

TECH OFFER

Wireless Power Transmission Units with Three-Dimensional (3D) Coil Winding Technology



KEY INFORMATION

TECHNOLOGY CATEGORY:

Electronics - Interconnects

Electronics - Power Management

TECHNOLOGY READINESS LEVEL (TRL): **TRL5**

COUNTRY: **SINGAPORE**

ID NUMBER: **TO174864**

OVERVIEW

The traditional coiling method involves the use of flat, planar coils that are wound in a circular or rectangular shape around a core material. These flat coils generate a magnetic field that is used to transfer energy wirelessly from a charging pad to a device that is compatible with wireless charging technology.

This technology offer is a three-dimensional (3D) coil winding method that can provide improved and stable magnetic field that results in increased efficiency and flexibility. This technology allows products to be adapted to suit various forms, shapes and sizes, making it a highly versatile option for a range of applications.

The technology owner is keen to do R&D collaboration with application developers from various industries where wireless power transfer is required. Their goal is to further improve this technology and apply it to a wider range of products and use cases.

TECHNOLOGY FEATURES & SPECIFICATIONS

The main features and benefits offered by the wireless power transmission technology are:

- Flexible design that can conform to irregular shapes and sizes
- Space saving design by integrating multiple coils into a product
- Weight reduction up to 50%; Physical size reduction up to 50%
- Comply with IP67 for outdoor usage; resistant to dust and water
- Ideal for portable devices, electric vehicles, home appliances and harsh environment

POTENTIAL APPLICATIONS

This wireless power transmission technology can be deployed in a wide range of applications where wireless power transfer is needed, such as, the following applications and examples:

- **Wearables:** Typically, smartwatches and fitness trackers are small and have irregular shapes, making it difficult to charge them using traditional flat coils. 3D shaped coils can accommodate the irregular shapes of these devices and improve the efficiency of wireless charging.
- **Electric Vehicles:** Wireless charging technology is used to improve the electric vehicles usability and convenience. 3D shaped coils could be used to create charging pads that can fit into the irregular shapes of electric vehicle batteries, making charging more efficient and reliable.
- **Medical Devices:** Pacemakers and some hearing aids are often implanted in the body, making it difficult to charge them using traditional charging methods. 3D shaped coil winding could be used to create charging systems that can wirelessly charge these devices without the need for invasive procedures.
- **Home Appliances:** Home appliances such as smart speakers, lamps, and toothbrushes can be integrated with 3D shaped coil to create charging pads, improving their usability and convenience.
- **Delivery robots:** Sidewalk robots, drones and other delivery robots are increasingly adopting self-charging systems to improve operational efficiency. 3D shaped coils can accommodate the irregular shapes of these robots, and making charging more safely outdoors.

UNIQUE VALUE PROPOSITION

The unique value proposition of wireless power transmission with 3D coil winding technology lies in its ability to address some of the pain points associated with traditional flat coil winding methods, such as:

- Enhanced flexibility that can accommodate irregular shapes and sizes
- Cost savings by reducing material wastage associated with traditional flat coil winding methods
- Improved durability and robustness; less prone to breakage

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