

PAD ROL[®] 200XM[™]

FOR QFN, DFN, AND OTHER PAD-STYLE APPLICATIONS

A Solution for your most challenging matte tin QFN / DFN applications.

XM[™] Low-Force Contacts for Matte Tin packages

Benefits

XM[™] contacts are Johnstech's next advancement in contacting technology:

- Low force
- Polished Tips only
- Finer, smoother finish on tips provides:
 - Extended MTBA for certain matte tin platings
 - Easier cleaning
 - Less debris
 - Less aggressive witness marks

Improved Performance on Matte Tin

The XM[™] contacts simply complement Johnstech's existing Pad ROL[®] 200 product line to offer the same high-frequency performance as the existing ROL contacts, but in addition, offer a lower force design with a polished contact to reduce matte tin buildup and ease cleaning. The initial XM[™] configuration is for 0.5 mm pitch matte tin packages. Other configurations will follow.

An example of one customer's performance improvements included*:

- 10-15X extended cleaning interval
- 30% less matte tin debris
- 40% less disturbed pad area

*Compared to XL-2 contacts.

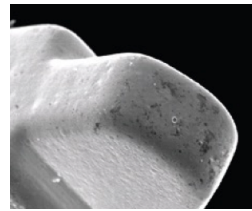
Individual results will depend on variables including the matte tin composition, handler setup, and maintenance conditions.

FEATURES & BENEFITS

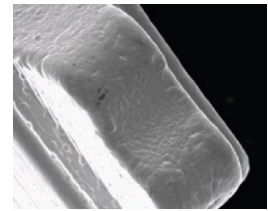
| | |
|---------------------------------|--|
| FREQUENCY | 17.5GHz Matte Tin; |
| PITCH | ≥ 0.4 mm |
| TEMPERATURE | -65°C to 175°C (XT [™] Elastomers) |
| CURRENT CARRY CAPABILITY @ 100% | 3.5A |

Polished, Smooth Surface Finish

XM[™] contacts utilize a patented process to polish the tip to provide a smooth surface finish needed to reduce matte tin oxide buildup for excellent MTBA while maintaining the long load board pad life upon which ROL[®] technology was founded.



SEM photos: New XM[™] contact



Standard Contact

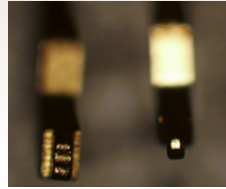
Lower Force Contacting

The new XM[™] tip design and lower force elastomers combine with the polished contactor to provide:

- Lower force on sensitive packages (25 g)
- Less aggressive pad witness marks
- Less matte tin package debris
- Excellent for multiple insertion applications (e.g., automotive)



New XM[™] contact (top)
Standard contact (bottom)



New XM[™] contact (right)
Standard contact (left)



| Electrical Specifications | Matte Tin Configuration, 0.5mm Pitch XM |
|--|---|
| Electrical Length (compressed height): | 2.01 mm |
| Inductance: | Self: 0.54 nH Mutual: 0.19 nH |
| Capacitance: | Ground: 0.38 pF Mutual: 0.13 pF |
| S ₂₁ Insertion Loss (GSG): | -1dB @ 17.5 GHz |
| S ₁₁ Return Loss (GSG): | -20dB @ 4.4 GHz |
| S ₄₁ Crosstalk (GSSG): | -20dB @ 13.3 GHz |
| Current Carrying Capability ¹ : (Duty cycle 100%, 50%, 1%) | 3.5A, 8.1A, 10.5A |
| RMS Current Carrying Capability ² : (Duty cycle 100%, 50%, 1%) | |
| Current Leakage: | <1pA @ 10V |
| Nearest Decoupling Area: | 1.58 mm |

NOTE: Specifications for 0.5mm pitch configurations shown here. These specifications are based on a combination of internal and third-party measured testing.

1: Test conditions: 300 msec pulse, 20°C temperature rise. Higher currents allowed for higher temperature rises.

2: RMS current carrying capacity for pulsed applications. Values based on measured steady state current capacity,

| Mechanical Specifications | Matte Tin Configuration |
|---|---|
| Physical Compressed Height: | 1.40 mm |
| Contact Life ³ (# of insertions, Typical Performance): | Elastomers = 300,000 Contacts = 500,000+ Housing = 2,000,000+ |
| Contact Compliance: | 0.20 mm |
| Contact Force (per contact): | 25 grams |
| Contact Tip Coplanarity: | 0.05 mm |
| Temperature: | -65°C to 175°C, (XT [™] Elastomers) |
| Housing Material: | Torlon [®] 5030 |
| Contacts: | Gold-Plated |
| Contact Material: | BeCuNiAu |

standardized to 1 Hz test cycle, 20°C temperature rise. Higher currents allowed for higher temperature rises.
3: Contact, elastomer, and housing life values are TYPICAL based on Johnstech internal testing. Actual production life will vary based on a wide range of variables including: handler, Contactor, and load board interface; handler plunge depth and velocity; device presentation; alignment plate condition; package plating material and characteristics; test floor conditions; maintenance activities; mounting/fastening techniques; site-to-site coplanarity; docking coplanarity; and temperature extremes.



Pad witness mark (XM[™] 1 insertion)



(XM[™] 10 insertions)

Methodology

