



# THE DATASHEET OF ML-1220/F1AN

# Manganese Lithium Rechargeable Batteries (ML Series)

## TAB CONFIGURATIONS

Model No.	Tab Type		Configuration Diagram No.	Nominal	
	With Insulation Wrap	Without Insulation Wrap		Voltage (V)	Capacity (mAh)
ML414S <sup>1</sup>		/F9D	1	3	1.2
ML421S <sup>1</sup>	Contact Panasonic for details on available tab configurations.			3	2.3
ML612S			2	3	2.6
ML614S			3	3	3.4
ML616S			4	3	2.9
ML621S		/F9D	5	3	5.0
ML920S		/F9F	6	3	11.0
ML1220	/F1A	/F9D	7	3	17.0
ML1220	/V1A	/F9D	8	3	17.0
ML1220	/F1B	/F9D	9	3	17.0
ML2020	/V1A		10	3	45.0
ML2020	/G1A		11	3	45.0
ML2020	/H1C		12	3	45.0

<sup>1</sup>Contact Panasonic for the latest information on these models.

### Notes:

- A) To ensure proper electrical contact, it is recommended that rechargeable coin cell batteries be used with tabs for PC Board mounting. Please consult Panasonic before planning a design that will use bare coin cells without tabs (e.g. using a holder).
- B) Please contact Panasonic for requests on custom tab configurations. Minimum order requirements may apply.

## ML Series Tab Configurations

## DIMENSIONS / MM

Model No.	Dimensions/mm	Model No.	Dimensions/mm
ML414S/F9D	<p>①</p> <p>Max 4.8</p> <p>Max 1.45</p> <p>1.6 ± 0.5</p> <p>0.5 ± 0.2</p> <p>2.2 ± 0.05</p> <p>1.5 ± 0.5</p> <p>0.1 ± 0.05</p> <p>Max 1.8</p> <p>1.65</p> <p>Pre-soldered</p>	ML612S/F9D	<p>②</p> <p>Max 9.9</p> <p>Max 6.8 <math>^{+0}_{-0.15}</math></p> <p>1.55 ± 0.15</p> <p>0.45</p> <p>2.6 ± 0.5</p> <p>2 ± 0.5</p> <p>2 ± 0.7</p> <p>0.15 ± 0.05</p> <p>2 ± 0.5</p> <p>0.5 ± 0.1</p> <p>1.5</p> <p>Max 1.25</p>
ML614S/F9F	<p>③</p> <p>9.4</p> <p>6</p> <p>0.5</p> <p>2.2 ± 0.5</p> <p>Pre-soldered</p> <p>0.15 ± 0.05</p> <p>1.9 Max</p> <p>2.6 ± 0.5</p> <p>(0.35)</p> <p>2</p> <p>Max 6.8</p>	ML616S/F9D	<p>④</p> <p>Max 9.9</p> <p>Max 6.8 <math>^{+0}_{-0.15}</math></p> <p>1.85 ± 0.15</p> <p>0.45</p> <p>2.6 ± 0.5</p> <p>2 ± 0.5</p> <p>2 ± 0.7</p> <p>0.15 ± 0.05</p> <p>0.5 ± 0.1</p> <p>1.5</p> <p>Max 1.55</p> <p>Pre-soldered</p> <p>Datum Line</p> <p>(Both ⊖ and ⊕ terminals)</p> <p>*1: allowance: ± 0.5mm (Difference between ⊕ terminal and ⊖ terminal)</p>
ML621S/F9D	<p>⑤</p> <p>Max 9.9</p> <p>6</p> <p>0.5</p> <p>1.5 ± 0.7</p> <p>2.05</p> <p>2.35 ± 0.5</p> <p>0.15</p> <p>2.15</p> <p>0.45</p> <p>2.6</p> <p>6</p> <p>Max 6.8 <math>^{+0}_{-0.15}</math></p>	ML920S/F9D	<p>⑥</p> <p>12.8 ± 0.5</p> <p>0.5</p> <p>2.0 ± 0.5</p> <p>2.1</p> <p>0.15</p> <p>2.7 max</p> <p>3.3</p> <p>9.5 max</p>
ML1220/F1A	<p>⑦</p> <p>12.5 ± 0.3</p> <p>2.6</p> <p>2.6</p> <p>15.25</p> <p>1.5</p> <p>0.75</p> <p>2</p> <p>14</p> <p>2.75</p> <p>0.15</p> <p>2</p> <p>Insulation Wrap (lavender)</p>	ML1220/V1A	<p>⑧</p> <p>12.5 ± 0.3</p> <p>4.5 ± 0.2</p> <p>6.25</p> <p>3.5 ± 0.3</p> <p>1.5 ± 0.1</p> <p>2.45 ± 0.9</p> <p>0.15 ± 0.05</p> <p>0.75 ± 0.1</p> <p>3.5 ± 0.3</p> <p>2</p> <p>0.45</p> <p>2.6 ± 0.5</p> <p>1.3 ± 0.5</p> <p>2</p> <p>Insulation Wrap (lavender)</p>

# ML Series Tab Configurations

## DIMENSIONS / MM

Model No.	Dimensions/mm	Model No.	Dimensions/mm
ML1220/F1B	<p>⑨</p> <p>Insulation Wrap (lavender)</p> <p>12.5 ± 0.3 4.5 ± 0.2 2.6 ± 0.3 2 0.15 ± 0.05 2.6 ± 0.5 4.55 3.8 ± 0.5 3.5 ± 0.3 1.5 ± 0.5 0.75 ± 0.1 2 ± 1</p>	ML2020/V1A	<p>⑩</p> <p>Insulation Wrap (lavender)</p> <p>Ø20 ± 0.3 4 2 2.9 1.5 1.8 10.2 ± 0.5 0.75 0.2 2.7</p>
ML2020/G1A	<p>⑪</p> <p>Insulation Wrap (Lavender)</p> <p>20 ± 0.3 2 2.7 ± 0.3 4 ± 0.2 0.2 ± 0.1 2.5 ± 1 0.75 ± 0.2 5.08 ± 0.7 3.5 ± 0.3 3 ± 1 10.16 ± 0.2 0.75 ± 0.2 Pre-soldered</p>	ML2020/H1C	<p>⑫</p> <p>Insulation Wrap (lavender)</p> <p>20.5 ± 1 20 ± 0.3 2.7 ± 0.3 4 ± 0.2 1.7 ± 0.3 2 0.75 ± 0.2 20.5 ± 1 0.2 ± 0.1 1.8 ± 0.2 3.0 ± 0.6 1.7 ± 0.3 Pre-soldered</p>