

# Micromax™ 0F59E

## Electronic Inks and Pastes

### Lead Free Resistor Composition

Designed to give an ideal balance of properties, Micromax™ 0FXXEseries has been specifically developed for Chip Resistor Applications. It meets the market needs for smaller sized resistors and greener products.

### Product benefits

- TCR variants to Micromax™ 0FXXE series which serves broader market needs
- Lead, Cadmium, Nickel and Phthalate free\*
- Excellent performance for smaller chip sizes with thinner printed thickness
- Good power handling stability
- Excellent ESD stability
- High speed laser trimmable
- Narrow TCR gap

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

### Product information

Solvent or thinner  
 Blend member or series  
 [1]: Blending Group Higher-ohm

Micromax™ 8250  
 0FXXEsrs<sup>[1]</sup>

### Rheological properties

Viscosity  
 [2]: Brookfield HAT, SC4-14/6R, @10 rpm

120 - 220<sup>[2]</sup> Pa.s

### Application technique

Mask mesh  
 Mask emulsion  
 Drying time  
 Drying temperature  
 Recommended film thickness, dried  
 Leveling time

200 - 325  
 5 - 25 µm  
 10 - 15 min  
 150 °C  
 11 - 13 µm  
 5 - 10 min

### Electrical properties

Surface resistivity  
 Hot Temperature Coefficient Resistance  
 Cold Temperature Coefficient Resistance

7.5E7 - 1.25E8<sup>[3]</sup> mOhm per square  
 -60 - 80<sup>[4]</sup> ppm/K  
 -60 - 80<sup>[5]</sup> ppm/K

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[3]: Shipping specifications : Resistors are printed with dried thickness 11-13µm. Printed on Micromax™ 5421E termination (12-14µm dried thickness). Fired in Micromax™ standard QA firing profile with 850°C peak for 10 minutes. Resistor geometry is 0.5mm x 0.5mm except Micromax™ 0F01E (8sq).

[4]: Temperature Coefficient of Resistance from +25 to +125°C for Hot TCR.

[5]: Temperature Coefficient of Resistance from -55 to +25°C for Cold TCR.

### Storage and stability

Shelf life

6<sup>[6]</sup> months

[6]: in unopened containers, from date of shipment, at temperature 5-30°C

### Additional information

How to use

### Processing

- **Terminations**

- Micromax™ 0FXXE resistors were designed for use with high silver- containing terminations like Micromax™ 5421E Ag/Pd conductor. Reported properties were obtained using Micromax™ 5421E Ag/Pd termination. Use of different terminations may cause a shift of resistance and TCR values.

- **Blendability**

- Adjacent members of each blending group are blendable. Micromax™ 0FXXE resistors have cross-blendability with Micromax™ 0FXXA series and are also blendable with Micromax™ 00LXX lead free low ohm resistor members in good linearity.

- **Substrates**

- Reported properties are based on tests with 96% alumina substrates. Substrates of other composition may yield variation in performance properties.

- **Printing**

- Properties of Micromax™ 0FXXE series are based on resistors printed to 11~13µm dried thickness. 200~325 mesh screen with 5-25µm emulsion is recommended.

- **Thinning**

- Micromax™ 0FXXE resistors have 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 for 5-10 minutes and then dried for 10-15minutes at 150°C.

- **Firing**

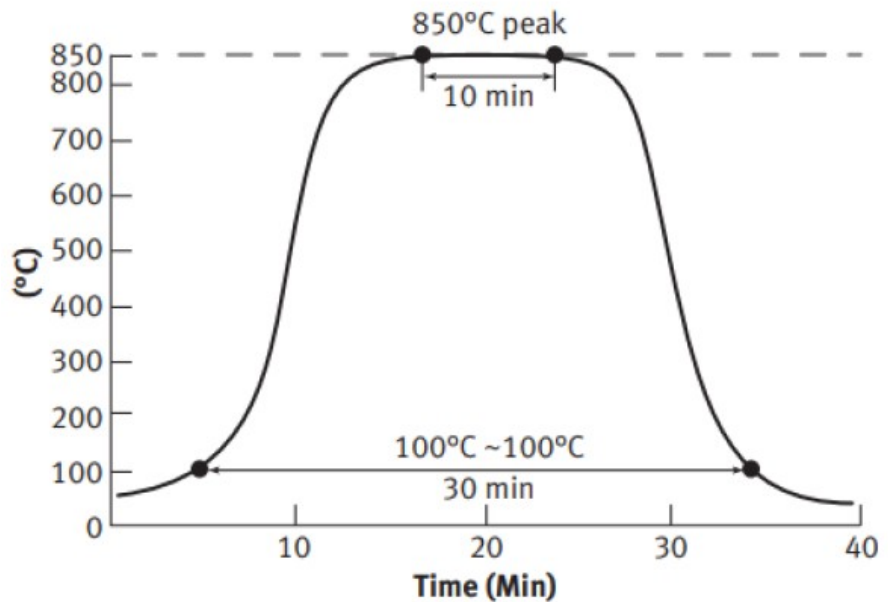
- Properties are based on a 30 minutes firing cycle (100°C - 100°C) with 10 minutes at a peak temperature of 850 °C

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standard profile.

Micromax™ Standard QA Firing Profile (850°C 10 min)



## 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 six months from date of shipment. Some settling of solids may occur and compositions should be thoroughly mixed prior to use.

## Safety and handling

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