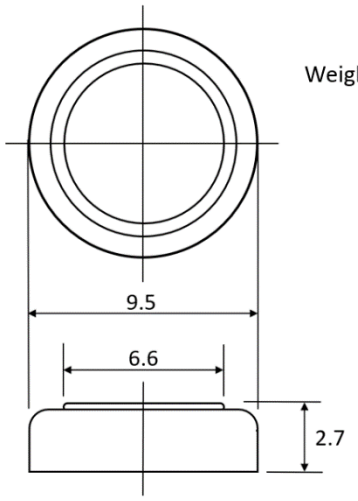
Nimbus Product Guide

PRODUCT SPECIFICATIONS ON THE NIMBUS 9 AND 20

MILLIBATT, INC. | VERSION 2.0 (MAY 24, 2021)

Nimbus 9:

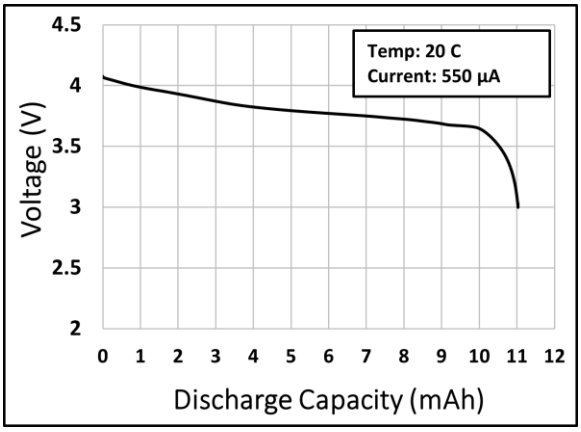
Dimensions (mm):



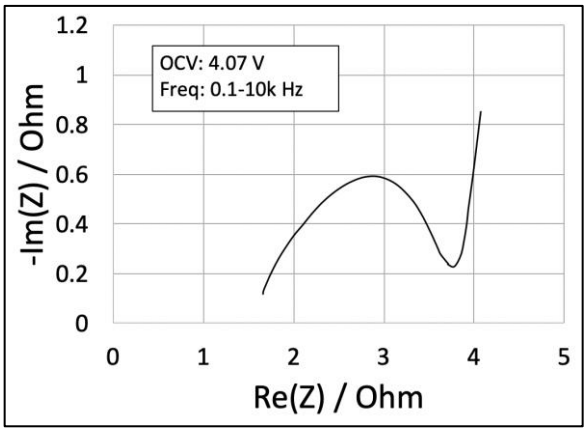
Specification:

Nominal voltage (V)	3.7
Nominal capacity (mAh)	11.0
Continuous standard load (mA)	5.0
Instantaneous pulse for 500ms (mA)	20
Operating temperature (C)	-20 ~ +60

Discharge Characteristics:



Impedance Characteristics:



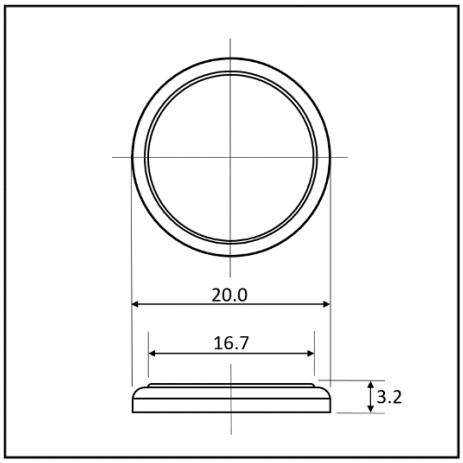
Charge method:

Method	Constant Current + Constant Voltage
Voltage limit	4.2 V
Charge current	5 mA (standard)
	10 mA (fast)
Cut off by time	3 h
Cut off by current	0.05 mA

Cycle life @ 0.5C/0.5C, 20°C:
500 cycles (>80% of C_{ini}) by Q3 2021

Nimbus 20:

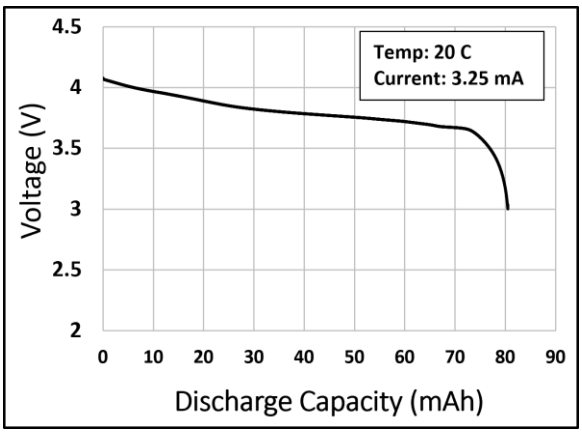
Dimensions (mm):



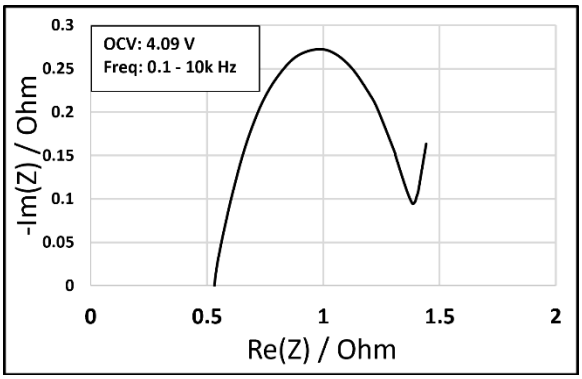
Specification:

Nominal voltage (V)	3.7
Nominal capacity (mAh)	80
Continuous standard load (mA)	40
Instantaneous pulse for 500ms (mA)	200
Operating temperature (C)	-20 ~ +60

Discharge characteristics:



Impedance characteristics:



Charge method:

Method	Constant Current + Constant Voltage
Voltage limit	4.2 V
Charge current	40 mA (standard)
	80 mA (fast)
Cut off by time	3 h
Cut off by current	1.6 mA

Cycle life @ 0.5C/0.5C, 20°C:
500 cycles (>80% of C_{ini}) by Q3 2021

Nimbus – Performance Comparison

9 millimeter Coin Cells

Millibatt's Nimbus line of coin cells are optimized for high power applications. For a detailed explanation of why high power capability is essential for wireless sensing and communication, please take a look at our white paper: Power Considerations for Wireless Sensing.

In the comparison table below, power performance is represented by internal impedance which is inversely related to power (lower impedance gives higher power). Nimbus 9 can be fully charged in 2 hours, whereas existing rechargeable coin cells in this format are rated for minimum 20 hours charging.

Comparing rechargeable coin cells with 9 mm diameter, Millibatt Nimbus 9 delivers 10x higher power (8x higher power per volume). Millibatt's manufacturing process is customizable and applicable to coin cells with diameter ranging from 4 to 20 mm and thickness from 1.6 mm to 5.4 mm. All cells listed below have a stability temperature range of -20 to +60 °C. We are currently providing Nimbus 9 samples for customer evaluation. If you are interested in other dimensions, please see the charts on the next page.

Manufacturer	Part Number	Size (ø x h)	Nominal Voltage (V)	Nominal Capacity (mAh)	Nominal Energy (mWh)	Internal Impedance (Ohm @1 kHz)	Cycles (80% capacity retention)
Millibatt	Nimbus 9	9.5 x 2.7	3.7	11	40	2	200*
Panasonic	ML920	9.5 x 2.1	3	11	33	33	100
Seiko	MS920SE	9.5 x 2.1	3	11	33	33	100

* 500 cycles by Q3 2021
All data measured at 20 °C

Nimbus – Available in Various Dimensions

Millibatt's flexible manufacturing line can produce coin cells in various dimensions. Please refer to the tables below listing the capacity (mAh) and internal impedance (Ohm @ 1k Hz) for different coin cell dimensions. All dimensions are rated for 0.5C charge and discharge rates. The other parameters (voltage, cycle life, temperature window, etc.) match those listed on page 1 and 2. If your design requires a size or performance spec that is not shown below, please reach out to us via email and we can prepare a design to meet your needs.

	Capacity (mAh)	Diameter (mm)				
		7.9	9.5	12	16	20
Thickness (mm)	**1.6**				19	30
	2.0			13		
	2.5					46
	2.7		11*			
	3.2					80*
	3.6	11				
	5.4	16		63		

	Impedance (Ohm)	Diameter (mm)				
		7.9	9.5	12	16	20
Thickness (mm)	1.6				1.9	1.2
	2.0			2.7		
	2.5					0.8
	2.7		2.0*			
	3.2					0.5*
	3.6	3.4				
	5.4	2.3		0.5		

* Free samples of Nimbus 9 or 20 available to qualified customers