Overview

Since its commercial introduction in 1959, the Alkaline-Manganese Dioxide battery has advanced to a dominant position in the portable battery market. This came about because the alkaline system is recognized to have several advantages over carbon zinc type batteries. Some of these advantages of alkaline chemistry over the basic carbon zinc chemistry are: higher energy density and longer shelf life.

Performance
Overview

The miniature manganese dioxide primary battery is designed to provide an economical power source for device applications that do not require the flat voltage discharge curve characteristic of silver oxide batteries.

Performance
Overview

The most significant advantages of lithium batteries are long (10+ year estimated) shelf life at room temperature, good low temperature operation, high operating voltage and excellent leakage resistance.

Performance

![Graph showing typical service (%) vs temperature (°C)](image1)

- **Typical Service (%)**

![Graph showing projected service maintenance vs storage time (yrs)](image2)

- **Projected Service Maintenance**

**Battery Types**
- Alkaline Cylindrical
- Alkaline Miniature
- Lithium Coin
- Lithium Cylindrical
- NiMH
- Silver Oxide
- Zinc Air

**EXAMPLE:**
- 30,000 ohm 24 hrs/day
Overview

The cylindrical Lithium Iron Disulfide battery is designed for superior performance. It is compatible in any application using primary 1.5 volt battery types AA and AAA. Some of the advantages of this battery are: works at low temperature extremes where other types will not, excellent performance even after 15 year storage at ambient conditions and longer service than other primary battery types.

Performance
Typical Temperature Effects
Nickel Metal Hydride Rechargeable

Overview

The nickel-metal hydride rechargeable battery is currently finding widespread application in high end portable electronic products where battery performance parameters, notably runtime, are a major consideration.

Performance

![Typical Service (%) graph showing service percentage at different temperatures.]

![Self-Discharge Characteristics graph showing capacity percentage at different storage times and temperatures.]

Battery Types

- Alkaline Cylindrical
- Alkaline Miniature
- Lithium Coin
- Lithium Cylindrical
- NiMH
- Silver Oxide
- Zinc Air
Typical Temperature Effects
Silver Oxide

Overview

The silver oxide/zinc alkaline primary battery is the predominate system of the miniature battery product line. Its general characteristics include: good low temperature characteristics and good resistance to shock and vibration.

Performance

![Graph showing typical service percentage over temperature]

**Typical Service (%)**

- **Temperature (°C):** -20, 0, 20, 40
- **Service (%):** 0, 25, 50, 75, 100, 125

*EXAMPLE: 15K ohm Continuous*

![Graph showing projected service maintenance over storage time]

**Projected Service Maintenance**

- **Storage Time (yrs):** 0, 2, 4, 6, 8, 10, 12
- **Capacity (%):** 50, 60, 70, 80, 90, 100
- **Temperature (°C):** 0, 20, 40
Typical Temperature Effects
Zinc Air

Overview

Miniature zinc air batteries are primarily designed to provide power to hearing aids. In most hearing aid applications, zinc air batteries give the longest hearing aid service of any common battery system.

Performance

![Graph showing typical service percentage versus temperature](image)

**Typical Service (%)**

- **Temperature (°C):** -20 to 40
- **Service (%):** 0 to 125

**Example:**

- 1,500 ohm 16 hrs/day

![Graph showing projected service maintenance](image)

**Projected Service Maintenance**

- **Temperature:** 0°C
- **Capacity (%):** 100 to 50
- **Storage Time (months):** 0 to 36
- **Unsealed:**
  - 20°C

**Battery Types**

- Alkaline Cylindrical
- Alkaline Miniature
- Lithium Coin
- Lithium Cylindrical
- NiMH
- Silver Oxide
- Zinc Air