Leaded ROL™ 200KR XT™

For QFP, SO, SOT and Other Leaded-Style Applications

The Automotive Test Solution That Drives Toward Higher Test Yields

As a designer of high performance devices for the automotive industry, you know that your applications are growing in both numbers and complexity. Since this trend is expected to continue for the next several years, it is more important than ever to require extreme versatility and superior reliability from your test solutions. Whether you are testing Audio & Infotainment, Vehicle Networking, Powertrain, or other automotive device applications, look for the solution that drives your results toward higher test yields and delivers superior production throughput.

Johnstech's Leaded ROL™ 200KR XT™ Automotive Contactor is just the product you're looking for! This Xtreme Temperature (XT™) capable product is designed to maximize your test results, regardless of your tri-temp testing objectives! Even if you are not testing outside the temperature limits of standard Contactors and sockets, the robust design of the XT™ Contactor provides additional design margin and certainly satisfies even your roadmap requirements.

The Leaded ROL™ 200KR XT™ Automotive Contactor improves test yields and increases test reliability through several features, including:

Electrical Reliability Improves Yields

- Patented, One-Piece ROL™ Contacts
- Delivers Lowest Contact Resistance (CRES)
- High current carrying capability
- Low Inductance
- Extremely stable contact resistance (CRES)
- High Frequency Capability

Mechanically Robust

- Long Life ROL™ Contacts
- Temperature Test Stability
- Patented Wiping Lengthens MTBA

Kelvin-Ready™ Versatility

- Configurable Application Flexibility
- Two Contact Profiles Optimize Performance
- Superior Load Board Design (see back)
- Kelvin Only When And Where Needed
- Determine When To Clean
- Eliminate / Minimize Retests
- Redundant Sense Contact Reliability
- Self Cleaning Contacts Clear Debris

Your Contact for Higher Performance

Johnstech®

Johnstech Automotive Leaded ROL™ 200KR XT™

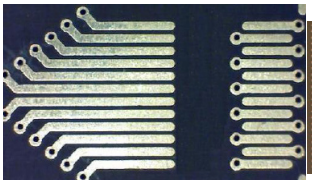
Electrical Specifications	Matte Tin	NiPdAu
	Non-Kelvin (Kelvin with Sense)	
Inductance:	Self: 0.46 nH* (3.09 nH) Mutual: 0.04 nH* (0.49 nH)	Self: .46 nH* (3.26 nH) Mutual: 0.03 nH* (0.81 nH)
Capacitance:	Ground: 0.10 pF* (0.63 pF) Mutual: 0.02 pF* (.118 pF)	Ground: 0.10 pF* (0.64 pF) Mutual: 0.02 pF* (0.125 pF)
S_{21} Insertion Loss (GSG):	-1 dB @ 23.3 GHz (1.8 GHz)	-1dB @ 23.1 GHz (2.4 GHz)
S_{11} Return Loss (GSG):	-20 dB @ 8.2 GHz (0.8 GHz)	-20dB @ 9.4 GHz (0.6 GHz)
S_{41} Crosstalk (GSSG):	-20 dB @ 34.7 GHz (5.0 GHz)	-20dB @ 29.9 GHz (3.0 GHz)
Average CRES:	60 mΩ Force Contact 400 mΩ Sense Contact	30 mΩ Force Contact 330 mΩ Sense Contact
Current Carrying Capability**: (Duty Cycle 100%, 50%, 1%)	Force Contact 2.8A, 4.1A, 5.9A Sense Contact 1.0A, 1.8A, 2.3A	Force Contact 3.6A, 5.0A, 7.5A Sense Contact 1.0A, 1.8A, 2.3A
Current Leakage:	<1 pA @ 10 V	

Mechanical Specifications		Matte Tin	NiPdAu
Compressed Height: Electrical Length		1.34 mm 2.00 mm	1.34 mm 2.00 mm
Contact Force (grams): Force (Force + Sense)	@ -65°C @ 25°C @ +175°C	30 grams (70 grams) 30 grams (70 grams) 40 grams (80 grams)	
Contactor Life (# of insertions):		Elastomers = 330,000 Force Contacts = 500,000+ Sense Contacts = 1,000,000 Housing =2,200,000	
Contact Compliance:		0.20 mm	
Contact Wipe on Lead:		0.22 mm	0.13 mm
Contact Tip Coplanarity:		0.05 mm	0.05 mm
Temperature:		-65°C to +175°C	
Housing Material:		High Performance Torlon®	
Force Contacts:		Low-Force XL-2K Fine Tip	
Nearest Decoupling Area		1.80 mm	

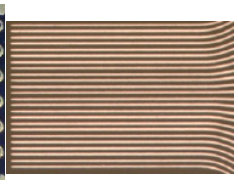
*Force contacts with 100Ω resistor in parallel with self inductance and 30mΩ of contact resistance model accurate to 10 GHz.
**Test conditions: 300 msec pulse, 20°C temperature rise.

Kelvin-Ready™ Load Boards More Reliable, Less Expensive

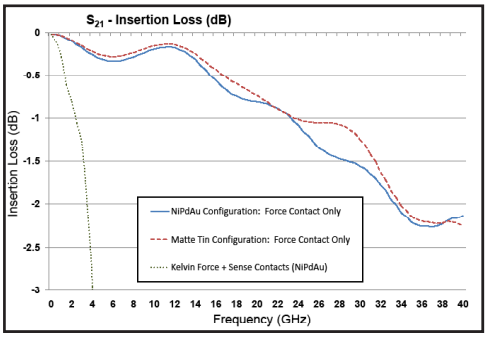
The Leaded ROL™ 200KR Kelvin-Ready™ load board solution separates the Force and Sense load board traces in a front and back format, allowing standard size load board traces to route test signals. The relatively larger traces maintain testing reliability and simplify load board design, reducing load board manufacturing expenses relative to other socket designs. For I/Os where Kelvin is not needed, removing the Sense line creates additional load board real estate and can also provide a straight line path to high speed connectors when testing RF and other high speed signals.

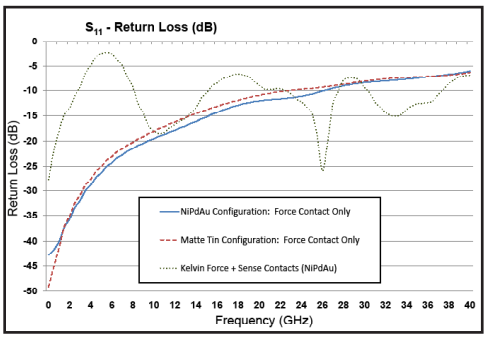


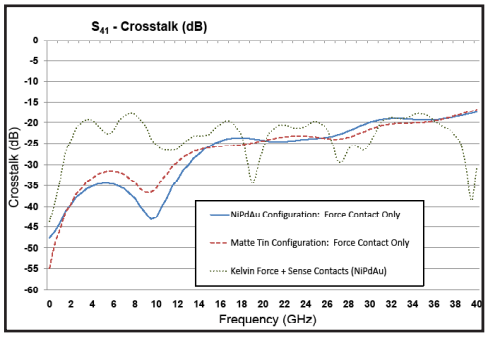
Kelvin-Ready Front/Back Design



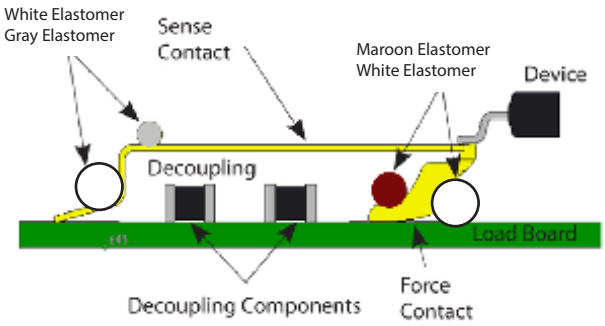
Spring Pin Side-by-Side Design







Methodology



Johnstech Services and Contact Information

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- Wiping Contact Clears Debris

Mechanically Robust

- Long Life ROL™ Contacts
- Temperature Test Stability
- Patented Wiping Lengthens MTBA

Your Contact for Higher Performance

Johnstech®

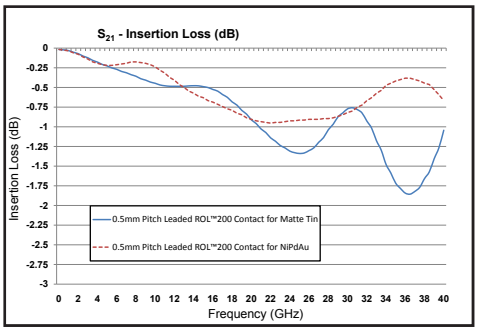
Johnstech Automotive Leaded ROL™ 200 XT™

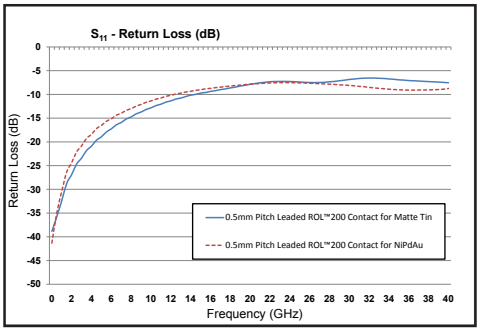
Electrical Specifications	Matte Tin Configuration	NiPdAu Configuration
Inductance:	Self: 0.42 nH Mutual: 0.16 nH	Self: 0.45 nH Mutual: 0.16 nH
Capacitance:	Ground: 0.23 pF Mutual: 0.14 pF	Ground: 0.24 pF Mutual: 0.15 pF
S_{21} Insertion Loss (GSG):	-1dB @ 20.7 GHz	-1dB @ 21.3 GHz
S_{11} Return Loss (GSG):	-20dB @ 4.4 GHz	-20dB @ 3.2 GHz
S_{41} Crosstalk (GSSG):	-20dB @ 16.7 GHz	-20dB @ 14.5 GHz
Average CRES:	50 mΩ	20 mΩ
Current Carrying Capacity*: (Duty Cycle 100%, 50%, 1%):	4.3A, 7.3A, 10.1A	4.4A, 5.9A, 9.1A
Current Leakage:	<1pA @ 10V	
Nearest Decoupling Area:	1.80 mm	

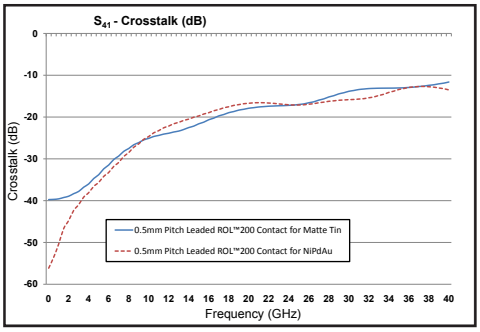
Results for 0.5mm pitch configurations. Specifications provided here are based on internal testing at Johnstech, customer production sites, and third party electrical testing. Actual individual results may vary based on a wide range of variables including: handler/contactor/load board interface, handler plunge depth and velocity, device presentation, alignment plate condition, package plating characteristics, test floor conditions, maintenance activities, mounting/fastening techniques, non-coplanarity from site to site, non-coplanar docking, and temperature extremes.

** Test conditions: 300 msec pulse, 20°C temperature rise.*

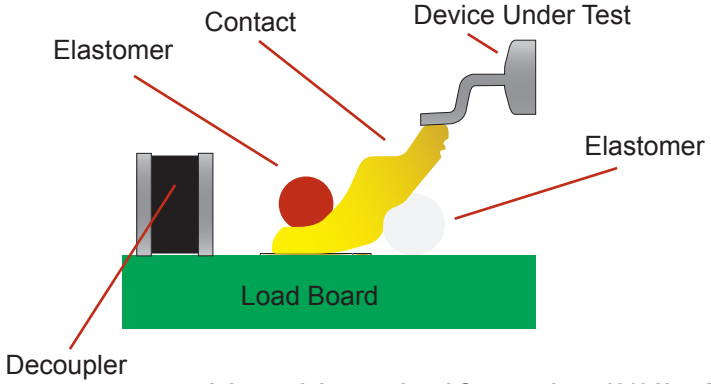
Mechanical Specifications		Matte Tin Configuration	NiPdAu Configuration
Compressed Height: Electrical Length:		1.34 mm 1.98 mm	1.34 mm 2.00 mm
Contactor Life (# of insertions):		Elastomers = 330,000 Contacts = 500,000+ Housing = 2,200,000	
Contact Compliance:		0.20 mm	
Contact Wipe on Pad:		0.22 mm	0.13 mm
Contact Force (per contact):	@ -65°C @ 25°C @ +175°C	40 grams 40 grams 60 grams	
Contact Tip Coplanarity:		0.05 mm	
Temperature:		-65°C to +175°C	
Housing Material:		High Performance Torlon®	
Contacts:		Gold-Plated	Low-Force XL-2
Contact Material:		Beryllium Copper Alloy	







Methodology



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- Self Cleaning Contacts Clear Debris

Your Contact for Higher Performance

Johnstech®

Johnstech Automotive Pad ROL™ 200KR XT™

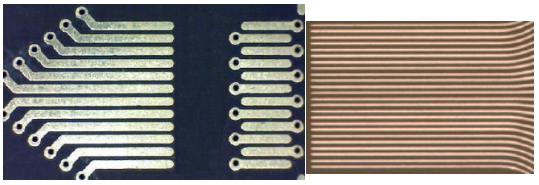
Electrical Specifications	Force Contact (non-Kelvin)	Force + Sense (Kelvin)
Inductance:	Self: 0.47 nH* Mutual: 0.10 nH*	Self: 3.3 nH Mutual: 0.72 nH
Capacitance:	Ground: 0.16 pF* Mutual: 0.06 pF*	Ground: 0.78 pF Mutual: 0.25 pF
S_{21} Insertion Loss (GSG):	-1 dB @ 17.1 GHz	-1dB @ 3.0 GHz
S_{11} Return Loss (GSG):	-20 dB @ 8.0 GHz	-20dB @ 0.8 GHz
S_{41} Crosstalk (GSSG):	-20 dB @ 33.5 GHz	-20dB @ 17.3 GHz
Average CRES:	40 mΩ Force Contact 330 mΩ Sense Contact	<1 mΩ System
Current Carrying Capacity (Duty Cycle 100%, 50%, 1%):	2.8 A, 4.0A, 5.8A Force Contact 0.8A, 1.3A, 1.7A Sense Contact	
Current Leakage:	<1 pA @ 10 V	
Nearest Decoupling Area:	1.58 mm	

*Force contacts with 1000Ω resistor in parallel with self inductance and 30mΩ of contact resistance model accurate to 10 GHz.

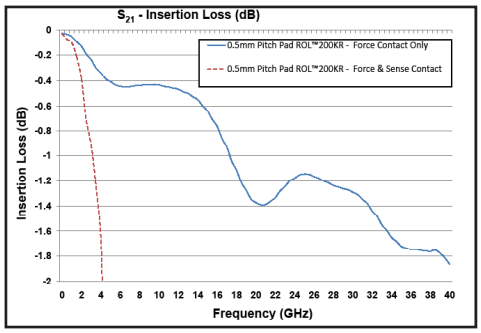
Mechanical Specifications		Force Contact (non-Kelvin)	Force + Sense (Kelvin)
Compressed Height: Electrical Length:		1.40 mm 2.00 mm	
Contact Force (grams): Force (Force + Sense)	@ -65°C @ 25°C @ +175°C	30 grams (60 grams) 30 grams (60 grams) 40 grams (70 grams)	
Contactor Life (# of insertions):		Elastomers = 330,000 Force Contacts = 500,000+ Sense Contacts = 1,000,000 Housing =2,200,000	
Contact Compliance:		0.20 mm	
Contact Wipe on Pad:		0.17 mm	
Contact Tip Coplanarity:		0.05 mm	
Temperature:		-65°C to +175°C	
Housing Material:		High Performance Torlon®	
Force Contacts:		Low-Force XL-2K Fine Tip	

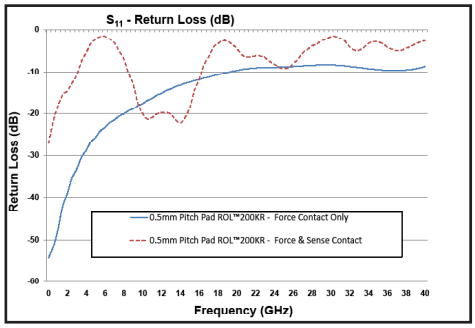
Kelvin-Ready™ Load Boards More Reliable, Less Expensive

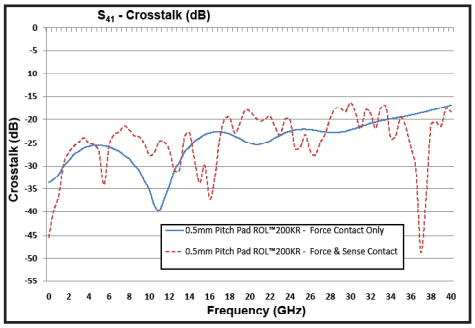
The Pad ROL™ 200KR Kelvin-Ready™ load board solution separates the Force and Sense load board traces in a front and back format, allowing standard size load board traces to route test signals. The relatively larger traces maintain testing reliability and simplify load board design, reducing load board manufacturing expenses relative to other socket designs. For I/Os where Kelvin is not needed, removing the Sense line creates additional load board real estate and can also provide a straight line path to high speed connectors when testing RF and other high speed signals.



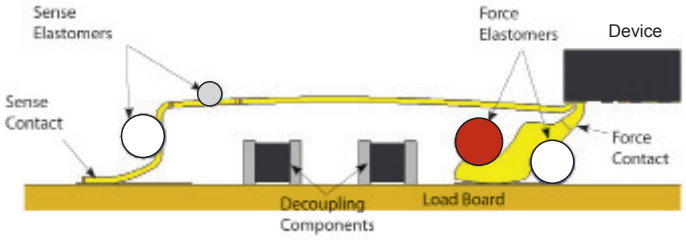
Kelvin-Ready Front/Back Design Spring Pin Side-by-Side Design







Methodology



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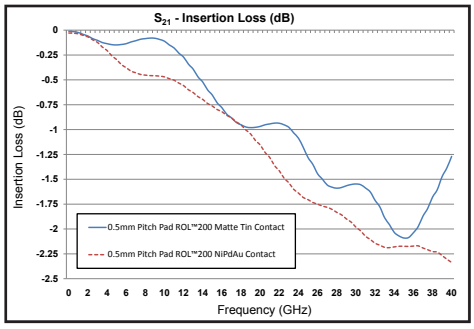
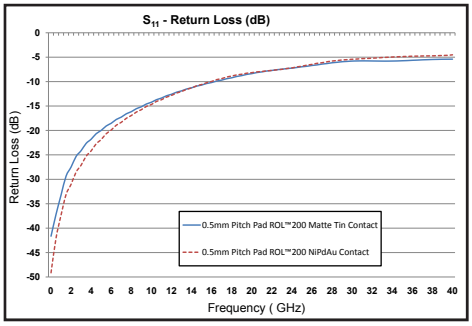
Electrical Specifications	Matte Tin Configuration	NiPdAu Configuration
Inductance:	Self: 0.45 nH Mutual: 0.21 nH	Self: 0.55 nH Mutual: 0.24 nH
Capacitance:	Ground: 0.27 pF Mutual: 0.12 pF	Ground: 0.23 pF Mutual: 0.12 pF
S_{21} Insertion Loss (GSG):	-1dB @ 23.1 GHz	-1dB @ 18.5 GHz
S_{11} Return Loss (GSG):	-20dB @ 5.0 GHz	-20dB @ 5.8 GHz
S_{41} Crosstalk (GSSG):	-20dB @ 21.86 GHz	-20dB @ 29.5 GHz
Average CRESS:	30 mΩ	20 mΩ
Current Carrying Capacity* (Duty Cycle 100%, 50%, 1%):	3.8A, 6.4A, 9.8A	3.0A, 5.1A, 9.3A
Current Leakage:	<1pA @ 10V	
Nearest Decoupling Area:	1.58 mm	

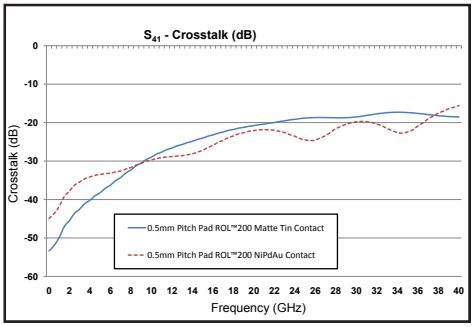
*300ms pulse, 20°C temperature rise.

Mechanical Specifications		Matte Tin Configuration	NiPdAu Configuration
Compressed Height: Electrical Length:		1.40 mm 2.00 mm	1.40 mm 2.07 mm
Contactor Life (# of insertions):		Elastomers = 330,000 Contacts = 500,000+ Housing = 2,200,000	
Contact Compliance:		0.20 mm	
Contact Force (per contact):	@ -65°C @ 25°C @ +175°C	40 grams 40 grams 60 grams	25 grams 25 grams 40 grams
Contact Tip Coplanarity:		0.05 mm	
Temperature:		-65°C to +175°C	
Housing Material:		High PerformanceTorlon®	
Contacts:		Gold-Plated	Low-Force XL-2
Contact Material:		BeCuNiAu	Gold-plated Alloy

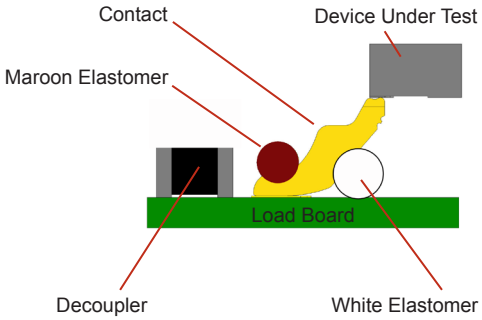
Results for 0.5mm pitch configurations. Specifications provided here are based on internal testing at Johnstech, customer production sites, and third party electrical testing. Actual individual results may vary based on a wide range of variables including: handler/contactor/load board interface, handler plunge depth and velocity, device presentation, alignment plate condition, package plating characteristics, test floor conditions, maintenance activities, mounting/fastening techniques, non-coplanarity from site to site, non-coplanar docking, and temperature extremes.







Methodology



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