Datasheet

L-5MA3

Multiband LTE SMD Chip Antenna

CELLULAR WIFI

The L-5MA3 is a versatile SMD antenna designed to operate at frequencies ranging from 698 MHz to 960 MHz and 1710 MHz to 2690 MHz. This wide frequency range makes it suitable for various wireless communication applications, including cellular networks, IoT devices, and wireless data transmission. The SMD form factor allows for easy integration onto printed circuit boards (PCBs), making it ideal for compact and space-constrained devices.

42*10*3 mm

The L-5MA3 offers reliable performance and efficient signal reception, enabling seamless wireless connectivity in diverse environments. Whether it's for IoT deployments or wireless communication systems, the L-5MA3 SMD antenna is a reliable choice.

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Document Information

Product	L-5MA3
Part Number	L-5MA3
Description	Multiband LTE SMD Chip Antenna
Version	1.0 (current)
Date	15-Mar-2024
Status	Released

Revision History

Version	Date	Author	Changes
1.0	15-Mar-2024	Ivy Liao	Initial Release

Product Overview

Product Description

The L-5MA3 is a versatile SMD antenna designed to operate at frequencies ranging from 698 MHz to 960 MHz and 1710 MHz to 2690 MHz. This wide frequency range makes it suitable for various wireless communication applications, including cellular networks, IoT devices, and wireless data transmission.

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Key Features

- Supports LTE / WCDMA & WIFI
- Wide Application
- High Reliability/Sensitivity
- Compact Size, Easy to install.
- Ideal for MIMO systems
- RoHS & Reach Compliant

Applications

- Mi-Fi routers
- Medical equipment
- Tablets
- OBD++ system
- Femtocell / Pico stations
- Remote monitoring

Electrical Specifications

Frequency			VSWR	Peak Gain	Efficiency(%)
4G/3G	698 - 806	MHz	2.5	2.60 d Bi	65.3
4G/3G	824 - 960	MHz	3.1	2.22 d Bi	61.5
4G/3G	1710 - 2200	MHz	2.2	5.93 d Bi	69.1
4G/3G	2300 - 2690	MHz	2.8	4.35 d Bi	58.2

Frequency Range	698 –2690 MHz	Radiation	Omnidirectional
Impedance	50 Ω	Electrical Type	Monopole
Polarization	Linear		

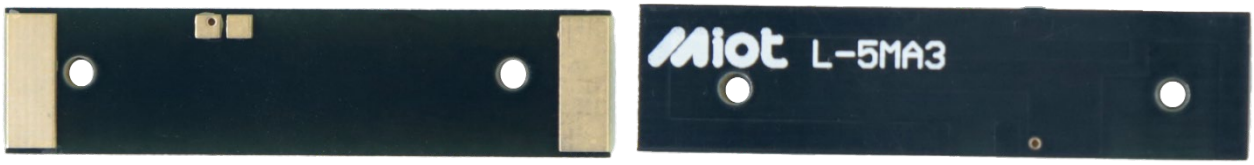
Mechanical Specifications

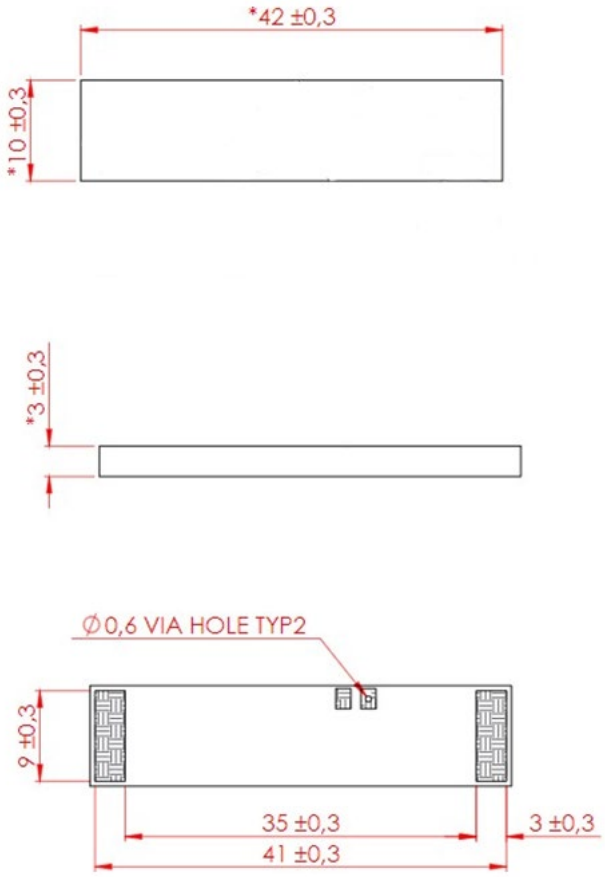
Type	SMD	Casing	NA
Dimensions	42 x 10 x 3 mm	Color	Black
Connector (Termination)	NA	Material	FR4
Mounting Type	SMT	Weight	<2.5g

Caution:

1. Do not apply excess mechanical stress to the component body or terminations. Do not attempt to re-form or bend the components, as this will cause damage to the component.
2. Do not expose the component to an open flame.
3. This specification applies to the functionality of the component as a single unit. Please ensure the component is thoroughly evaluated in the application circuit.
4. For vibration environments, apply adhesive at the antenna base for additional fixation.

Product Image and Dimensions



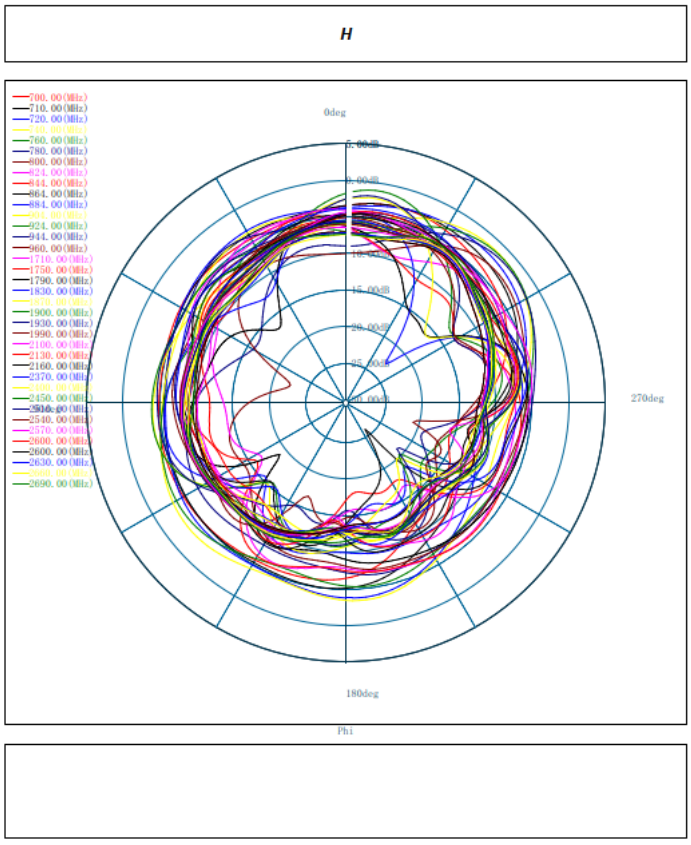


Radiation Pattern

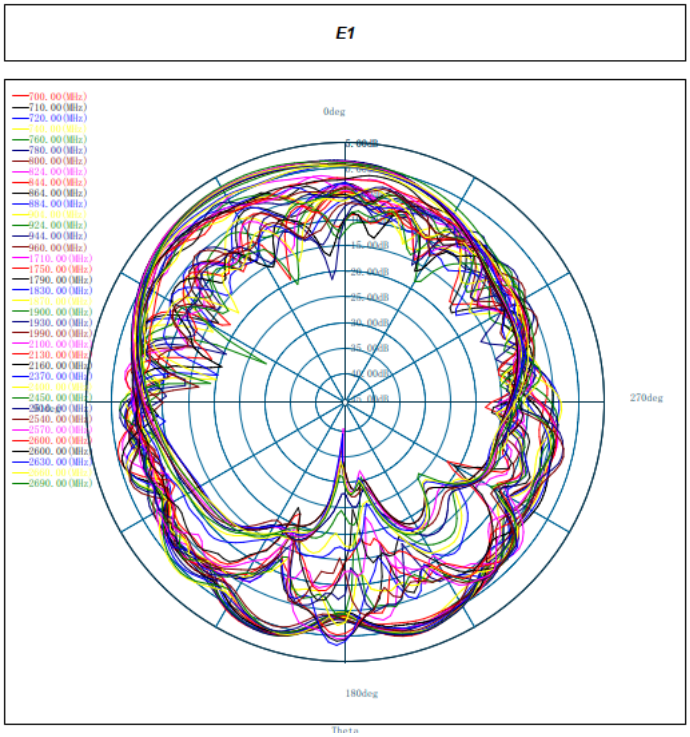
A radiation pattern is a graphical representation of the directional properties of an antenna. It shows how electromagnetic waves are distributed in space in relation to the direction of propagation.

By understanding the information provided by a radiation pattern, it is possible to optimize the design and performance of an antenna for specific applications.

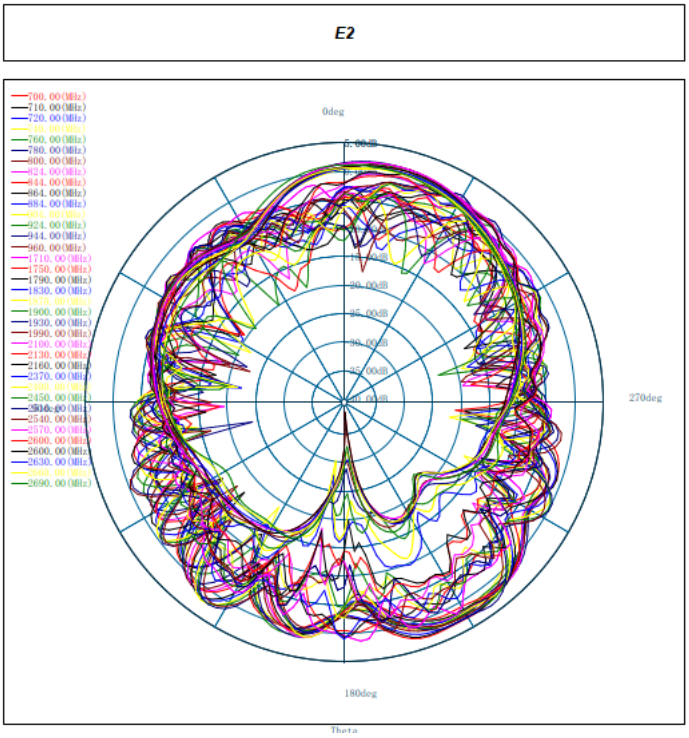
XY Plane (H) 698 – 2690 MHz



XZ Plane (E1) 698 – 2690 MHz



YZ Plane (E2) 698 – 2690 MHz

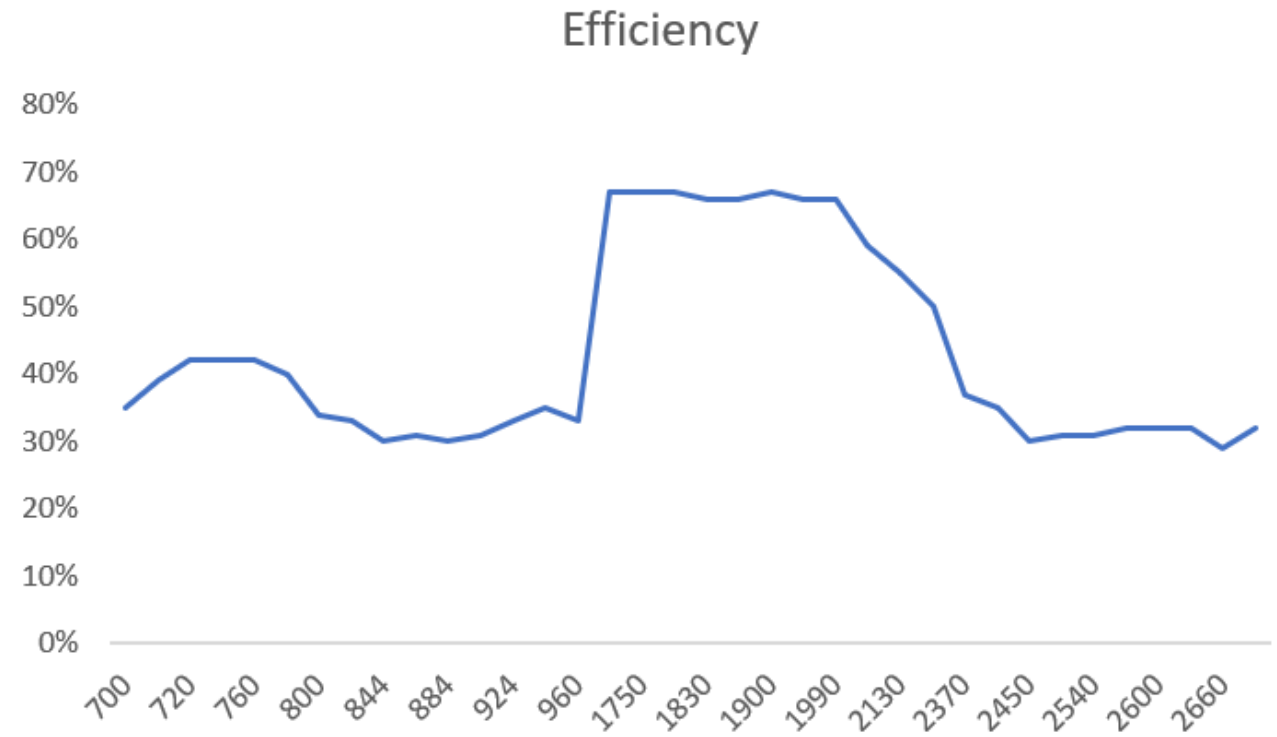


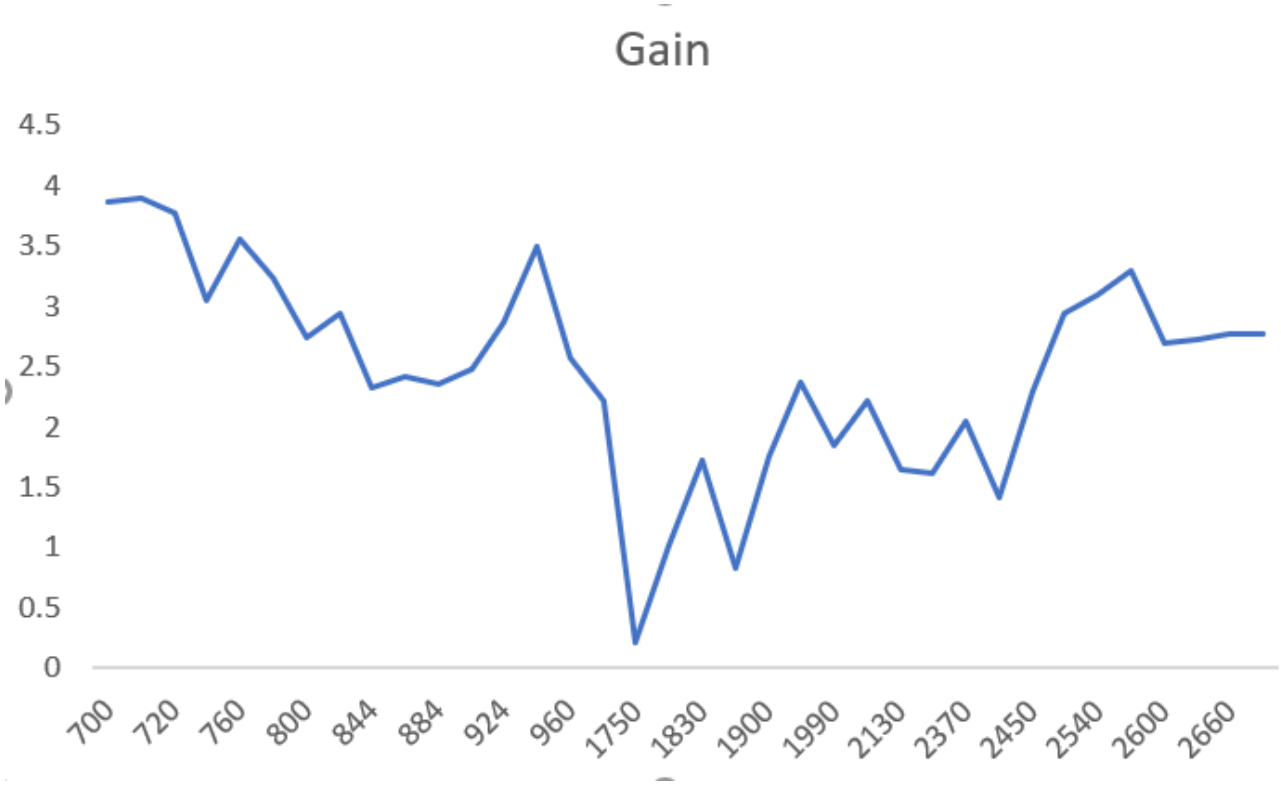
Antenna Efficiency and Gain

Ground Plane Length 120mm

Frequency		Efficiency	Gain
700	MHz	35%	3.87
710	MHz	39%	3.90
720	MHz	42%	3.78
740	MHz	42%	3.05
760	MHz	42%	3.56
780	MHz	40%	3.23
800	MHz	34%	2.74
824	MHz	33%	2.94
844	MHz	30%	2.33
864	MHz	31%	2.42
884	MHz	30%	2.36
904	MHz	31%	2.48
924	MHz	33%	2.87
944	MHz	35%	3.50
960	MHz	33%	2.57
1710	MHz	67%	2.22
1750	MHz	67%	0.22
1790	MHz	67%	1.02

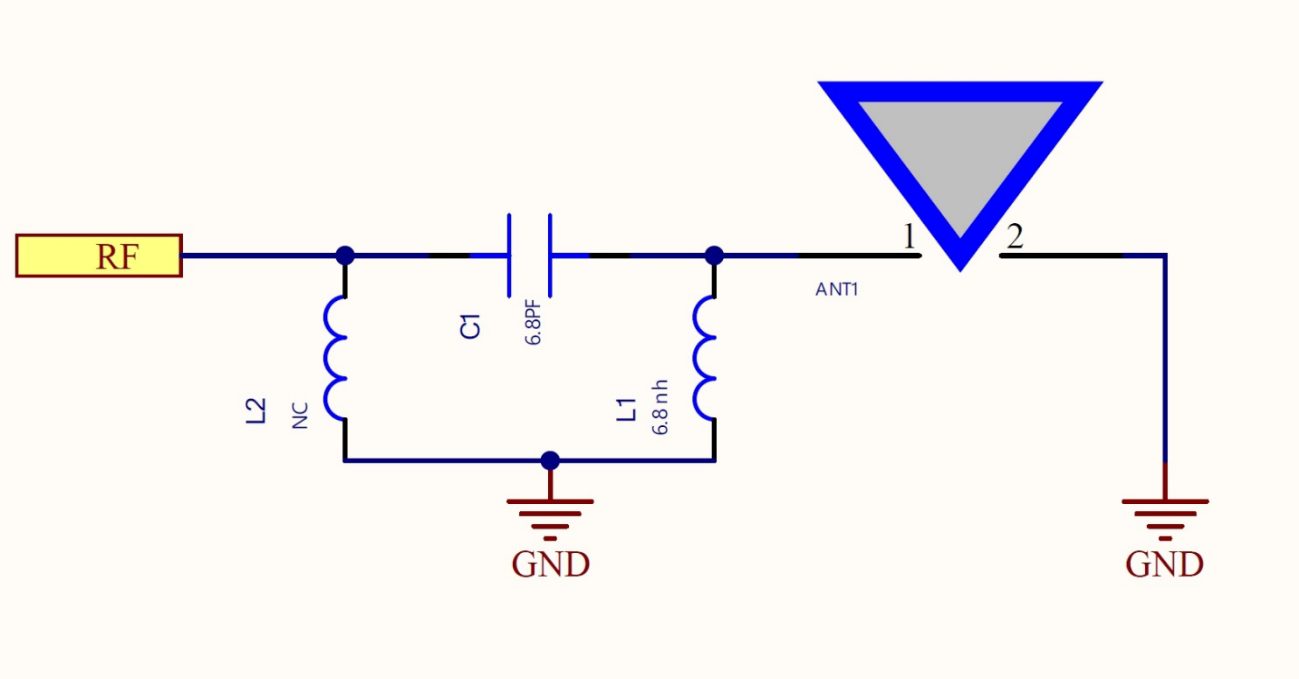
Frequency		Efficiency	Gain
1830	MHz	66%	1.73
1870	MHz	66%	0.83
1900	MHz	67%	1.75
1930	MHz	66%	2.37
1990	MHz	66%	1.85
2100	MHz	59%	2.22
2130	MHz	55%	1.65
2160	MHz	50%	1.62
2370	MHz	37%	2.04
2400	MHz	35%	1.42
2450	MHz	30%	2.30
2510	MHz	31%	2.94
2540	MHz	31%	3.09
2570	MHz	32%	3.30
2600	MHz	32%	2.70
2630	MHz	32%	2.73
2660	MHz	29%	2.77
2690	MHz	32%	2.77


Efficiency
80%
70%
60%
50%
40%
30%
20%
10%
0%
700
720
760
800
844
884
924
960
1750
1830
1900
1990
2130
2370
2450
2540
2600
2660


Gain
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
700
720
760
800
844
884
924
960
1750
1830
1900
1990
2130
2370
2450
2540
2600
2660

Matching Circuit

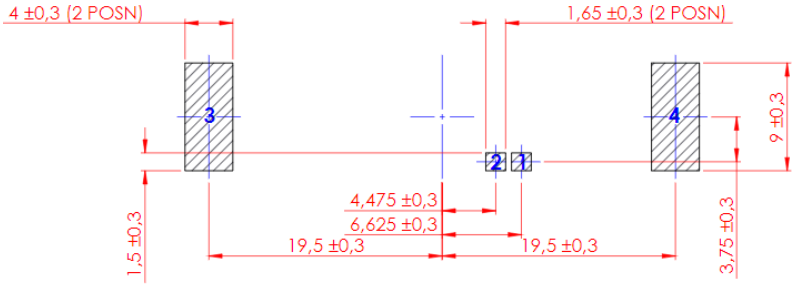
A matching component (L1) in parallel with the L-5MA3 is required for the antenna to have optimal performance on the evaluation board, located outside of the ground plane in the space specified in the above images. C1 is also required as a matching component for this antenna. C1 is positioned sitting across the ground plane as shown in the above images. Additional matching components may be necessary for your device, so we recommend incorporating extra component footprints, forming a "pi" network, between the cellular module and the edge of the ground plane.



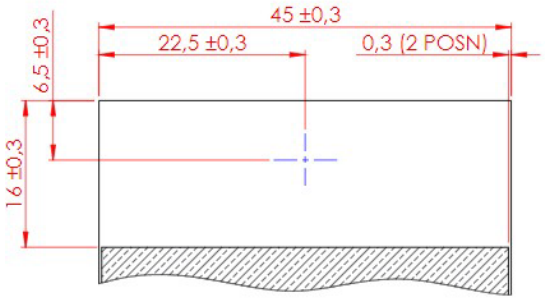
Designator	Type	Value
L1	Inductor	6.8nH
C1	Capacitor	6.8pF
C2	Capacitor	Not Fitted

Footprint

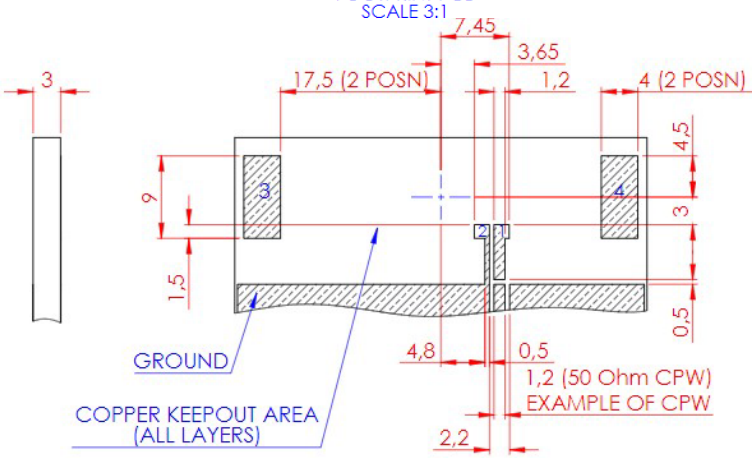
PIN:	DESCRIPTION:
1	FEED
2	GROUND
3	NOT CONNECTED
4	NOT CONNECTED



FOOTPRINT PCB
SCALE 3:1



GROUND CLEARANCE BOTTOM VIEW
(SILKSCREEN NOT SHOWN)



GROUND CLEARANCE TOP VIEW
(SILKSCREEN NOT SHOWN)

Environmental Data

Operation Temperature	-40°C ~ +85°C
Storage Temperature	-40°C ~ +85°C
Moisture Sensitivity Level	3
Compliance	RoHS

Ordering Information

Product Variants

Part Number	Description
L-5MA3	Multiband LTE SMD Chip Antenna

About MIOT

Miot Wireless Solutions, headquartered in Suzhou, China, was established in 2017. It has subsidiaries in Canada, the United States, Brazil, and EMEA. MIOT is a professional designer and manufacturer of Antennas and IoT PCBA products, providing turn-key service to customers worldwide.

Our talented R&D team has experienced antenna, hardware, and software engineers who can participate in your new project, from something simple like antenna/selection and design, to complete turn-key services, which entails taking your concept and ideas through design, prototyping, debugging, certification, and manufacturing. Miot offers reliable products at reasonable prices with fast delivery times to help you get ahead in the market.

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