

Micromax™ 0004A

Electronic Inks & Pastes

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Product Information

00X0A Resistor Series

Designed to give an ideal balance of properties, the Micromax™ 00x0A Series has been specifically developed for Chip Resistor applications. Excellent electrical properties have been achieved while satisfying the market needs of lower overall cost, smaller resistors and process insensitivity when used with high silver terminations. Micromax™ 00X0A Series is fully blendable allowing a wide range of resistance without sacrifice of electrical properties. The series is Cadmium, Nickel and Phthalate free*.

Product benefits

- Exceptional ESD stability
- Excellent power handling stability
- Low Quan-Tech noise
- Well controlled TCRs
- Small TCR length and thickness effects
- Linear blend behavior of electrical properties between adjacent members
- Excellent thermal cycle stability
- Cadmium, Nickel and Phthalate free*

*Cadmium, Nickel and Phthalate 'free' as used herein means that cadmium, nickel and phthalate are not intentional ingredients in and are not intentionally added to the referenced product. Trace amount however may be present.

Processing features

- Co-fireable with specified termination
- Optimized high resolution printing speeds of up to 30cm/sec
- Fast firing – 850°C/30 minute profile.

Product information	Value	Unit
Application	Chip resistor	
Solvent or thinner	Micromax™ 8250	
Blend member or series	00X0Asrs	

Rheological properties	Value	Unit
Viscosity	100 - 150 ^[1]	Pa.s

Application technique	Value	Unit
Mask mesh	250 - 325	
Mask emulsion	10 - 15	µm
Drying time	10 - 15	min

Application technique	Value	Unit
Drying temperature	150	°C
Recommended film thickness, dried	18 - 22	µm
Leveling time	5 - 10	min
Electrical properties	Value	Unit
Resistivity	2.8 - 4 ^[2]	Ohm per square
Hot Temperature Coefficient Resistance	0 - 100 ^[3]	ppm/°C
Cold Temperature Coefficient Resistance	-100 - 100 ^[4]	ppm/°C
Electrostatic discharge, 5kV	-0.3 - 0.3 ^[5]	(avgDeltaR)(%)
Noise	≤-35 ^[6]	dB
Storage and stability	Value	Unit
Shelf life	6 ^[7]	months

1: Brookfield HAT 10 rpm, UC&SP; (SC4-14/6R), 25°C ± 0.2°C

2: Unless otherwise noted, resistors were printed on Micromax™ 5426 terminations at 18-22µm dried thickness, then co-fired in 30 minute cycles with 850°C peak for 10 minutes. Resistor geometry is 0.8 x 0.8mm.

3: Temperature coefficient of resistance from 25°C to 125°C for Hot TCR.

4: Temperature coefficient of resistance from 25°C to -55°C for Cold TCR.

5: Electrostatic discharge using 100pF/1500Ω R/C network. Untrimmed resistors, 0.8mm x 0.8mm.

6: Using Quan-Tech Model 315C meter, untrimmed 0.8mm x 0.8mm resistors.

7: in unopened containers, from date of shipment, stable environment at room temperature between 5°C - 30°C

How to use

• Terminations

- Micromax™ 00x0A resistors were designed for use with high silver-containing terminations. Reported properties were obtained using Micromax™ 5426 Ag/Pd termination. Data with other terminations is available.

• Blendability

- Micromax™ 00x0A Series is blendable between each adjacent member.

• Substrates

- Reported properties are based on tests with 96% alumina substrates. Good performance properties have also been observed on Micromax™ QM44 dielectric. Substrates of other compositions may yield variation in performance properties.

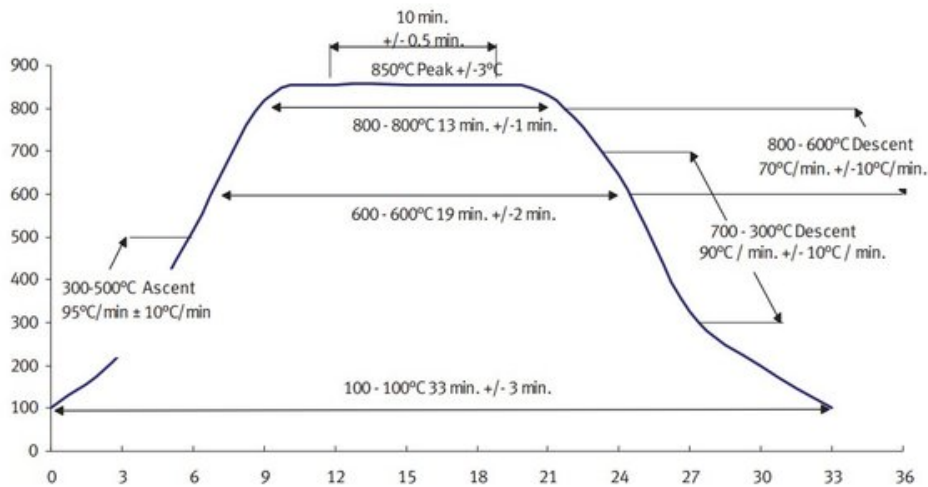
• Printing

- Unless otherwise noted, properties are based on resistors printed to 20±2µm dried thickness. This can be achieved by using 250-325 mesh screens with emulsions of 10-15µm. Resistors smaller than 0.3x0.3mm will require finer mesh screen to achieve the desired print resolution. Although Resistance and TCR values will change, similar functional properties have been observed with thinner dried film prints (<18µm). To optimize laser trainability, dried thickness >22µm should be avoided.

• Thinning

- Micromax™ 00x0A Series has been optimized for screen printing and thinning is not normally required or recommended. Micromax™ 8250 thinner may be added sparingly to compensate for evaporative losses.
- **Drying**
 - Parts should be allowed to level at room temperature and then dried.
- **Firing**
 - Properties are based on a 30 minute firing cycle (100°C - 100°C) with 10 minutes at a peak temperature of 850°C. Micromax™ 00x0A was designed to allow cofiring of selected termination materials with the resistors. See sample furnace profile.

Typical 30 Minute Furnace Profile



Storage and shelf life

- Containers should be stored, tightly sealed, in a clean, stable environment at room temperature between 5°C - 30°C. Shelf life of material in unopened containers is 6 months from date of shipment. Some settling of solids may occur and compositions should be thoroughly mixed prior to use.
- Storage conditions on the product data sheets are intended to represent long-term material storage recommendations and not a shipping or temperature-at-receipt requirement.
- Transportation: Under normal shipping conditions, without temperature control, Micromax™ products are not expected to exhibit a change in quality or fitness for use. Should extraordinary events result in extended transportation periods, Micromax™ recommends customers confirm products remain suitable for the intended application.

Safety and handling

For safety and handling information pertaining to this product, read Safety Data Sheet (SDS).

Disclaimer

NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colourants or other additives may cause significant variations in data values. Properties of moulded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Other than those products expressly identified as medical grade (including by MT® product designation or otherwise), Micromax's products are not intended for use in medical or dental implants. Regardless of any such product designation, any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users seek and adhere to the manufacturer's current instructions for handling each material they use, and entrust the handling of such material to adequately trained personnel only. Please call the telephone numbers listed for additional technical information. Call Customer Services for the appropriate Materials Safety Data Sheets (MSDS) before attempting to process our products. Copyright © 2025 Micromax or its affiliates. All rights reserved. Micromax™, and all other trademarks identified herein with ®, ™, SM, unless otherwise noted, are trademarks of Micromax or its affiliates.

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