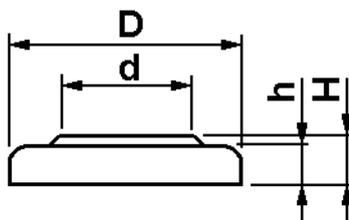


## Specification of ML1220

### Coin Type Rechargeable Lithium Battery (ML-Series)

Nominal Voltage		3 V	
Nominal Capacity		15 mAh	Nominal capacity is determined to an end voltage of 2.0V when the battery is allowed to discharge at a standard current level at 23°C
Standard Charge/ Discharge Current		0.1 mA	
Max. Discharge Current	Continuous	2 mA	Current value is determined so that 50% of the nominal capacity is obtained with an end voltage of 2.0V at 23°C
	Pulse	5 mA	Current value for obtaining 2.0V cell voltage when 15 sec. pulse applied at 50% discharge depth (23°C)
End Voltage		2.0 V	
Self-Discharge		2%/year	Storage condition: 23°C
Charge/Discharge Cycle Characteristics		3000 cycles with 0.6 mAh (discharge depth of 5%) 500 cycles with 2.4 mAh (discharge depth of 20%)	
Charging Method		3.1±0.15V	Constant voltage charge
Energy Density	Volume	122 Wh/l	Calculate with nominal capacity and standard discharge current
	Weight	43 Wh/kg	Calculate with nominal capacity and standard discharge current
Weight		0.7 g	
Dimensions	Height	2.0 mm	
	Diameter	12.5 mm	

#### Dimensions



#### Size without shrinktube:

D = 12,5<sub>-0,2</sub>  
d = 10,0  
h = 1,4<sub>±0,05</sub>  
H = 2,0<sub>-0,2</sub>  
(unit: mm)

#### Can material:

Negative cap: stainless steel

Positive can: stainless steel

#### Battery material:

Cathode: Manganese dioxide

Anode: Li-Al alloy

Electrolyte: Organic electrolyte

#### Chemical reaction:

Anode reaction: (Li-Al)  $\rightleftharpoons$  Al + Li<sup>+</sup> + e<sup>-</sup>

Cathode reaction: Mn<sup>IV</sup>O<sub>2</sub> + Li<sup>+</sup> + e<sup>-</sup>  $\rightleftharpoons$  Mn<sup>III</sup>O<sub>2</sub> (Li<sup>+</sup>)

Overall battery reaction: Mn<sup>IV</sup>O<sub>2</sub> + (Li-Al)  $\rightleftharpoons$  Mn<sup>III</sup>O<sub>2</sub> (Li<sup>+</sup>) + Al