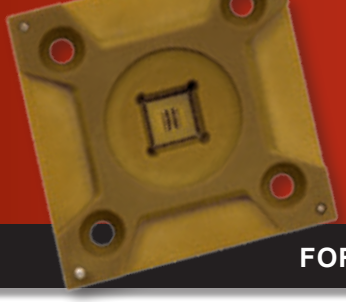


PAD ROL® 200 XM™

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**

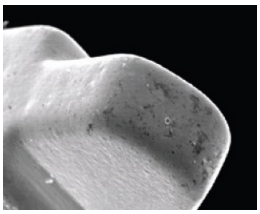
**Compared to XL-2 contacts.*

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

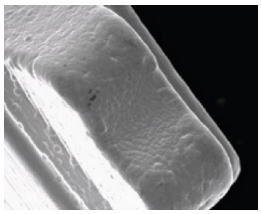
FEATURES & BENEFITS	
FREQUENCY	17.5GHz Matte Tin;
PITCH	≥ 0.4 mm
TEMPERATURE	-65°C to 175°C (XT™ Elastomers)
CURRENT CARRY CAPABILITY @ 100%	3.5A

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



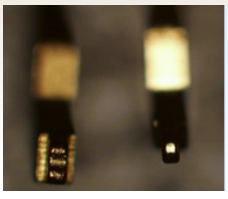
Standard Contact

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)

PRECISION ANALOG TO mmRF™

PAD ROL® 200 XM™

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

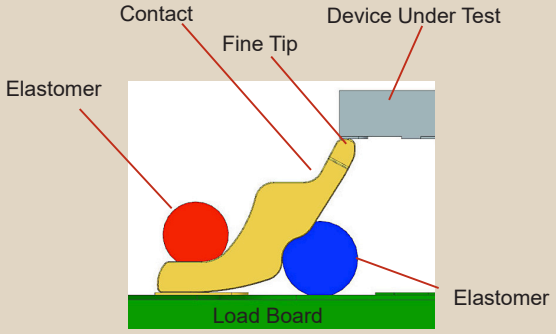
NOTE: Specifications for 0.5mm pitch configurations shown here. These specifications are based on a combination of internal and third-party measured testing.
1: Test conditions: 300 msec pulse, 20°C temperature rise. Higher currents allowed for higher temperature rises.
2: RMS current carrying capacity for pulsed applications. Values based on measured steady state current capacity, 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.

Mechanical Specifications	Matte Tin Configuration
Physical Compressed Height:	1.40 mm
Contactor 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

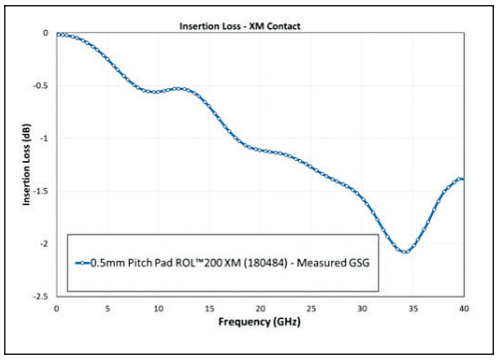
Pad witness mark (XM™ 1 insertion)

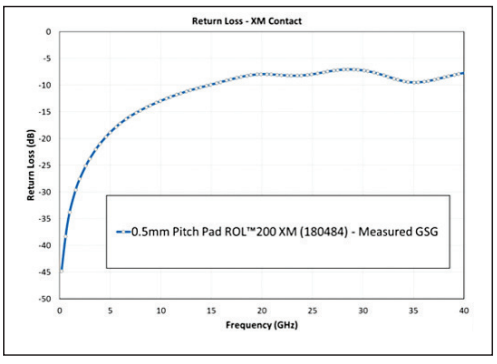
(XM™ 10 insertions)

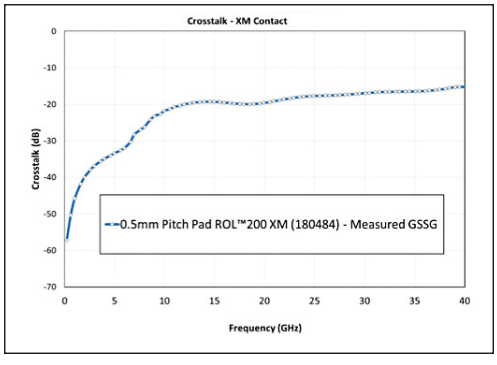
Methodology



≥ 0.5mm pitch Matte Tin Configuration







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