

Every where in life **VITZROCAP** always with you

***Vitzrocap***  
Electric Double Layer Capacitor





**Head office / factory**

Sinam Agriculture and Industry Complex, 256-41 Dugok-li, Sinam-myun, Yesan-gun,  
Chungcheongnam-do, South Korea (340-860) Tel : 82-41-332-8642 Fax : 82-41-332-8646

**Seoul office**

VITZROCELL Bldg, 241 Gunja-dong, Gwangjin-gu, Seoul, South Korea (143-837)  
Tel : 82-2-2024-3219 Fax : 82-2-499-2756