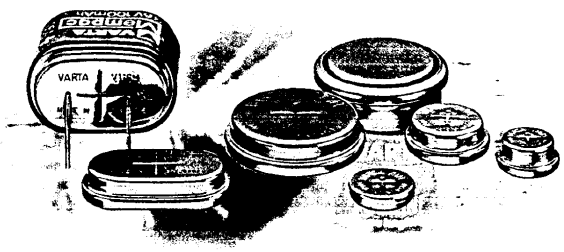
Rechargeable Cells

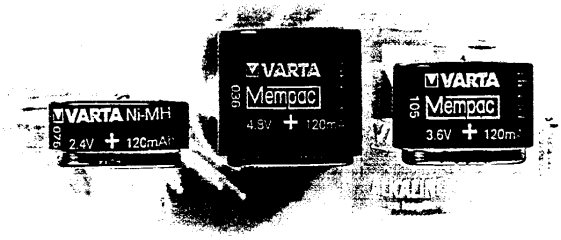


Rechargeable Button Cells

Ni-MH Button Cells

Type*	Dimension (mm) Ø	w	h	Weight (g)	Nominal voltage (V)	Typical capacity (5 h-rate)	Nominal capacity (5 h-rate)	Continuous discharge current	Charge current 14 hrs
V15H	11.5		3.1	1.2	1.2	15 mAh	11 mAh	2.2 mA	1.4 mA
V40H	11.5		5.35	1.7	1.2	40 mAh	40 mAh	8 mA	4 mA
V80H	15.5		6.0	4.0	1.2	80 mAh	70 mAh	14 mA	7 mA
V150H	25.6	14.1	5.9	6.0	1.2	150 mAh	140 mAh	28 mA	14 mA
V250H	25.1		6.7	10.0	1.2	250 mAh	240 mAh	48 mA	24 mA
V300H	25.1		8.8	12.0	1.2	320 mAh	280 mAh	56 mA	28 mA
CP300H	25.1		7.55	11.0	1.2	300 mAh	280 mAh	28 mA	28 mA

Note: V110H: l - 25.6 (-0.2 mm) b = 14.1 (-0.2mm)

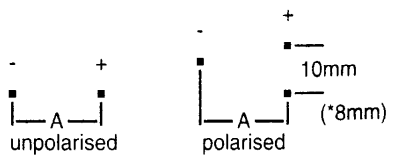


Memory Protection Batteries

Ni-MH Mempac Range

Type	Dimensions (mm) l/Ø	w	h	Weight (g)	Nominal voltage (V)	Pin Out Dimension A (mm)	Typical capacity (5h-rate)	Charge current 14 hours
3/V15H	12.0		10.5	3.3	3.6	10.1 unpol.	15 mAh	1.1 mA
2/V40H*	12.5		10.9	3.6	2.4	11.2 pol.	40 mAh	3 mA
3/V40H*	12.5		16.4	5.4	3.6	17.0 pol.	40 mAh	3 mA
2/V80H	16.5		12.2	8.3	2.4	12.7 pol.	80 mAh	6 mA
3/V80H	16.5		18.3	12.5	3.6	19.1 pol.	80 mAh	6 mA
1/V150H	25.6	14.1	5.9	6.2	1.2	6.35 pol.	150 mAh	11 mA
2/V150H	26.8	15.3	11.9	12.7	2.4	12.8 pol.	150 mAh	11 mA
3/V150H	26.8	15.3	18.0	19.0	3.6	18.8 pol.	150 mAh	11 mA
4/V150H	26.8	15.3	24.0	25.6	4.8	24.8 pol.	150 mAh	11 mA
5/V150H	26.8	15.3	30.0	32.2	6.0	30.8 pol.	150 mAh	11 mA
2/V250H	26.3		13.5	20.4	2.4	13.7 pol.	250 mAh	20 mA
3/V250H	26.3		20.1	30.6	3.6	20.4 pol.	250 mAh	20 mA
3/V300H	26.3		26.7	37.1	3.6	26.6 pol.	320 mAh	30 mA
5/V300H	26.3		44.5	61.5	6.0	43.7 pol.	320 mAh	30 mA

Note: The above represent popular assemblies. Varta button cells can be used however to produce other variants. Varta Ni-MH button cell assemblies are 100% interchangeable with Ni-Cd size equivalents.



Rechargeable Cell Systems

Nickel Metal-Hydride (Ni-MH)

The Varta Ni-MH system provides reliable high energy density across a range of sizes; round, prismatic and button cells. The higher capacity of the system is generally delivered over a wider environmental range, and cells have no heavy metal content. Round and prismatic cells are of spirally wound construction and use the latest Hydride technology to meet the power requirements of modern portable equipment. Mass plate button cells offer enhanced cost-effective solutions to memory back-up applications and are completely interchangeable with industry standard formats.

Typical Characteristics

Nominal Voltage	1.2 V per cell	Operational Temperature	0 to 45°C charge and -20 to +60°C discharge
Open Circuit Voltage	1.3 - 1.4 V per cell (temperature dependant)	Storage Temperature	-20°C to +60°C
End Point Voltage	0.9 V per cell		

Lithium Ion

Lithium Ion has been developed to offer high energy density portable power and is particularly suited to the demands of the cellular telephone and computer applications, and Varta is able to offer OEM customers a wide range of Lithium Ion battery solutions.

Owing to the complex charge and discharge properties of the Li-ion system it is necessary to construct complete battery packs which incorporate a range of control and protection measures and these cells are provided as part of a complete smart battery service.

Typical Characteristics

Nominal Voltage	3.7 V per cell	Operational Temperature	0°C to 40°C charge and -20°C to +60°C discharge
Open Circuit Voltage	4.2 V per cell (temperature dependant)	Storage Temperature	-20°C to +60°C
End Point Voltage	3.1 V per cell (must not decrease to < 2.1 V per cell)	Self Discharge	6% per month (must not decrease to < 2.1 V per cell)