



Series: Snap-In Hybrid

Features:

- Board mountable
- Solderable
- UL Recognized
- RoHS compliant

Applications:

- Low power, low energy
- Low rate cycling
- Rapid charge slow discharge

Markets:

- Solar lighting
- Low power backup
- Medical devices
- LED lighting
- Handheld devices

Markings:

Products are marked with the following:

Rated capacitance, rated voltage, product number, name of manufacturer, negative terminal marking.



Operating

Voltage, Rated	1.0 V – 2.3 V
Voltage, Surge	2.5 V
Capacitance Tolerance	+10% / -5%

Temperature

Range, Operational	-40°C to 65°C
Range, Storage	-40°C to 70°C

Life

DC	10 years, rated voltage, 25°C
	$\Delta C < 20\%$ decrease, ESR < 100% increase
Endurance	1000 hrs, rated voltage, 65°C
	$\Delta C < 20\%$ decrease, ESR < 100% increase
Shelf	1000 hrs, no voltage, 70°C
	$\Delta C < 20\%$ decrease, ESR < 100% increase
Cycle	>10,000 cycles, Rated to half rated voltage, 25°C
	$\Delta C, 20\%$ decrease, ESR, 100% increase

Standards Compliance

UL 810a RoHS BS EN 60068-2-6, 27, 29
IEC 60068-2-14 SAE J2464, J2390, J1455 IP65
MIL 810 B-(516.3-5, 514.3-1, 509.2-1) ASTM B117



Product Specifications

Part Number	RHE2R3227SR	RHE2R3307SR	RHE2R3807SR	RHE2R3827SR	RHE2R3108SR
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Electrical

Capacitance (F)	220	300	800	820	1000
ESR, DC $\leq$ (m Ω) [10ms]	40.0	25.0	15.0	12.0	14.0
ESR, AC 1kHz $\leq$ (m Ω)	25.0	15.0	8.0	6.0	7.0
Inductance $\pm$ 30(nH)	<100	<100	<100	<100	<100
72hr Leakage $\leq$ (mA)	0.20	0.55	0.50	0.50	0.70

Cycling

Current, Peak [1s] (A)	26	41	71	87	77
Continuous Current (A)*	5	5.5	7	7.5	8
Current, Short Circuit (A)	92	153	288	383	329

Thermal

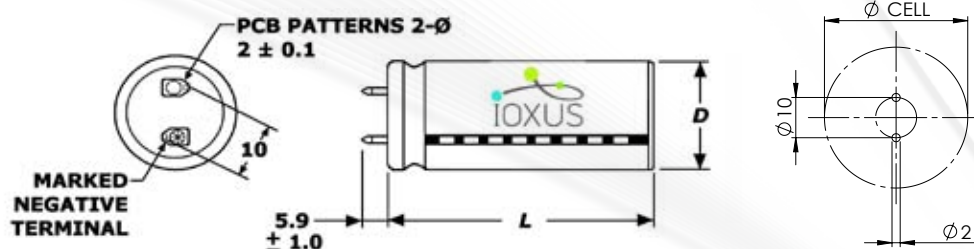
Resistance, Thermal ($^{\circ}$ C/W)	22	11	10	8	8
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Energy/Power

$E_{\max}$ (Whr)	0.13	0.18	0.48	0.49	0.60
$E_{\max}$ (Whr/kg)	5.2	6.6	5.2	7.0	5.2
$E_{\max}$ (Whr/L)	7.7	10.4	7.3	10.7	7.0
$P_{\max}$ (kW/kg)	2.1	3.3	1.8	3.1	2.1
$P_{\max}$ (kW/L)	3.1	5.2	2.5	4.8	2.2
P_d (kW/kg)	0.63	0.94	0.47	0.76	0.50

Physical

D (mm) +1/-0	22	22	35	27	35
L (mm) +/-2	45	45	68	80	88
Mass (kg)	0.025	0.027	0.091	0.070	0.115
Volume (L)	0.017	0.017	0.065	0.046	0.085



Additional Technical Information

Product specification test methods available in separate document.

*Rated current = continuous current with 20 $^{\circ}$ C temperature rise.

Mounting Recommendation

Do not reverse polarize. Solder following recommendations in *Notes on Using Ultracapacitors*, available at www.ioxus.com.



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