

**New Product Announcement**  
**Circuit Protection**  
**Matsuo High Current Micro Fuses**

**September, 2013**



**JHB**

**JHC**

**Micro Fuses for High Current Applications**

Established in 1949, Matsuo prides themselves as being a company based on technology. In 1959 Matsuo became the first Japanese company to manufacture Tantalum Capacitors.

Since then, under their company motto "Quality First", Matsuo has responded to the market with their reliable technology. Today, Matsuo primarily manufactures Tantalum Capacitors, but also offers film capacitors and circuit protection components.

In the year 2000 Matsuo was awarded ISO 14001 certification. In 2006, the Fukuchiyama Plant was proudly awarded the Quality System Standard ISO/TS16949

# JHB & JHC Series

## Micro Fuses for High Current (50A) Applications

Most suitable for the short circuit protection of the high capacity Li-ion batteries such as power tools and E-Bicycles.

- Surface Mount
- RoHS Compliant
- Halogen Free
- UL248-1 & 14 Approved

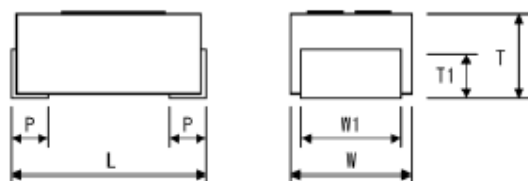
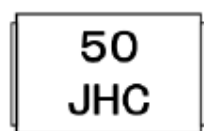
### ▪ Ratings

Catalog Number	Rated Current (A)	Internal Resistance (mΩ)	Voltage Drop (mV)	Category Temperature Range (°C)	Rated Voltage (VDC)	Breaking Current (A)
JHB 3502 503R44E	50	1.5	100	-40 to +125	35	300
JHB 6002 503R44E	50	1.5	100			
JHC 3502 503R44E	50	1.2	80			
JHC 6002 503R44E	50	1.2	80			

### ▪ Fusing Characteristics

- JHB: Fusing within 1 minute if the current is 200% of rated current
- JHC: Fusing within 1 minute if the current is 250% of rated current

### ▪ Dimensions



### ▪ Appearance



Case Size	Case Code	L	W	T
7358	44E	7.3 ± 0.3	5.8 ± 0.2	4.2 ± 0.2

P	W1	T1
1.5 ± 0.3	4.5 ± 0.2	1.2 ± 0.2

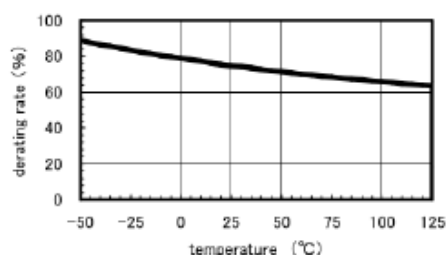
# Application Notes for High Current Micro Fuses (Series JHB & JHC)

## Circuit Design

High current micro fuses should be designated only after confirming operating conditions and the micro fuse performance characteristics.

- Type JHC should always be operated below the value considered in the rated derating rate and temperature derating rate for rated current.
- Type JHC should always be operated below the rated voltage.
- Type JHC should be selected with correct rated value to be fused at overload current.
- When type JHC is used in inrush current applications, please confirm sufficiently inrush resistance of Micro Fuse.
- Please do not apply the current exceeding the breaking current to TYPE JHC.
- Use type JHC under the condition of category temperature.
- Type JHC should not be used in the AC power source and primary power source.
- Type JHC should be selected by determining the operating conditions that will occur after final assembly, or estimating potential abnormalities through cycle testing.
- In a 25 °C environment under normal circumstances, please design substrate wiring so that the surface temperature of a fuse does not exceed 80 °C. And, please use after checking that turn on operating current and overload current by an actual substrate in advance, and it is satisfactory.

rated derating rate + temperature derating rate



## Assembly and Mounting

During the entire assembly process, observe Micro Fuse body temperature and the heating time specified in the right chart. In addition, observe the following items:

- Mounting and adjusting with soldering irons are not recommendable since temperature and time control is difficult.
- Once Micro Fuse mounted on the board, they should never be remounted on boards or substrates.
- During mounting, be careful not to apply any excessive mechanical stresses to TYPE JHC.

Reflow Soldering

	condition
Preheating	180°C MAX 1~2min
Peak	250°C ±5°C 5sec
Holding	230~250°C 30~40sec
Cooling Time	2min or more

## Solvents

For cleaning of Micro Fuse, immersion in isopropyl alcohol for 90 seconds (at 20 ~ 30°C liquid temp.) Will not be damaged. If organic solvents (Pine Alpha TM, Techno Care TM, Clean through TM, etc.) will be applied to TYPE JHC, be sure to preliminarily check that the solvent will not damage TYPE JHC.

## Ultrasonic Cleaning

Ultrasonic cleaning is not recommended for TYPE JHC. This may cause damage to TYPE JHC such as broken terminals which results in electrical characteristics effects, etc. depending on the conditions.

## Caution During Usage

TYPE JHC with electricity should never be touched. TYPE JHC with electricity may cause burning due to TYPE JHC high temperature. Also, in case of touching TYPE JHC without electricity, please check the safety temperature of TYPE JHC. Protective eyeglasses should always be worn when Performing fusing tests. However, there is a fear that TYPE JHC will explode during test. During fusing tests, please cover particles not to fly outward from the board or testing fixture. Caution is necessary during usage at all times.

## Environmental Conditions

TYPE JHC should not be stored or operated in the presence of acids, or alkalis, or corrosive atmosphere.

TYPE JHC should not be vibrated, shocked, or pressed excessively.

TYPE JHC should not be operated in a flammable or explosive atmosphere.

TYPE JHC should not be used under dew condensation environment.

## Emergency

In case of fire, smoking, or offensive odor during operation, please cut off the power in the circuit or pull the plug out.

## Storage

- TYPE JHC should be stored at room temperature (-10°C ~+40°C) without direct sunlight. Direct sunlight may cause decolorization and deformation of the exterior and taping. TYPE JHC should not be stored in corrosive atmosphere such as hydrogen sulfide or sulfur dioxide. Also, there is a fear that solder ability will be remarkably lower in high humidity.
- If the products are stored for an extended period of time, please contact Matsuo Sales Department for recommendation. The longer storage term causes packages and tapings to worsen. If the products are stored for longer term, please contact Matsuo Sales Department for advice.
- The products in taping, package, or box should not be given any kind of physical pressure. Deformation of taping or package may affect automatic mounting.

## Disposal

When TYPE JHC is disposed of as waste or "scrap", they should be treated as "industrial waste".

## Samples

TYPE JHC received as samples should not be used in production applications. A sample is provided for the special use (in such cases as the one for the form sample, the electric characteristic confirmation).

Distributed by:

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