

Lifetime Calculation for RENATA Batteries

Project: WSR Wireless Sensor
Customer: Hidrolock, Moscow Region Mytishchi
Reference: Mr. Eshin Andrey

Battery type: CR2450N
Data source: CR2450N.839
Nominal capacity: 540.0 mAh
Capacity calculated until cut-off voltage of 2.0V: 545.3 mAh
Maximum recommended continuous discharge current: 3.000 mA

Load profile	Current	Pulse length	Pulses per unit	
Constant current:	0.0005 mA			
Pulse 1:	1.5 mA	40 us	0.43 / s	
Pulse 2:	20 mA	60 ms	0.25 / h	
Average load current:				0.0006 mA

Temperature profile: 365 days @ 20 °C;
Average ambient temperature: 20.0 °C
Self discharge rate per year at 20.0 °C: 1.0 %
Self discharge current: 0.616 uA

Pulse current peak: 20 mA
Minimum temperature at pulse current peak: 18 °C
Maximum internal resistance for pulse current peak: 42 Ohm

Average calculation at room temperature of 20 °C:

	hours	days	years	%
Lifetime with average load current and self discharge:	444918	18538	50.8	100.0

Average calculation at ambient temperature of 20.0 °C:

	hours	days	years	%
Lifetime with average load current and self discharge:	444918	18538	50.8	100.0
considering pulse current peak at room temperature:	342226	14259	39.1	76.9
considering pulse current peak at min. temperature of 18 °C:	326801	13617	37.3	73.5

3 Sigma calculation (worst case) at ambient temperature of 20.0 °C:

	hours	days	years	%
Lifetime with average load current and self discharge:	414352	17265	47.3	93.1
considering pulse current peak at room temperature:	224478	9353	25.6	50.5
considering pulse current peak at min. temperature of 18 °C:	209200	8717	23.9	47.0

This tool is property of Renata SA, Switzerland, and may only be used and distributed with the agreement of Renata SA.
Please note: Lifetime results are calculated based on measured values. Calculation is subject to change without notice.

CR2450N_ 20130628