

Panasonic

Industrial Alkaline Batteries Technical Specifications '03/'04



PDF File Technical Specifications

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NOTICE TO READERS

It is the responsibility of each user to ensure that each battery application system is adequately designed safe and compatible with all conditions encountered during use, and in conformance with existing standards and requirements. Any circuits contained herein are illustrative only and each user must ensure that each circuit is safe and otherwise completely appropriate for the desired application.

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Outline

Panasonic Industrial Alkaline batteries are designed to provide consistent performance and longer lasting power in industrial and OEM applications. Available with convenient shrink wrap or bulk packaging in case and pallet quantities to provide excellent cost efficiencies in higher volume applications.

Features

- **Large Current and Large Capacity for an Excellent Performance**

Large quantities of highly pure manganese dioxide is used in the positive-activating substance. The negative-activating substance consists of zinc powder scattered throughout the gelled alkaline electrolyte. The result is large reaction area that produces a large capacity and a large current.

- **Stable Voltage and Current**

A caustic alkaline solution is used for the electrolyte to ensure high conductivity. This maintains a stable voltage and stable current at all times.

- **Unsurpassed Resistance to Leakage**

The use of a special resin-sealing inlet and special sealant results in unsurpassed leak-resistance.

- **Excellent Storage Life**

Highly pure materials are used to minimize self-discharge, thus ensuring a long storage life.

- **Contains Less Than 0.0005 Mercury by Weight**

We've replaced mercury with new proprietary materials that allow us to still maintain the high level of performance you expect from Panasonic.

- **Made in the USA**

Applications

Portable audio products • Strobes • Cameras
• Electronic calculators • Cameras • Electric shavers • Tape recorders • Highpower flash lights • Toys
• Other cordless products • Pagers • Clocks
• Security devices • Remote controllers • Electronic door locks

Precautions

- Improper use of batteries may cause leakage and explosion. Therefore, strictly observe the following precautions.
 - (1) Install the batteries with the positive (+) and negative (-) polarities in the proper direction.
 - (2) Do not use new and old batteries together.
 - (3) Do not use cylindrical alkaline batteries with other types of batteries.
 - (4) Never attempt to short-circuit, disassemble, or heat batteries. Do not throw batteries into a fire.
- Cylindrical alkaline primary batteries are not rechargeable. Charging of primary batteries may cause an explosion or leakage which may result in bodily injury.

INDUSTRIAL ALKALINE BATTERIES: SPECIFICATION TABLE

Industrial Alkaline Batteries Summary Specification Table

| Model Number | Size | Nominal Voltage | Rated Capacity ¹ | Rated Voltage Cut-off | Rated Load | Dimensions ² | | | | Weight (Avg.) | Volume (Max.) | Terminals | Cross Reference | |
|--------------|------|-----------------|-----------------------------|-----------------------|------------|-------------------------|------------------|------------------|------------------|---------------|------------------------------------|--------------------|-----------------|-------|
| | | | | | | Diameter (Max) | Height (Max.) | Length (Max.) | Width (Max.) | | | | ANSI | IEC |
| | | (V) | (mAh) | (V) | Ω | in. (mm) | in. (mm) | in. (mm) | in. (mm) | oz (g) | in ³ (cm ³) | | | |
| AM-1PI* | D | 1.5 | 17,000 | 0.8 | 39 | 1.312 (33.3) | 2.407 (61.1) | - | - | 4.97 (141) | 3.28 (53.8) | Flat or Button Top | 13A | LR20 |
| AM-2PI* | C | 1.5 | 7,800 | 0.8 | 39 | 1.004 (25.5) | 1.969 (50.00) | - | - | 2.47 (70) | 1.62 (26.6) | Flat or Button Top | 14A | LR14 |
| AM-3PI* | AA | 1.5 | 2,870 | 0.8 | 75 | 0.571 (14.50) | 1.988 (50.50) | - | - | 0.84 (24) | 0.51 (8.4) | Button Top | 15A | LR6 |
| AM-4PI* | AAA | 1.5 | 1,150 | 0.8 | 75 | 0.413 (10.49) | 1.752 (44.50) | - | - | 0.42 (12) | 0.23 (3.8) | Button Top | 24A | LR03 |
| 6AM-6PI* | 9V | 9.0 | 570 | 4.8 | 620 | - | 1.909 (48.49) | 1.043 (26.49) | 0.689 (17.50) | 1.65 (45) | 1.37 (22.5) | Snap | 1604A | 6LR61 |

* = Typical packaging designator codes (see below)

| Model Number | Description | Case Qty | Pallet Qty |
|--------------|----------------------------------|----------|------------|
| AM-1PI | Inner carton-bulk | 144 | 5184 |
| AM-1FTFX | Bulk-flat top | 140 | 5880 |
| AM-1FTSFX | Bulk-flat top-plain silver label | 140 | 5880 |
| AM-2PI | Inner carton-bulk | 288 | 11520 |
| AM-2FTFX | Bulk-flat top | 234 | 11232 |
| AM-3PI/B | Bulk | 500 | 36000 |
| AM-3PI/2S | 2 shrink-inner carton-bulk | 600 | 32400 |
| AM-4PI/B | Bulk | 500 | 76000 |
| AM-4PI/2S | 2 shrink-inner carton-bulk | 500 | 84000 |
| 6AM-6PI/B | Bulk | 210 | 17010 |
| 6AM-6S/B | Bulk-plain silver label | 210 | 17010 |
| 6AM-6PI/1S | 1 shrink-inner carton-bulk | 288 | 16128 |

Notes:

- Rated capacity: For reference only. Actual ratings may vary depending on the discharge rate of the end application and usage conditions.
- Dimensions are IEC/ANSI STANDARDS.
 - Operating Temperature Range is -20°C to 54°C (-4°F to 130°F)
 - No Mercury Added
 - No Lead Added
 - No Cadmium Added
 - Made in the U.S.A.

Disposal

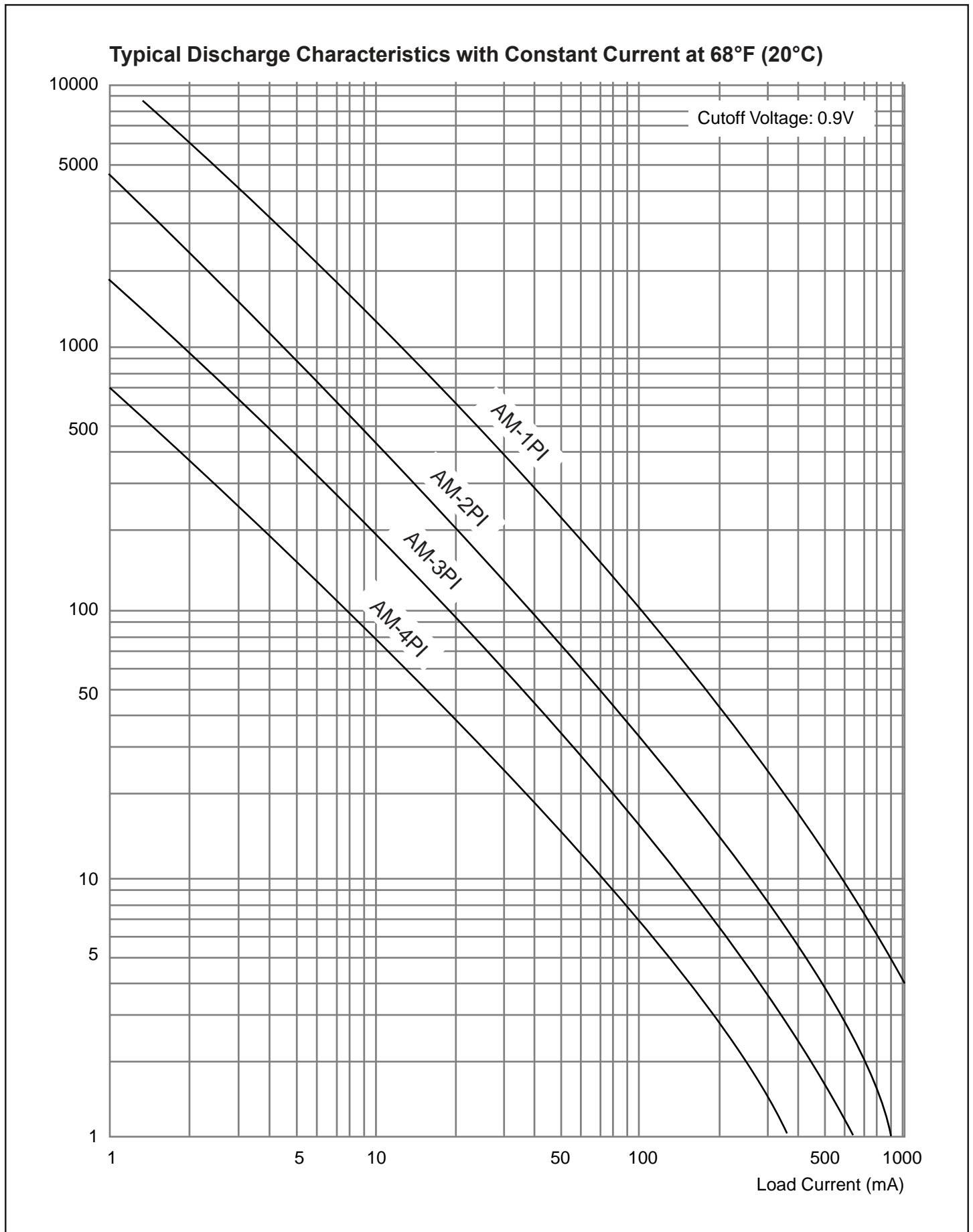
Since January 1992 all Panasonic Alkaline batteries are manufactured with “no mercury added”. These batteries are classified by the federal government as non-hazardous waste and are safe for disposal in the normal municipal waste stream. Exceptions: California requires non-households to dispose of these batteries in accordance with the California Universal Waste Rules; Minnesota (Hennipen County only) requires consumers and non-consumers to dispose of these batteries as a hazardous waste.

Transportation

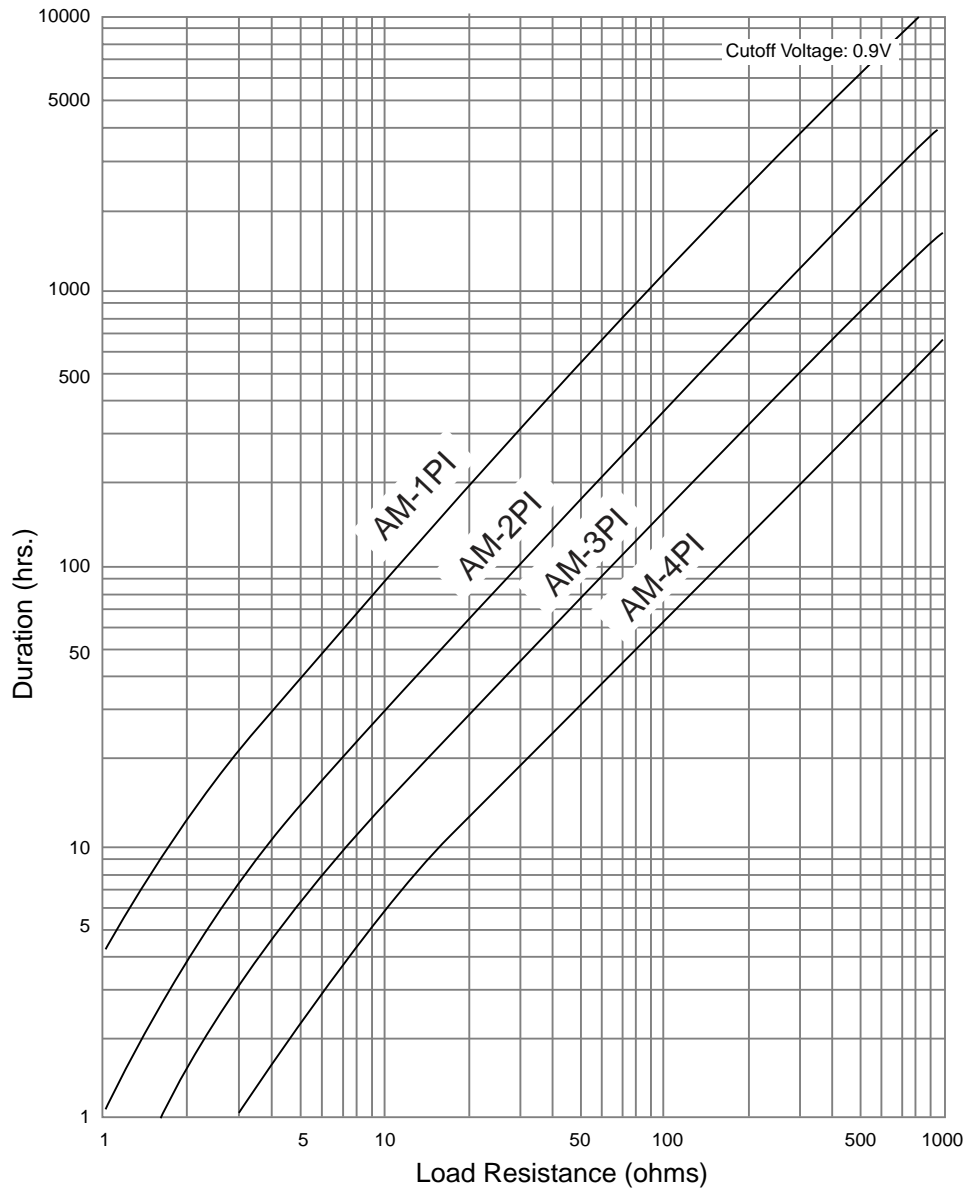
Panasonic Alkaline batteries are considered to be “dry cell” batteries and are unregulated for purposes of transportation by the U.S. Department of Transportation (DOT), International Civil Aviation Administration (ICAO), International Air Transport Association (IATA) and the International Maritime Organization (IMO). The only requirements for shipping these batteries by DOT is Special Provision 130 which states: “Batteries, dry are not subject to the requirements of this subchapter only when they are offered for transportation in a manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminals). The only requirements for shipping these batteries by ICAO and IATA is Special Provision A123 which states: “An electrical battery or battery powered device having the potential of dangerous evolutions of heat that is not prepared so as to prevent a short-circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals; or in the case of equipment, by disconnection of the battery and protection of exposed terminals) is forbidden from transportation.”

For additional information on the transportation and disposal of batteries, please contact your local Panasonic Battery Sales Group sales office or visit our website at:

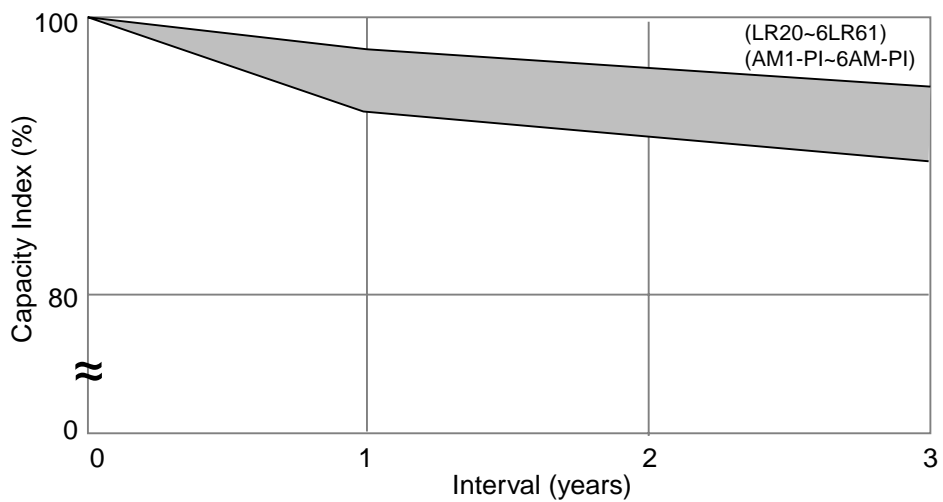
www.panasonic.com/batteries ⇒ OEM Section



Typical Discharge Characteristics with Constant Resistance at 68°F (20°C)

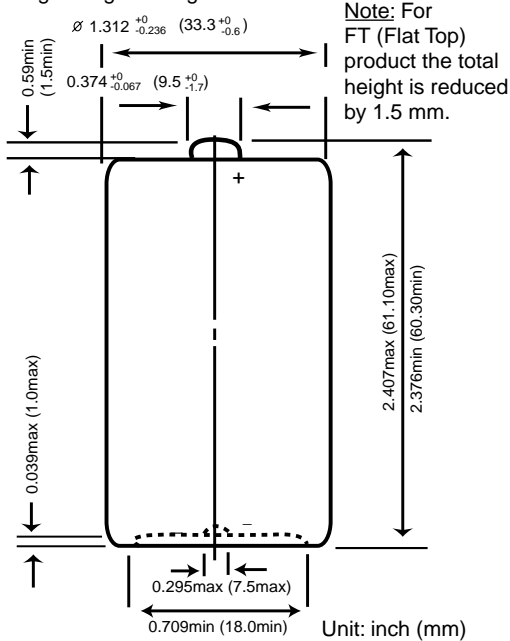


Typical Shelf Life at 68°F (20°C)

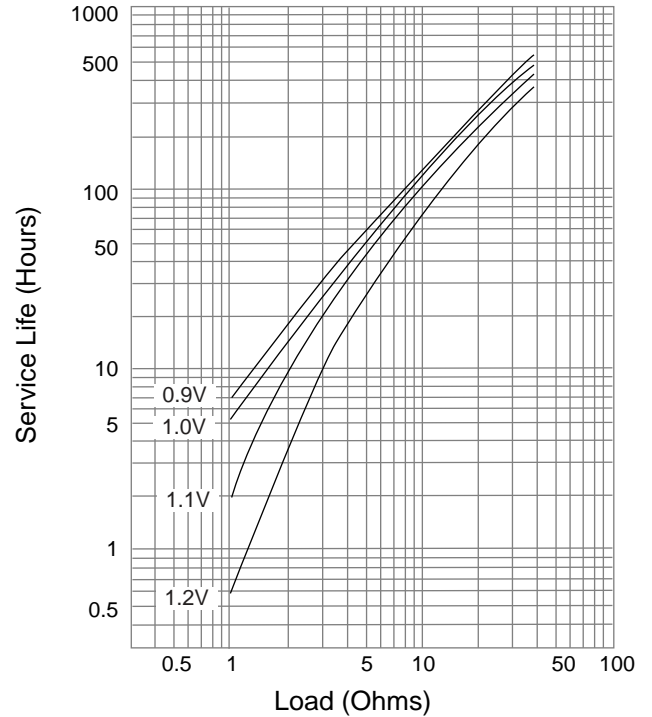


AM-1PI (Size "D")

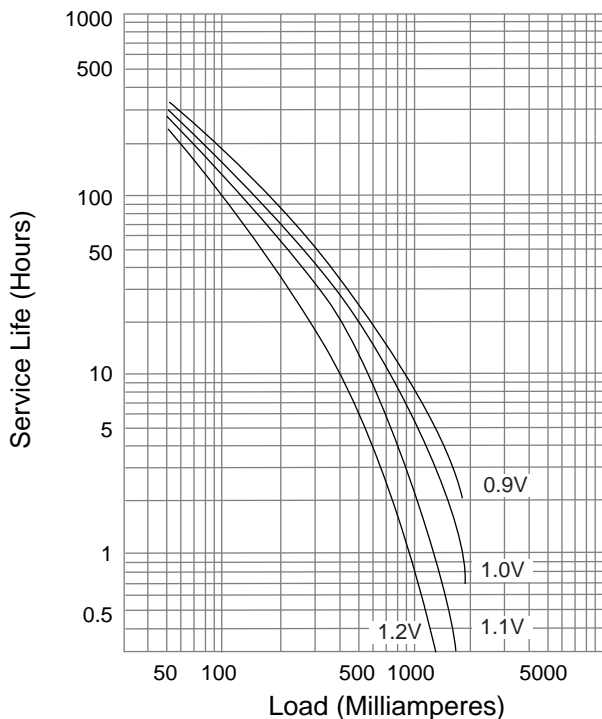
1. Type: AM1 (ANSI: 13A IEC: LR20)
2. Nominal Voltage: 1.5 volts
3. Average Weight: 141 grams



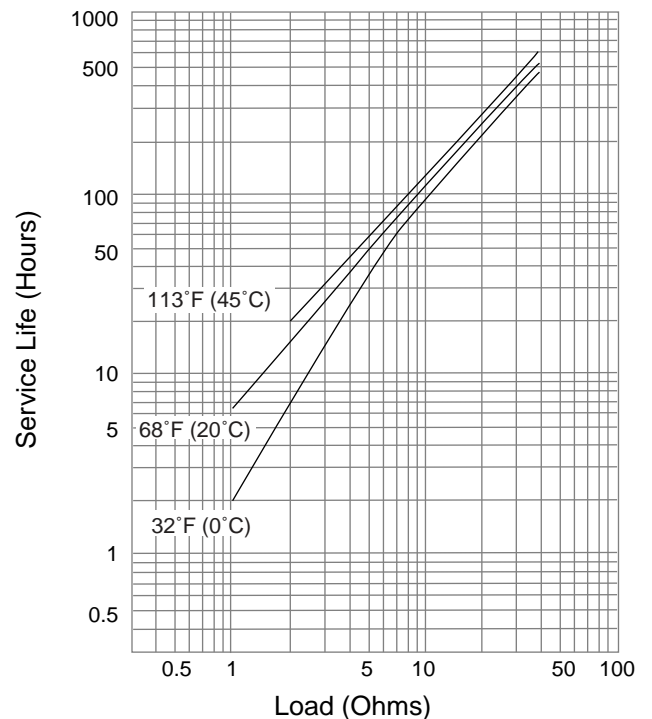
Typical Discharge Characteristics With Constant Resistance At 68°F (20°C)



Typical Discharge Characteristics With Constant Current At 68°F (20°C)

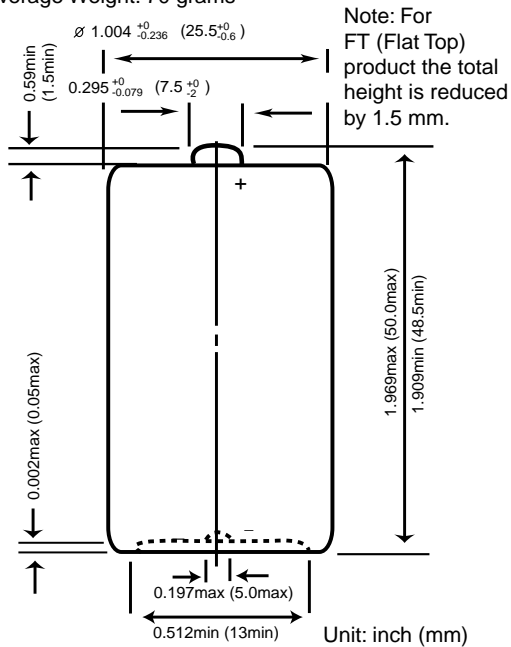


Typical Temperature Characteristics With 0.9 Volts Cutoff Voltage

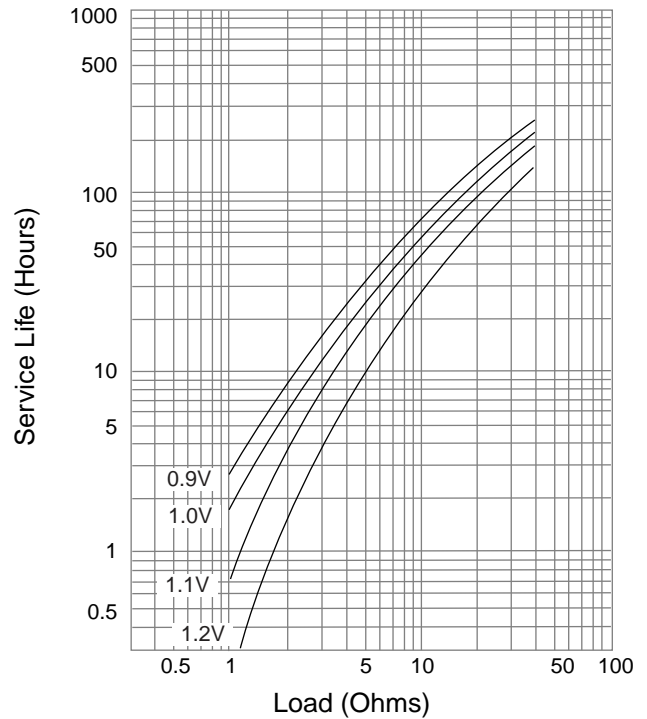


AM-2PI(Size "C")

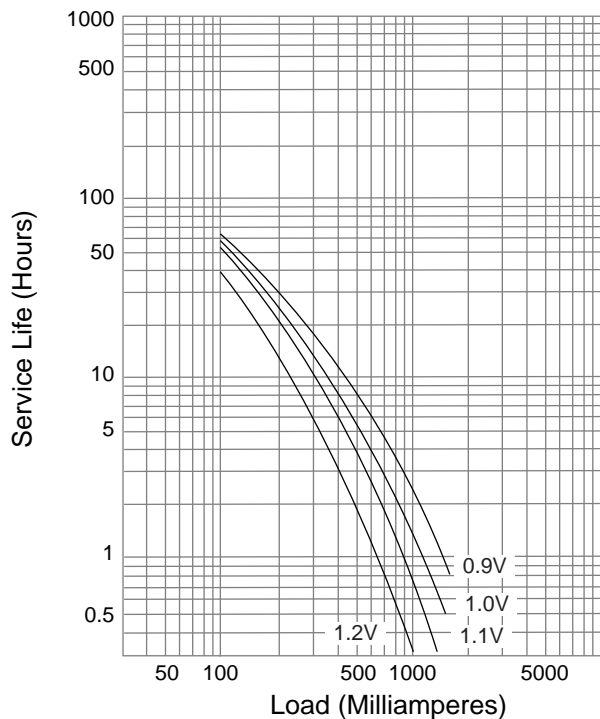
1. Type: AM2 (ANSI: 14A IEC: LR14)
2. Nominal Voltage: 1.5 volts
3. Average Weight: 70 grams



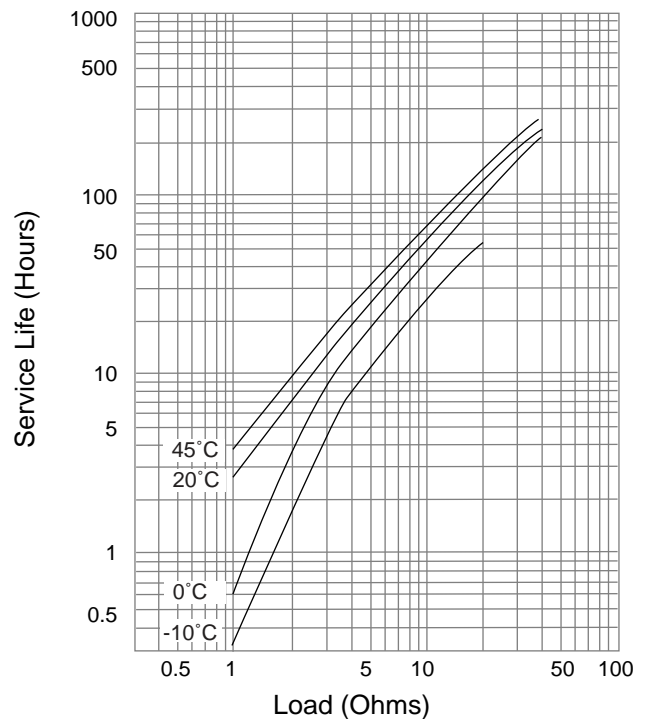
Typical Discharge Characteristics With Constant Resistance At 68°F (20°C)



Typical Discharge Characteristics With Constant Current At 68°F (20°C)

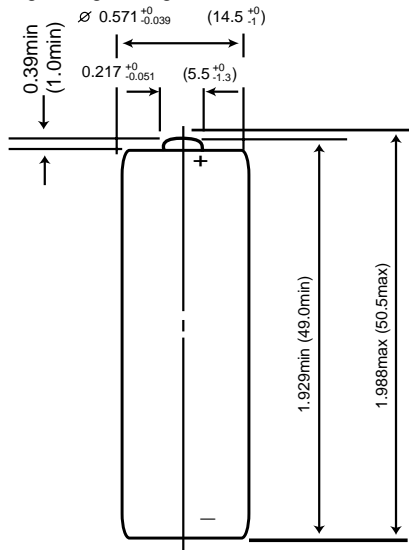


Typical Temperature Characteristics With 0.9 Volts Cutoff Voltage



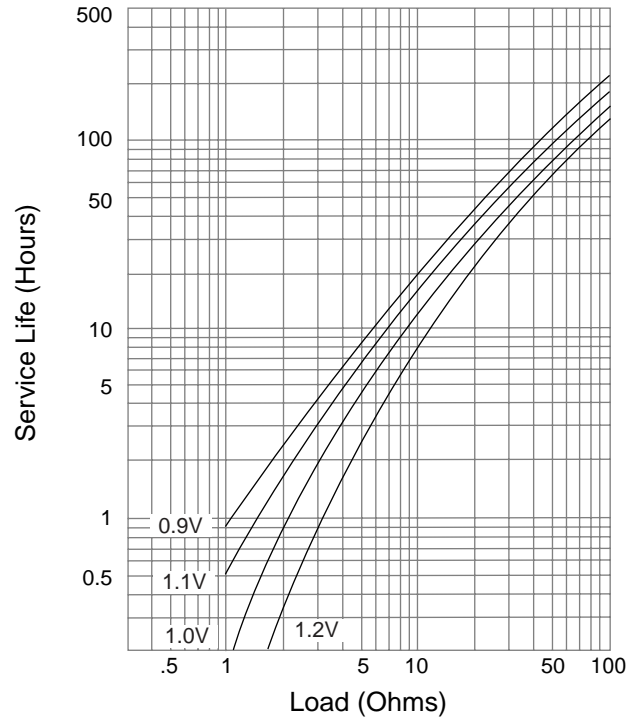
AM-3PI(Size "AA")

1. Type: AM3 (ANSI: 15A IEC: LR06)
2. Nominal Voltage: 1.5 volts
3. Average Weight: 24 grams

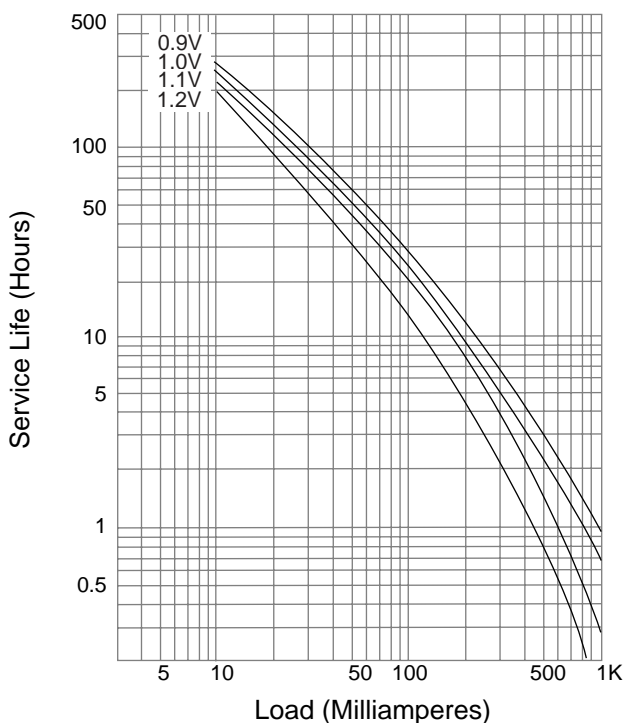


Unit: inch (mm)

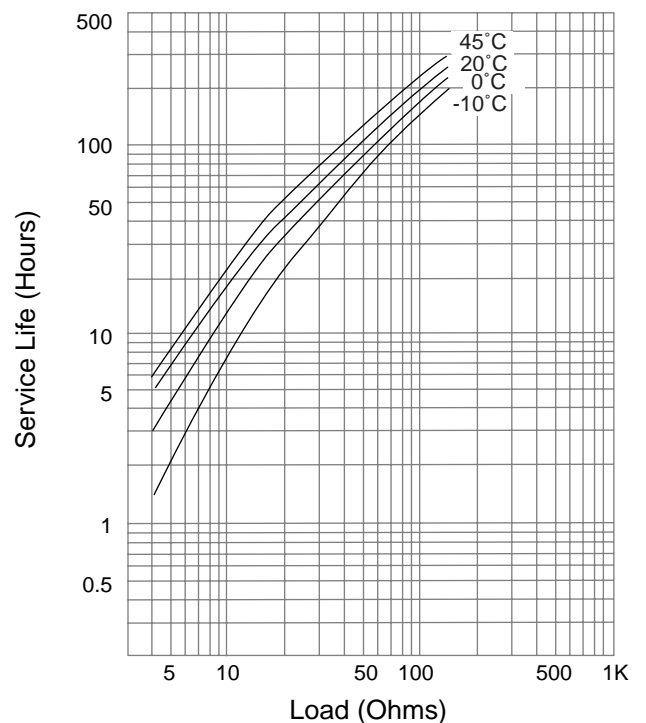
Typical Discharge Characteristics With Constant Resistance At 68°F (20°C)



Typical Discharge Characteristics With Constant Current At 68°F (20°C)

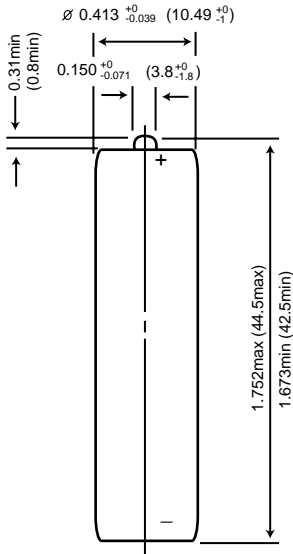


Typical Temperature Characteristics With 0.9 Volts Cutoff Voltage



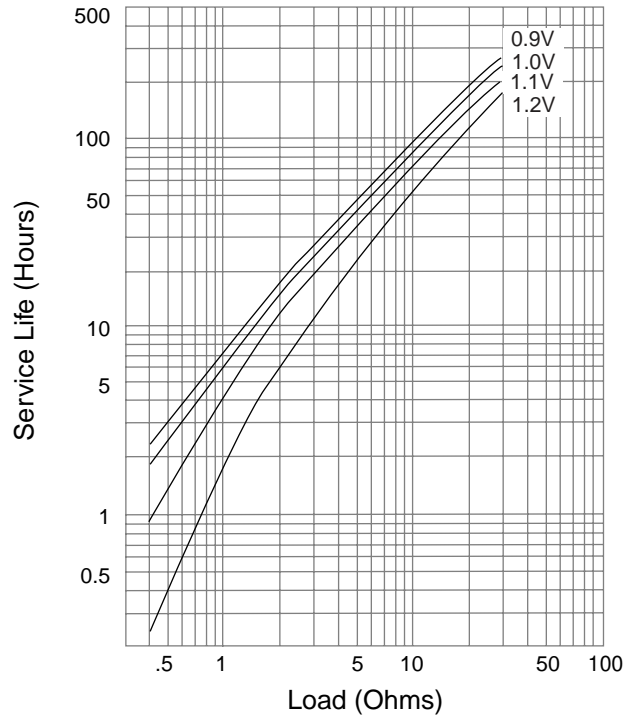
AM-4PI(Size "AAA")

1. Type: AM4 (ANSI: L24A IEC: LR03)
2. Nominal Voltage: 1.5 volts
3. Average Weight: 12 grams

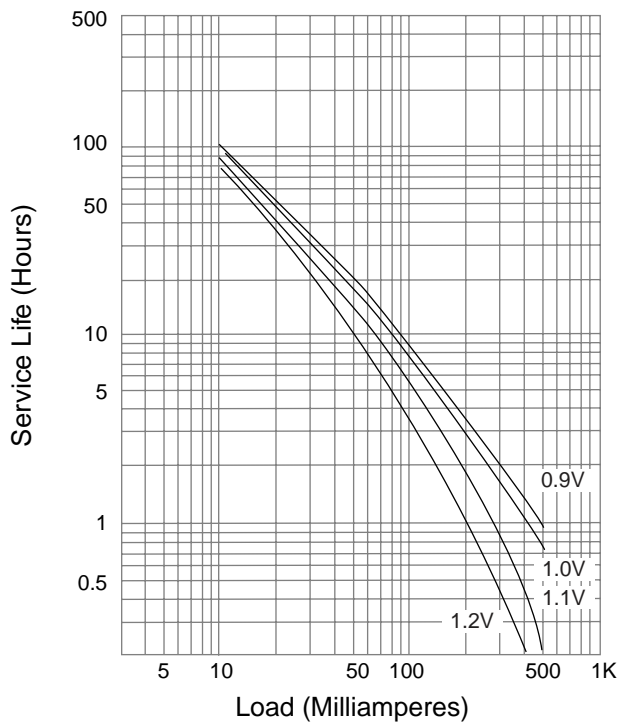


Unit: inch (mm)

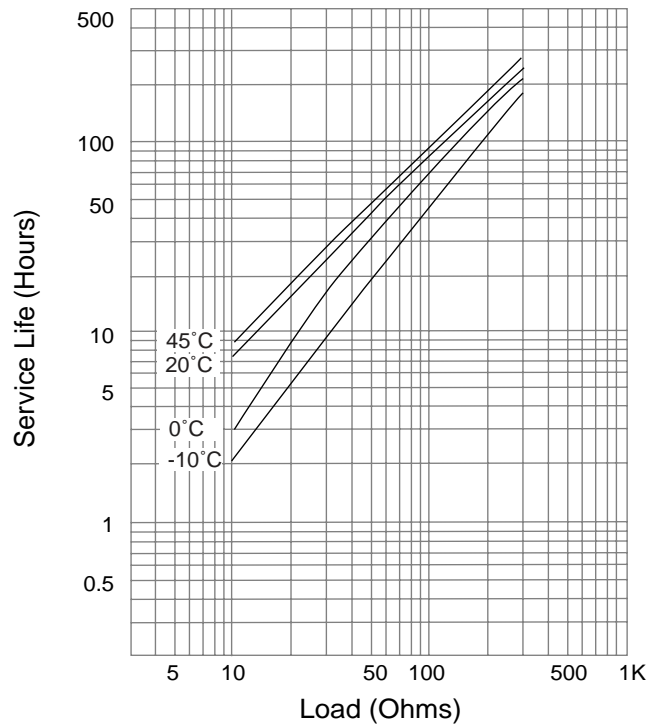
Typical Discharge Characteristics With Constant Resistance At 68°F (20°C)



Typical Discharge Characteristics With Constant Current At 68°F (10°C)

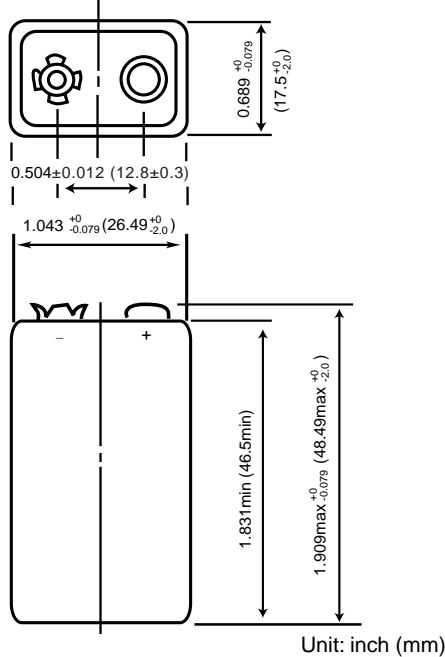


Typical Temperature Characteristics With 0.9 Volts Cutoff Voltage

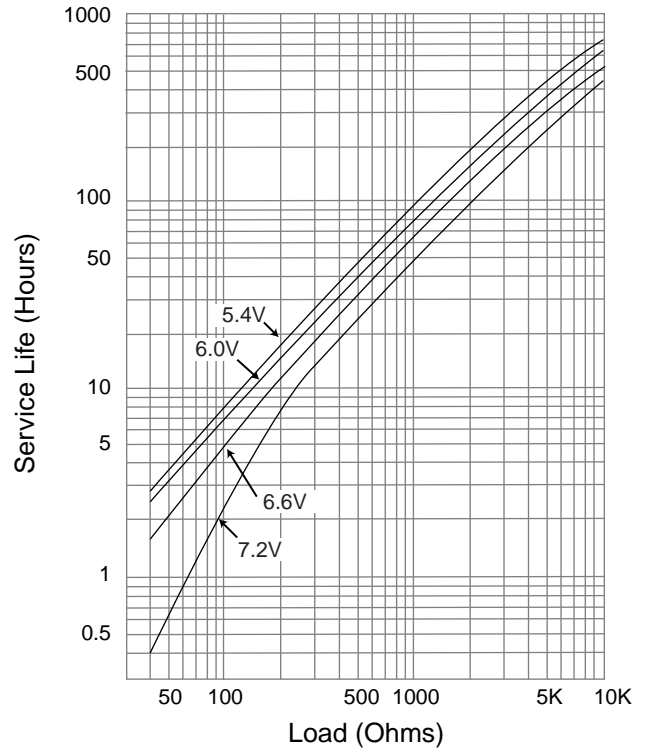


6AM6-PI(9V)

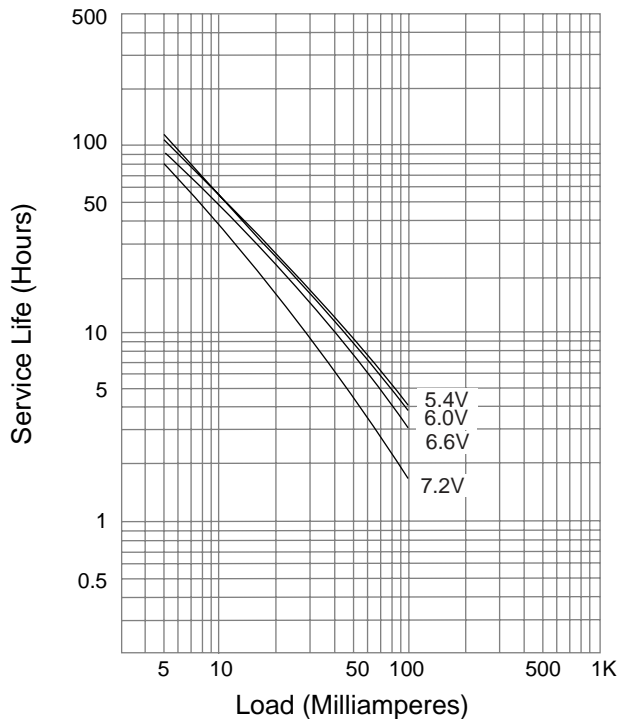
1. Type: 6AM6 (ANSI: 1604A IEC: 6LR61)
2. Nominal Voltage: 9 volts
3. Average Weight: 45 grams



Typical Discharge Characteristics With Constant Resistance At 68°F (20°C)



Typical Discharge Characteristics With Constant Current At 68°F (20°C)



Typical Temperature Characteristics With 0.9 Volts Cutoff Voltage

