

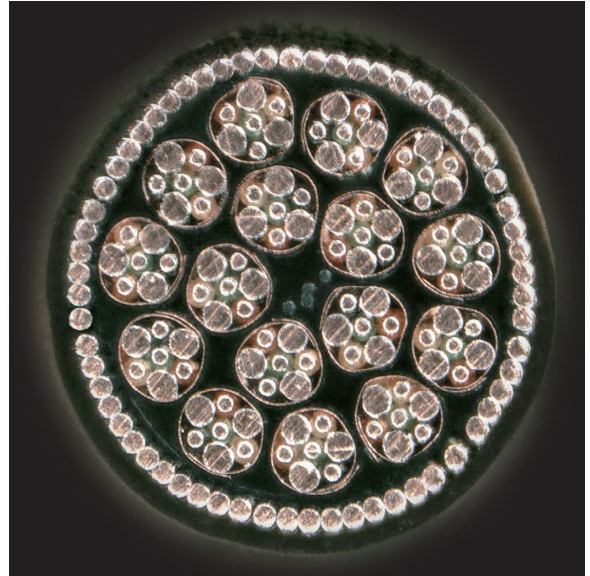
Junkosha Multi-Core Cable and Assembly

Multi-Channel Transmission Cable and Assembly (MCT) Patented

In recent years, highly specialized ultrasonic probes deployed inside the human body cavity have been used to diagnose organs and blood vessels that are difficult to diagnose using more traditional ultrasonic probes used on the surface of the body. Due to the need to tackle the body's expansive and complex vasculature, smaller delivery devices and probe units are required. Junkosha has developed a new multi-channel transmission cable to replace existing coaxial and FPC subassemblies that offer improved signal integrity, mechanical flexibility and space savings.

Features

- **Thinner** - Since our multi-channel transmission cable structure is thinner than the outer diameter of a standard coaxial cable, the number of signal lines can be increased in a smaller/identical footprint
- **Signal Quality** - Since the signal quality is equivalent to that of a coaxial cable, this product can be easily integrated into existing designs and can improve the overall signal quality of a system through advanced coupling technology
- **Flexible** - Since our multi-channel transmission cable is flexible and allows for improved movement of a delivery system when compared to more traditional constructs, it is ideal for internal diagnostic applications
- **Process Friendly** - A simplified and centralized cable structure can reduce device assembly man-hours and improve assembly yields and quality, thus lowering total overhead manufacturing costs
- **Subassembly Service** - Junkosha can offer various subassembly and value-add services to further streamline manufacturing needs and processes

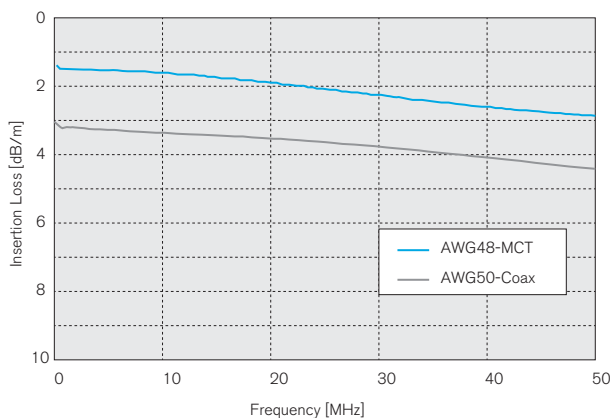


64CH in 1 mm

Use

- Intracardiac Echocardiogram (ICE)
- Ultrasound Endoscopy
- Intravascular Ultrasound (IVUS)
- Transesophageal Echocardiogram (TEE)

AWG50 Coax vs. AWG48 MCT [Case Study: Lumen I.D. for Cable: 1.25mm]



Conductor Size	64 Channels O.D.		
	MCT	Coax	Reduction Ratio
AWG #44	0.062" (1.57 mm)	0.109" (2.77 mm)	43%
AWG #46	0.059" (1.50 mm)	0.086" (2.19 mm)	32%
AWG #48	0.044" (1.12 mm)	0.066" (1.68 mm)	33%
AWG #50	0.040" (1.00 mm)	0.060" (1.53 mm)	35%

Capacitance: nom. 115 pF, Characteristic Impedance: nom. 50 Ω

In a case where the inner diameter of a cable lumen in a catheter is 1.25 mm for a transmission line utilizing a 64ch probe.

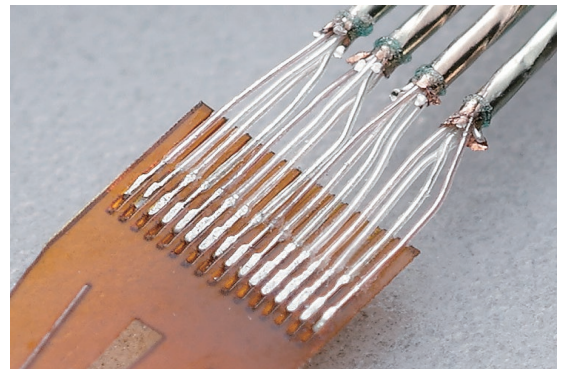
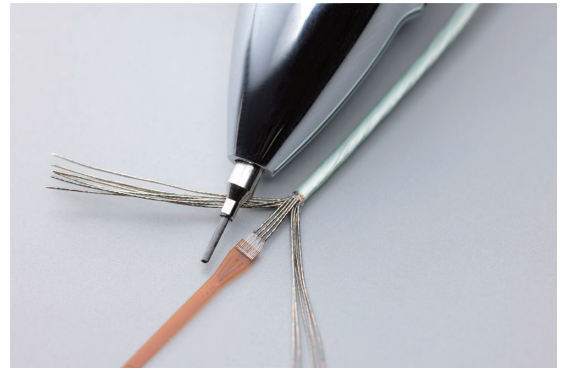
When you select a Coax cable, then the outer diameter will be 1.22 mm at size AWG50, whereas if you select the Junkosha MCT cable, the outer diameter will be 0.98mm. Additionally, if you select size AWG48 for the Junkosha MCT cable, the outer diameter will be 1.16 mm which is still thinner than an AWG50 Coax cable. However, the transmission characteristics will be significantly improved, which will result in improved ultrasonic image quality and an improved catheter assembly process.

Junkosha's Advanced Technology for Integrated Structure Patent Pending

Junkosha's "integrated" structure enables customers to perform difficult or high-touch soldering assembly without special tooling or jigs.

Benefits

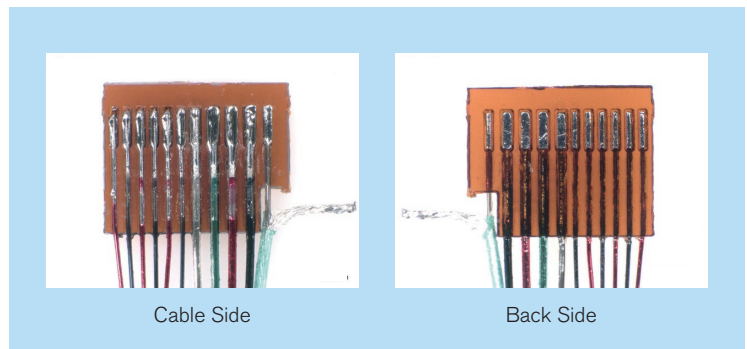
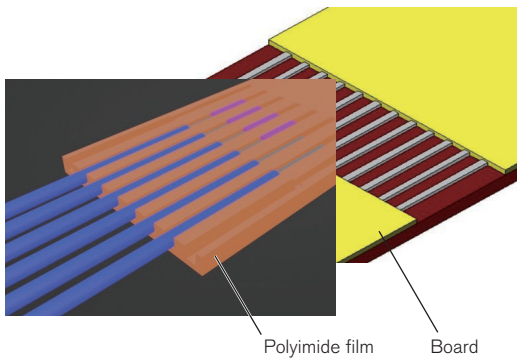
- By connecting and pre-processing the ends of the cable solution, customers can streamline the final assembly process, eliminating excess supply chain management and third-party supply of critical components involving the customer's core technologies.
- This "integrated" sub-assembly solution removes the need for relay boards or additional FPCs in device design, reducing costs and shortening pad dimensions. This results in space savings and further miniaturization of devices.
- This solution simplifies and streamlines device manufacturability and can be further automated into the assembly process, stabilizing the quality of connections in the finished device.
- This solution allows various composite cables and conductor sizes to fit into custom device designs even if the PAD position on the mating side is random.



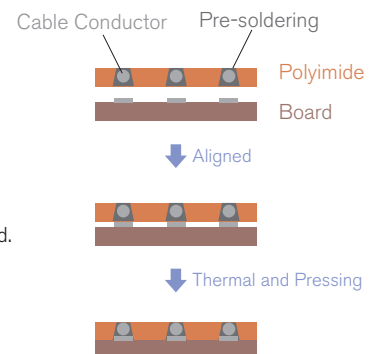
Assembly Options

- Junkosha offers additional design and recommendations for process conditions.
- After positioning, the customer can use a welder with set temperature and pressure conditions.

Assembly Process



- 1 Stripped cable ends are placed on the wiring surface of the molded polyimide insulation film.
- 2 Through-holes are made in the polyimide insulation film to match the cable ends.
- 3 Cables are pre-soldered to the wiring surface.
- 4 The polyimide film with the pre-soldered cables is aligned with the connection board.
- 5 During thermal pressing, the solder melts through the through-holes, assembling the cables and the board.



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