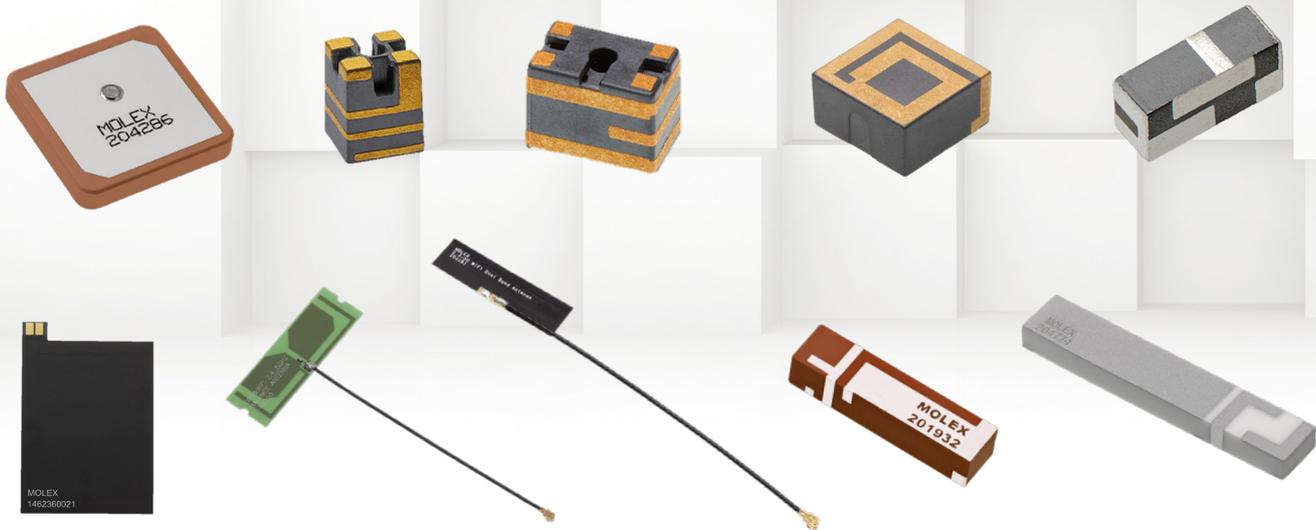


Ready to Use Internal Antennas



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Ready to Use Internal Antennas

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Bluetooth/Wi-Fi Flexible and PCB Antennas

146153 - Wi-Fi 6E Flex Cabled Balanced Antenna
146187 - Wi-Fi 6E PCB Cabled Balanced Antenna
204281 - Wi-Fi 6E Flex Cabled Side-fed Balanced Antenna
208482 - Wi-Fi 6E Flex Cabled 2x2 MIMO Antenna
212330 - Wi-Fi 6E Flex Cabled 4x4 MIMO Antenna
206994 - Wi-Fi 6E Flex Cabled Side-fed Antenna
212498 - 2.4GHz Cabled On-metal Antenna
214061 - 2.4/5GHz Cabled On-metal Antenna

Bluetooth/Wi-Fi Ceramic and MID Chip Antennas

47948 - 2.4 GHz SMT MID Chip Antenna
146175 - 2.4/5 GHz SMT MID Chip Antenna
206513 - 2.4 GHz Ceramic Antenna
206514 - 2.4/5 GHz Ceramic Antenna
211964 - 2.4/5 GHz LTCC Antenna, edge mounting
206774 - 2.4/5GHz LTCC Antenna, corner mounting

Cellular Flexible Antennas

105263 - Multi(6)-band Cellular Flexible Antenna
146185 - Cellular Quad-band Flexible Antenna
146234 - 698 MHz - 6 GHz Flexible Antenna
207235 - 824~2170 MHz Flexible Antenna
207901 - 600~6000 MHz Flexible Antenna
209142 - 698~4000 MHz Flexible Antenna
212570 - 824 MHz Flexible Antenna side-fed cable

Cellular Ceramic Antennas

146200 - 698 MHz to 2.7 GHz SMT Antenna
204774 - 790 to 2700 MHz Ceramic Antenna
206649 - 700~960 MHz Ceramic Antenna
206760 - 698 MHz to 2.7 GHz Antenna Low profile 3mm
208485 - 600~4000 MHz ceramic SMT Antenna

GNSS Antennas – MID/LDS, Ceramic, Flexible

146235 - Helix LDS-MID GPS Antenna
146216 - RHCP LDS-MID SMT GPS Antenna
146168 - RHCP GPS Ceramic Antenna
215634 - Linear LTCC GNSS Antenna
204286 - GNSS Ceramic Antenna 25x25x4mm
206640 - Active Antenna (Ant + RF LNA) 25 by 25mm
206560 - GNSS Flexible Antenna
208890 - GPS Ceramic Antenna 18x18x2mm
211624 - GPS L1/L5 and Glonass 36mm Stacked Antenna
212203 - GPS L1/L5 25mm Stacked Antenna
213602 - GPS L1/L2 36mm Stacked Antenna

Combo Antennas (Wi-Fi, GPS, ISM, Cellular)

146186 - Wi-Fi 6E+GNSS Flex Cabled Balanced Antenna
146220 - Wi-Fi 6E+GNSS PCB Cabled Balanced Antenna
201932 - 2.4/5 GHz and 900 MHz Triple-band Ceramic Antenna
213353 - LTE/GNSS combo cabled FPC Antenna
216942 - WiFi 4/5/6 + GNSS LTCC combo Antenna

Ultra Wide Band (UWB) Antennas

146184 - Ultra Wide Band (UWB) PCB Antenna
211996 - UWB 6-8.5 GHz Flexible Antenna

Industrial, Scientific and Medical (ISM) Antennas

105262 - 868/915 MHz ISM Flexible Antenna
204287 - 433 MHz ISM Flexible Antenna
206764 - 868/915 MHz Dipole ISM Flexible Antenna
208142 - 868/915 MHz Ceramic SMT Antenna
211140 - 868/915 MHz Flexible Antenna

Near Field Communications (NFC) Antennas

146236 - NFC Rectangular Antenna

Bluetooth/Wi-Fi Flexible Internal Antennas (1 of 2)



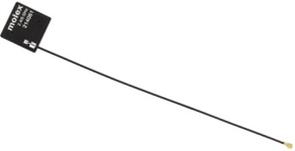
2.4, 5, 6 GHZ WI-FI 6E FLEXIBLE AND PCB ANTENNAS

| Series | 146153 | 146187 | 204281 | 208482 | 212330 | 206994 |
|----------------------------|--|--------------------|--------------------|--|---|----------------------|
| Key Features | Balanced RF transmission, multiple cable lengths, center-fed/side-fed cables | | | 2x2, 4x4 MIMO | | Smallest Form Factor |
| Size (mm) | 34.90 by 9.00 | 40.95 by 9.00 | 35.00 by 11.00 | 40.40 by 15.40 by 0.10 | 70.00 by 20.00 | 15.00 by 6.00 |
| Material | Flexible | PCB | Flexible | Flexible | Flexible | Flexible |
| Frequency Range (GHz) | 2.4 to 2.5 / 5.15 to 5.85 / 6 to 7.125 | | | | | |
| Return Loss (dB) | <-10 / <-10 / <-10 | <-10 / <-10 / <-7 | <-10 / <-10 / <-4 | Port1, 2: <-8 / <-13 / <-5 | Port1: <-10 / <-10 / <-5 Port2: <-10 / <-9 / <-5 Port3: <-10 / <-10 / <-5 Port4: <-10 / <-10 / <-5 | <-10 / <-5 / <-4 |
| Peak Gain (dBi) | 3.0 / 4.0 / 5.5 | 3.2 / 4.5 / 4.5 | 2.0 / 3.3 / 4.5 | Port1: 2.9 / 5.0 / 4.5 Port2: 3.4 / 5.9 / 4.0 | Port1: 2.4 / 3.3 / 6.5 Port2: 2.6 / 2.3 / 2.3 Port3: 3.0 / 3.4 / 5.5 Port4: 3.5 / 3.9 / 5.5 | 4.0 / 3.6 / 2.7 |
| Total Radiation Efficiency | >75% / >75% / >80% | >80% / >75% / >75% | >65% / >68% / >55% | Port1: >65% / >75% / >75% Port2: >75% / >70% / >80% | Port1: 55% / 70% / 75% Port2: 55% / 65% / 65% Port3: 50% / 70% / 75% Port4: 55% / 65% / 75% | >55% / >70% / >40% |
| Product Image | | | | | | |

Bluetooth/Wi-Fi Flexible Internal Antennas (2 of 2)



2.4 AND 2.4, 5 GHZ WI-FI ON-METAL ANTENNAS

| Series | 212498 | 214061 |
|----------------------------|---|---|
| Key Features | Direct mounting on metallic surfaces | |
| Size (mm) | 20.2 by 20.2 by 3.5 | |
| Material | Plastic | |
| Frequency Range (GHz) | 2.4 to 2.485 | 2.4 to 2.485/ 5.15 to 5.85 |
| Return Loss (dB) | -6 | -9 |
| Peak Gain (dBi) | 3.7 | 3.6 / 6.2 |
| Total Radiation Efficiency | >60% | >60% / > 65% |
| Product Image |  |  |

Bluetooth/Wi-Fi Ceramic and MID Chip Internal Antennas



| 2.4 AND 2.4, 5 GHz CERAMIC AND MID CHIP ANTENNAS | | | | | | |
|--|---|---|---|--|---|---|
| Series | 146175 | 47948 | 206513 | 206514 | 211964 | 206774 |
| Key Features | Highest performance in the market | | Lower cost than LDS plastic | | Low profile | Low profile |
| Size (mm) | 3.00 by 5.00 by 4.00 | 3.00 by 3.00 by 4.00 | 3.00 by 3.00 by 4.00 | 3.00 by 4.00 by 4.00 | 3.20 by 1.60 by 1.20 | 3.20 by 1.60 by 0.65 |
| Material | LDS-MID | LDS-MID | Ceramic | Ceramic | Ceramic | Ceramic |
| PCB Mounting Recommendation | Corner mounting | Corner mounting | Corner mounting | Corner mounting | Center-edge mounting | Corner mounting |
| Frequency Range (GHz) | 2.4 to 2.5 5.15 to 5.85 | 2.4 to 2.5 | 2.4 to 2.5 | 2.4 to 2.5 5.15 to 5.85 | 2.4 to 2.5 5.15 to 5.85 | 2.4 to 2.5 5.15 to 5.85 |
| Return Loss (dB) | <-6 | <-7 | <-6 | <-8 / <-5 | Config.1 (2.4 GHz): <-6 Config.2 (2.4/5 GHz): <-5 | Config.1 (2.4GHz): <-10 dB Config. 2 (2.4/5GHz): <-7 dB |
| Peak Gain (dBi) | 3.0 / 4.2 | 3 | 3.6 | 3.5 / 6.2 | Config.1: 2.7 Config.2: 2.1 / 2.2 | Config.1: 2.7 Config.2: 1.9 / 1.7 |
| Total Radiation Efficiency | >70% | >70% | >55% | >75% | Config.1: >80% Config.2: >70% / >65% | > 60% |
| Product Image |  |  |  |  |  |  |

Cellular Flexible Internal Antennas



CELLULAR FLEXIBLE ANTENNAS

| Series | 212570 | 207235 | 146185 | 105263 | 209142 | 146234 | 207901 |
|----------------------------|----------------------------------|----------------------------------|--|----------------------------------|--|--|--|
| Key Features | Small size, side-fed cable | Small size | Balanced antenna with high performance | | Small size, side-fed cable | Balanced antenna with high performance | |
| Size (mm) | 40.40 by 15.40 | 40.40 by 15.40 by 0.10 | 84.00 by 15.00 | 106.6 by 13.00 | 85.00 by 14.50 by 0.10 | 140.00 by 20.00 | 147.00 by 25.00 by 0.16 |
| Material | Flexible | Flexible | Flexible | Flexible | Flexible | Flexible | Flexible |
| Frequency Range | 824 to 960 MHz / 1.7 to 2.17 GHz | 824 to 960 MHz / 1.7 to 2.17 GHz | 824 to 960 MHz / 1.71 to 2.7 GHz | 824 to 960 MHz / 1.71 to 2.7 GHz | 698 to 960 MHz / 1.5 to 3 GHz / 3 to 6 GHz | 698 to 960 MHz / 1.5 to 2.7 GHz / 2.7 to 6 GHz | 600 to 960 MHz / 1.5 to 3 GHz / 3 to 6 GHz |
| Return Loss (dB) | <-4 / <-3 | <-4 / <-6 | <-4 | <-6 | <-10 / <-5 / <-5 | <-4 / <-5 / <-5 | <-3 / <-5 / <-5 |
| Peak Gain (dBi) | -0.45 / 1.76 | 0 / 4.3 | 1.4 / 3.0 | 2.3 / 3.1 | 1.2 / 5.2 / 2.7 | 1.7 / 2.65 / 4.8 | 2.6 / 4.9 / 5.4 |
| Total Radiation Efficiency | >25% / >50% | 30% / 60% | >60% / >65% | >66% / >60% | >45% / >55% / >55% | >69% / >68% / >67% | >70% / >65% / >70% |
| Product Image | | | | | | | |

Cellular Ceramic Internal Antennas



CELLULAR CERAMIC ANTENNAS

| Series | 204774 | 206649 | 206760 | 146200 | 208485 |
|----------------------------|---|---|--|---|---|
| Key Features | Small size, low profile | Tiny size, specifically designed for NB-IoT | Low profile, high performance | MIMO pair -0001 and -0011 | Low profile, ultra wide band |
| Size (mm) | 33.00 by 6.00 by 3.00 | 20.00 by 10.00 by 1.20 | 38.00 by 8.00 by 3.00 | 40.00 by 5.00 by 5.00 | 38.00 by 8.00 by 3.00 |
| Frequency Range | 790 to 960 MHz / 1.71 to 2.17 GHz | 698 to 869 / 791 to 862 / 824 to 960 / 698 to 960 MHz | 698 to 960 MHz / 1.7 to 2.7 GHz | 698 to 960 MHz / 1.71 to 2.7 GHz | 617 to 894 / 1.71 to 2.69 GHz / 3.3 to 3.8 GHz |
| Return Loss (dB) | <-6 | <-4 / <-6 / <-7 / <-5 | <-5 | <-5 | <-6 / <-4 / <-4 |
| Peak Gain (dBi) | 0.6 / 4.8 | 0.5 / 0.8 / 1.1 / 0.9 | 1.3 / 4.4 | 1.1 / 4.5 | 1.6 / 4.7 / 3.6 |
| Total Radiation Efficiency | >50% / >70% | >50% / >50% / >55% / >55% | >60% / >70% | >60% / >70% | >70% / >65% / >65% |
| Product Image |  |  |  |  |  |

GNSS Internal Antennas (1 of 2)



| GPS ANTENNAS | | | | |
|----------------------------|---|----------------------|--|----------------------------|
| Series | 146216 | 146235 | 206560 | 215634 |
| Key Features | LDS plastic material, superior performance, and small form factor | | Flexible with cable, multiple length options | Low profile, edge mounting |
| Frequency Range (MHz) | 1561 / 1575 / 1602 | 1561 / 1575 / 1602 | 1561 / 1575 / 1602 | 1561/1575/1602 |
| Size (mm) | 11.80 by 11.55 by 6.00 | 3.00 by 5.00 by 4.00 | 40.40 by 15.40 | 3.20 by 1.60 by 0.65 |
| Polarization | RHCP | Elliptic | Linear | Linear |
| Axial Ratio | <3.0 | <6.0 | N.A. | N.A. |
| Total Radiation Efficiency | >55% / >57% / 60% | >50% / >55% / 50% | >74% / >74% / >75% | > 55% |
| Product Image | | | | |

GNSS Internal Antennas (2 of 2)

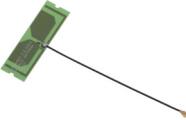


CERAMIC GPS ANTENNAS

| Series | 213602 | 211624 | 212203 | 206640 | 208890 | 146168 | 204286 |
|----------------------------|---|---|---|---|--|---|---|
| Key Features | Stacked ceramic patch for high precision navigation | | | Active patch with cable, two stage LNA | Ceramic patch, single feed pin, customized length options | | |
| Frequency Range (MHz) | L2: 1227.6 / L1: 1575.42 | L5: 1176.45 / L1: 1575.42 / GLONASS: 1602 | L5: 1176.45 / L1: 1575.42 | 1561 / 1575 / 1602 | 1575 | 1575 | 1561 / 1575 / 1602 |
| Size (mm) | 36.00 by 36.00 by 7.00 | 36.00 by 36.00 by 7.00 | 25.00 by 25.00 by 8.00 | 25.00 by 25.00 by 6.50 | 18.00 by 18.00 by 2.00 | 25.00 by 25.00 by 4.00 | 25.00 by 25.00 by 4.00 |
| Polarization | RHCP | RHCP | RHCP | RHCP | RHCP | RHCP | Elliptic |
| Axial Ratio | N.A. | N.A. | N.A. | N.A. | <2.0 | <3.0 | <13.0 / <7 / <12 |
| Total Radiation Efficiency | >50% / >80% | >74% / >74% / >75% | >65% / >75% | N.A. | >45% | >75% | >70% / >70% / 75% |
| Product Image |  |  |  |  |  |  |  |

Combo Internal Antennas (Wi-Fi, GPS, ISM and Cellular)

molex

| COMBO ANTENNAS | | | | | |
|----------------------------|--|---|---|--|---|
| Series | 146186 | 146220 | 201932 | 213353 | 216942 |
| Key Features | Multiple bands in one antenna, small form, high performance | | | | |
| Standard | WiFi 4/5/6/6E + GNSS | WiFi 4/5/6/6E + GNSS | WiFi 4/5/6 + ISM900 | LTE + GNSS | WiFi 4/5/6 + GNSS |
| Frequency Range (GHz) | 1.561 to 1.602/ 2.4 to 2.5 / 5.15 to 5.85 / 3 to 6 / 5.925 to 7.125 | | 0.9 to 0.924MHz / 2.4 to 2.5 / 5.15-5.85 | 0.698 to 8.5 (LTE) and 1.561 / 1.575 / 1.602 (GNSS) | 1.561 to 1.602 2.4 to 2.5 5.15 to 5.85 |
| Size (mm) | 53.00 by 18.00 | 53.50 by 16.60 | 20 by 5 by 4 | 119.40 by 19.40 | 3.20 by 1.60 by 1.20 |
| Polarization | Linear | Linear | Linear | Linear | Linear |
| Return Loss (dB) | -5 ~ -10 | -5 | <-5 / <-6 / <-5 | < -5 (LTE) < -10 (GNSS) | <-6 / <-7 / <-5 |
| Peak Gain (dBi) | 2.13 to 5.49 | 2.39 ~ 3.97 | 0.7 / 4.2 / 4.5 | 2.3~7(LTE) / 1.9~2.4 (GNSS) | 0.8 / 1.3 / 3.0 |
| Total Radiation Efficiency | 65% ~ 70% | 70% ~75% | >40% / >65% / >55% | >60% (LTE) >45% (GNSS) | >40% >50% >65% |
| Product Image |  |  |  |  |  |

Ultra Wide Band (UWB) Internal Antennas

molex

ULTRA WIDE BAND (UWB) ANTENNAS

| Series | 146184 | 211996 |
|----------------------------|---|---|
| Key Features | Ground plane-independent, dipole-style antenna | Designed for V2X/DSRC communications |
| Size (mm) | 47.00 by 17.60 | 16.40 by 7.60 by 0.16 |
| Material | Flexible | Flexible |
| Frequency Range (GHz) | 3.0 to 6.0 | 5.85 to 5.295 |
| Return Loss (dB) | <-10 | <-10 |
| Peak Gain (dBi) | 4.7 | 5.75 |
| Total Radiation Efficiency | >74% | >79% |
| Product Image |  |  |

Industrial, Scientific and Medical (ISM) Internal Antennas



| | FLEXIBLE ANTENNAS | | | | SMT ANTENNA |
|----------------------------|---|---|--|---|---|
| Series | 105262 | 206764 | 211140 | 204287 | 208142 |
| Key Features | Balanced, multiple cable length options | Dipole-type, balanced, multiple cable length options | Small size | Dipole-type, balanced, multiple cable length options | Small footprint, low profile |
| Frequency Range (MHz) | 863 to 928 | 863 to 928 | 863 to 928 | 433 | 868 or 915 (by different matching) |
| Size (mm) | 79.00 by 10.00 | 87.40 by 12.40 | 38.00 by 10.00 by 0.10 | 90.00 by 40.00 | 9.00 by 3.00 by 0.63 |
| Return Loss (dB) | <-6 | <-9 | <-5 | <-10 | <-10 / <-5 |
| Peak Gain (dBi) | 0.4 / 1.4 | 1.2 | 0.3 / 1.0 | 0.7 | 1.5 / 1.8 |
| Total Radiation Efficiency | 50% / >66% | >70% | >55% / >60% | >55% | 70% / 65% |
| Product Image |  |  |  |  |  |

Near Field Communication (NFC) Internal Antennas



RECTANGULAR NEAR FIELD COMMUNICATION (NFC) ANTENNA

| Series | 146236 | | |
|----------------------|--------------------------|------------------------|---|
| Name | NFC Antenna with Ferrite | NFC Antenna | NFC Antenna with Ferrite and Twisted pair |
| Size (mm) | 15.00 by 25.00 by 0.27 | 15.00 by 25.00 by 0.17 | 15.00 by 25.00 by 0.27 |
| | 23.00 by 27.00 by 0.27 | 23.00 by 27.00 by 0.17 | 23.00 by 27.30 by 0.27 |
| | 34.00 by 46.00 by 0.27 | 34.00 by 46.00 by 0.17 | 34.39 by 46.10 by 0.27 |
| | 45.00 by 55.00 by 0.27 | 45.00 by 55.00 by 0.17 | 45.00 by 55.00 by 0.27 |
| | 15.00 by 15.00 by 0.27 | 15.00 by 15.00 by 0.17 | 15.00 by 15.00 by 0.27 |
| Material | FFC with Ferrite | FFC | FFC with Ferrite and AWG28 |
| Antenna Type | Near Field Coupling | | |
| Frequency Range | 13.56 MHz | | |
| Inductor @ 13.56 MHz | 3.10 μ H | 2.00 μ H | 2.00 μ H |
| | 3.00 μ H | 2.00 μ H | 2.00 μ H |
| | 3.80 μ H | 2.60 μ H | 4.20 μ H |
| | 3.50 μ H | 2.40 μ H | 2.40 μ H |
| | 2.10 μ H | 1.40 μ H | 1.40 μ H |
| Product Image | | | |

www.molex.com/cm/readytouseantenna.html