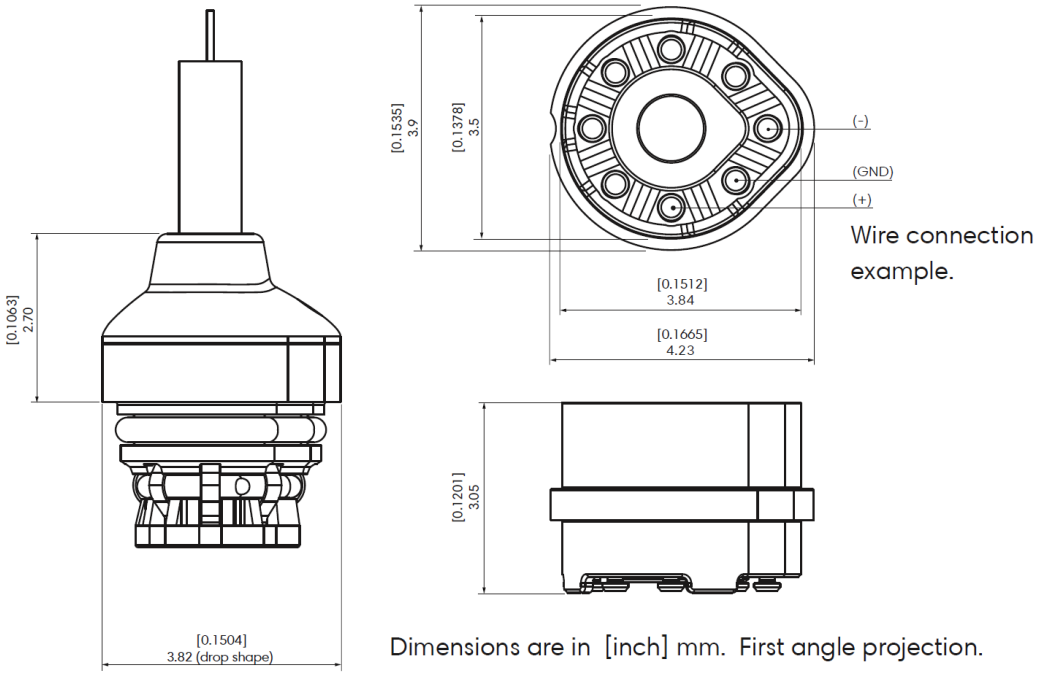
High-priority product: µ-connector

Designation of multi-material multi-functional product:	*Next Generation RIC (N-RIC) Connector for Hearing Aids*
General description of product (3 – 4 sentences):	*The Receiver in the canal (RIC) hearing aid needs a connection mechanism that connects the loudspeaker (receiver) of the hearing aid with the signal processing unit. This is known as RIC connector. The next generation RIC connector should be a multi-functional, multi-purpose hybrid connector that will be able to support the future demands on the hearing aid.*
Multi-materials needed/required:	*Thermoplastics, Thermoplastic elastomers, Metals and metals alloys etc. It can even call for Ceramics and other high performance Composite materials.*
Multi-functionality needed/required:	*Establish electrical contact (up to 9 contact points), conduction of electrical and acoustical signals, act as programming connector, provide required retention force between the two halves of the connector (plug and sockets), provide mechanical and acoustical sealing at the interface of the connector etc.*
Expected improvement:	*Increases number of electrical contacts (compared to the state-of-the-art), possibilities of conduction both the electrical and acoustical signals via the RIC connector, possibilities of providing the programming connection for hearing aid devices during the programming of the hearing aids by the audiologists or by the dispensers. Reduce the possibilities of electro-chemical corrosion in the electrical contacts, improved wear and tear for mating components, improved ergonomics, aesthetics and lifespan etc. This versatile connector system is expected to be cheaper compared to the current price for the state-of-the-art connector today.*
Bottlenecks to overcome for reaching the expected improvement	*The main bottleneck associated with the proposed idea will be the realization of combined electrical and acoustical signal transmission without enlarging the overall size of the system. Integration of 9 electrical contacts within the space available inside the connector system will be another challenge. Micro part handling and assembly is a general bottleneck for micro manufacturing, this will be even more acute for the component production and assembly of the connector system which will be comprised of very complex, micro sized components of several material classes.*
Functional requirements:	*The design of the new RIC connector should match with the existing design of the RIC hearing aids. Retention of the electrical contact and mating force up to 500 connection-disconnection cycles for 5 years, no particle generation due to wear and tear, easy assembly of the RIC connector with bulk product, design-in-built orientation of the two parts of the connector. Minimum feature will probably be the contact pins with a diameter of about 150 µm and aspect ratio of 20). The surface roughness of the mating components (like metal contacts) should be as low as possible to reduce the frictional wear and the roughness of the plastic components (like housing of the connection systems) should be any standard surface that can be produce by injection moulding process. The connector will be exposed to soldering to connect the litz wires, so the plastic materials should be able to withstand the heat of soldering. About the characterization requirements, electrical*

	conductivity and contact resistance of the metal inserts , tensile strength and torque of the plug-socket combination, sealing property of the mated plug-socket, thermal resistance of the plastic material, corrosion and wear resistance of the metallic components, insulating property of the plastic, etc. should be tested according to the hearing aid standard.
Technical sketch of product (if applicable):	  Ref: Sonion's Product Datasheet, CS8X Rev 001, www.sonion.com