10W Rx COIL FOR LOW FREQUENCY WIRELESS POWER TRANSFER

Product Name

Wireless Charging Antenna Coil -10w low frequency receive

Molex PN	Part Description
1461790001	Wireless Charging Coil - 10w low frequency receive

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Low Frequency Medium Power Rx

10W Rx COIL FOR LOW FREQUENCY WIRELESS POWER TRANSFER

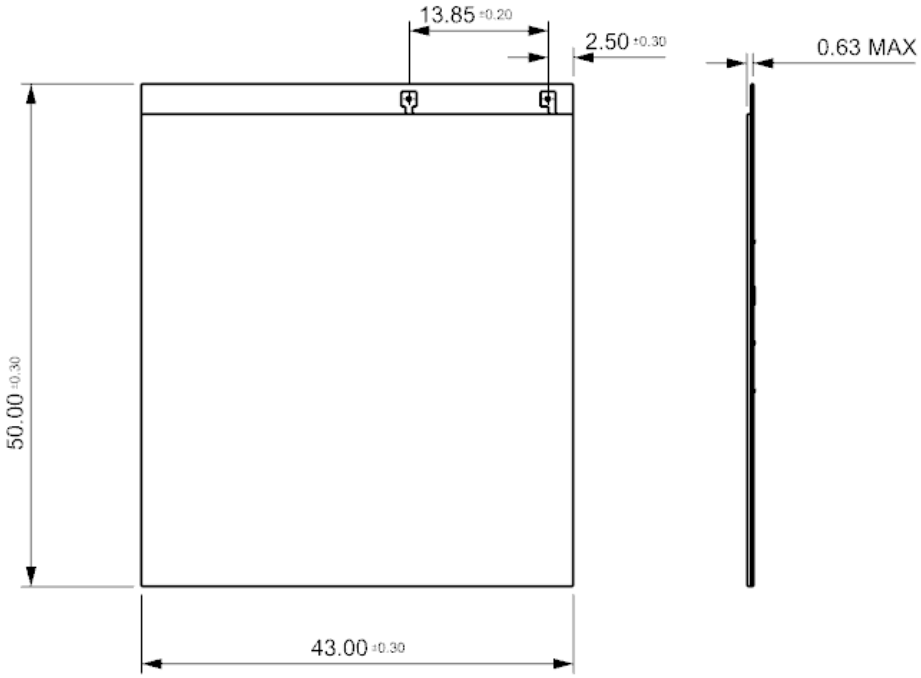
FEATURES

- CoolSkin™ for highest PCB/Flex Q Factor
- Smartphone and accessory form factor
- Industry leading thinness of 0.63mm MAX (w/shield)
- Enables high efficiency solutions
- Flex PCB construction:
  - Increased durability
  - Repeatable performance
  - Integration with other electronics
- Custom design available

Molex Part Number 1461790001

Electrical Parameters at 25°C			
Inductance +/-2%, @ 200kHz (uH)	DCR +/- 2% (mOhm)	ESR +/- 2% (mOhm)	Typical End-End Efficiency[1] (%)
17.3	450	975	>70

Mechanical Parameters (mm)		
Coil Thickness	Assembly Thickness (w/shield)	Material
0.24	0.63 MAX	Flex



[1] End to End Efficiency is typical and will depend on Power Amplifier, matching circuit, device configuration, charging distance and other factors. Please contact Molex directly if further guidance is required; www.Molex.com or via phone at 1 800-78MOLEX (1 800 786-6539).

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1.0 SCOPE

This specification describes a FPCB receiver coil for wireless power transfer at frequencies 100kHz to 300kHz. The information in this document is for reference and benchmark purposes only. The user is responsible for validating coil performance based on users own testing environment.

2.0 PRODUCT

This high efficiency coil is designed for high performance mobile phones, handheld mobile terminals or any other device / accessory requiring up to 10W power out. Standard FPCB construction enables integration with other electronics, high durability, and consistent performance.

2.1 SPECIFICATIONS AND DEFINITIONS

Equivalent Series Resistance (ESR): resistance measured at or around the operating frequency. ESR accurately characterizes any losses such as skin effect or proximity effect and any additional effects that may occur in the presence of material such as shielding, metal backing, or the housing. Comparison of coil assembly and in situation ESR measurements can accurately determine sources of loss. This metric should be given serious consideration during product selection to ensure full characterization of system electrical parameters.

Direct Current Resistance (DCR): resistance measured at DC or measured at very low frequencies (60 Hz - 100 Hz) and is often considered an incomplete measurement in wireless charging environments because it does not take into account actual causes of resistance during operation. NuCurrent recommends ESR as the most relevant measurement of resistance in a wireless power coil, but provides DCR values as well.

2.2 PRODUCT TUNING

Tuning is a critical aspect that greatly impacts system performance. The receiver coil should be placed in the final housing, placed on desired charging surface, and have situational inductance, Ls', measured. The necessary tuning capacitor values can be calculated using Equation 1:

$$C_{tune} = \frac{1}{(2 * \pi * f)^2 * Ls'} \quad (1)$$

*It is important to note that the equation above should be used as reference, and for additional tuning information, please check appropriate system datasheets for further information.

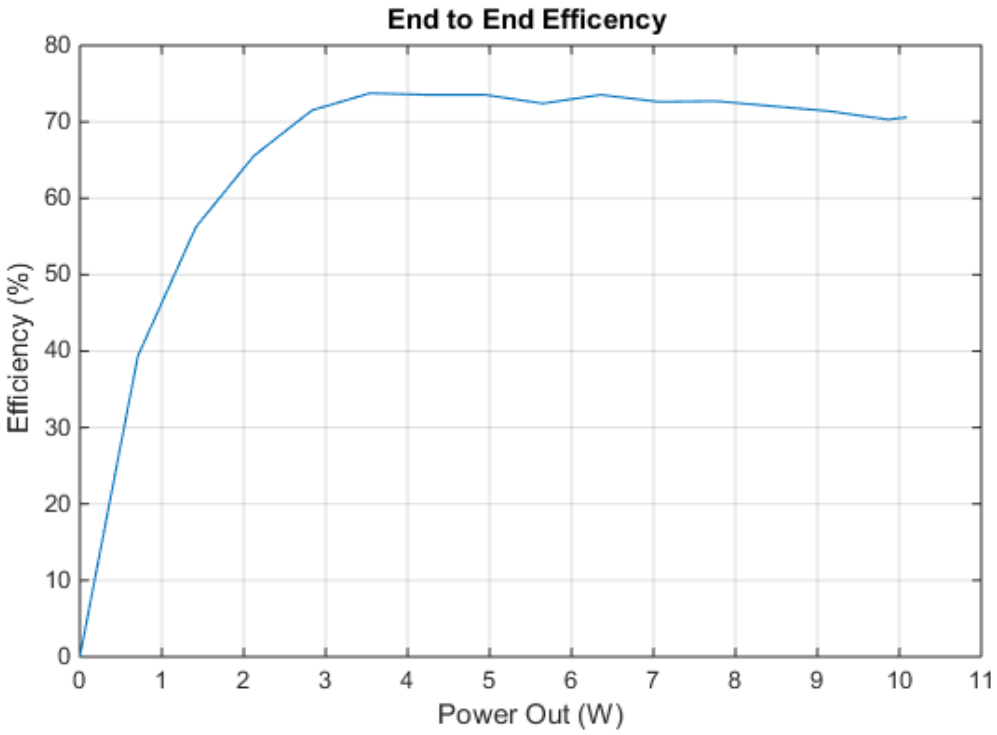
For detailed product specific tuning information, please contact Molex at www.molex.com or via phone 1 800-78MOLEX (1 800 786-6539).

2.3 PERFORMANCE

For custom applications, Molex and NuCurrent can optimize antenna assemblies for thickness, price or efficiency. The data below demonstrates the performance of the coil up to 10W.

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Test Equipment used for all tests

- 10W transmitter
- 10W Receiver @ 7V/1.4A out
- Coil assembly (coil and shield)

2.4 SCHEMATIC



2.5 GENERAL INFORMATION

a. Wireless Charging receiver coil applicable for low frequency devices
b. For Rx applications up to 10W
c. Includes shielding for low frequency wireless charging
d. High quality (Q) factor coil
e. Durable, repeatable, easily integrated, robust solution

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Low Frequency Medium Power Rx

3.0 REFERENCE DOCUMENTS

4.0 PROCEDURE

4.1 GENERAL REQUIREMENTS

A. CONNECTIONS FOR TESTING

I. 28AWG copper wire recommended for through-hole soldering

B. RECOMMENDED TEST SETUP

