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PRODUCTS DATA SHEET

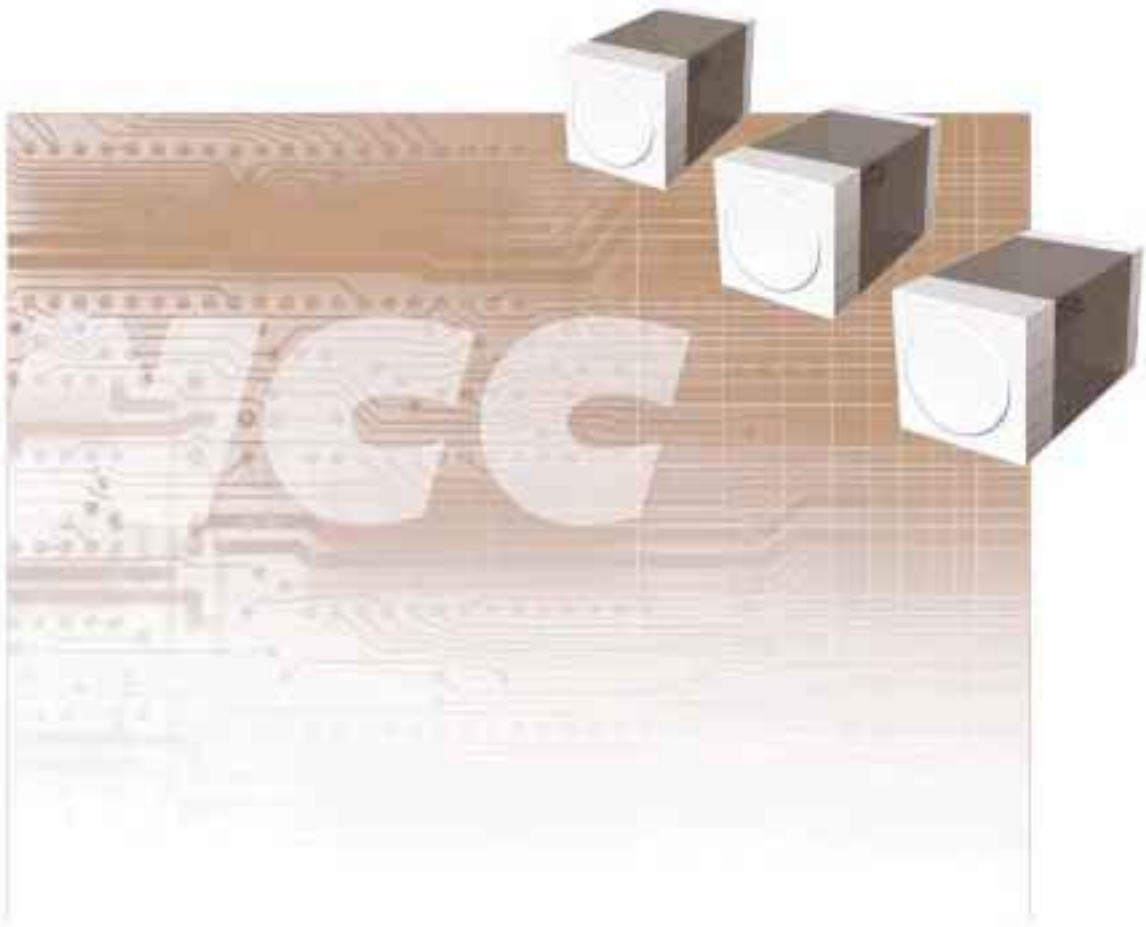
No. P-KAC-001
DATE 2003-09

UL. cUL Approved

File No.170721

MICRO FUSE

Type KAC



MATSUO ELECTRIC CO., LTD.

With KAC's unique configuration, Type KAC is able to prevent the decreasing of pulse endurance which is usually associated with miniaturization.
Please use type KAC for ultra miniaturization devices.
Also, the ecology design of Type-KAC is kind to the environment due to lead free terminals.

FEATURES

Decreases restriction of application due to the achievement of pulse endurance characteristics equal to Type KAB 1608 size.
Ultra-small-size $1.0 \times 0.5 \times 0.5\text{mm}$, stabilize the correct dimensions with precise cutting technology.
Suitable for automatic mounting.
Able to maintain high quality carrier tape by using pressed pocket paper.

CHARACTERISTICS

ITEM	CHARACTERISTICS
Operating Temperature Range	-40 - +125°C
Rated Current	1.25 - 1.6 - 2.0 A
Rated Voltage	24VDC
Voltage Drop	See below "Ratings and Catalog Numbers"
Insulation Resistance	1000MΩ or more
Fusing Characteristics	Fusing within 1 minutes $2.0 \times R.C$

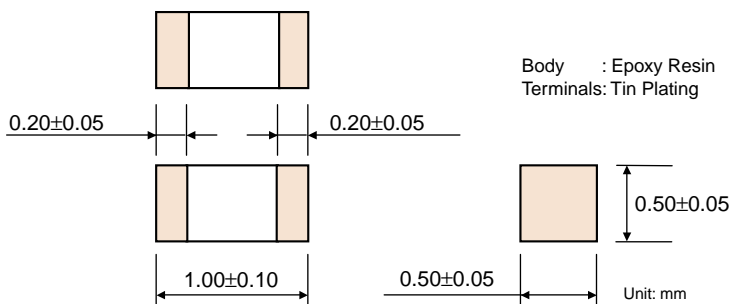
RATINGS AND CATALOG NUMBERS

Table-1

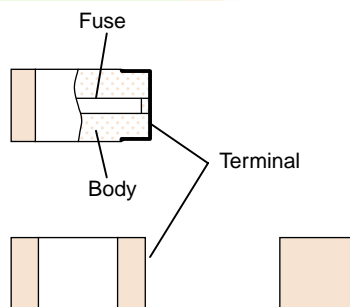
Catalog Number	Rated Current (In) (A)	Typical Internal Resistance(mΩ) (Typ)	Voltage Drop mV (Max)	I ² t* A ² s (Typ)	Rated Voltage VDC	Fusing Current (A)
KAC 2402 132 □□07	1.25	68	130	0.07	24	50
KAC 2402 162 □□07	1.6	47	120	0.12		
KAC 2402 202 □□07	2.0	33	110	0.18		

* Standard of I²t is when the 10 times of RC is applied.

DIMENSION

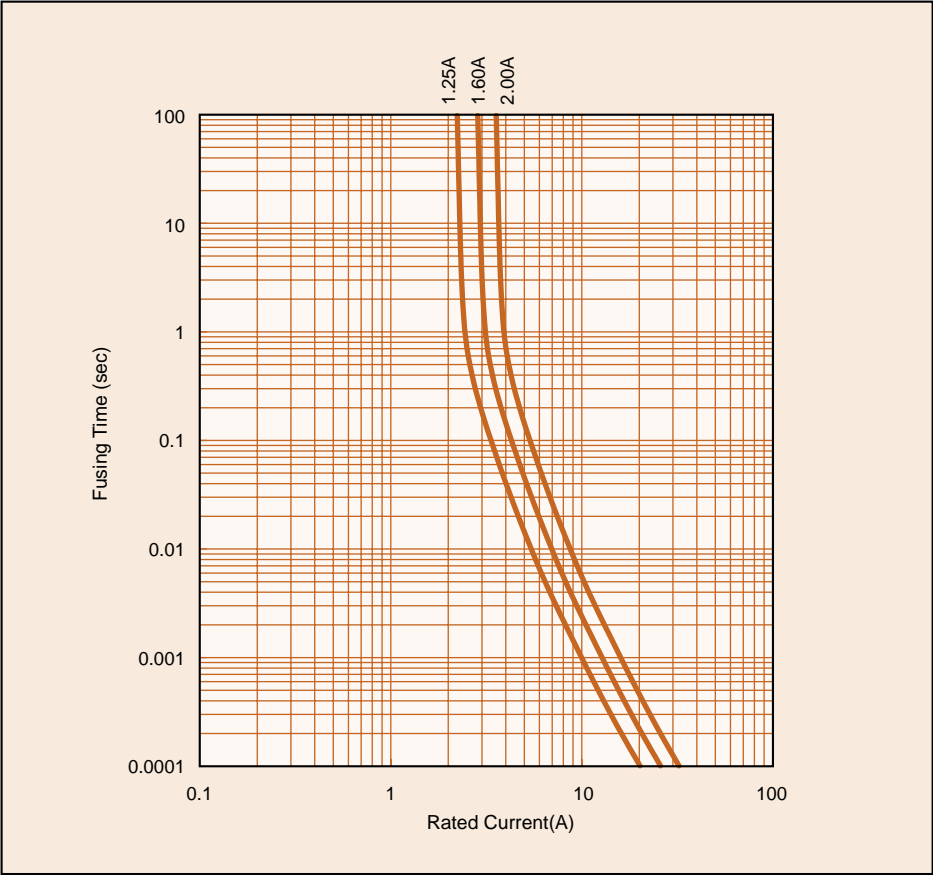


CONFIGURATION



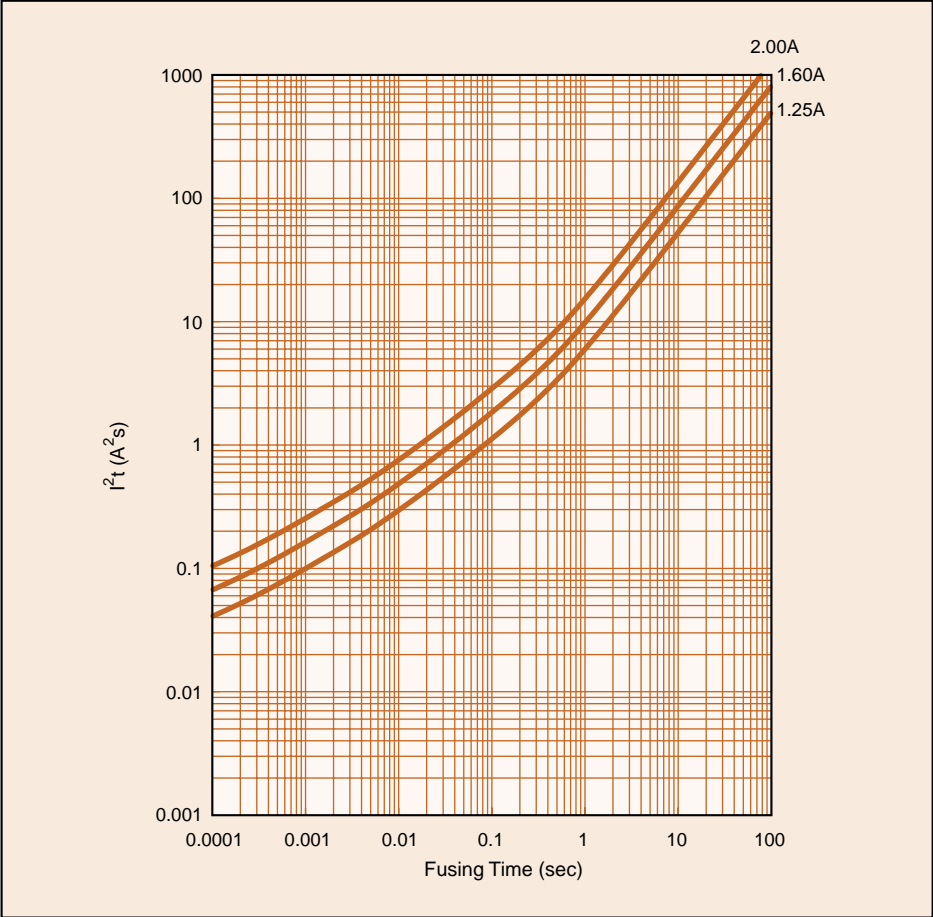
NAME	MATERIAL, ETC	MEMO
Fuse Wire	Lead Alloy	Plating
Body	Epoxy Resin	—
Terminal	Copper-Nickel-Tin	Plating

FUSING CHARACTERISTICS



I²t-t CHARACTERISTICS

Fig. -1



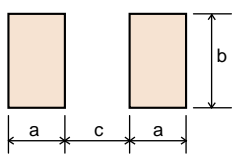
PERFORMANCE

ITEM	PERFORMANCE	TEST METHOD
Temperature rise	The temperature rise shall not exceed 75°C	Apply rated current
Current-carrying capacity	Shall not open within 1 hour	Apply rated current
Clearing characteristic	After fusing, the arc shall not continue	Breaking Voltage : 24V Breaking Current : 50A
Voltage drop	Voltage drop is below the value of Table 1.	Apply rated current
Fusing characteristics	Rated current x 200% : Max. 1 minute	Ambient temp. 10-30°C
Insulation resistance	1000MΩ or more	Insulation resistance between case and terminals
Bend Strength	No mechanical damage Resistance change rate is within ±20% after test.	Supporting width of substrate : 90mm Bending speed : 0.5mm/second Holding time : 30 sec. Bending : 3mm
Adhesion	No mechanical damage Resistance change rate is within ±20% after test.	Applied force : 5N (0.51kgf) Duration : 10 second Tool : R0.5 Direction of the press : side face
Body strength	No mechanical damage Resistance change rate is within ±20% after test.	Applied force : 5N (0.51kgf) Duration : 10 seconds. Tool : R0.5 Direction of the press : vertical face
Solderability	Dipped in solder within 3 seconds. The dipped surface of the terminals shall be covered more than 95% with new solder.	Dipping Temperature : 235±5°C Time : 3±1sec.
Resistance to soldering heat	No mechanical damage Resistance change rate is within ±20% after test.	Dipping (1 cycle) Preconditioning : 100-150°C/60 second Temperature : 260±5°C 10±1 sec. Reflow Soldering (2 cycle) Preconditioning : Below 150°C/1-2 minutes Peak : 240±5°C 5 sec. Hold : 220±5°C 40 sec. Cooling off : More than 2 min. Hand Soldering Temp of soldering iron : 300±5°C Time : 3-4 sec. Measure after 1 hour left under normal temp. and humidity
Solvent resistance	No mechanical damage Resistance change rate is within ±20% after test.	Dipping rinse Solvent : isopropyl alcohol Time : 90 seconds.

ORDERING INFORMATION

Type	Code	RV	Code	Rated Current	Code	Style	Code	Case Size
KAC	2402	24V	132 162 202	1.25A 1.6A 2.0A	NA	φ180 Reel	07	1.0 × 0.5

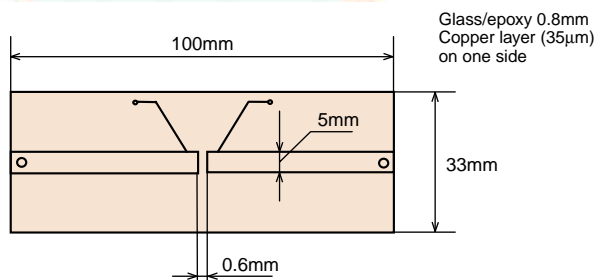
RECOMMENDED PAD DIMENSIONS



	1005 Size
a	0.4
b	0.5
c	0.6

Unit : mm

STANDARD TEST BOARD



■ Application Notes for Circuit Protection Components (Micro Fuse: Type KAC)

⚠ Circuit Design

1. Circuit Protection Components (hereinafter called "CPCs") should be designated only after confirming operating conditions and the CPCs' performance characteristics.
2. CPCs should always be operated under the rated current (the value considered in the temperature derating rate) and voltage specifications.
3. For best results, please set the fusing current (irregular current) at 2.5 times the rated current. When CPCs are used in inrush current applications, please confirm sufficiently inrush resistance of CPCs.
4. CPCs should not be used in circuits exceeding the rated voltage.
5. CPCs should be selected by determining the operating conditions that will occur after final assembly, or estimating potential abnormalities through cycle testing.
6. CPCs should not be used in the primary power source.

⚠ Assembly and Mounting

7. During the entire assembly process, CPCs body temperature should not exceed 10 seconds at 260°C.
8. CPCs' body should not have contact with a soldering iron.
9. Once CPCs mounted on the board, they should never be remounted on boards or substrates.
10. Fixing with soldering iron should not be performed. In case of emergency, the iron tip contacting the terminals should not exceed 3 seconds at 300°C.

⚠ Solvents

11. For cleaning CPCs, immersion in isopropyl alcohol for 5 minutes (at 20-30°C liquid temp.) is recommended. If organic solvents will be applied to the CPCs, please evaluate sufficiently for effects before usage.

⚠ Ultrasonic Cleaning

12. Ultrasonic cleaning is not recommended for CPCs. This may cause damage to the CPCs such as broken terminals, electrical characteristics effects, etc depending on the conditions. If Ultrasonic cleaning process must be used, please evaluate the effects sufficiently before usage.

⚠ Caution During Usage

13. CPCs with electricity should never be touched. CPCs with electricity may cause burning due to the CPCs' high

temperature. Also, in case of touching CPCs without electricity, please check the safety temperature of CPCs.

14. Protective eyeglasses should always be worn when performing fusing tests. However, it is possible that CPCs will explode during testing. 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

15. CPCs should not be operated in acid, alkali, or active gas atmosphere.
16. CPCs should not be vibrated, shocked, or pressed excessively.
17. CPCs should not be operated in a flammable or explosive atmosphere.

⚠ Emergency

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

⚠ Storage

19. CPCs should be stored at room temperature (-10°C to +40°C) without direct sunlight. Direct sunlight may cause decolorization and deformation of the exterior and taping. Also, it is possible that solderability will be remarkably lower in high humidity.
20. If the products are stored for an extended period of time, please contact the Matsuo Sales Department for recommendation. The longer storage term causes packages and tapings to worsen. If the products will be stored for longer term, please contact the Matsuo Sales Department for advice.
21. 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

22. When CPCs are disposed of as waste or "scrap", they should be treated as "industrial waste". CPCs contain various kinds of metals and resins.

⚠ Samples

23. CPCs received as samples should not be used in products or devices in the market. Samples are provided for a particular purpose such as configuration, confirmation of electrical characteristics, etc.



MATSUO ELECTRIC CO., LTD.

Please feel free to ask our Sales Department for more information on the Circuit Protection Components.

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Export Dep. Takara Bldg., 8-7 Toyotsu-cho, Suita-shi, Osaka 564-0051, Japan

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