Panasonic

Industrial Alkaline Batteries Technical Specifications '00/01

PDF File Technical Specifications

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.

This literature contains information concerning cells and batteries manufactured by Matsushita Battery Industrial Co., Ltd. This information is generally descriptive only and is not intended to make or imply any representation guarantee or warranty with respect to any cells and batteries. Cell and battery designs are subject to modification without notice. All descriptions and warranties are solely as contained in formal offers to sell or quotations made by Matsushita Battery Industrial Co., Ltd., Panasonic Sales Companies and Panasonic Agencies.

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.
- **99.999% Mercury Free**
  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.)					
		(V)	*(mAh)*	*(V)*	*Ω*	*in. (mm)*	*in. (mm)*	*in. (mm)*	*in. (mm)*	*oz (g)*	*in³ (cm³)*		*ANSI*	*IEC*
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:

1) Rated capacity: For reference only. Actual ratings may vary depending on the discharge rate of the end application and usage conditions.
2) 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.

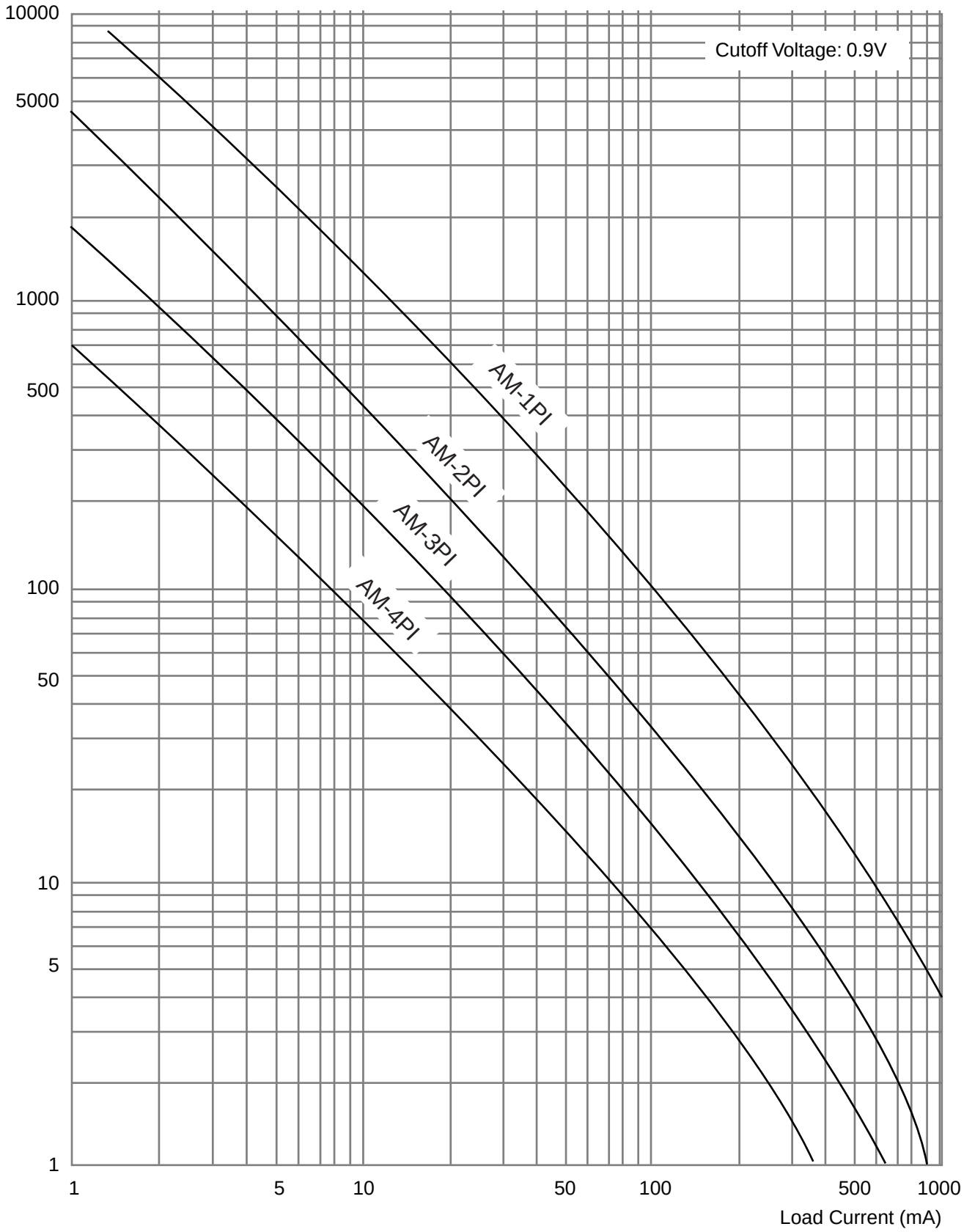
Disposal

Since January 1992 all Panasonic alkaline batteries are manufactured with "no mercury added". These batteries are not defined by the federal government as hazardous waste and are safe for disposal in the normal municipal waste stream.

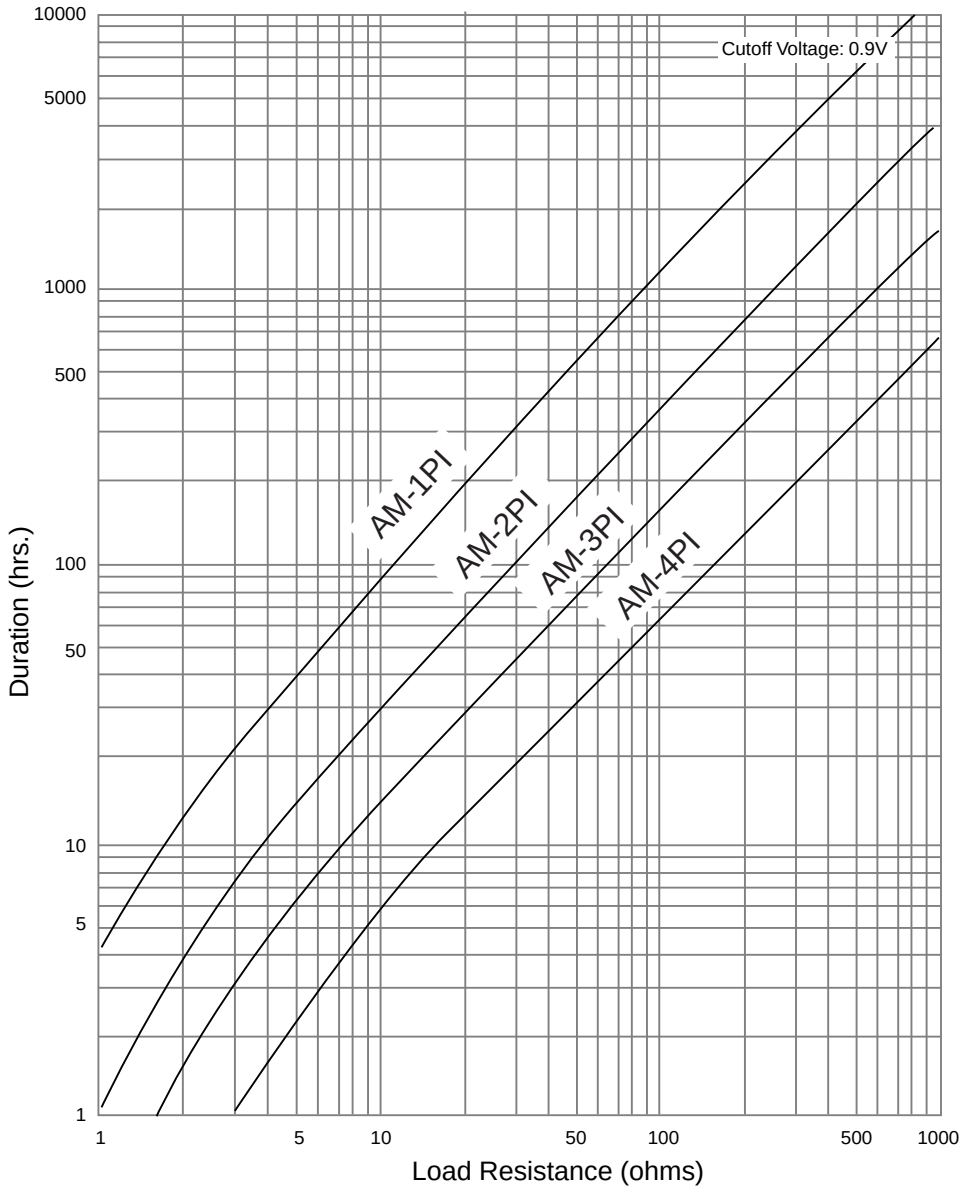
Transportation

Panasonic Alkaline battenes 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 Dangerous Goods regulations (IMDG). The only DOT requirement for shipping these batteries 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)." As of 1/1/97 IATA requires that batteries being transported by air must be protected from short-circuiting and protected from movement that could lead to short-circuiting.

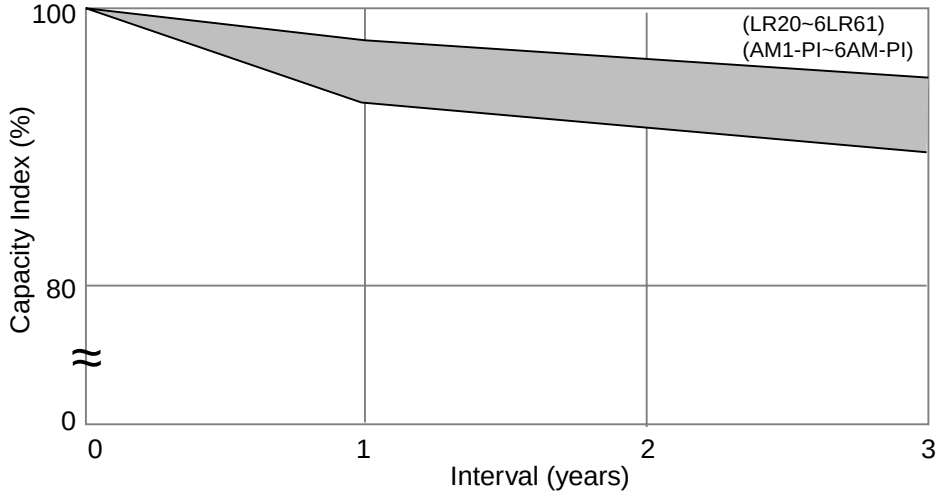
Typical Discharge Characteristics with Constant Current at 68°F (20°C)



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

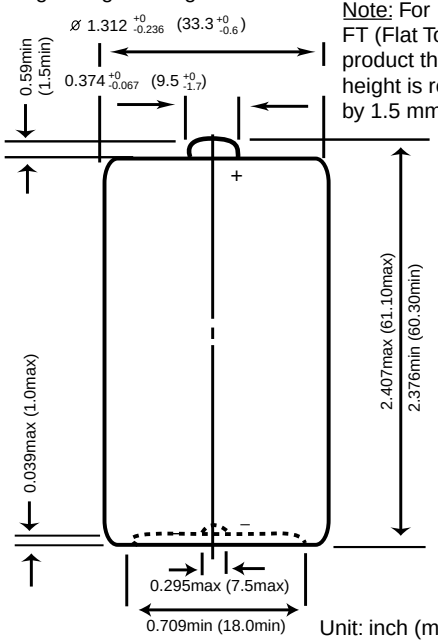


Typical Shelf Life at 68°F (20°C)



AM-1PI(Size“D”)

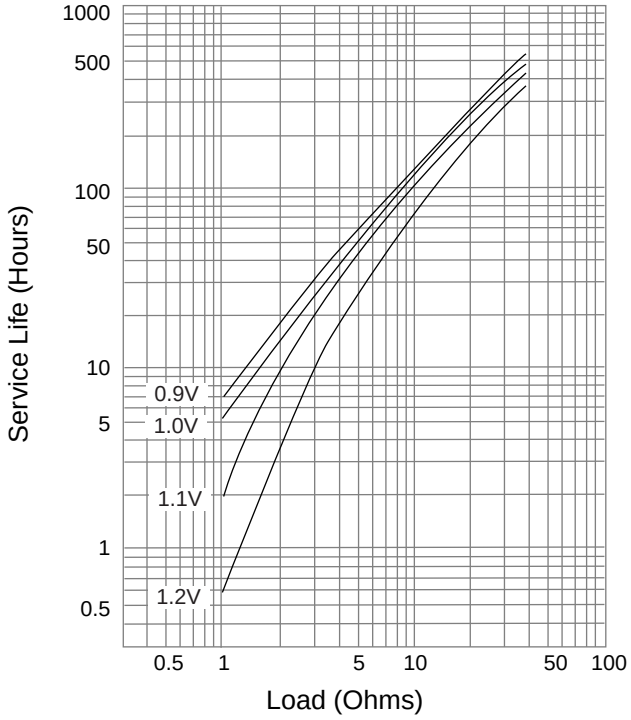
1. Type: AM1 (ANSI: 13A IEC: LR20)
2. Nominal Voltage: 1.5 volts
3. Average Weight: 141 grams



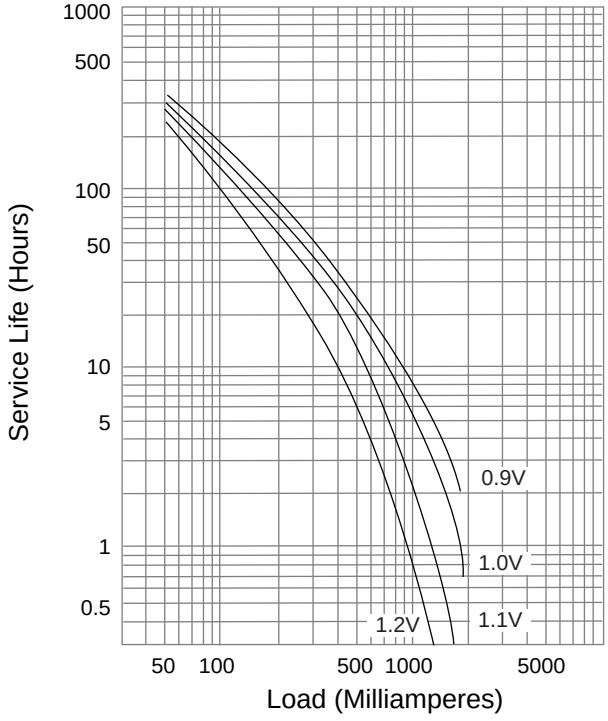
Note: For FT (Flat Top) product the total height is reduced by 1.5 mm.

Unit: inch (mm)

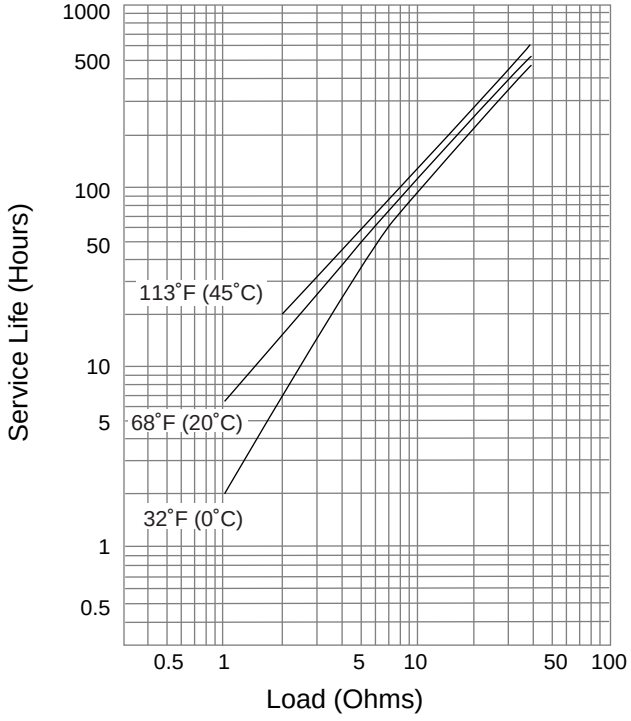
Typical Discharge Characteristics With Constant Resistance At 68˚F (20˚C)



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

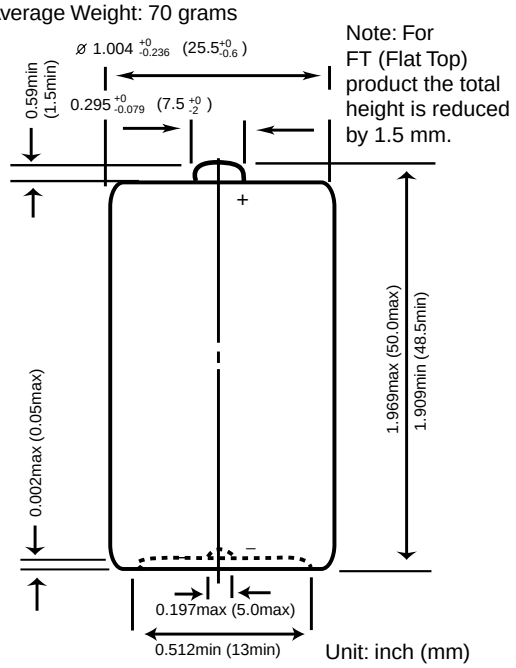


Typical Temperature Characteristics With 0.9 Volts Cutoff Voltage



AM-2PI(Size“C”)

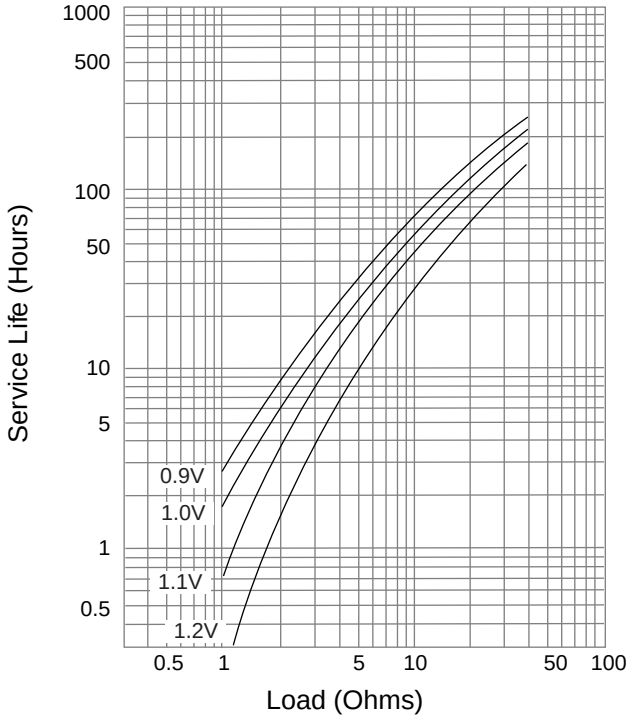
1. Type: AM2 (ANSI: 14A IEC: LR14)
2. Nominal Voltage: 1.5 volts
3. Average Weight: 70 grams



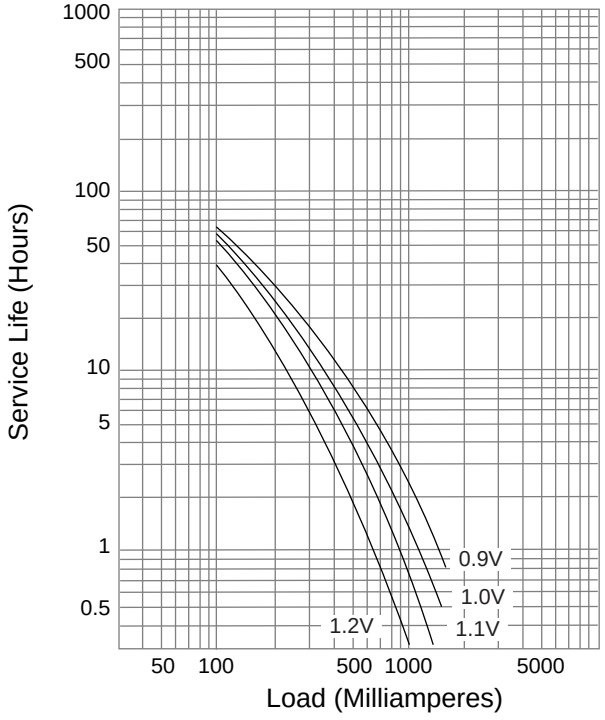
Note: For FT (Flat Top) product the total height is reduced by 1.5 mm.

Unit: inch (mm)

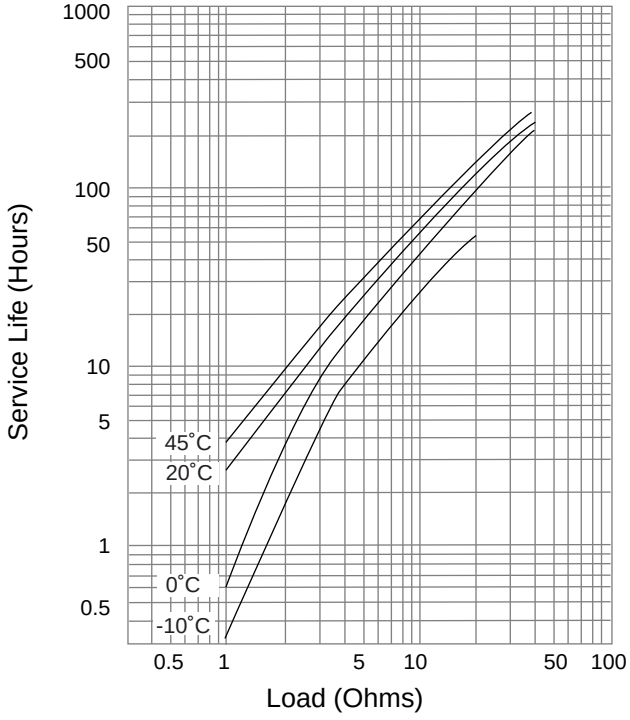
Typical Discharge Characteristics With Constant Resistance At 68˚F (20˚C)



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

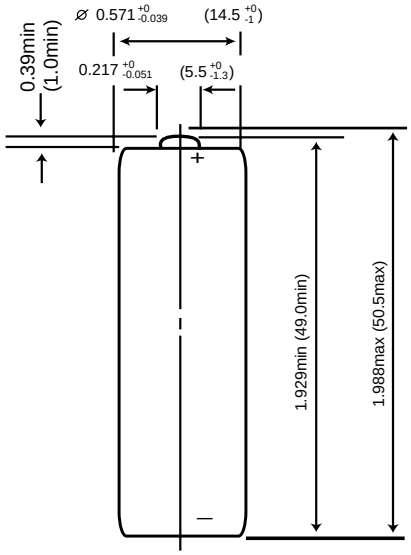


Typical Temperature Characteristics With 0.9 Volts Cutoff Voltage



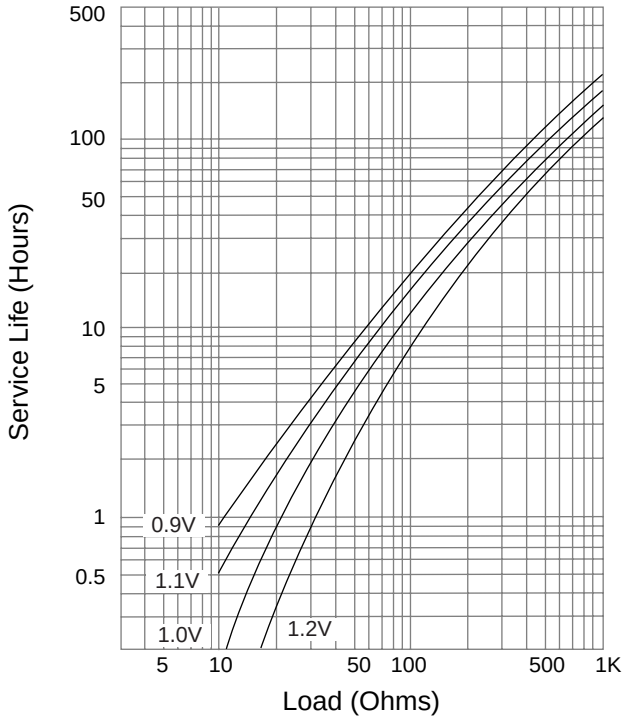
AM-3PI(Size“AA”)

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

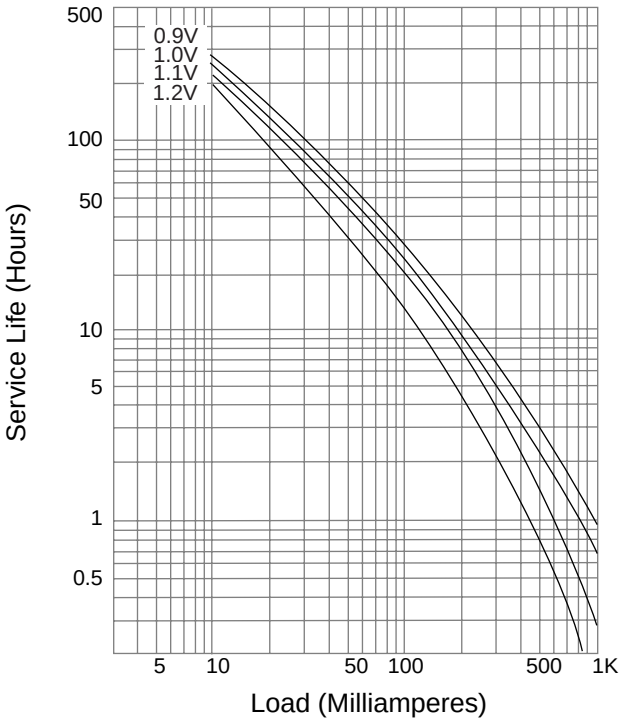


Unit: inch (mm)

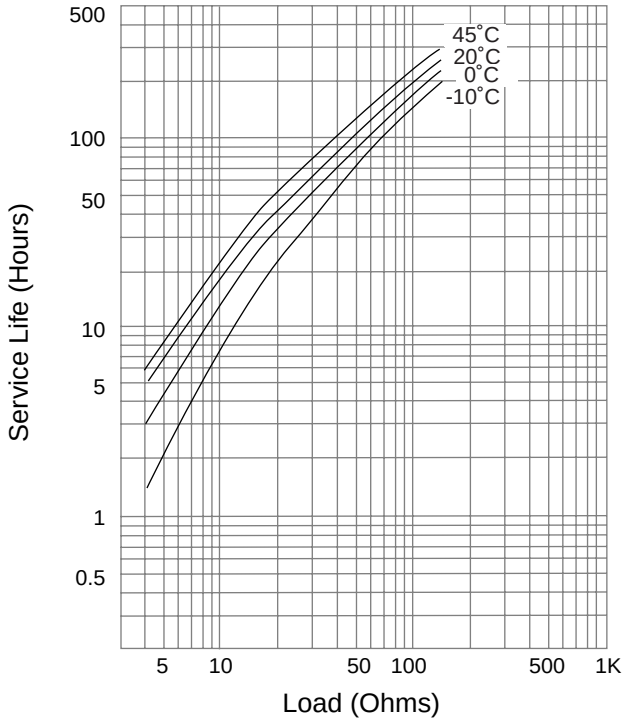
Typical Discharge Characteristics With Constant Resistance At 68˚F (20˚C)



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

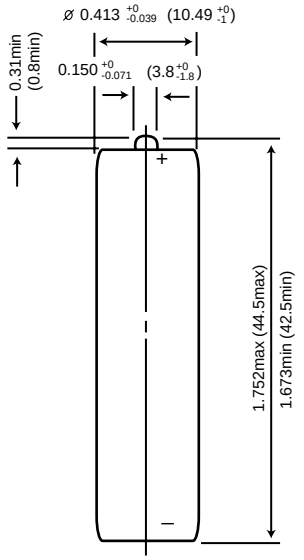


Typical Temperature Characteristics With 0.9 Volts Cutoff Voltage



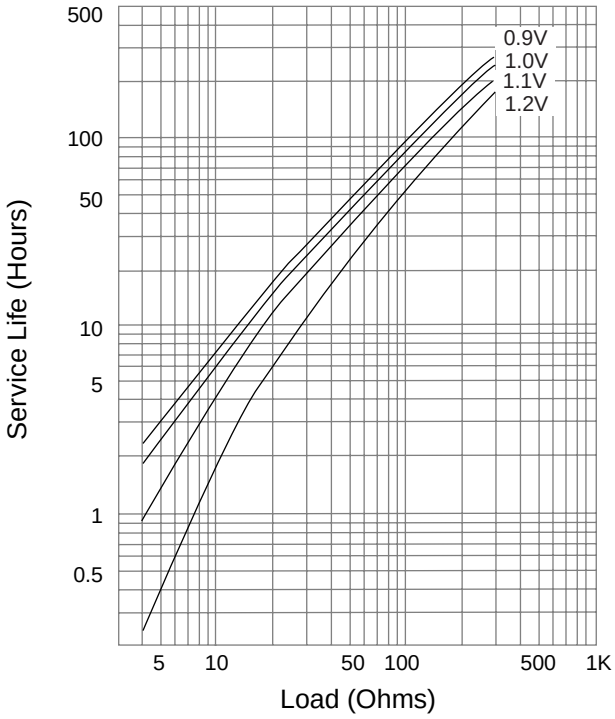
AM-4PI(Size "AAA")

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

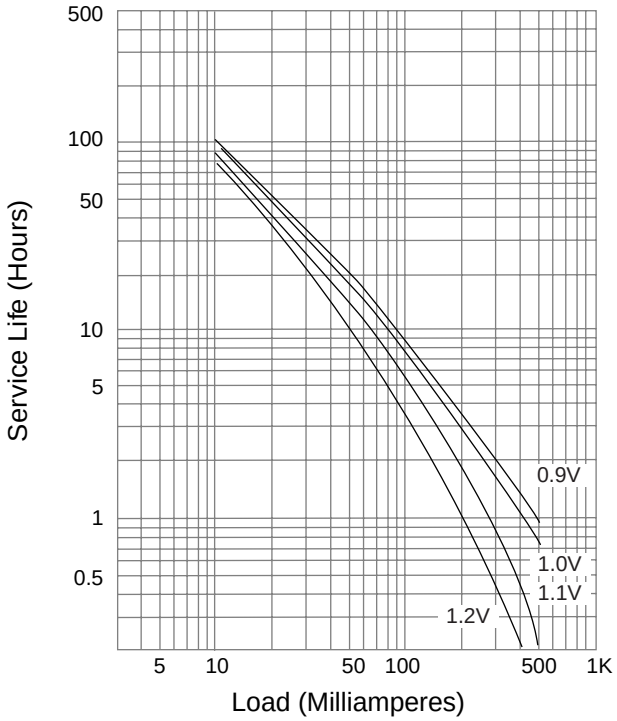


Unit: inch (mm)

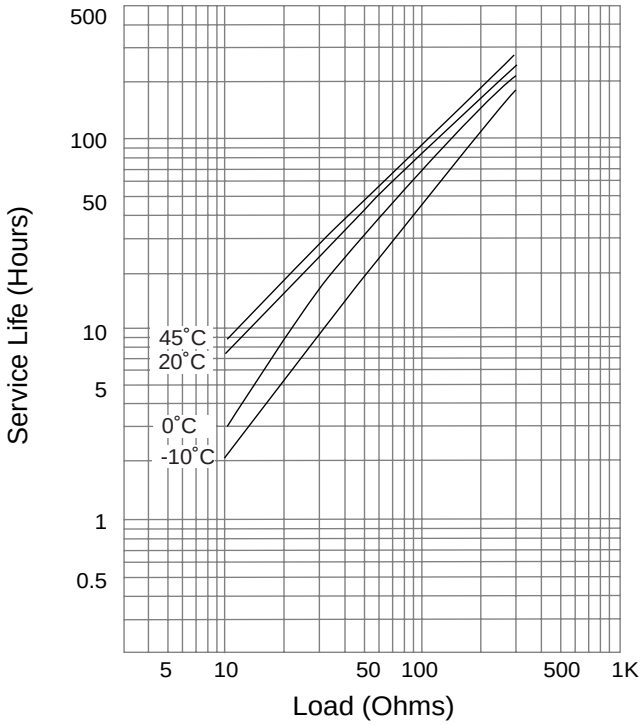
Typical Discharge Characteristics With Constant Resistance At 68˚F (20˚C)



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

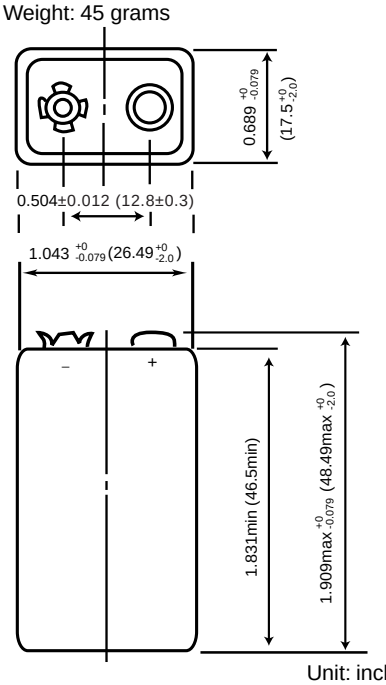


Typical Temperature Characteristics With 0.9 Volts Cutoff Voltage



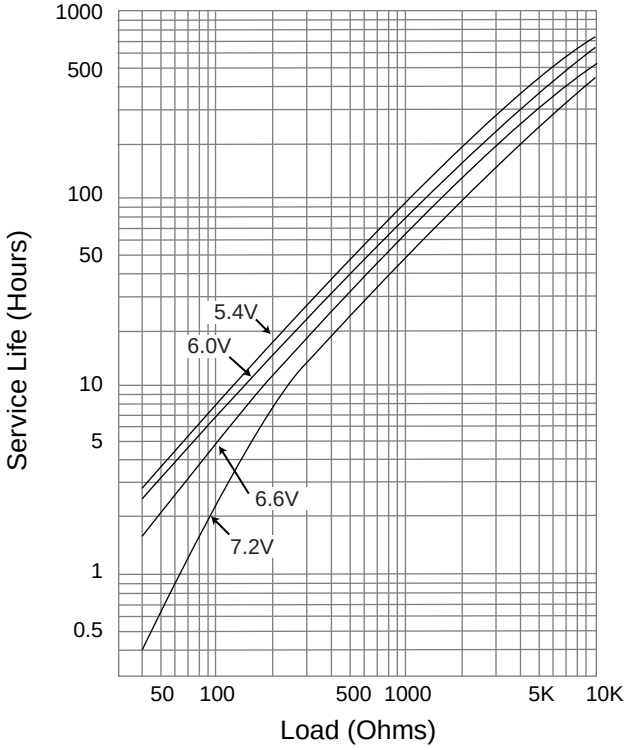
6AM6-PI(9V)

1. Type: 6AM6 (ANSI: 1604A IEC: 6LR61)
2. Nominal Voltage: 1.5 volts
3. Average Weight: 45 grams

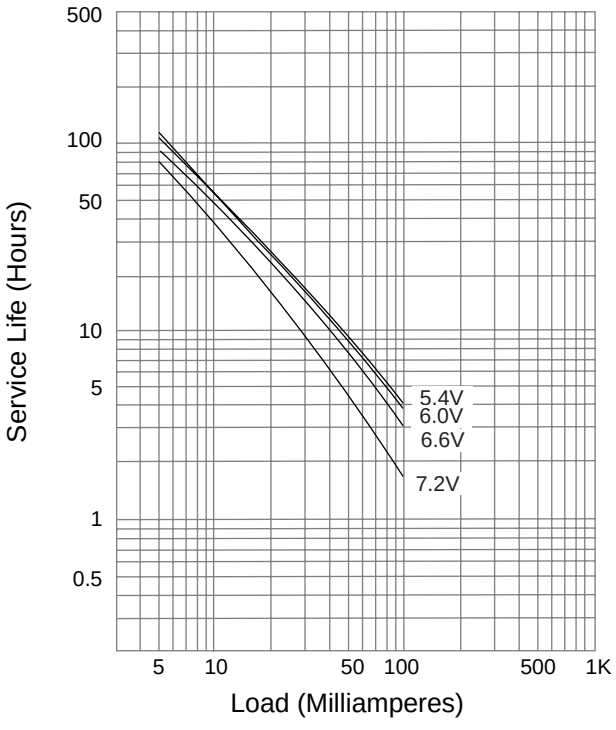


Unit: inch (mm)

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