Celanese
The chemistry inside innovation™

Micromax™ 0020L

Electronic Inks and Pastes

00X0L Series Resistor Composition 100 Ω/sq

Designed to give high productivity and high quality, Micromax™ 00X0L low ohm resistor series has been specifically developed for Chip Resistor Applications. It meets the market needs for low cost manufacturing.

Product benefits

- Balanced cost vs TCR performance
- Tight distribution of resistances
- High productivity and manufacturing yields
- 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

- Excellent printability
- Insensitive to firing profile and chip size
- Linear blend behavior
- Compatible with Micromax™ 5426, 5421E, 5418 Ag/Pd terminations and 5463 Ag termination

Product information

Solvent or thinner	Micromax™ 8250
Blend member or series	00X0L Series

Rheological properties

Viscosity	150 - 240[1]	Pa.s

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

Application technique

Mask mesh	250 - 325	
Mask emulsion	10 - 15	µm
Drying time	10 - 15	min
Drying temperature	150	°C
Recommended film thickness, dried	14 - 16	µm
Leveling time	5 - 10	min

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Electrical properties

Surface resistivity	70000 - 100000[2]	mOhm per square
Hot Temperature Coefficient Resistance	-100 - 100[3]	ppm/K
Cold Temperature Coefficient Resistance	-100 - 100[4]	ppm/K
Electrostatic discharge, 5kV	-0.1 - 0.1[5]	(avgDeltaR)(%)
Noise	≤-25[6]	dB

[2]: Unless otherwise noted, Micromax™ 00X0L resistors are printed on Micromax™ 5426 terminations at 14-16µm dried thickness, then fired in 30 minutes cycle with 850°C peak for 10 minutes. Resistor geometry is 1.0mm x 1.0mm.

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

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

[5]: Electrostatic discharge HBM using 150pF/1000Ω R/C network. Untrimmed resistors, 1.0mm x 1.0mm.

[6]: Using Quan-Tech Model 315C meter, untrimmed 1.0mm x 1.0mm

Storage and stability

Shelf life	6[7]	months

[7]: In unopened containers, from date of shipment, at room temperature (<25°C)

Additional information

How to use

Processing

- Terminations
  - Micromax™ 00X0L resistor sesies was designed for use with high silver-containing terminations like Micromax™ 5421E Ag/Pd conductor. Reported properties were obtained using Micromax™ 5426 Ag/Pd termination. Use of different terminations may cause a shift of resistance and TCR values.
- Blendability
  - Adjacent members among Micromax™ 00X0L series are totally blendable. As blend members of Micromax™ 00X0L series, 003XZ (1kΩ/sq.) are blendable with 0020L, and 00L1L (100mΩ/sq.) is blendable with 0001L.
- 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™ 00X0L series are based on resistors printed to 14~16um dried thickness with resistor geometry 1.0mmsq (10 and 100Ω) and 8sq (1Ω). 250~325 mesh screen with 10-15µm emulsion is recommended.
- Thinning
  - Micromax™ 00X0L resistors have been optimized for screen

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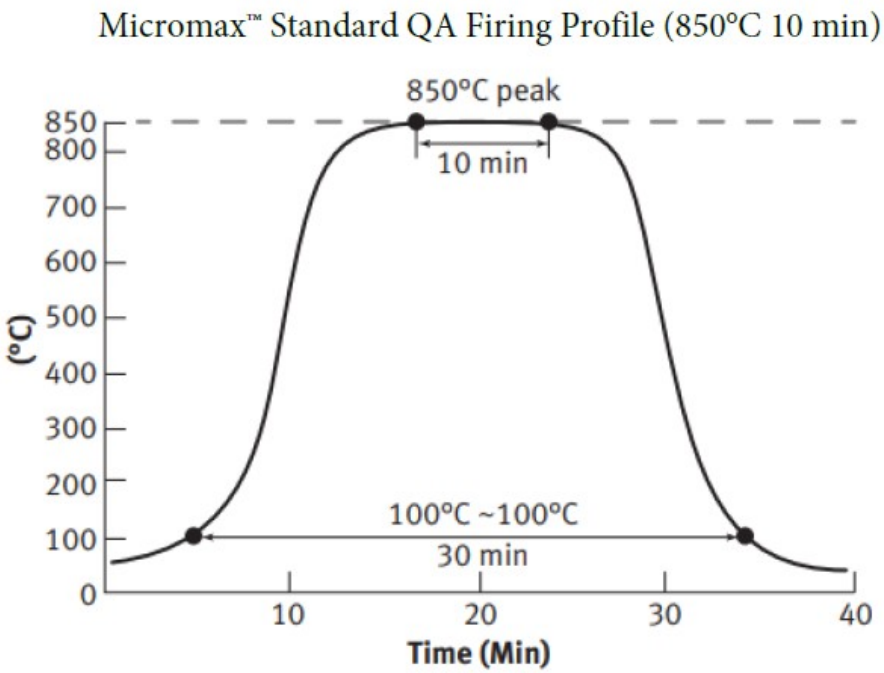
printing and thinning is not normally required or recommended. Micromax™ 8250 thinner may be added sparingly to compensate for losses.

- Drying
  - Parts should be allowed to level at room temperature and then dried.
- Firing
  - Properties are based on a 30 minutes firing cycle (100°C - 100°C) with 10 minutes at a peak temperature of 850°C Micromax™ standard profile.



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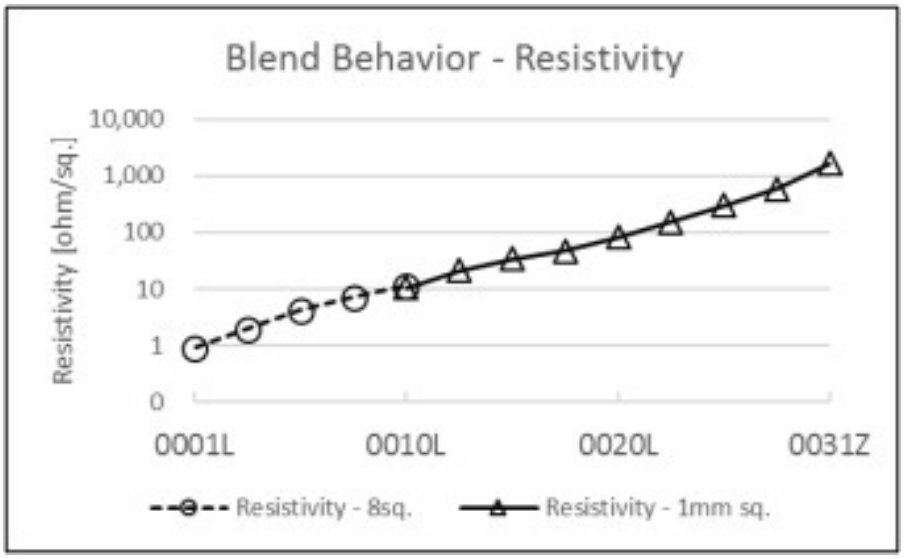

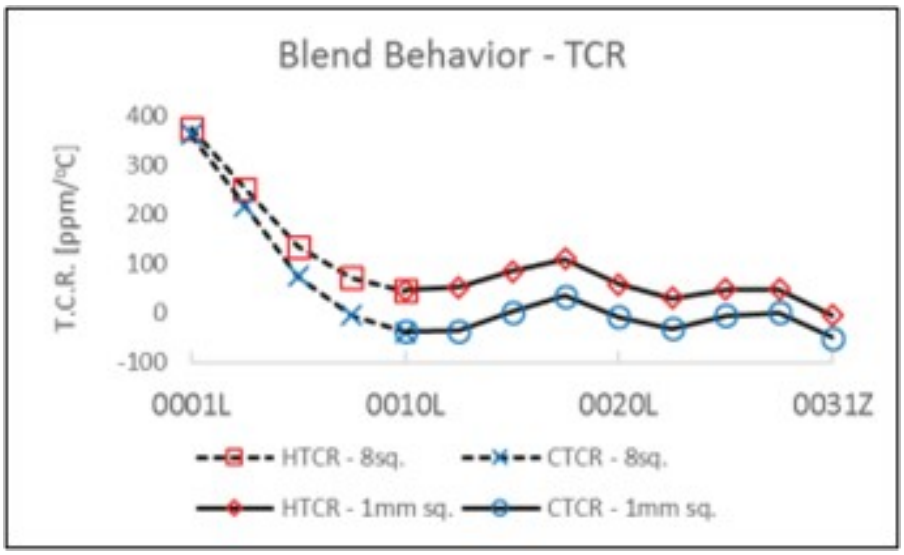

Properties

Typical Performance Properties

Test	Properties
STOL*1 (ΔR%)	≤ ± 0.1

*1 Short time overload with loaded voltage of 2.5 times the rated power with 400V maximum. 1.0mm x 1.0mm after trimming.

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Storage and shelf life

Containers should be stored, tightly sealed, in a clean, stable environment at room temperature. 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).