

Description: 860-930MHz Embedded
Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139



Features:

- Antenna type: Helix with molded plastic support
- Fully SMD compatible
- Size 14x3mm
- Minimum keep out 4.2mm
- RoHS compliant

Applications:

- ISM 868MHz and 915MHz radio systems
- Sensors
- Remote controls
- Security
- IoT

All dimensions are in mm / inches

Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

For more information:

Pulse Worldwide Headquarters
15255 Innovation Drive #100
San Diego, CA 92128
USA
Tel: 1-858-674-8100

Pulse/Larsen Antennas
18110 SE 34th St Bldg 2 Suite 250
Vancouver, WA 98683
USA
Tel: 1-360-944-7551

Europe Headquarters
Pulse GmbH & Do, KG
Zeppelinstrasse 15
Herrenberg, Germany
Tel: 49 7032 7806 0

Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road(#29 Bldg, 4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998



Description: 860-930MHz Embedded
Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

ELECTRICAL SPECIFICATIONS

Antenna Type	Helical
Frequency	860-930MHz
Nominal Impedance	50 Ω
Radiation Pattern	Omni
Polarization	Linear
Power Withstanding	2W

	Frequency band	Return Loss	Gain	Efficiency
PWB 1 (small clearance, 4.2mm copper free area from the PCB edge)	ISM868 $\pm$ 5MHz	<-8dB	-2.5	35%
	ISM915 $\pm$ 13MHz	<-8dB	-2.5	30%
PWB 2 (big clearance, 9.5mm copper free area from the PCB edge)	ISM868 $\pm$ 5MHz	<-10dB	-0.5	55%
	ISM915 $\pm$ 13MHz	<-10dB	-1	45%

Description: 860-930MHz Embedded
Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

MECHANICAL SPECIFICATIONS

Overall Length / Height	14 mm / 3 mm
Weight	0.52 g
Antenna Color / Material	White
Fix system	SMD+Glue
Recommended Glue	Resinlab EP1320LV Black
Solder Paste Thickness	Min 0.15mm

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-40° C~+85 ° C
Storage Temperature	-40 ° C ~+85° C
RoHS Compliant	Yes

OTHER SPECIFICATIONS

Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

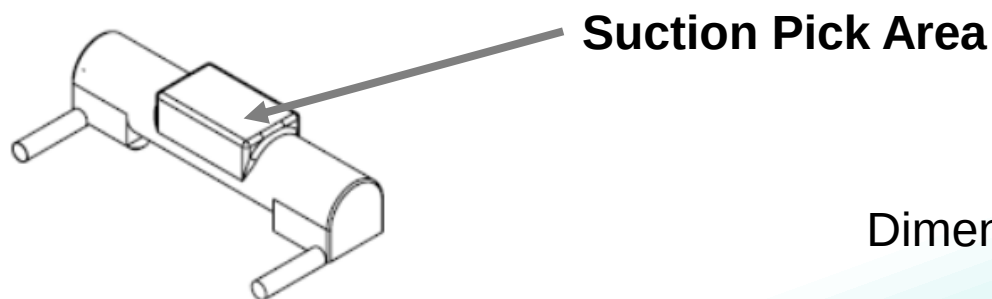
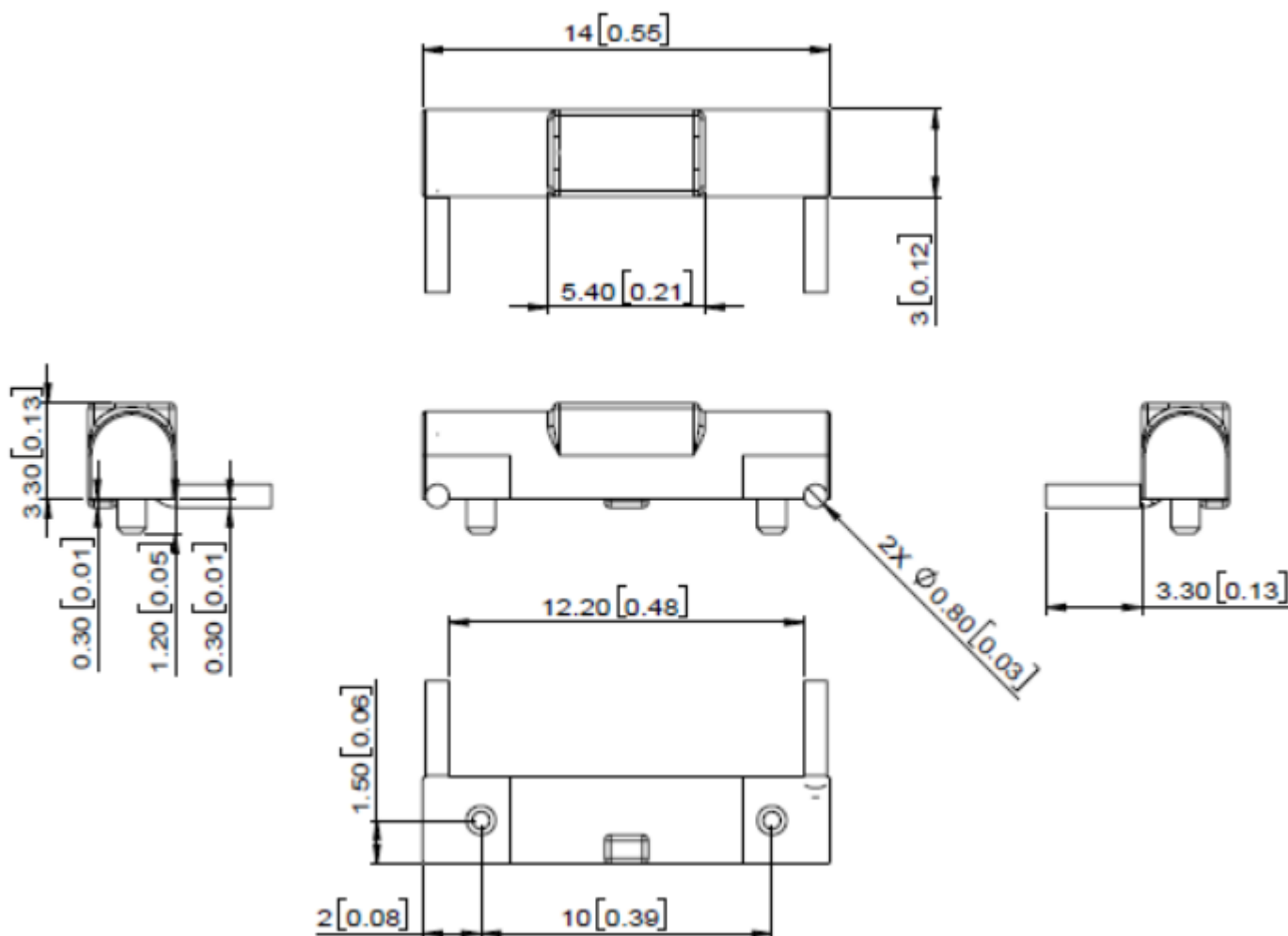
This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

Description: 860-930MHz Embedded Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

MECHANICAL DRAWING



Dimension Unit: mm[inch]

Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

Description: 860-930MHz Embedded
Helical Antenna

Series:
SMD Helical Antenna

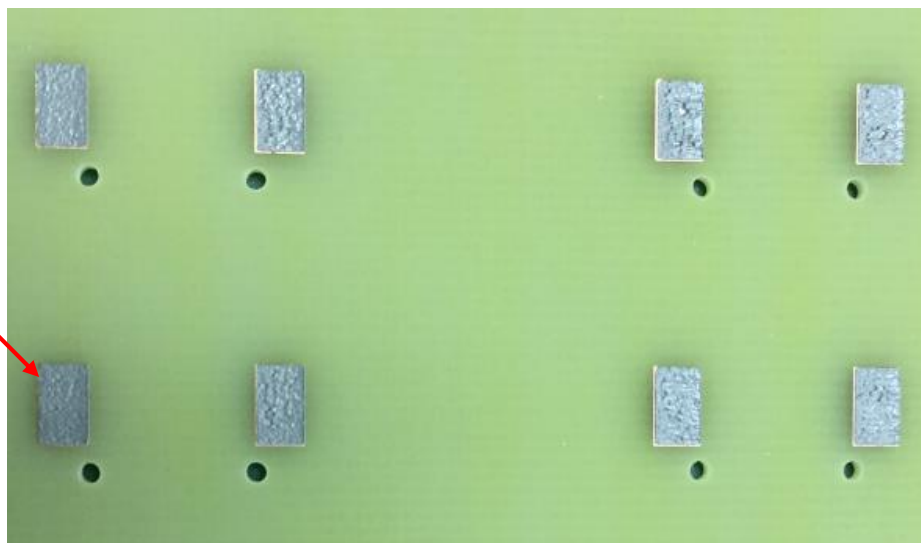
PART NUMBER: W3139

FIX SYSTEM RECOMMENDATION

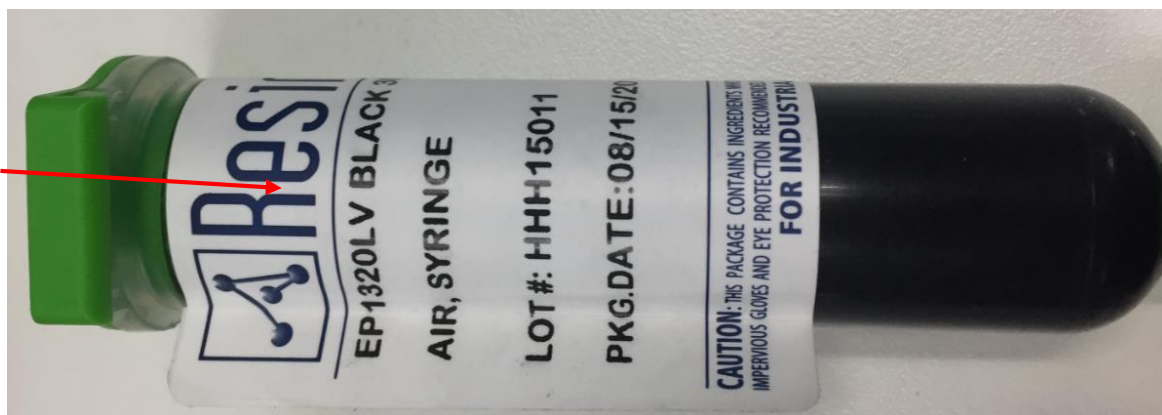
Fix system

1. SMD process
2. Solder paste thickness: minimum 0.15mm
3. Glue is required, Recommended Glue: Resinlab EP1320LV Black, usage and position see below recommended area.

Solder
paste



Recommended
Glue Type



Dimension Unit: mm[inch]

Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

Description: 860-930MHz Embedded
Helical Antenna

Series:
SMD Helical Antenna

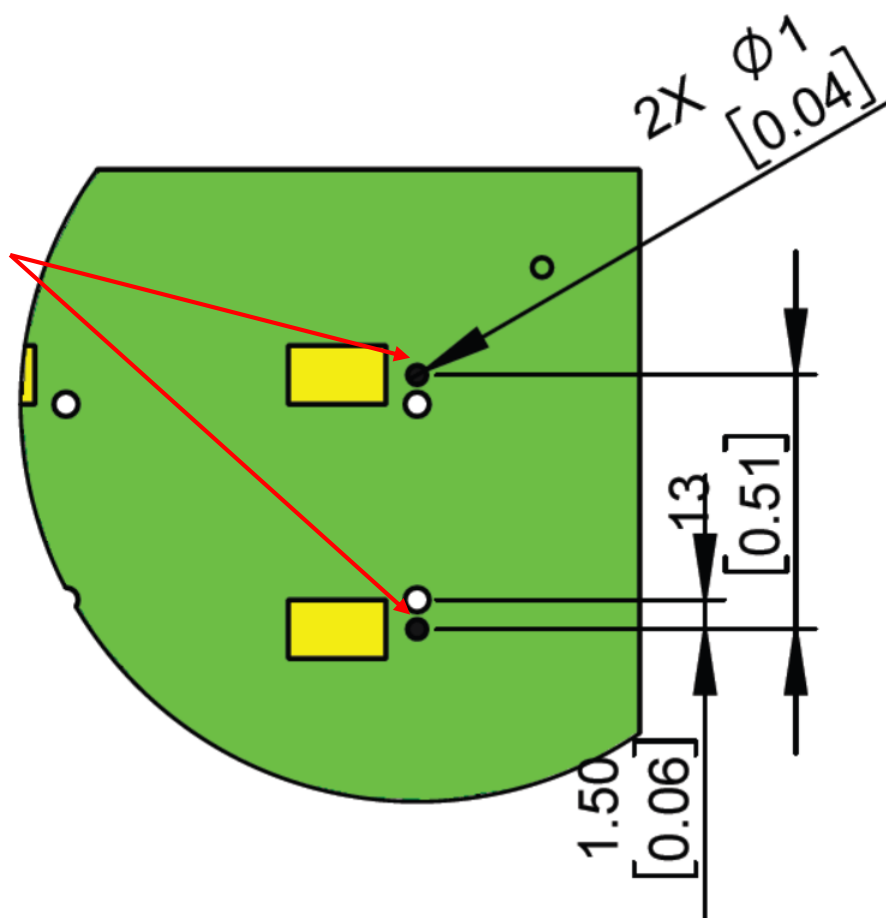
PART NUMBER: W3139

FIX SYSTEM RECOMMENDATION

Fix system

1. Glue position on PCB for recommendation

Glue position on PCB for
recommendation



Dimension Unit: mm[inch]

Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

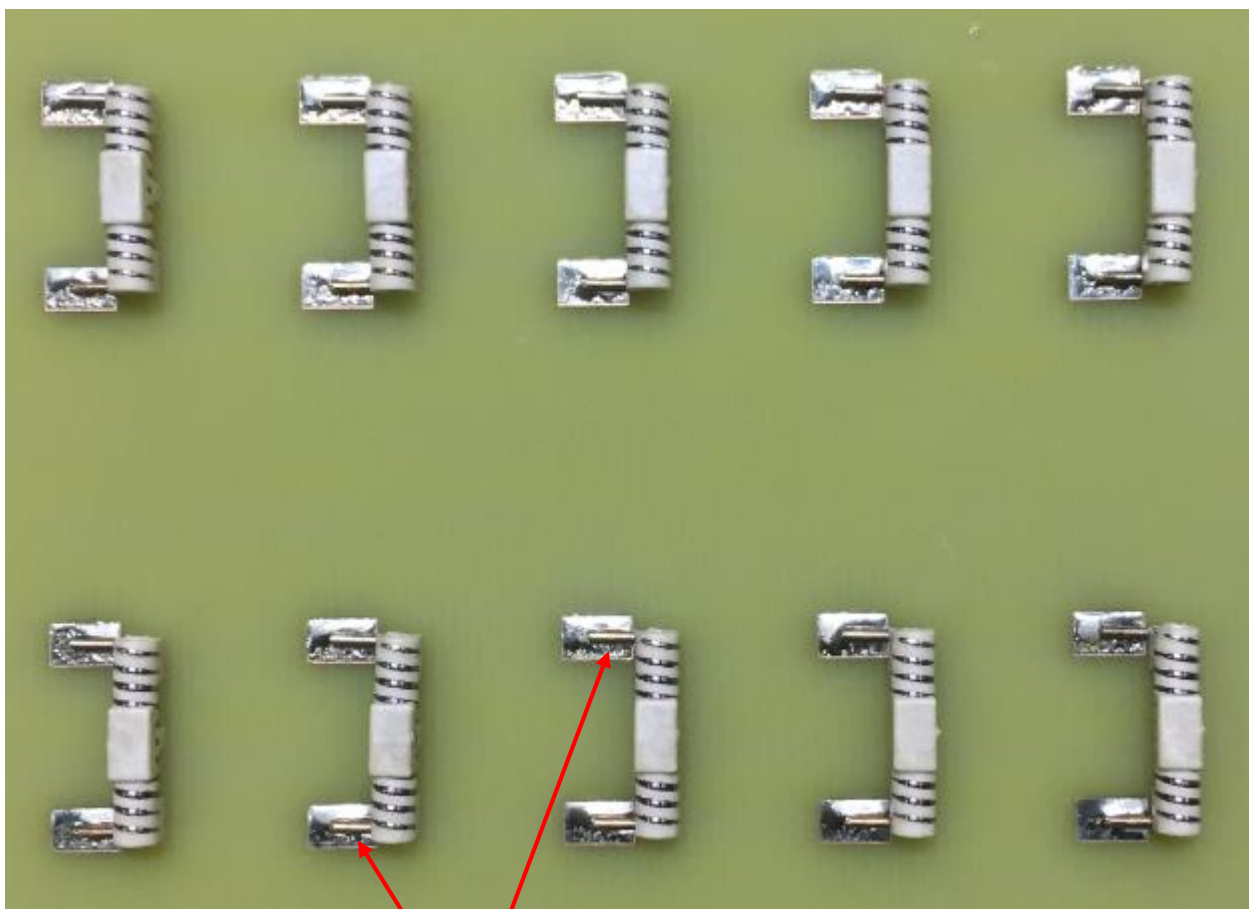
This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

Description: 860-930MHz Embedded
Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

FIX SYSTEM RECOMMENDATION



Solder effect

Dimension Unit: mm[inch]

Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

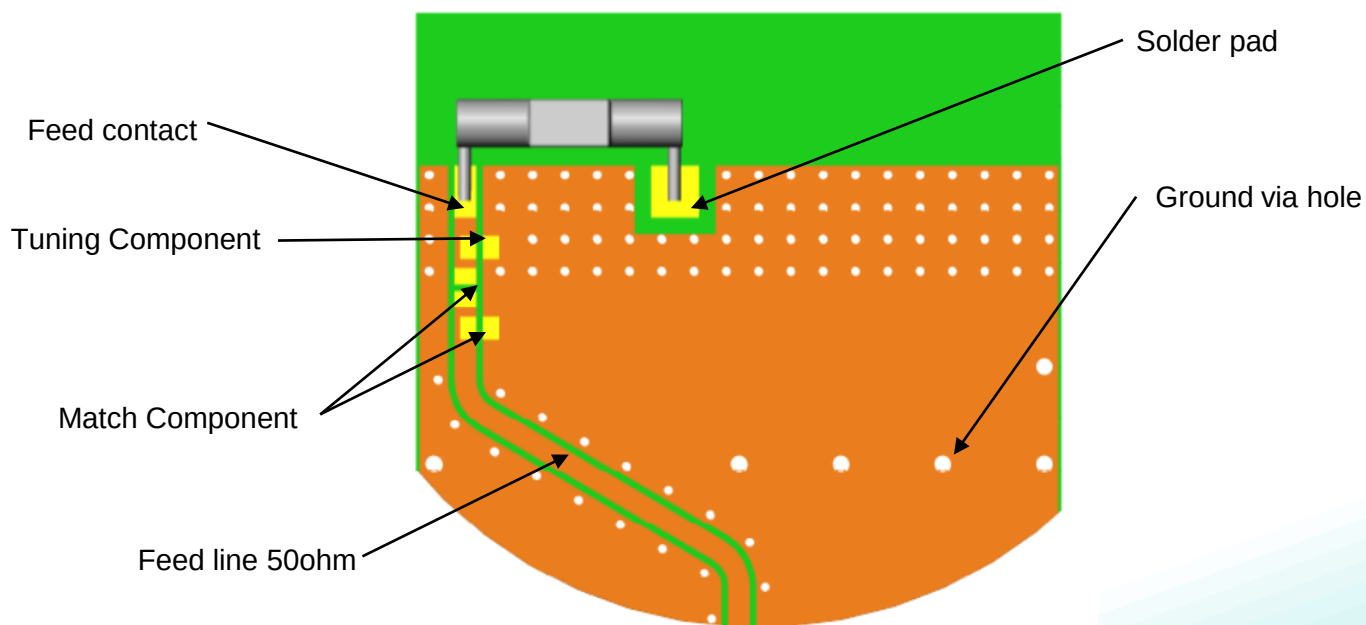
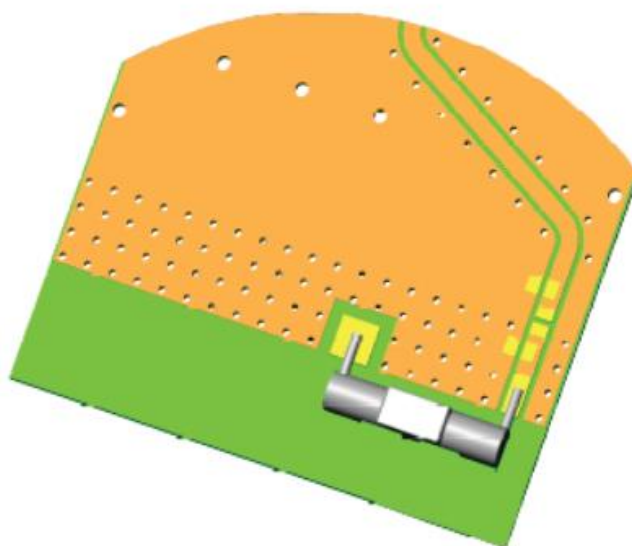
Description: 860-930MHz Embedded
Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

TEST SETUP

PWB 1 Layout for W3139 SMD Helical Antenna



Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

Description: 860-930MHz Embedded
Helical Antenna

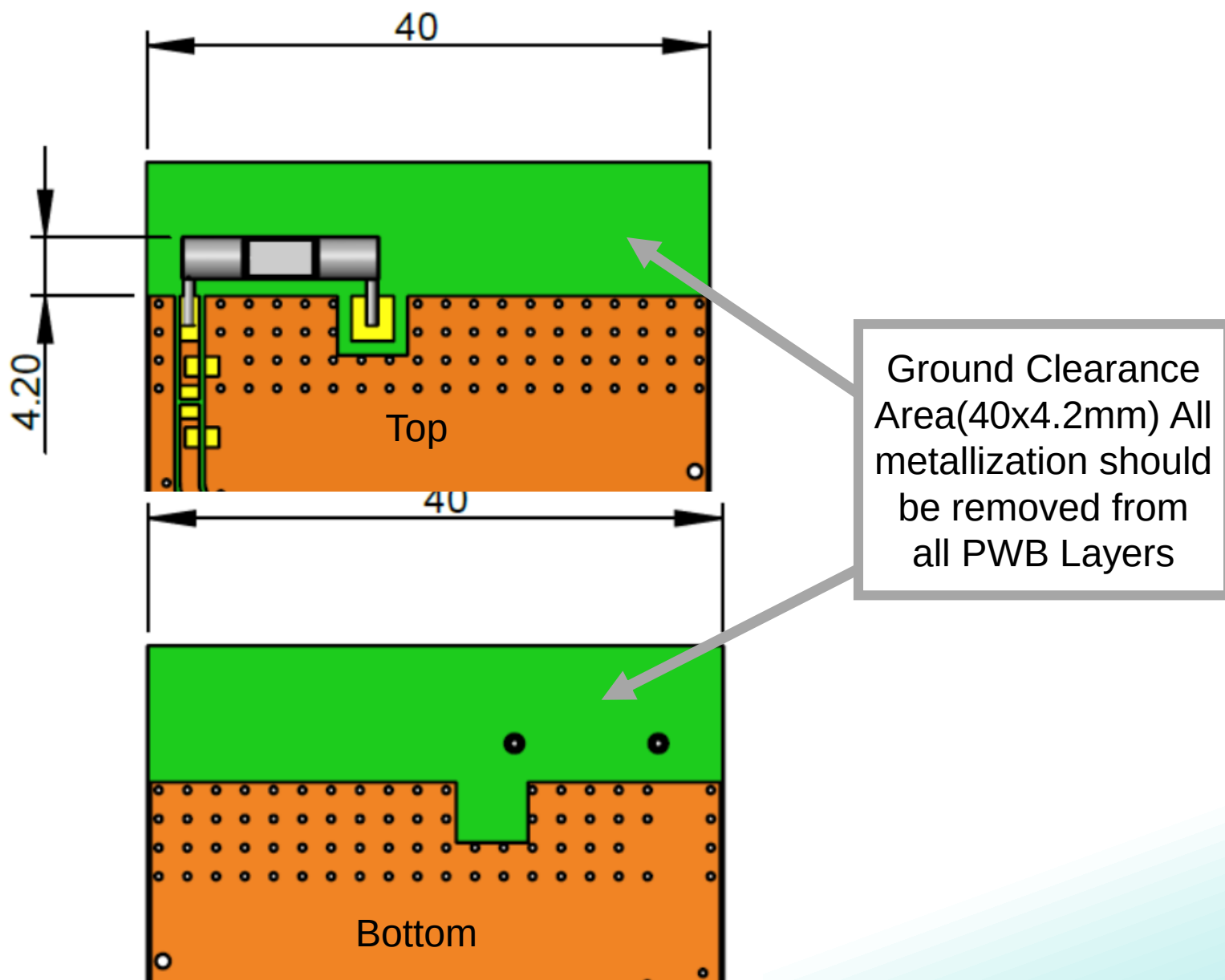
Series:
SMD Helical Antenna

PART NUMBER: W3139

TEST SETUP

PWB 1 ground clearance area (Top):40x4.2mm

PWB 1 ground clearance area (Bottom):40x4.2mm



Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

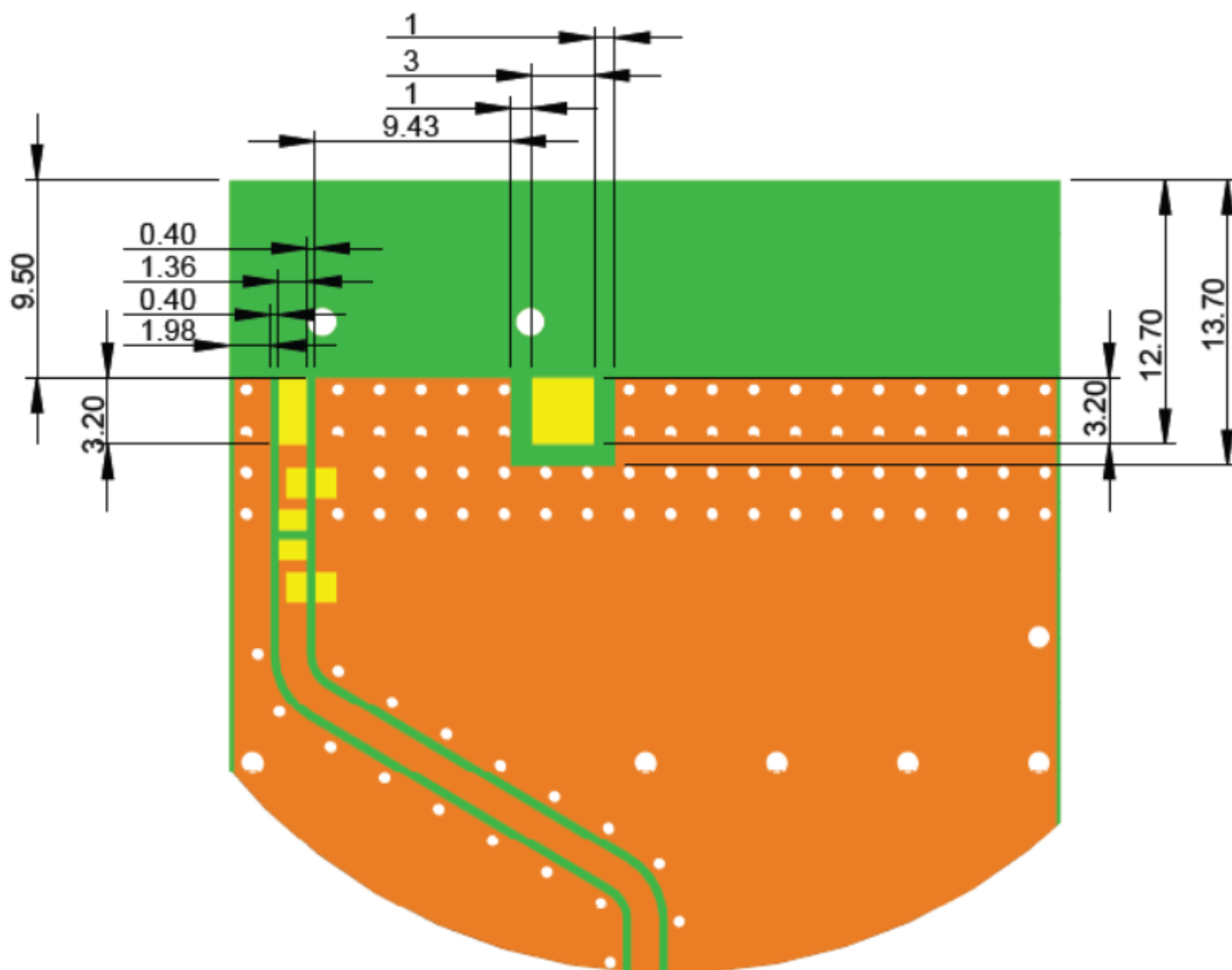
Description: 860-930MHz Embedded
Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

TEST SETUP

PWB 1 Pad dimension in top copper



Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

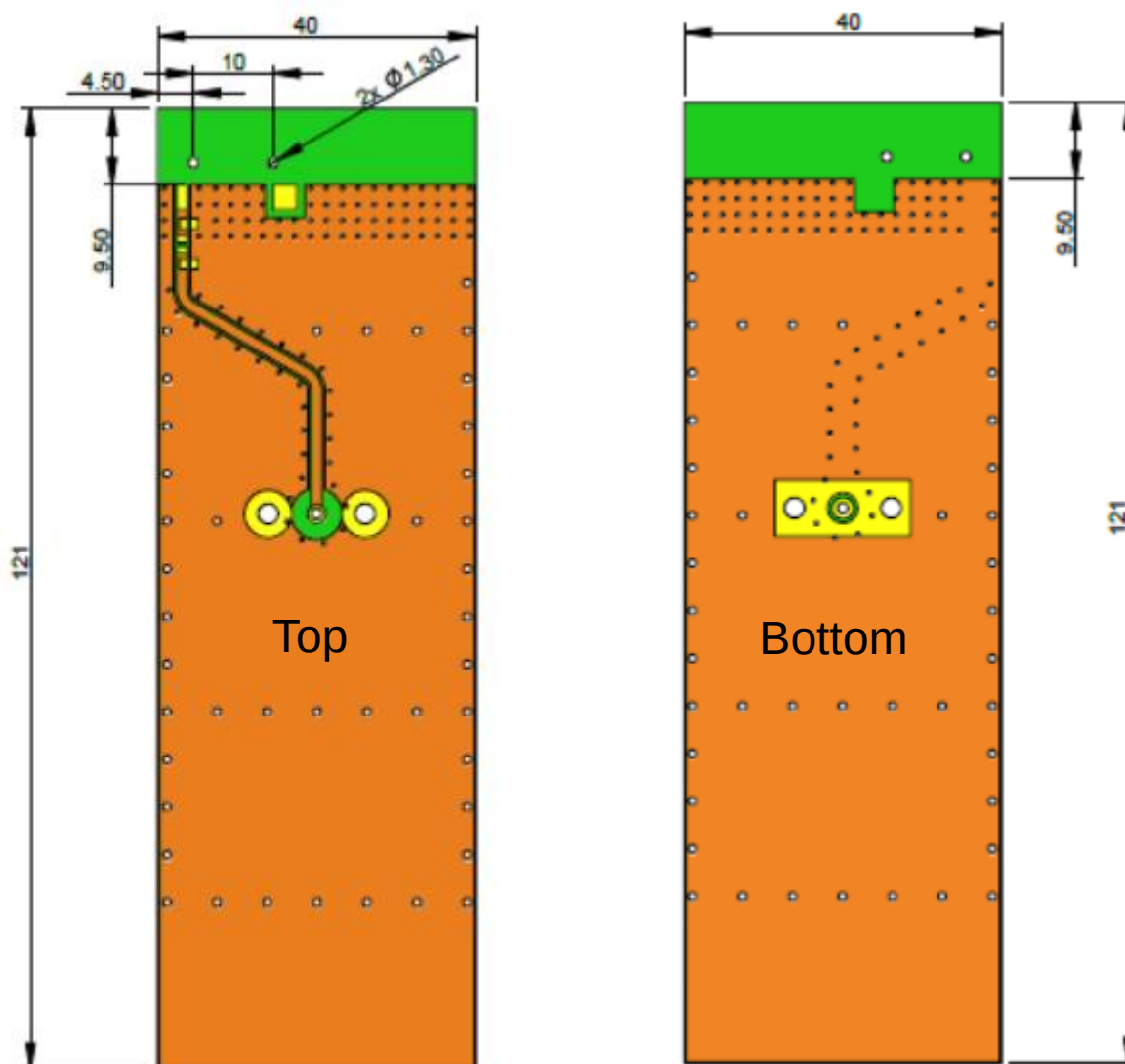
Description: 860-930MHz Embedded Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

TEST SETUP

PWB 1 Pad dimension in top copper



Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

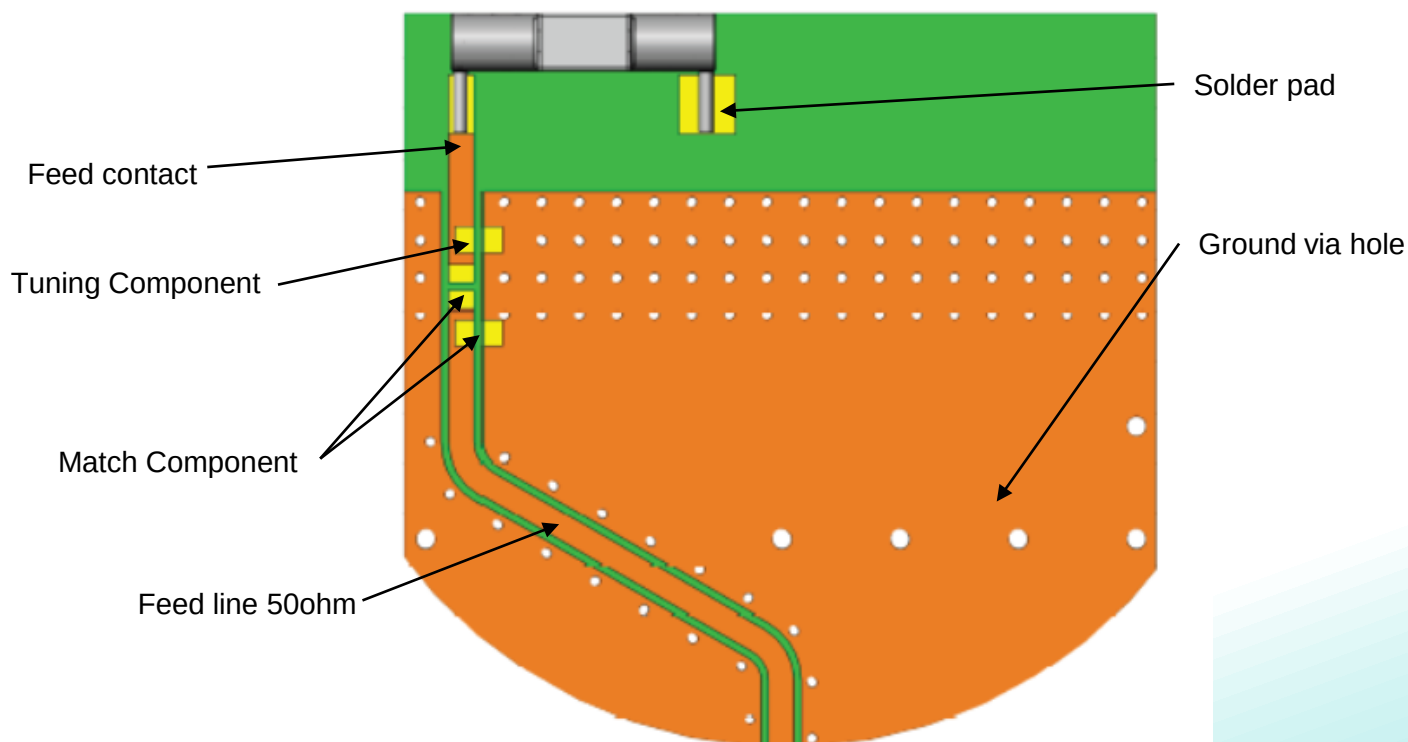
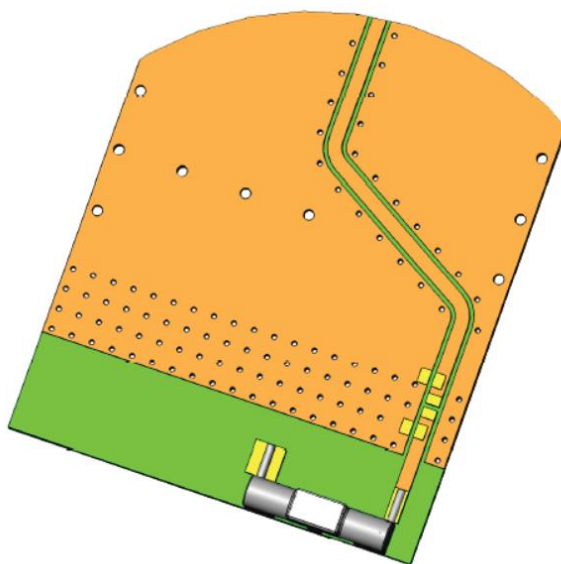
Description: 860-930MHz Embedded Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

TEST SETUP

PWB 2 Layout for W3139 SMD Helical Antenna



Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

Description: 860-930MHz Embedded
Helical Antenna

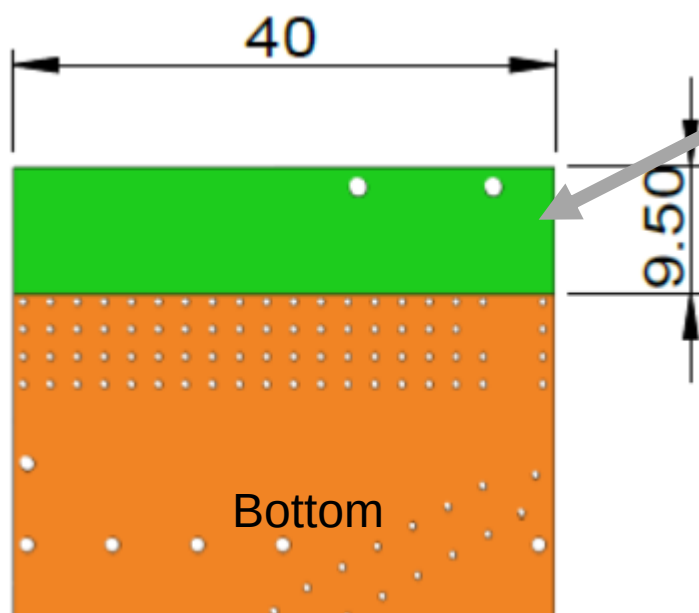
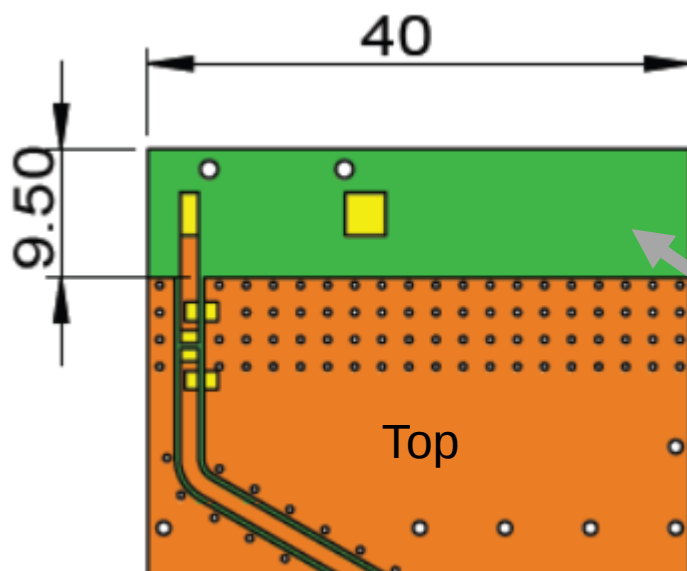
Series:
SMD Helical Antenna

PART NUMBER: W3139

TEST SETUP

PWB 2 ground clearance area (Top):40x9.5mm

PWB 2 ground clearance area (Bottom):40x9.5mm



Ground Clearance
Area(40x9.5mm) All
metallization should
be removed from
all PWB Layers

Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

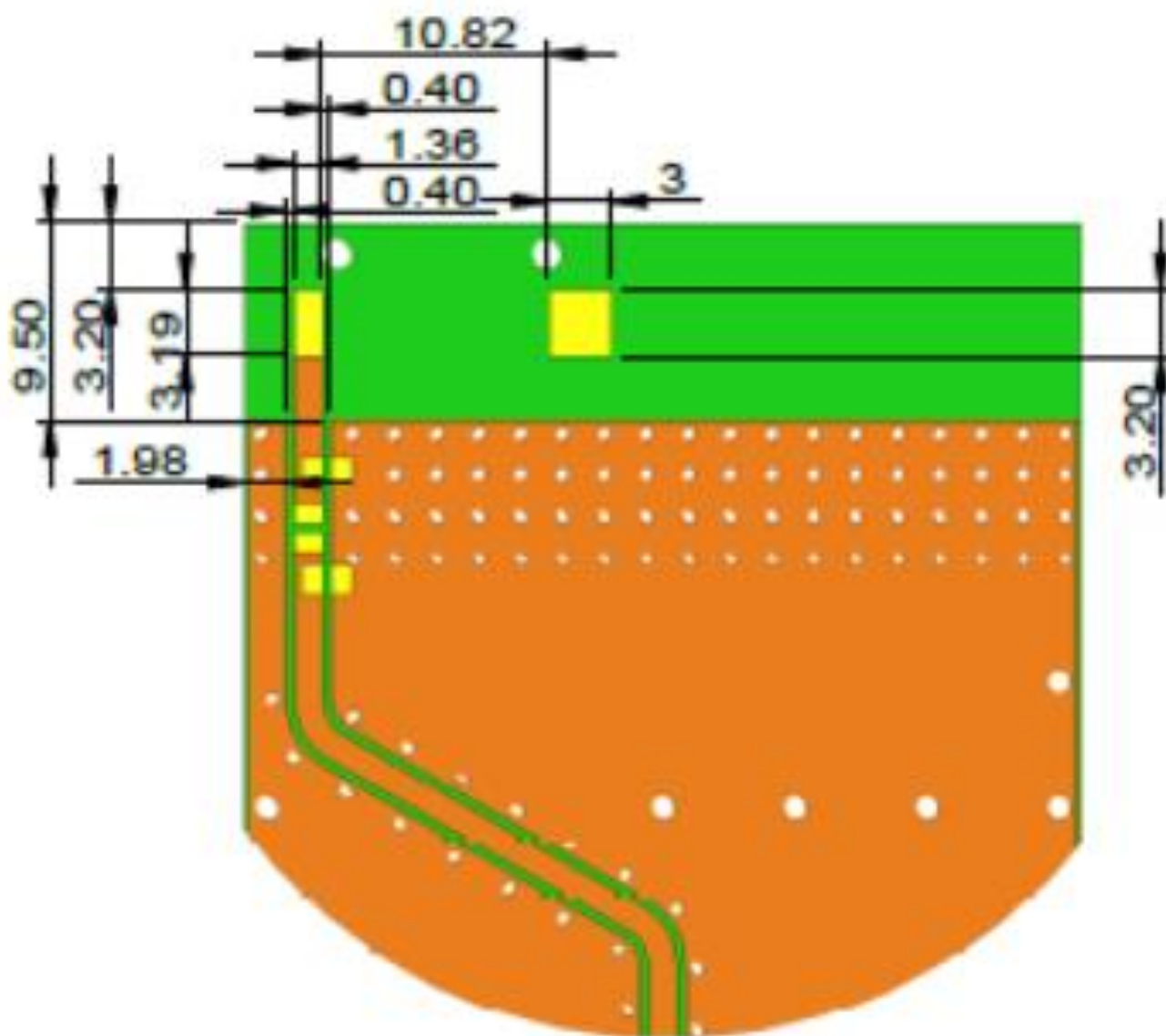
Description: 860-930MHz Embedded Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

TEST SETUP

PWB 2 Pad dimension in top copper



Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

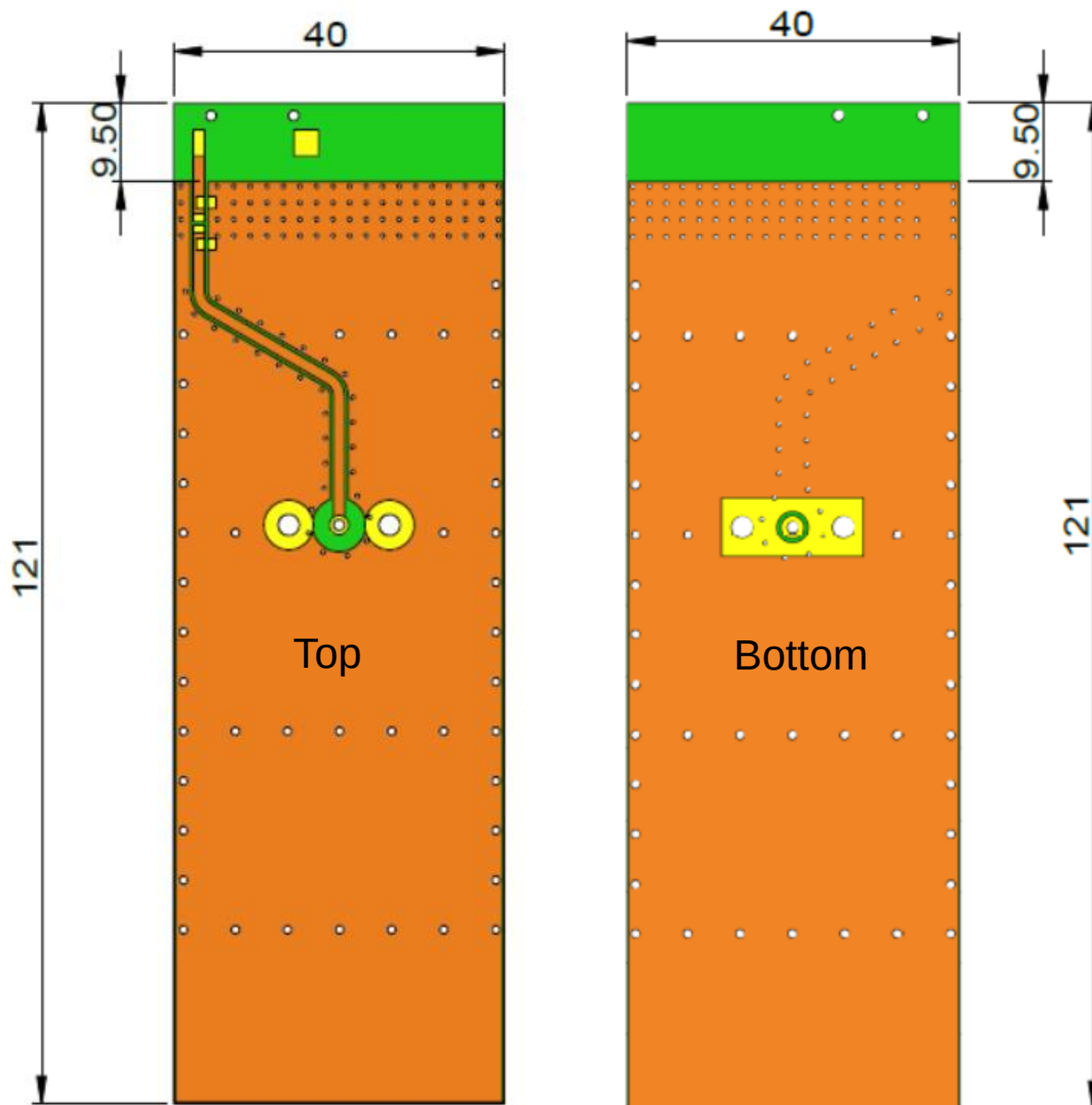
Description: 860-930MHz Embedded Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

TEST SETUP

PWB 2 Pad dimension in top copper



Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

Description: 860-930MHz Embedded Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

TEST SETUP

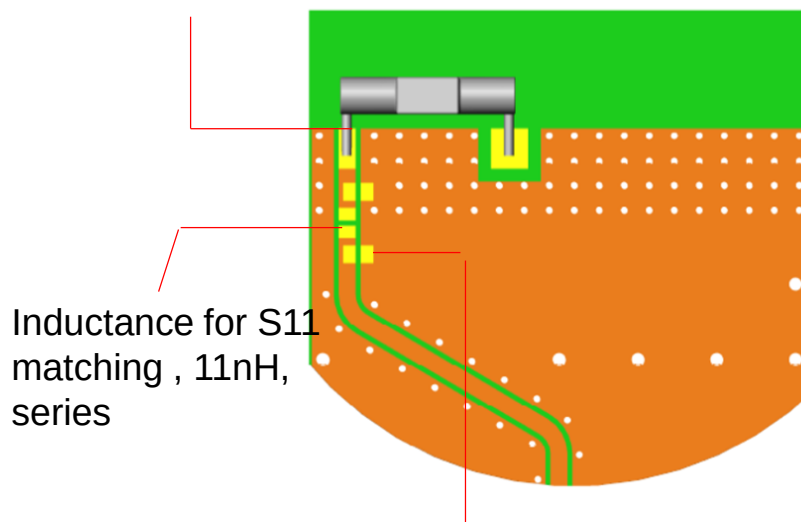
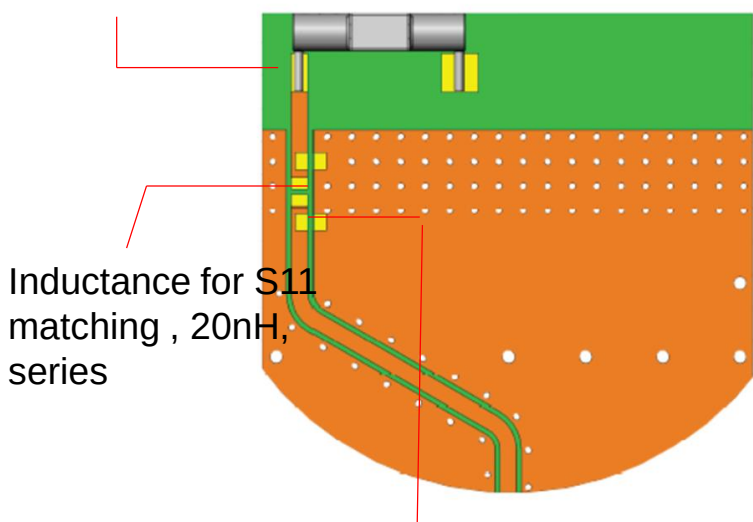
ISM 868MHz matching circuit.

(PWB 2 big clearance)

(PWB 1 small clearance)

Antenna feed point

Antenna feed point



Capacitance for S11
matching , 6.8pF, shunt

Capacitance for S11
matching , 9.1pF, shunt

Note : Exact matching and tuning components value depend on application , board size ,cover etc.

Description: 860-930MHz Embedded
Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

CHARTS

ISM 868MHz two version performance , test in free space.



Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

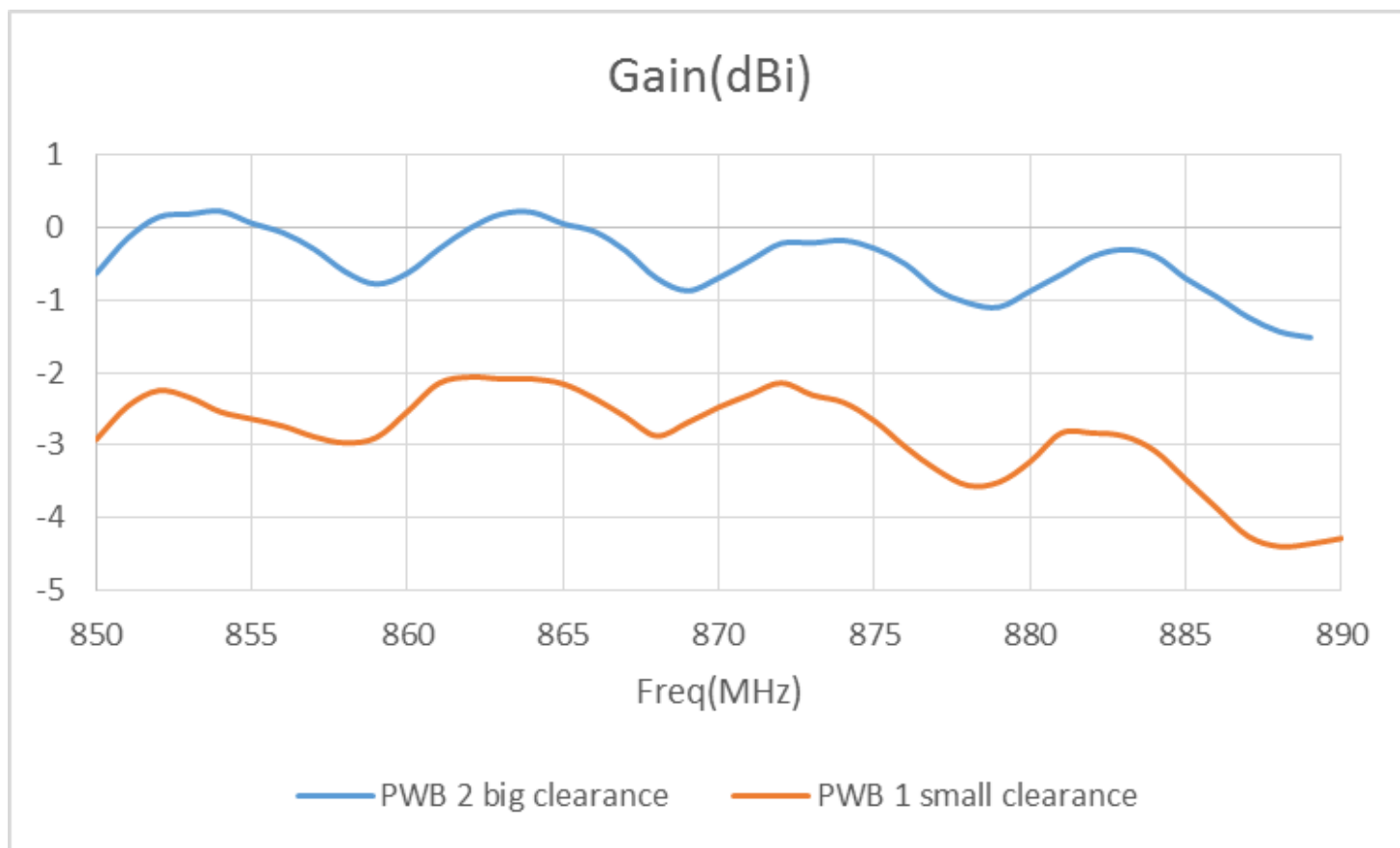
Description: 860-930MHz Embedded Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

CHARTS

ISM 868MHz two version performance ,test in free space.



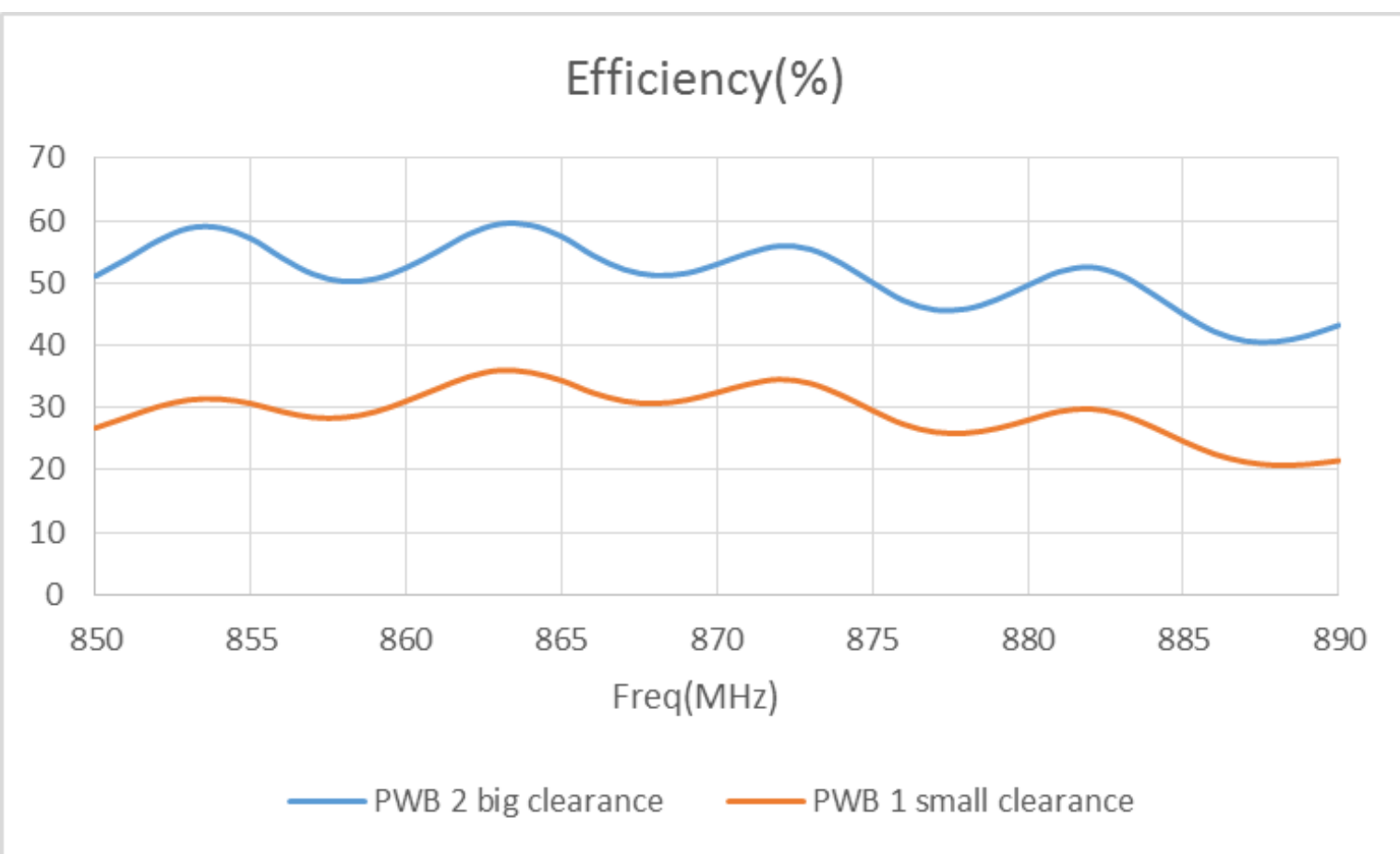
Description: 860-930MHz Embedded Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

CHARTS

ISM 868MHz two version performance , test in free space.



Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

Description: 860-930MHz Embedded Helical Antenna

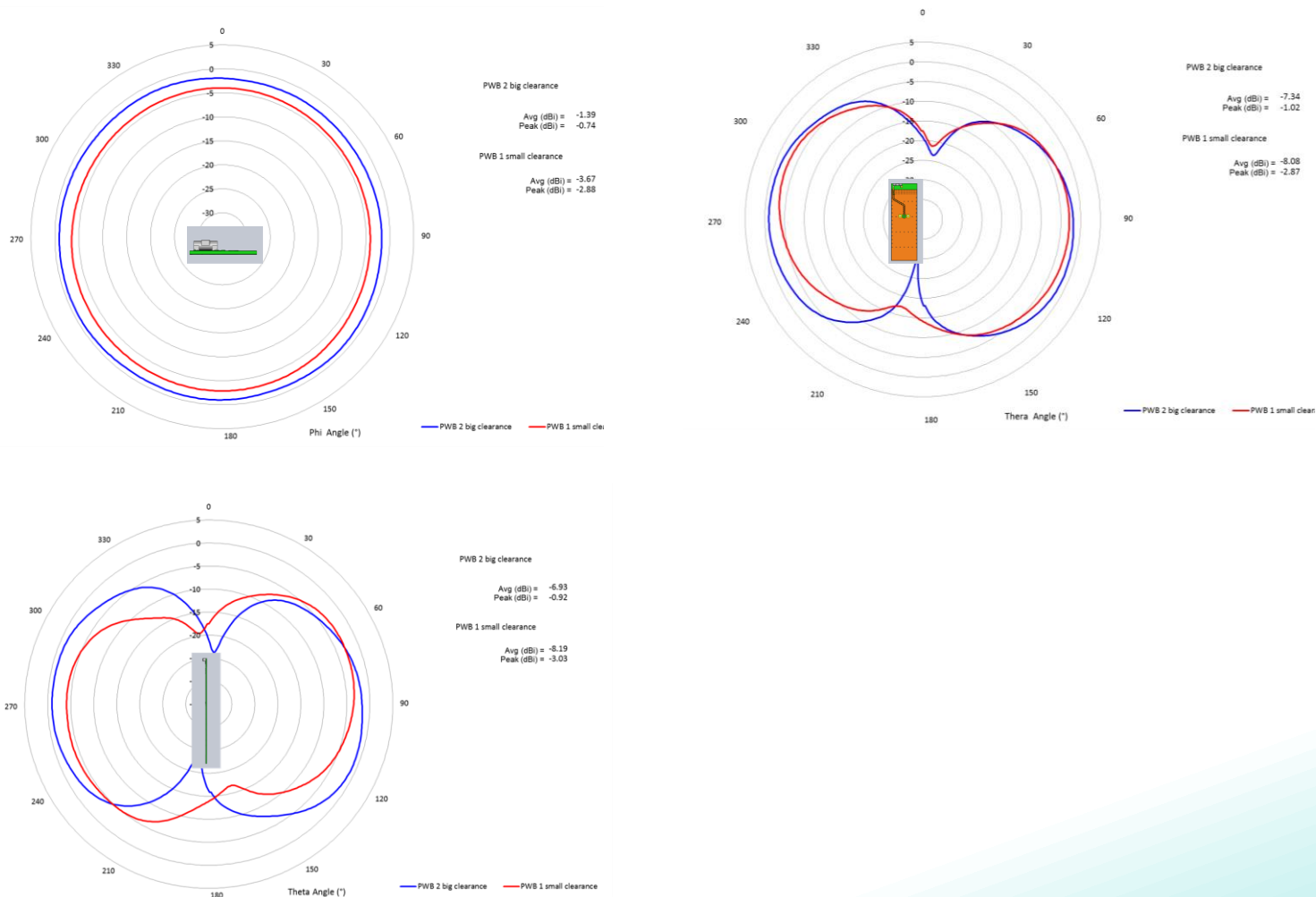
Series:
SMD Helical Antenna

PART NUMBER: W3139

CHARTS

ISM 868MHz two version performance , test in free space.

Typical radiation pattern in free space



Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

Description: 860-930MHz Embedded Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

TEST SETUP

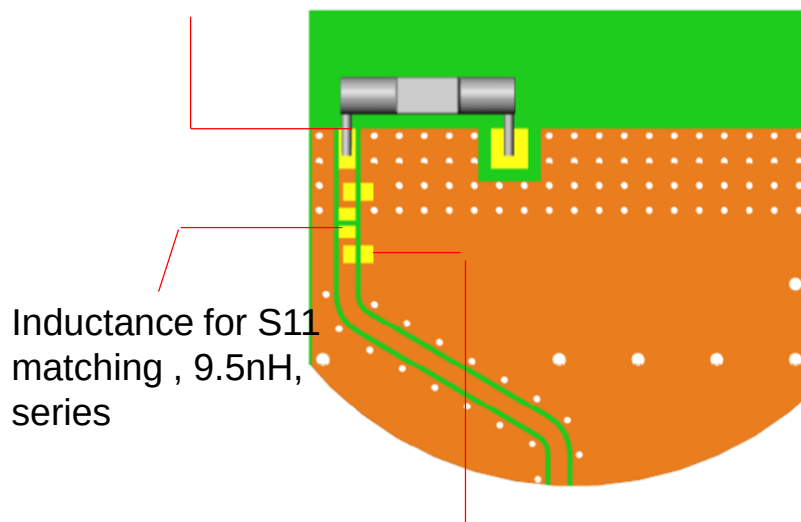
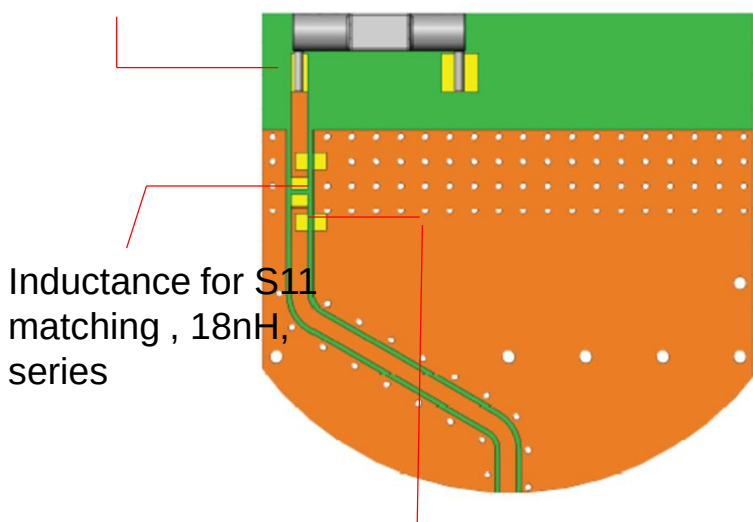
ISM 915MHz matching circuit.

(PWB 2 big clearance)

(PWB 1 small clearance)

Antenna feed point

Antenna feed point



Inductance for S11
matching , 18nH,
series

Inductance for S11
matching , 9.5nH,
series

Capacitance for S11
matching , 5.1pF, shunt

Capacitance for S11
matching , 9.1pF, shunt

Note : Exact matching and tuning components value depend on application , board size ,cover etc.

Description: 860-930MHz Embedded Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

CHARTS

ISM 915MHz two version performance , test in free space.



Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

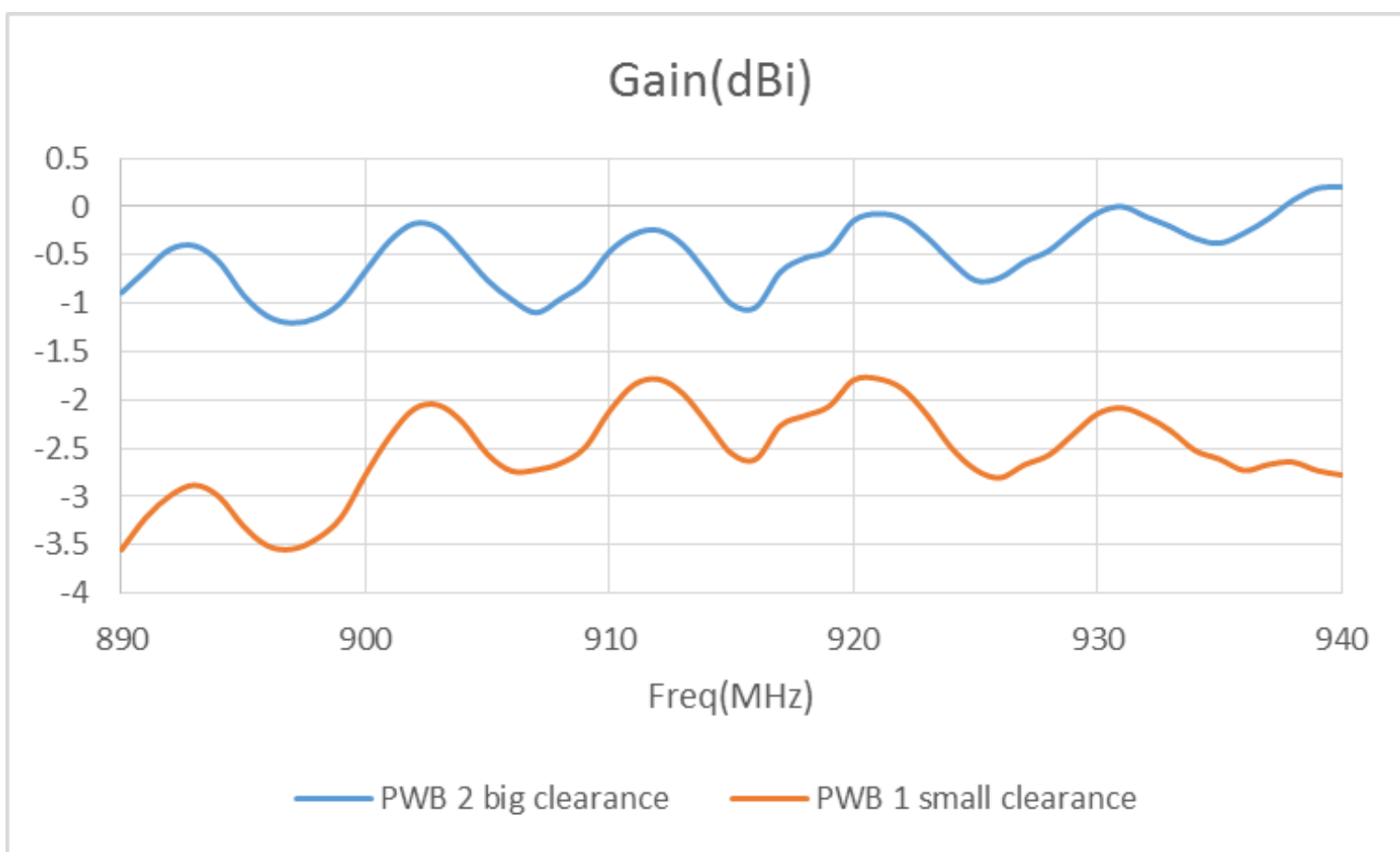
Description: 860-930MHz Embedded Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

CHARTS

ISM 915MHz two version performance , test in free space.



Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

Description: 860-930MHz Embedded Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

CHARTS

ISM 915MHz two version performance , test in free space.



Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

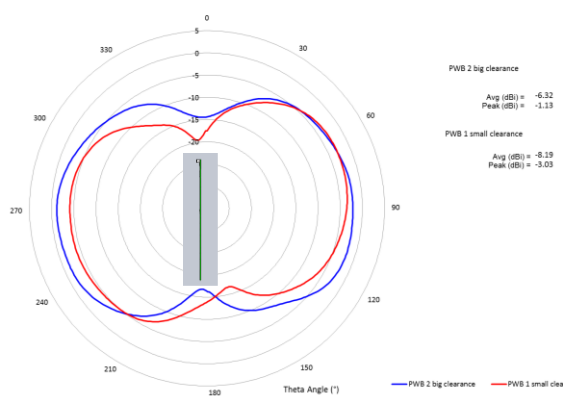
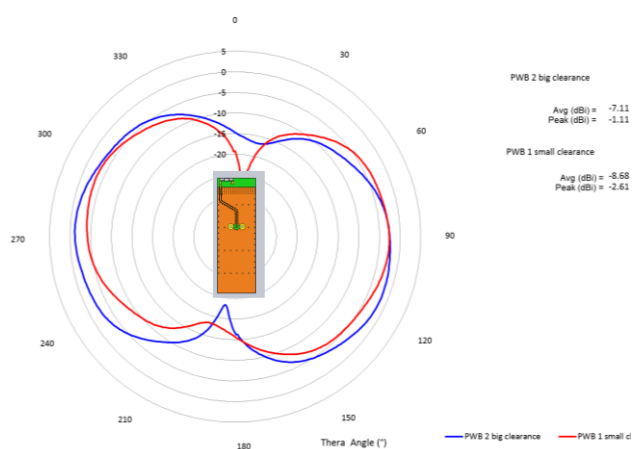
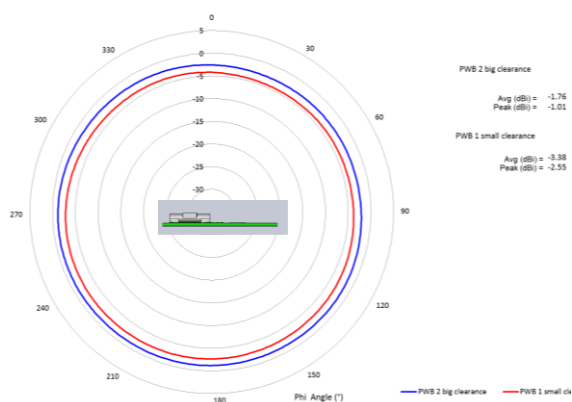
Description: 860-930MHz Embedded Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

CHARTS

ISM 915MHz two version performance .
Typical radiation pattern in free space



Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

Description: 860-930MHz Embedded Helical Antenna

Series:
SMD Helical Antenna

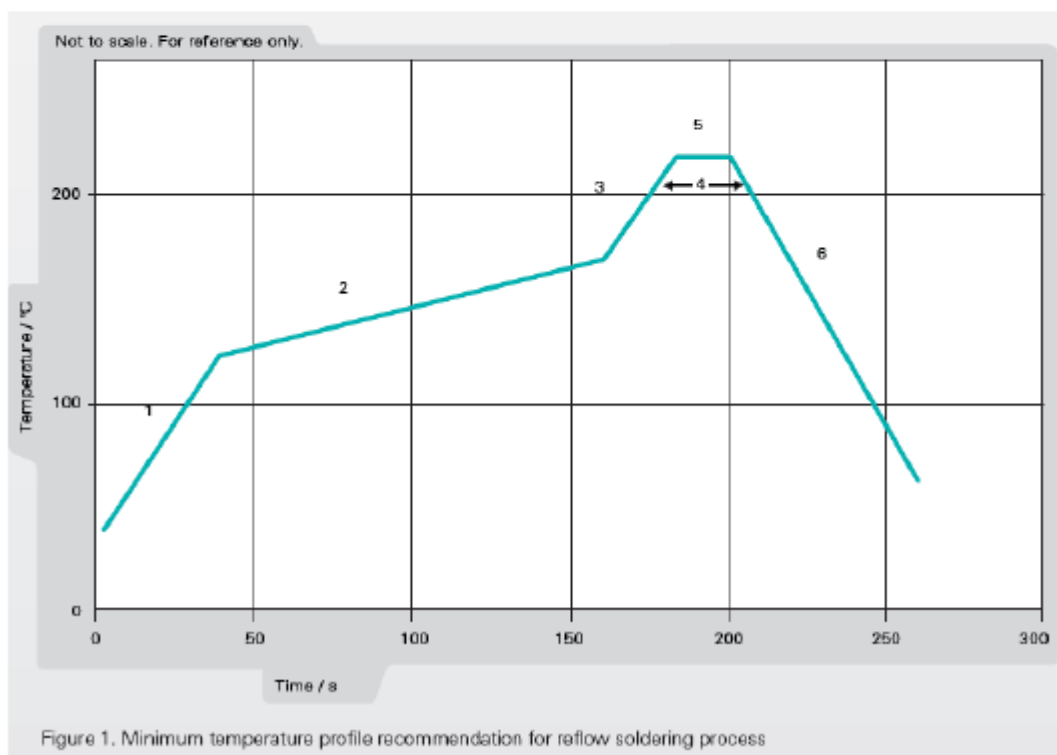
PART NUMBER: W3139

Recommendation for reflow soldering process

Printing stencil thickness 0,15 - 0,25 mm is recommended for the solder paste. The maximum soldering temperature should not exceed 260°C. The temperature profile recommendations for reflow soldering process is presented in the Figures 1 and 2. The reflow profile

presented in figure 1 describes minimum reflow temperatures. The reflow profile presented in figure 2 describes maximum reflow temperatures, located at the center of the coverage area.

	Method of heat transfer	Controlled hot air convection
1	Average temperature gradient in preheating	2.5 °C/s
2	Soak time	2-3 minutes
3	Max temperature gradient in reflow	3 °C/s
4	Time above 217 °C	Max 30 sec
5	Peak temperature in reflow	230 °C for 10 seconds
6	Temperature gradient in cooling	Max -5 °C/s



Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

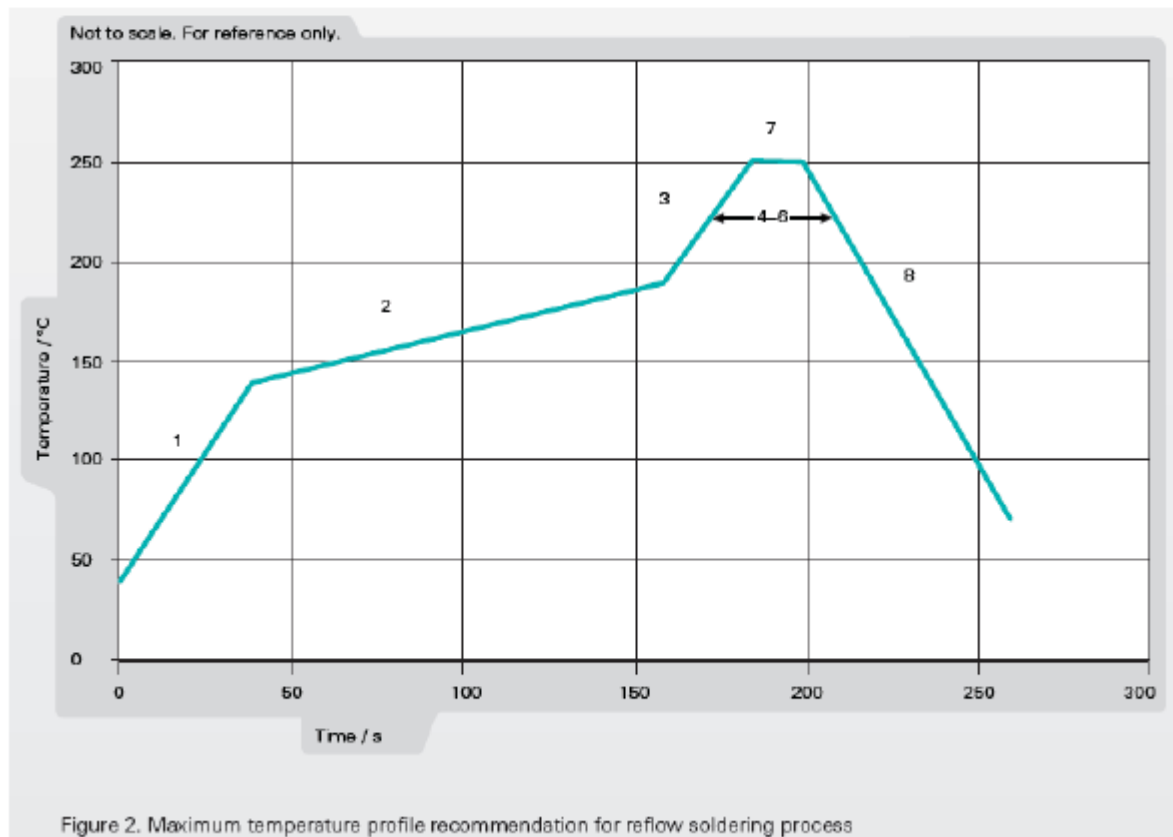
Description: 860-930MHz Embedded Helical Antenna

Series:
SMD Helical Antenna

PART NUMBER: W3139

Recommendation for reflow soldering process

	Method of heat transfer	Controlled hot air convection
1	Average temperature gradient in preheating	2.5 °C/s
2	Soak time	2-3 minutes
3	Max temperature gradient in reflow	3 °C/s
4	Time above 217 °C	Max 60 sec
5	Time above 230 °C	Max 50 sec
6	Time above 250 °C	Max 10 sec
7	Peak temperature in reflow	260 °C for 5 seconds
8	Temperature gradient in cooling	Max -5 °C/s



Issue: 1924

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

CONFIDENTIAL AND PROPRIETARY INFORMATION

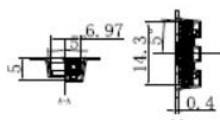
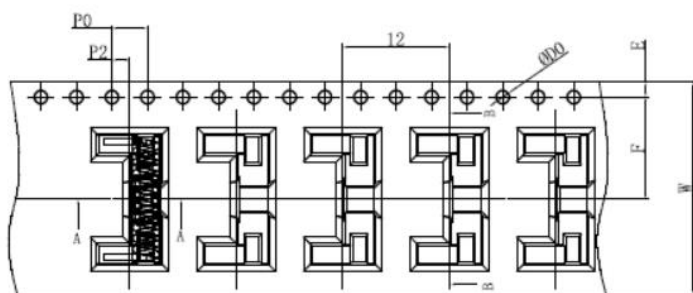
This document contains confidential and proprietary information of Pulse Electronics, Inc. (Pulse) and is protected by copyright, trade secret and other state and federal laws. Its receipt or possession does not convey any rights to reproduce, disclose its contents, or to manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of Pulse is strictly forbidden.

Description: 860-930MHz Embedded Helical Antenna

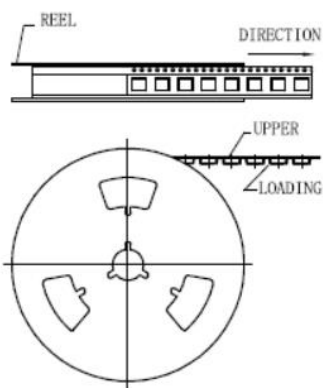
Series:
SMD Helical Antenna

PART NUMBER: W3139

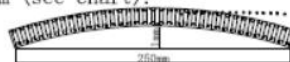
PACKAGING



REFERENCE VIEW



5. All the size design with reference to the EIA - 481 - C - 2003.
6. Loading within 250 mm length maximum curvature is less than 1 mm (see chart).



Notes:

1. 10 side hole of the cumulative tolerance cannot be more than ± 0.2 mm.
2. Material specifications: PS black antistatic, thickness of 0.50 mm.
3. 13 inches (100) axis reel package length: 4.6 m. (the front air bag length: 0.33 m, parts packing length: 4 m, after a period of empty packet length: 0.33 meters).
4. 13 inches (100) axis reel packaging components to the total number of stars: 1056. (the front air bag star count: 28, actual packing parts the number: 1000, after a period of empty bag star count: 28).

Manufacture Data	
Total PCS	1056PCS
Reel	13"/44
Package Qty	1000PCS

Total 1000 PCS In Reel
Reel Size: 330MM[13INCH]
Total 2 PCS Reel In Package Box
Package Box Size:350x350x120mm

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Pulse:

W3139