

**Eliminating space and PCB real-estate constraints, LDS-MID and Ceramic GNSS/GPS antennas combine ease of integration with reduced cost of implementation over a variety of wireless navigation device applications**

## Features and Benefits

Antennas	Helix GPS (146235)	RHCP <sup>†</sup> LDS-MID GPS (146216)	RHCP Ceramic GPS (146168)	GPS/BEIDOU/GLONASS Ceramic (204286)	Low-profile GNSS Ceramic (204283)
Dimension	3.00 by 5.00 by 4.00mm	11.80 by 11.55 by 6.00mm	25.00 by 25.00 by 4.00mm	25.00 by 25.00 by 4.00mm	3.20 by 1.60 by 1.10mm
PCB Clearance	4mm x 6mm	No clearance	No clearance	No clearance	5mm x 6mm
Material	LDS	LDS	Ceramic	Ceramic	Ceramic
Antenna Type	Monopole	PIFA	Patch	Patch	Loop
Frequency Range	1561 - 1602MHz	1575MHz	1575MHz	1561 - 1602MHz	1561 - 1602MHz
Return Loss	<-8dB	<-10dB	<-15dB	<-10dB	<-10dB
Peak Gain	1.1dBi	1dBi	5.5dBi	5.5dBi	2.0dBi
Total Efficiency	>50%	>55%	>75%	>70%	>60%
Polarization	Elliptic	RHCP	RHCP	Elliptic	Linear
Axial Ratio	<6.0	<3.0	<3.0	<13.0	-
Benefits	Compact size	Greater space savings (no PCB clearance needed)	Greater space savings (no PCB clearance needed)		Vertical space savings with low profile; compact size
			High Total Radiation Efficiency		
Product Image					

## Applications

### Automotive

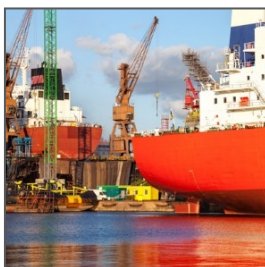
- Commercial Vehicle
- Agricultural Vehicle
- Rail

### Commercial Aviation

- Consumer (Recreational)
- Geocaching

### Industrial

- Maritime Port Management System
- Surveying and Mapping Systems
- Emergency Response Systems



Maritime Port Management



Automotive



Agricultural



Commercial Aviation

\*GNSS (Global Navigation Satellite System) is the standard generic term for satellite navigation systems that provide autonomous geo-spatial positioning with global coverage. This term includes GPS (USA), GLONASS (Russian), Galileo (European Union), BEIDOU (China) and other regional satellite systems.  
<sup>†</sup>RHCP – An industry acronym for "Right Hand Circularly Polarized"

## Specifications

### REFERENCE INFORMATION

Packaging: Tape on reel  
 (146216, 146235, 204283), Tray (146168, 204286)  
 Reference Platform:  
 100.00 by 100.00 by 1.00mm (146216)  
 100.00 by 50.00 by 1.00mm (146235)  
 70.00 by 70.00mm (146168, 204286)  
 80.00 by 40.00 by 0.80mm (204283)  
 Designed In: Millimeters  
 RoHS Compliant: Yes  
 Halogen-free: Yes  
 Ground Clearance: Refer to Application Specification  
 of each respective Series

### ELECTRICAL

RF Power (max.): 2 Watts  
 Return Loss - S11(dB): Refer to Product Specifications  
 Average Total Radiation Efficiency(%): Refer to  
 Product Specifications  
 Peak Gain (dBi): Refer to Product Specifications  
 Polarization: RHCP (146216, 146168);  
 Elliptic (146235, 204286); Linear (204283)  
 Input Impedance (ohms): 50

### MECHANICAL

Peeling Force (min.): 8N (146216, 146235)  
 Tape Test: Acceptance <10% peeling off  
 (204283, 204286)

### PHYSICAL

Housing: LCP-LDS, Vectra E840ILDS, 40% mineral-  
 filled LDS grade (146216, 146235)  
 Housing: Ceramic (146168, 204283, 204286)  
 Flammability: UL 94V-0  
 Plating:  
 Series 146216, 146235:  
 Hatched Area — 0.05micron Gold (Au) min.  
 MID Plane — 1.0 to 2.5micron Nickel (Ni)  
 Under-plating — 12 to 16micron Copper (Cu)  
 Series 146168: 8 to 10microns Silver (Ag)  
 Series 204283: 3 to 8microns Silver (Ag)  
 Series 204286: 4 to 7microns Silver (Ag)  
 Operating Temperature: -40 to 125°C

## Ordering Information

Series No.	Frequency Band (MHz)	Dimensions (mm)
<a href="#">204286</a>	1561±5; 1575±5; 1602±5	25.00(L) by 25.00(W) by 4.00(H)
<a href="#">204283</a>		3.20(L) by 1.60(W) by 0.80(H)
<a href="#">146235</a>		5.00(L) by 3.00(W) by 4.00(H)
<a href="#">146216</a>	1575±3	11.80(L) by 11.50(W) by 5.95(H)
<a href="#">146168</a>		25.00(L) by 25.00(W) by 4.00(H)

[www.molex.com/link/standard\\_antennas.html](http://www.molex.com/link/standard_antennas.html)