Broadband Technology 2000

Vision for Nature

VIVA Tech

Supercapacitors

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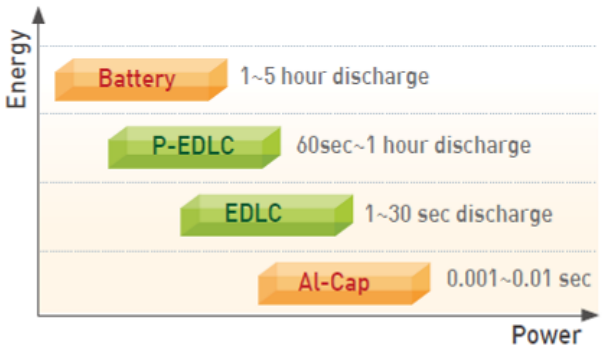
Hy Cap Introduction

Environment-friendly New Energy Storage Device

Hy-Cap is a brand name of VinaTech's supercapacitor products. Supercapacitor is an electrochemical energy storage device in the "power" industries.
Compared with battery, supercapacitor has one-tenth of energy, but delivers over 10 times power due to ultra low ESR. It operates more reliably in wider temperature range and its life is semi-permanent, over 500,000 cycles.



EDLC [Electric Double Layer Capacitor]

FEATURES
Rated 2.5V, 2.7V, 3.0V
Higher Power Density (low ESR)
Over 500,000 cycle life
Short-term Peak Power assist applications
Operating temperature range - Rated 2.5V : -25℃ ~ 70℃ - Rated 2.7V, 3.0V : -40℃ ~ 65℃

P-EDLC [Hybrid Capacitor]

FEATURES
Rated 2.3V
Higher Energy Density (2 times of EDLC)
Over 100,000 cycle life
Low current & long-term backup applications
Operating temperature range : -25℃ ~ 60℃

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Hy Cap Specification

CHARACTERISTICS

ITEM		CHARACTERISTICS			
Product series		P-EDLC	EDLC		
Rated Voltage (V_R)		2.3 V	2.5 V	2.7 V	3.0 V
Operating Temperature		-25 ~ +60℃	-25 ~ +70℃	-40 ~ +65℃	
Capacitance Tolerance		-10 ~ +30%			
High Temperature Load Life	Measure	After 1,000 hours at V_R loaded under +60, +70, +65℃ respectively, capacitors meet the following criteria.			
	Cap. Change	≤ 30% of initial value			
	ESR Change	100% increase from specified value			
85℃ Higher Temperature		NA	Max 2.1V	Max 2.3V	Max 2.4V
Cycle Life Characteristics	Cycle	100,000	500,000		
	Cap. Change	≤ 30% of initial value			
	ESR Change	100% increase from specified value			
	Condition	Cycle of charge/discharge from V_R to $1/2V_R$			
Shelf life		2 Years No Electrical Charge, Temperature below 70℃ (△C : ≤ 10% of initial value / △ESR : ≤ 50% of initial value)			

PART NUMBER SYSTEM

VEC 3R0 367 QG - H

Terminal Code for Module & Axial Type Cells

(2 or 3 serial connection)

Design Code

ex) G : Standard

Nonstandard items only available under negotiation

Capacitance Tolerance

CODE	TOLERANCE	CODE	TOLERANCE
Q	-10 ~ +30%	H	0 ~ +20%

Capacitance Code

ex) 367 : 360F (36×10^7 μF)

Rated Voltage

VOLTAGE	2.3 V	2.5 V	2.7 V	3.0 V
CODE	2R3	2R5	2R7	3R0

Series

CODE	Full name
VHC	P-EDLC (Hybrid Capacitor)
VEC	EDLC / 2 Series Module
VEM	EDLC Module

** Module specification for 2 series cells has identical characteristics to above items.
Please contact us at hycap@vina.co.kr if you need detailed data sheets.

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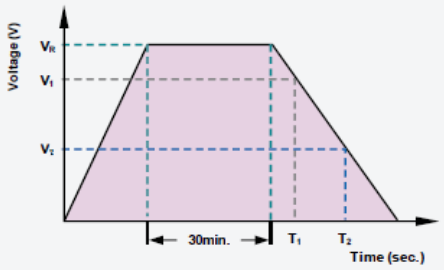
Hy Cap Specification

RELIABILITY TEST & CONDITION

ITEM		PASSING CRITERIA	TEST CONDITION
Cycle Life	Cap. Change	≤ 30% of initial value	• 1 cycle : Charge & discharge from V_R and 1/2V_R at 25℃ ① EC series : 500,000 cycles ② HC series : 100,000 cycles ③ HG series : 1,000,000 cycles
	ESR Change	100% increase from specified value	
	Appearance	No remarkable change	
High Temp. Load Life	Cap. Change	≤ 30% of initial value	• Temp. : T_{Max} ± 2℃ • Voltage : V_R VDC • Test Time : T_{Max} : 1,000 (+48)hours
	ESR Change	100% increase from specified value	
	Appearance	No remarkable change	
Temperature Characteristics (* 2.7V case)	Cap. Change	≤ 5% of initial value	• Temperature : T_{Min} ± 2℃ • Storage time : 12 hours • No load
	ESR Change	100% increase from specified value	
	Appearance	No remarkable change	
Vibration Resistance	Cap. Change	≤ 30% of initial value	• Amplitude : 1.5㎜ • Frequency : 10~55㎐ • Direction : X,Y,Z (2 hours) • Test time : 6 hours
	ESR Change	100% increase from specified value	
	Appearance	No remarkable change	
Soldering Effect	Cap.	Specified value	• Soldering Temp. : 310 ± 5℃ • Immersion time : 1 ± 0.2 sec. • Dip Length : To 1.6㎜ (auto-soldering)
	ESR	Specified value	
	Appearance	No remarkable change	
Humidity	Cap. Change	≤ 10% of initial value	• Rated Voltage • Temperature : 70℃ ± 2℃ • Relative Humidity : 90% • Test Time : 72 hours
	ESR Change	100% increase from specified value	
	Appearance	No remarkable change	

MEASUREMENT OF CAPACITANCE & ESR

Capacitance (F)



$$C(F) = I \times \frac{(T_2 - T_1)}{(V_1 - V_2)}$$

Where

V_R	Rated Voltage
V_1	0.8V_R
V_2	0.4V_R
I	Discharge Current (1mA per Farad)

Equivalent Series Resistance (ESR)

AC ESR is measured by 4-probe impedance analyzer.
*Condition : Potentiostat mode, AC amplitude : 5mV, Frequency : 1㎑

DC ESR(R_d) is calculated by voltage drop (ΔV) which is measured by the period of time from discharge start to 10 milli-seconds later.
The discharge current(A) for test and measurement, 40 x Capacitance(F) x Rated Voltage(V_R) would be recommended

NOTE ON USING HY-CAP

1. Make sure of polarity(+and –marking) when using.
2. Do not use higher than rated voltage.
   In case of connecting more than 2 units for modules, we recommend "unit voltage - 0.2V" per unit for the sake of safer voltage balancing (e.g. 2.5V in case of 2.7V unit).
3. Please store or use products under the proper conditions.
4. When soldering, be aware of proper conditions in order to avoid excessive heat or time on the products.

※ For more details, please contact us.

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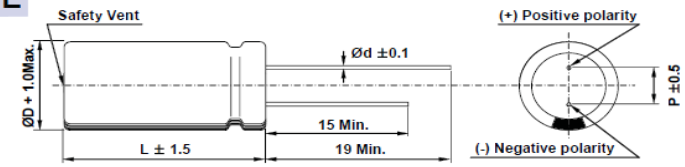
Hy Cap / Cell
Lead Terminal

LEAD TYPE



D	8	10, 13	16, 18
d	0.6		0.8
P	3.5	5.0	7.5

PART NUMBER		Rated Voltage (V)	Capacitance (F)	ESR (mΩ)		Max. Current (A)	Leakage Current (㎃, 72hr)	Size (㎜)	Weight (g)	Volume (㎖)
				AC(1㎑)	DC			D × L		
P-EDLC	VHC 2R3 106 QG	2.3	10	220	700	0.5	0.020	10x20	2.5	1.6
	VHC 2R3 226 QG		22	120	330	1.0	0.044	10x30	3.6	2.4
	VHC 2R3 506 QG		50	60	160	1.5	0.100	16x25	8.5	5.0
	VHC 2R3 127 QG		120	45	80	3.0	0.240	18x40	16.0	10.2
EDLC	VEC 2R5 335 QG	2.5	3.3	220	370	1.5	0.007	08x20	1.7	1.0
	VEC 2R5 505 QG		5	150	220	3.0	0.010	10x20	2.2	1.6
	VEC 2R5 106 QG		10	70	100	6.0	0.020	10x30	3.4	2.4
	VEC 2R5 256 QG		25	40	60	13.0	0.050	16x25	7.9	5.0
	VEC 2R5 506 QG		50	25	40	20.5	0.100	18x40	14.5	10.2
	VEC 2R7 105 QG	2.7	1	130	195	1.0	0.002	08x13	1.1	0.7
	VEC 2R7 335 QG		3.3	55	95	3.0	0.007	08x20	1.5	1.0
	VEC 2R7 505 QA		5	35	60	5.0	0.010	08x25	1.8	1.3
	VEC 2R7 505 QG		5	55	85	4.5	0.010	10x20	2.1	1.6
	VEC 2R7 705 QG		7	55	95	5.5	0.014	10x20	2.2	1.6
	VEC 2R7 106 QG		10	25	35	10.0	0.020	10x30	3.2	2.4
	VEC 2R7 106 QC		10	35	55	8.5	0.020	13x20	3.4	2.7
	VEC 2R7 156 QG		15	25	40	12.5	0.030	13x25	4.5	3.3
	VEC 2R7 186 QC		18	25	40	14.0	0.036	13x25	4.8	3.3
	VEC 2R7 256 QG		25	17	26	20.0	0.050	16x25	6.8	5.0
	VEC 2R7 506 QG		50	11	17	36.5	0.100	18x40	12.5	10.2
	VEC 2R7 606 QG		60	11	17	40.0	0.120	18x40	13.5	10.2
	VEC 3R0 105 QG		1	145	220	1.0	0.003	08x13	1.1	0.7
	VEC 3R0 335 QG		3.3	70	105	3.5	0.010	08x20	1.5	1.0
	VEC 3R0 505 QD	3.0	5	40	70	5.5	0.015	08x25	1.8	1.3
	VEC 3R0 505 QG		5	65	100	5.0	0.015	10x20	2.1	1.6
	VEC 3R0 705 QG		7	65	110	5.5	0.021	10x20	2.2	1.6
	VEC 3R0 106 QG		10	25	40	10.0	0.030	10x30	3.2	2.4
	VEC 3R0 106 QD		10	40	60	9.0	0.030	13x20	3.6	2.7
	VEC 3R0 156 QG		15	30	45	13.0	0.045	13x25	4.5	3.3
	VEC 3R0 256 QG		25	20	30	21.0	0.075	16x25	7.2	5.0
	VEC 3R0 406 QG		40	17	30	26.0	0.120	13x46	10.4	6.1
	VEC 3R0 506 QG		50	12.5	19	38.0	0.150	18x40	12.5	10.2
	VEC 3R0 606 QG		60	12.5	19	42.0	0.180	18x40	13.5	10.2

※ Max. Current : EDLC 1sec. discharge to 1/2V_R / P-EDLC 60sec. discharge to 1/2V_R

※ Please contact us at hycap@vina.co.kr if you need customized products.

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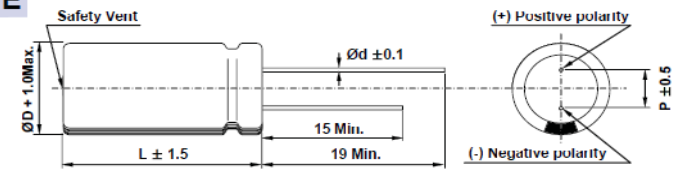
Hy Cap / Cell
Snap-in Terminal

LEAD TYPE



D	8	10, 13	16, 18
d	0.6		0.8
P	3.5	5.0	7.5

PART NUMBER		Rated Voltage (V)	Capacitance (F)	ESR (mΩ)		Max. Current (A)	Leakage Current (㎃, 72hr)	Size (㎜)	Weight (g)	Volume (㎖)
				AC(1kHz)	DC			D × L		
P-EDLC	VHC 2R3 106 QG	2.3	10	220	700	0.5	0.020	10x20	2.5	1.6
	VHC 2R3 226 QG		22	120	330	1.0	0.044	10x30	3.6	2.4
	VHC 2R3 506 QG		50	60	160	1.5	0.100	16x25	8.5	5.0
	VHC 2R3 127 QG		120	45	80	3.0	0.240	18x40	16.0	10.2
EDLC	VEC 2R5 335 QG	2.5	3.3	220	370	1.5	0.007	08x20	1.7	1.0
	VEC 2R5 505 QG		5	150	220	3.0	0.010	10x20	2.2	1.6
	VEC 2R5 106 QG		10	70	100	6.0	0.020	10x30	3.4	2.4
	VEC 2R5 256 QG		25	40	60	13.0	0.050	16x25	7.9	5.0
	VEC 2R5 506 QG		50	25	40	20.5	0.100	18x40	14.5	10.2
	VEC 2R7 105 QG	2.7	1	130	195	1.0	0.002	08x13	1.1	0.7
	VEC 2R7 335 QG		3.3	55	95	3.0	0.007	08x20	1.5	1.0
	VEC 2R7 505 QA		5	35	60	5.0	0.010	08x25	1.8	1.3
	VEC 2R7 505 QG		5	55	85	4.5	0.010	10x20	2.1	1.6
	VEC 2R7 705 QG		7	55	95	5.5	0.014	10x20	2.2	1.6
	VEC 2R7 106 QG		10	25	35	10.0	0.020	10x30	3.2	2.4
	VEC 2R7 106 QC		10	35	55	8.5	0.020	13x20	3.4	2.7
	VEC 2R7 156 QG		15	25	40	12.5	0.030	13x25	4.5	3.3
	VEC 2R7 186 QC		18	25	40	14.0	0.036	13x25	4.8	3.3
	VEC 2R7 256 QG		25	17	26	20.0	0.050	16x25	6.8	5.0
	VEC 2R7 506 QG		50	11	17	36.5	0.100	18x40	12.5	10.2
	VEC 2R7 606 QG		60	11	17	40.0	0.120	18x40	13.5	10.2
	VEC 3R0 105 QG	3.0	1	145	220	1.0	0.003	08x13	1.1	0.7
	VEC 3R0 335 QG		3.3	70	105	3.5	0.010	08x20	1.5	1.0
	VEC 3R0 505 QD		5	40	70	5.5	0.015	08x25	1.8	1.3
	VEC 3R0 505 QG		5	65	100	5.0	0.015	10x20	2.1	1.6
	VEC 3R0 705 QG		7	65	110	5.5	0.021	10x20	2.2	1.6
	VEC 3R0 106 QG		10	25	40	10.0	0.030	10x30	3.2	2.4
	VEC 3R0 106 QD		10	40	60	9.0	0.030	13x20	3.6	2.7
	VEC 3R0 156 QG		15	30	45	13.0	0.045	13x25	4.5	3.3
	VEC 3R0 256 QG		25	20	30	21.0	0.075	16x25	7.2	5.0
	VEC 3R0 406 QG		40	17	30	26.0	0.120	13x46	10.4	6.1
	VEC 3R0 506 QG		50	12.5	19	38.0	0.150	18x40	12.5	10.2
	VEC 3R0 606 QG		60	12.5	19	42.0	0.180	18x40	13.5	10.2

※ Max. Current : EDLC 1sec. discharge to $1/2V_R$ / P-EDLC 60sec. discharge to $1/2V_R$

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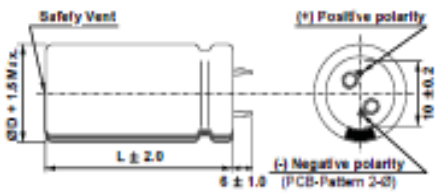
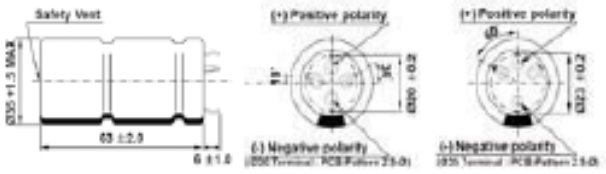
HyCap / Cell
Snap-in Terminal

SNAP-IN TYPE



2 PIN TYPE



4 PIN TYPE

PART NUMBER		Rated Voltage (V)	Capacitance (F)	ESR (mΩ)		Max. Current (A)	Leakage Current (㎃, 72hr)	Size (㎜)	Weight (g)	Volume (㎖)
				AC(1kHz)	DC			D × L		
P-EDLC	VHC 2R3 227 QG	2.3	220	30	45	3.5	0.44	22x45	24.8	17.1
	VHC 2R3 307 QG		300	30	50	4.5	0.60	22x45	25.2	17.1
	VHC 2R3 807 QG		800	10	15	12.5	1.60	35x72	94.5	69.2
EDLC	VEC 2R5 127 QG	2.5	120	18	30	32	0.24	22x45	22.5	17.1
	VEC 2R5 227 QG		220	14	22	47	0.44	25x60	38.5	29.4
	VEC 2R5 367 QG		360	6	10	97	0.72	35x62	71.0	59.6
	VEC 2R5 407 QG		400	6	10	100	0.80	35x72	76.0	69.2
	VEC 2R5 507 QG		500	5	9	110	1.00	35x82	83.0	78.9
	VEC 2R7 107 QG	2.7	100	6	10	65	0.20	22x45	20.0	17.1
	VEC 2R7 227 QG		220	4.5	7	115	0.44	25x70	38.0	34.3
	VEC 2R7 367 QG		360	3	4.5	185	0.72	35x62	70.0	59.6
	VEC 2R7 407 QG		400	3	4.5	190	0.80	35x72	80.0	69.2
	VEC 2R7 507 QG		500	3	4.5	205	1.00	35x82	96.0	78.9
	VEC 3R0 107 QG	3.0	100	6	10	75	0.30	22x45	20.0	17.1
	VEC 3R0 367 QG		360	3	4.5	200	1.08	35x62	70.0	59.6
	VEC 3R0 407 QG		400	3	4.5	210	1.20	35x72	80.0	69.2
	VEC 3R0 507 QG		500	3	4.5	230	1.50	35x82	96.0	78.9

※ Ø22 ~ Ø30 : 2Pin (Ø30 : 4Pin Available) ※ Ø35 : 4Pin
※ Please contact us at hycap@vina.co.kr if you need customized products.

Broadband Technology 2000

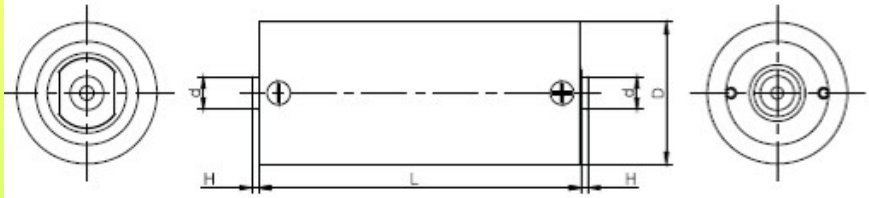
Vision for Nature VINATech

HyCap / Cell Weldable Terminal

FEATURES

- Rated 2.7V
- High power density and ultra low ESR
- Suitable for Electric Power Storage
- Charge and Discharge efficiency are higher than batteries

DRAWING



Dimension (mm)		
D (±0.2)	H (±0.125)	d (0/-0.05)
Φ60.4	3.2	Φ14

SPECIFICATION

ELECTRICAL		
Rated Voltage(V_R)		2.7V
Capacitance Tolerance		0 ~ +20%
Operating Temperature range		-40 ~ +65°C
Storage Temperature range		-40 ~ +70°C
Low temperature Characteristics	Capacitance change	Within ± 5% of initial value at +20°C
	ESR change	Within ± 150% of initial value at +20°C
Endurance	After 1,500hr application of rated voltage at +65°C	
	Capacitance change	Within -20% of initial value
	ESR change	Within 2 times of initial value
Life test	After 10years at rated voltage and 25°C	
	Capacitance change	Within -20% of initial value
	ESR change	Within 2 times of initial value
Cycle Life	Capacitors cycles between rated voltage under constant current at 25°C (1,000,000 cycle)	
	Capacitance change	Within -20% of initial value
	ESR change	Within 2 times of initial value

PART NUMBER	Rated Voltage (V)	Capacitance (F)	ESR (mΩ)		Max Peak Current (A)	LC(72hr) (mA, Max.)	Size (㎜)	Energy Density		Weight (g)	Volume (㎖)
			AC(1kHz)	DC			D x L	(Wh/kg)	(Wh/L)		
VEC 2R7 657 HG-W	2.7	650	0.50	0.70	603	1.5	60.4x51.5	3.06	3.97	215	166
VEC 2R7 128 HG-W		1200	0.38	0.50	1013	2.7	60.4x74.0	3.92	5.27	310	230
VEC 2R7 168 HG-W		1600	0.34	0.45	1256	3.0	60.4x85.0	4.70	6.19	345	262
VEC 2R7 208 HG-W		2000	0.26	0.35	1588	4.2	60.4x102.0	4.94	6.52	410	311
VEC 2R7 308 HG-W		3000	0.21	0.28	2201	5.2	60.4x138.0	5.68	7.34	535	414

Broadband Technology 2000

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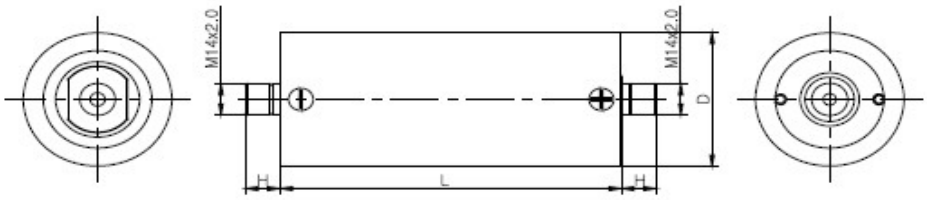
HyCap / Cell
Threaded Terminal

FEATURES

- Rated 2.7V
- High power density and ultra low ESR
- Suitable for Electric Power Storage
- Charge and Discharge efficiency are higher than batteries

DRAWING



Dimension (mm)	
D (±0.2)	H (±0.125)
Φ60.4	14

SPECIFICATION

ELECTRICAL		
Rated Voltage(V_R)		2.7V
Capacitance Tolerance		0 ~ +20%
Operating Temperature range		-40 ~ +65°C
Storage Temperature range		-40 ~ +70°C
Low Temperature Characteristics	Capacitance change	Within ± 5% of initial value at +20°C
	ESR change	Within ± 150% of initial value at +20°C
Endurance	After 1,500hr application of rated voltage at +65°C	
	Capacitance change	Within -20% of initial value
	ESR change	Within 2 times of initial value
Life Test	After 10years at rated voltage and 25°C	
	Capacitance change	Within -20% of initial value
	ESR change	Within 2 times of initial value
Cycle Life	Capacitors cycles between rated voltage under constant current at 25°C(1,000,000 cycle)	
	Capacitance change	Within -20% of initial value
	ESR change	Within 2 times of initial value

PART NUMBER	Rated Voltage (V)	Capacitance (F)	ESR (mΩ)		Max Peak Current (A)	LC(72hr) (mA, Max.)	Size (㎜)	Energy Density		Weight (g)	Volume (㎖)
			AC(1㎑)	DC			D × L	(Wh/kg)	(Wh/L)		
VEC 2R7 657 HG-T	2.7	650	0.50	0.70	603	1.5	60.4x51.5	2.99	2.89	220	228
VEC 2R7 128 HG-T		1200	0.38	0.50	1013	2.7	60.4x74.0	3.86	4.37	315	292
VEC 2R7 168 HG-T		1600	0.34	0.45	1256	3.0	60.4x85.0	4.63	5.24	350	324
VEC 2R7 208 HG-T		2000	0.26	0.35	1588	4.2	60.4x102.0	4.88	5.65	415	372
VEC 2R7 308 HG-T		3000	0.21	0.28	2201	5.2	60.4x138.0	5.63	6.58	540	476

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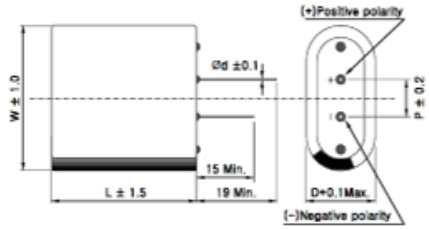
Vision for Nature VINA Tech

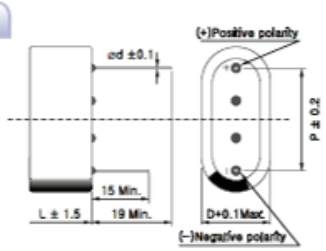
HyCap / Module
Lead Terminal Standard

2 SERIAL MODULE : DRAWING

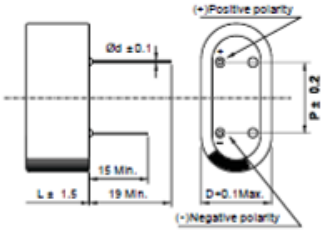
I TYPE



O TYPE



H TYPE



D = 8.5㎜

TYPE	I	O	H
P	4.7	12.3	8.5

D = 10.5㎜

TYPE	I	O	H
P	5.5	15.5	10.5

D = 13㎜

TYPE	I	O	H
P	7.5	18.5	13.0

PART NUMBER	Rated Voltage (V)	Capacitance (F)	ESR (mΩ)		Max. Current (A)	Leakage Current (㎂, 72hr)	Size (㎜)	Weight (g)	Volume (㎖)
			AC(1kHz)	DC			D × W × L		
VEC 5R0 504 QG	5.0	0.5	805	1205	0.5	0.002	8.5x17x15.5	3.0	2.2
VEC 5R0 155 QG		1.5	445	745	1.5	0.007	8.5x17x22	3.8	3.2
VEC 5R0 255 QA		2.5	245	405	3.0	0.010	8.5x17x27	4.6	3.9
VEC 5R0 255 QG		2.5	305	445	3.0	0.010	10.5x21x22.5	5.0	5.0
VEC 5R0 355 QG		3.5	355	585	3.0	0.014	10.5x21x22.5	5.4	5.0
VEC 5R0 505 QG		5.0	145	205	6.0	0.020	10.5x21x32	7.0	7.1
VEC 5R0 755 QG		7.5	145	205	7.5	0.030	13x26x28	9.6	9.5
VEC 5R4 504 QG	5.4	0.5	265	395	1.0	0.002	8.5x17x15.5	2.6	2.2
VEC 5R4 155 QG		1.5	115	195	3.0	0.007	8.5x17x22	3.3	3.2
VEC 5R4 255 QA		2.5	75	125	5.0	0.010	8.5x17x27	4.5	3.9
VEC 5R4 255 QG		2.5	115	175	4.5	0.010	10.5x21x22.5	4.7	5.0
VEC 5R4 355 QG		3.5	115	195	5.5	0.014	10.5x21x22.5	4.8	5.0
VEC 5R4 505 QG		5.0	55	75	10.0	0.020	10.5x21x32	6.6	7.1
VEC 5R4 755 QG		7.5	55	85	12.5	0.030	13x26x28	9.6	9.5
VEC 6R0 504 QG	6.0	0.5	295	445	1.0	0.003	8.5x17x15.5	2.5	2.2
VEC 6R0 155 QG		1.5	145	215	3.5	0.010	8.5x17x22	3.3	2.8
VEC 6R0 255 QG		2.5	135	205	5.0	0.015	10.5x21x22.5	4.7	4.4
VEC 6R0 505 QG		5.0	55	85	10.0	0.030	10.5x21x32	6.6	6.3

Broadband Technology 2000

Vision for Nature VINA Tech

HyCap / Module
Snap-In Standard (16V)

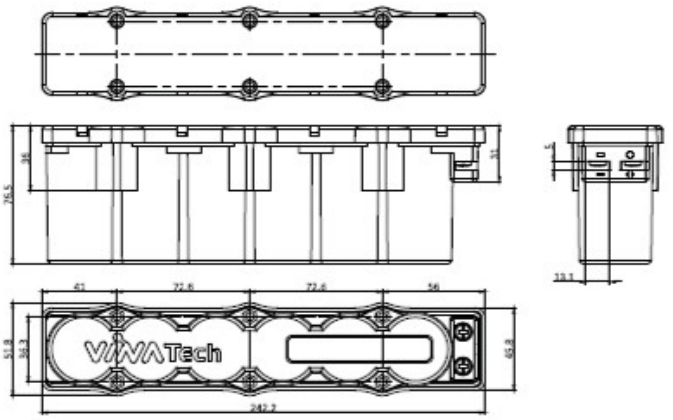
FEATURES

- Ultra-low internal resistance
- High power and reliable performance
- Over 500,000 duty cycles
- Compact & fully enclosed splash proof design

TYPICAL APPLICATIONS

- Automotive
- Consumer electronics
- Renewable energy system
- Short term UPS & Telecommunications
- Wind turbine pitch control

DRAWING



SPECIFICATION

ELECTRICAL	VEM16R0606QG
Rated Capacitance	60 F
Maximum ESR_{DC}, initial	22 mΩ
Rated Voltage	16 V
Maximum Peak Current(1 second)	200 A
Maximum Continuous Current	20A
Leakage Current, maximum	22 mA
TEMPERATURE	
Operating Temperature	-40°C ~ 65°C
Storage Temperature	-40°C ~ 70°C
CELL VOLTAGE MANAGEMENT	
Cell Voltage Management	ACTIVE / PASSIVE
PHYSICAL	
Mass, typical	0.67 kg
Power Terminals	M5 Thread
Environmental Protection	IP54
POWER & ENERGY	
Usable Specific Power	2,400 W/kg
Specific Energy, E_{max}	3.33 Wh/kg
Stored Energy	2.13 Wh
LIFE	
High Temperature (1500 hours)	Capacitance: -20% of initial value, ESR: Within 2 times of initial value
Room Temperature (25°C)	Capacitance: -20% of initial value, ESR: Within 2 times of initial value
Cycle Life	500,000 cycles

Broadband Technology 2000

Vision for Nature VINA Tech

Hybrid Lithium Capacitors

This limited VLC ultra low ESR series offers high density and extremely low SD (Self Discharge) characteristics. Ideally suited to Wireless sensing, RFiD devices, Energy harvesting and PV products, AMR, Automotive applications, Beacons and Buoys along with Medical applications and pumps

The VLC series is a great option to be used along side Primary powered Battery applications for pulse management where standard VEC series LCs may be a concern

- Low LC
- Higher Voltage than EDLCs 3.8v
- Ultra low ESR
- Hi Density 20F~ 270F
- Long cycle life 100k+
- ~30c~ +70C (can be used at 85c if de-rated to 3.5v
- Short lead times
- RoHS, REACH & WEEE compliant

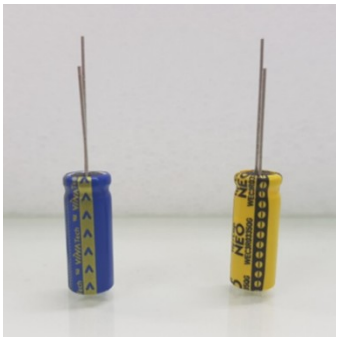
		Size	Max Charge V	Max Charge Current	Max discharge pulse Current	Max Cap 3.8v	Discharge End Voltage	ESR	Cycle life	Temp range *		SD 25c
3.8v	20F	10x30	3.8v	1A	1A	23F	2.2v	250mR	100,000	-30c~+70c**		<5%
3.8v	40F	12x35	3.8v	2A	2A	46F	2.2v	60mR	100,000	-30c~+70c**		2uA
3.8v	100F	18x40	3.8v	5A	5A	115F	2.2v	125mR	100,000	-30c~+70c**		<5%
3.8v	270F	25x40	3.8v	5A	5A	310F	2.2v	60mR	100,000	-30c~+70c**		<5%

Broadband Technology 2000

Vision for Nature VINATech

Anti-Wetting System

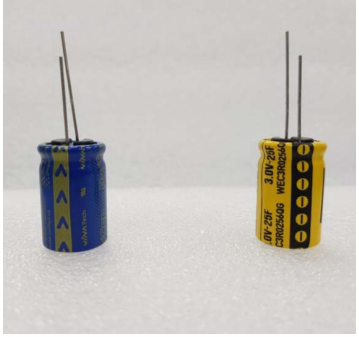
VINATech are rolling out a proven solution to combat effects of Extreme environments



Radial EDLCs are facing challenges when installed in equipment that regularly exceeds the recommended +65c temperature, especially when combined with high humidity conditions.
A growing number of applications from around the globe are realising this “Wetting Phenomenon” when products in the field are returned, especially areas like the Middle East , West Africa, Central America and parts of Asia. Applications include Automotive and Tracking, UPS, HVA, SSD and numerous AMR solutions.
VINATech’s development engineers have re-invented the EDLC technology in the 2.7v and their popular 3v series to overcome this Industry wide Wetting Phenomenon and have now exceeded over a year of constant trials with 30 second cycling at 65c 90rh with no effects of Wetting. The NEO series is ready to combat affects of extreme environments.

The new series is being promoted will cover 1 Farad to 100F in Radial options

- Pin for Pin compatible with standard series
- Temperature range -40~65c (extended to 85c when de-rated)
- Low ESR
- 2.7v and 3v options
- 500,000 cycle life
- First real Anti Wetting solution



Broadband Technology 2000

Vision for Nature VINA Tech

Hy Cap Applications

AMR / TELECOMMUNICATION

- Long life : No maintenance
- Wider operating temperature : -40℃ to +65(70)℃

VEHICLE ELECTRONICS

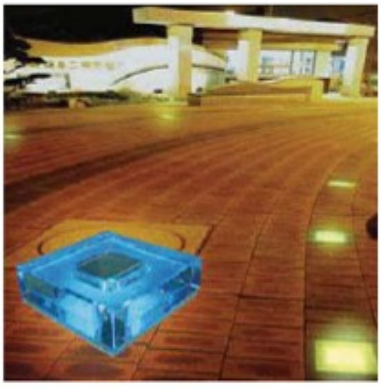
- Navigation system backup
- Black Box (Driving recorder)
- Battery Assist (Car-audio)

UPS / DVR

- Peak Power Assist (Bridge power)
- Improve battery's life & down-sizing

SOLAR & EMERGENCY LIGHT

- Solar LED light, Exit light
- Easy Installation
- No maintenance



Broadband Technology 2000

Vision for Nature VINA Tech

Hy Cap Applications

SOLAR

- Energy Storage to power for solar heliostat-tracking
- No maintenance / replacement
- Wider operating temperature

WINDMILL (PITCH CONTROL)

- Instant peak power providing
- No maintenance / replacement
- Semi-permanent

HYBRID ELECTRIC VEHICLE

- Engine + Electric motor with supercapacitor (covering peak power when acceleration or engine starting)
- Long life cycle (over 500,000 cycles)

OTHER APPLICATION

- Electric Valve (actuator)
- Electric Toy
- Industrial Robotics
- SSD (Solid State Drive)

Broadband Technology 2000

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