"High Frequency Ceramic Solutions"

NFC antenna with ferrite shielding feature for over-metal/battery/rugged/industrial/ home/automotive and extended reading distance environments.
Applications: Lock Access, Pairing, Data Communications, Payment systems, RFID

P/N NFC1AT80A01N8

Detail Specification: 1/7/2016

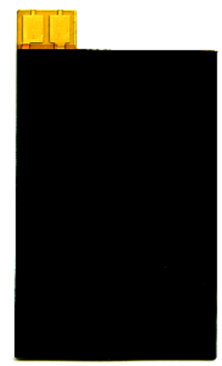
For optimized reading distance and speed, other inductance values[1] may be selected, go to: www.johansontechnology.com/antennas

General Specifications

Part Number	NFC1AT80A01N8	
Frequency (MHz)	13.56	
Reading Distance[2] (mm)	>40 EMVCO	>20 Card (Avg)
Inductance @ 13.56MHz	1.8 ±10% µH	
Quality Factor @ 13.56 MHz	>30	

[1]Depending on design and end product environment

[2]Reading distance measured using QP3000 and NXP-PN65N



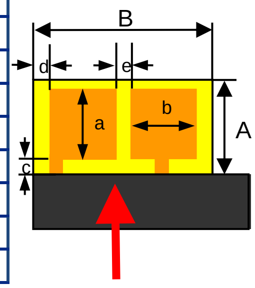
Part Number Explanation

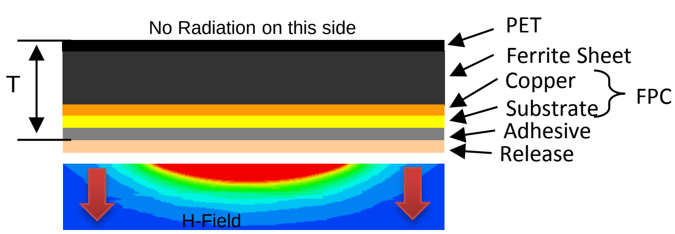
P/N Suffix	**Packing Style**	Bulk (loose)	Suffix = S	eg. NFC1AT80A01N8S
		Trays	Suffix = E	eg. NFC1AT80A01N8E

Applications
- Data Communications
- Lock entry systems
- Payment systems
- RFID Tags reader/writer
- Instant, High Data Rate transfers
- Contactless smart cards
- Transit Access systems
- Security

Mechanical Dimensions

	In	mm
L	1.969 ± 0.012	50.00 ± 0.30
W	1.181 ± 0.012	30.00 ± 0.30
A	0.256 ± 0.012	6.50 ± 0.30
B	0.354 ± 0.008	9.00 ± 0.20
T	0.021 Max.	0.53 Max.
a	0.177 ± 0.012	4.50 ± 0.30
b	0.118 ± 0.012	3.00 ± 0.30
c	0.039 ± 0.012	1.00 ± 0.30
d	0.039 ± 0.012	1.00 ± 0.30
e	0.039 ± 0.012	1.00 ± 0.30





Terminal/Contact Pads' Configuration

No.	Function
1	Feed
2	Feed

*Feed 1/2 interchangeable

JOHANSON TECHNOLOGY
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Ver 1.1

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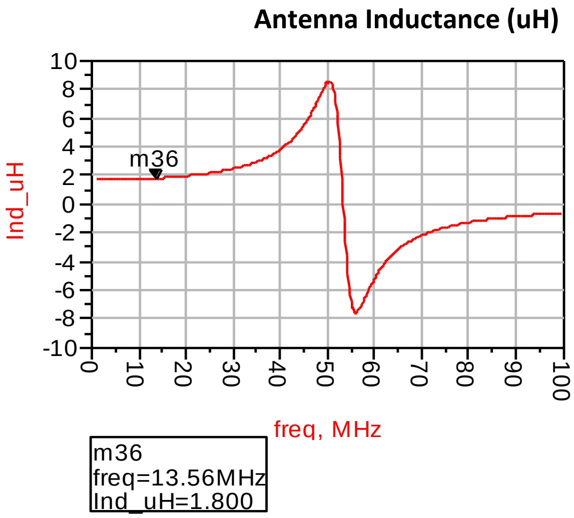
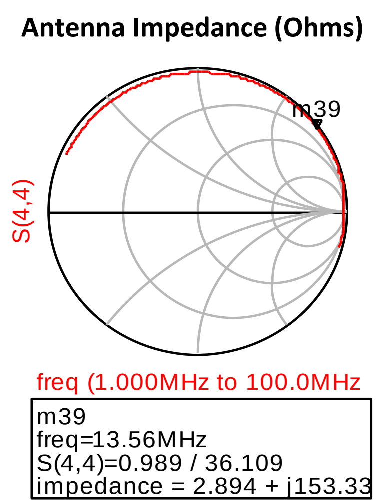
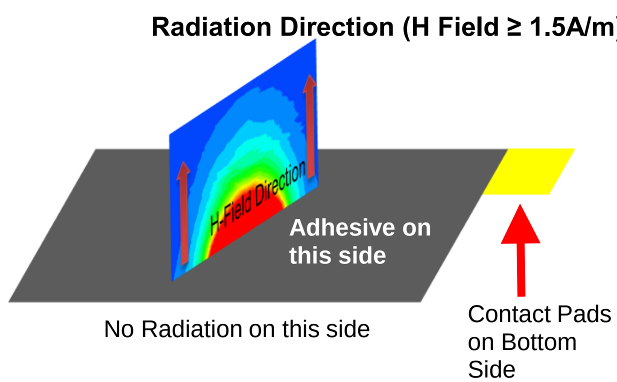
Typical Electrical Characteristics (T=25 °C) without metal plane



Features

- Can be mounted on top of metal
- Available in various inductance values depending on environment
- No custom antenna layout design needed
- Near field inductive coupling
- Ferromagnetic material for fast, instant coupling
- Shape, dimensions and matching circuit design for easy integration of all 13.56MHz NFC applications
- Thin profile





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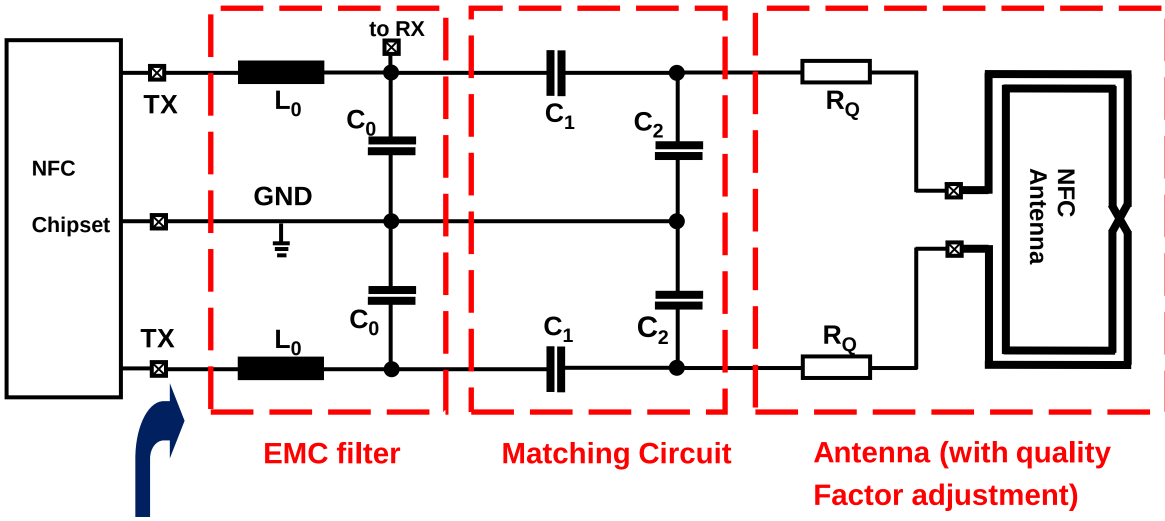
Antenna Matching Application Note



Component	Note
L_0	The EMC filter is used to reduce harmonics of the 13.56 MHz carriers and perform as an impedance transformer
C_0	
C_1	The matching circuit elements C1 and C2 must be tuned to get the required matching resistance Rmatch (Xmatch=0) at the I/O pins of NFC IC
C_2	
R_q	The quality factor damping resistors RQ are used to obtain a certain pulse shape as required by the standard. Normally, RQ is chosen to make the antenna Q<35

Let us help you tune your antenna for proper operation and maximum readout distance!
Details here: www.johansontechnology.com/ipc-antenna-services
Contact our RF Engineers here: http://www.johansontechnology.com/ask-a-question

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Cable Recommendation

When deciding what type of cable is best for your application, there are a few key factors to keep in mind. While a larger gauge cable provides lower losses, they are typically more rigid and difficult to bend. The opposite is true for thinner gauge wires in that they are more flexible at the cost of increased loss. **For this reason, we feel that the 1.13 mm micro coax cable strikes the best balance between performance, flexibility, and even cost.**

We recommend a minimum cable length of 10cm. This helps to reduce stress that the cable experiences when connecting to the main PCB. And while there isn't a maximum length, keep in mind that increased cable length does contribute to increased lossed.

Cable Soldering

We recommend directly soldering the RF cable onto the NFC antenna pads

1. Strip RF cable exposing roughly 2mm of each layer
2. Solder center conductor to one of the feeds (the two are interchangeable)
3. Solder the braided shield to the remaining feed (the two are interchangeable)
4. Ensure solid solder joints between cable and corresponding NFC feeds

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For layout positioning review assistance, contact our Applications Team at:
www.johansontechnology.com/component/techquestion

For more antennas and download measured S-parameters, go to:
www.johansontechnology.com/antennas

RoHS Compliance
www.johansontechnology.com/technical-notes/rohs-compliance.html

MSL Info
www.johansontechnology.com/technical-notes/msl-rating.html

Packaging information
www.johansontechnology.com/ipcpackaging.html

Soldering Information
www.johansontechnology.com/ipcsoldering-profile

Recommended Storage Condition and Max Shelf Life
www.johansontechnology.com/ipcstorage-shelflife

Why use a Ferrite Shielded NFC antenna Vs a regular flex PCB NFC antenna?

•When a metal-content object (i.e. battery, plate, GND PCB, LCD display) is placed near, above underneath the NFC antenna, the magnetic field will generate undesired EM current on metal plate, which are called eddy currents which will not permit communication unless customization is done

•These eddy currents will absorb power, weaken the E-field and lead to detuning of the antenna, rendering it non-operational

• Most of the time it is necessary to "load" or "shield" the antenna with ferrite or other mechanically precise metals for proper operation in metallic environments/layouts

End Product Examples	
Payment Terminal	Tablets/Notebooks
Transit access receivers	Lock/Security Systems
Smartphones	In-store reward tags
Wearables/Fitness Reader	Vehicle entry locks