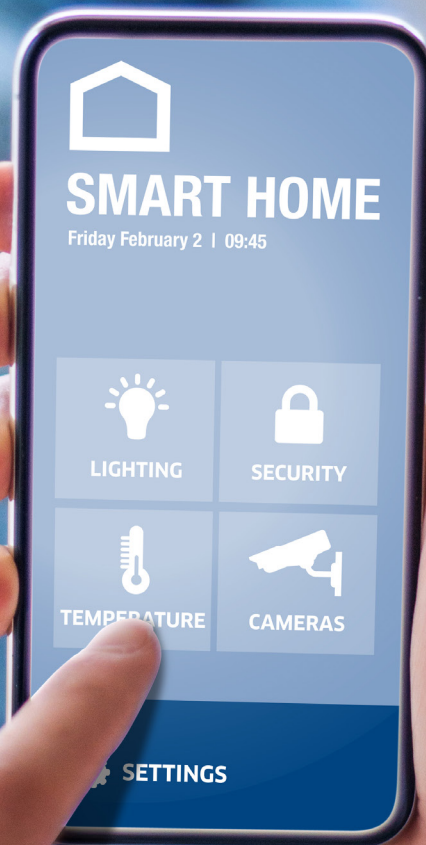


molex

AVNET[®]
Reach Further™



Molex
antenna portfolio

Molex antennas for the Smart Home

Intelligent and integrated smart home systems are bringing next generation connected devices into multiple consumer markets. Avnet Abacus offers an extensive portfolio of high performance Molex antennas for use across a broad spectrum of wireless applications in the Smart Home, as well as for industrial, medical and automotive markets. Molex incorporates the latest innovative technology into its antenna portfolio which includes Bluetooth/Wi-Fi, GNSS, Combo, Cellular and NFC.

FURTHER RESOURCES

Learn how to bring the future home with Molex and view the on-demand webinar 'Antenna design considerations for a Smart Home' by visiting [avnet-abacus.eu/molex](https://www.avnet-abacus.eu/molex)

Content

Bluetooth/Wi-Fi antennas	4-5
GNSS antennas	6
Combo antennas (Wi-Fi, GPS, ISM, cellular...)	7
Cellular antennas	8
Ultra wide band (UWB) antennas	9
Industrial, scientific and medical (ISM) antennas	10
Near field communications (NFC) antennas	11
Molex antenna portfolio	12-13



Bluetooth/Wi-Fi antennas (1 of 2)

SERIES	146153	146187	204281
Name	2.4/5 GHz balanced flex antenna with center-fed cable		2.4/5 GHz balanced flex antenna with side-fed cable
Size	34.90mm x 9.00mm		35.00mm x 11.00mm
Cable length	50, 100, 150, 200, 250, 300mm		50, 100, 150, 200, 250, 300mm
Material	Flexible		Flexible
Antenna type	Dipole-type, balanced		Dipole-type, balanced
Frequency range	2.4 to 2.5 GHz	5.15 to 5.85 GHz	2.4 to 2.5 GHz, 5.15 to 5.85 GHz
Return loss	<-10 dB		<-10 dB
Peak gain	3.0 dBi	4.0 dBi	2.0 dBi, 3.3 dBi
Total radiation efficiency	>75%	>75%	>65%, >68%
Polarisation	Linear		Linear
Input impedance	50 ohms		50 ohms
Product image			

Note: Performance values above are based on 100mm cable

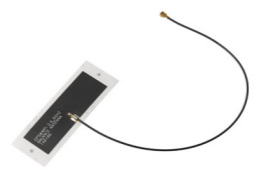
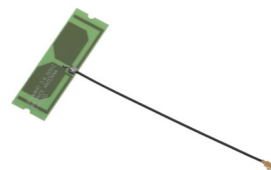


Bluetooth/Wi-Fi antennas (2 of 2)

SERIES	146175	47948	203006
Name	2.4/5 GHz Wi-Fi SMT chip antenna		2.4/5 GHz ceramic SMT antenna
Size	3.00 x 5.00 x 4.00mm		3.20 x 1.60 x 1.10mm
PCB clearance	4.00 x 6.00mm		4.00 x 6.00mm
Material	LDS-MID		Ceramic
Antenna type	Inverted F-Antenna (IFA)		Loop
Frequency range	2.4 to 2.5 GHz	5.15 to 5.85 GHz	2.4 GHz, 2.4 to 2.5 GHz, 5.15 to 5.85 GHz
Return loss	<-6 dB		<-7 dB, -10 dB, -5 dB
Peak gain	3.0 dBi	4.2 dBi	2.3 dBi, 2.1 dBi, 1.5 dBi
Total radiation efficiency	>70%		>70%, >60%, >55%
Polarisation	Linear		Linear
Input impedance	50 ohms		50 ohms
Product Image			

GNSS antennas

Part No.	146235	146216	146168	204286	204283
Name	Helix GPS antenna	RHCP MID GPS antenna	RHCP ceramic GPS antenna	GPS/BEIDOU/GLONASS ceramic antenna	Low-profile GNSS ceramic antenna
Size	3.00 x 5.00 x 4.00mm	11.80 x 11.55 x 6.00mm	25.00 x 25.00 x 4.00mm	25.00 x 25.00 x 4.00mm	3.20 x 1.60 x 1.10mm
PCB clearance	4.00 x 6.00mm	No PCB clearance	No PCB clearance	No PCB clearance	5.00 x 6.00mm
Material	LDS-MID	LDS-MID	Ceramic	Ceramic	Ceramic
Antenna type	Monopole	Planar inverted-F antenna (PIFA)	Patch	Patch	Loop
Frequency range	1561 ±5 MHz 1575 ±5 MHz 1602 ±5 MHz	1561 ±5 MHz 1575 ±5 MHz 1602 ±5 MHz	1.575 GHz	1561 ±5 MHz 1575 ±5 MHz 1602 ±5 MHz	1561 ±5 MHz 1575 ±5 MHz 1602 ±5 MHz
Return loss	<-8 dB	<-10 dB	<-15 dB	<-10 dB	<-8 dB <-10 dB <-8 dB
Peak gain	0.7 dBi 1.1 dBi 1.1 dBi	0.7 dBi 0.7 dBi 1.5 dBi	5.5 dBi	5.2 dBi 5.4 dBi 5.6 dBi	1.5 dBi 2.0 dBi 1.6 dBi
Total radiation efficiency	>50% >55% >50%	>55% >57% >60%	>75%	>70% >70% >75%	>60% >65% >60%
Polarisation	Elliptic	RHCP	RHCP	Elliptic	Linear
Axial ratio	<6.0 dB	<3.0 dB	<3.0 dB	<13.0 dB <7 dB <12 dB	-
Input impedance	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms

Combo antennas (Wi-Fi, GPS, ISM and cellular)


SERIES	146186	146220	203007	201932
Name	GPS/Wi-Fi combo balanced flexible antenna	GPS/Wi-Fi combo balanced pcb antenna	2.4/5 GHz, combo GPS/Wi-Fi ceramic antennas	2.4/5 GHz & 900 MHz triple band antenna
Size	53.00 x 18.00mm	53.50 x 16.60mm	3.20 x 1.60 x 1.10mm	20.00 x 5.00 x 4.00mm
Material	Flexible	PCB	Ceramic	Ceramic
Antenna type	Dipole-type, balanced	Dipole-type, balanced	Loop	IFA
PCB clearance	N.A.	N.A	6.20 x 8.00mm	30.00 x 6.00mm
Cable length	50, 100, 150, 200, 250, 300mm	50, 100, 150, 200, 250, 300mm	N.A.	N.A.
Frequency range	1.575 to 1.602 GHz 2.4 to 2.5 GHz 5.15 to 5.85 GHz 3 to 6 GHz	1.575 to 1.602 GHz 2.4 to 2.5 GHz 5.15 to 5.85 GHz 3GHz to 6 GHz	1.561 GHz 1.575 GHz 1.602 GHz 2.4 to 2.5 GHz 5.15 to 5.85 GHz	900 to 924 MHz 2.4 to 2.5 GHz 5.15 to 5.85 GHz
Return loss	<-10 dB	<- 8 dB	<-6 dB <-10 dB <-6 dB <-6 dB <-5.5 dB	<- 5 dB <- 6 dB <- 5 dB
Peak gain	3.0 dBi 3.0 dBi 4.0 dBi 4.7 dBi	2.4 dBi 2.9 dBi 3.8 dBi 3.5 dBi	0.9 dBi 1.0 dBi 0.3 dBi 0.6 dBi 1.0 dBi	0.7 dBi 4.2 dBi 4.5 dBi
Total radiation efficiency	>70% >75% >70% >80%	>82% >80% >83% >78%	>55% >55% >50% >55% >50%	>40% >65% >55%
Polarisation	Linear	Linear	Linear	Linear
Input impedance	50 ohms	50 ohms	50 ohms	50 ohms
Product image				

Note: Performance values above are based on 100mm cable



Cellular antennas

PART NO.	105263		146185		146200		204774	
Name	Multi(6)-band cellular flexible antenna		Multi-band combo cellular Wi-Fi flexible antenna		Full LTE SMT antenna		791 to 960 and 1710 to 2700 MHz	
Size	106.6 x 13.00mm		84.00 x 15mm		40.00 x 5.00 x 5.00mm		33.00 x 6.00 x 3.00mm	
Material	Flexible		Flexible		Ceramic		Ceramic	
Antenna type	Dipole-type, balanced		Dipole-type, balanced		SD type with MobliquA technology		Coupler	
PCB clearance	N.A.		N.A.		50.00 x 10.00mm		43.00 x 9.00mm	
Cable length	50, 100, 150, 200, 250, 300mm		50, 100, 150, 200, 250, 300mm		N.A.		N.A.	
Frequency range	824 to 960 MHz	1.71 to 2.7 GHz	824 to 960 MHz	1.7 to 2.7 GHz	698 to 960 MHz	1.71 GHz to 2.7 GHz	790 to 960 MHz	1.71 to 2.17 GHz
Return loss	<-6 dB		<-4 dB	<-4 dB	<-5 dB		<-6 dB	
Peak gain	2.3 dBi	3.1 dBi	1.4 dBi	3 dBi	1.1 dBi	4.5 dBi	0.6 dBi	4.8 dBi
Total radiation efficiency	>66%	>60%	>60%	>65%	>60%	>70%	>50%	>70%
Polarisation	Linear		Linear		Linear		Linear	
Input impedance	50 ohms		50 ohms		50 ohms		50 ohms	
Product image								

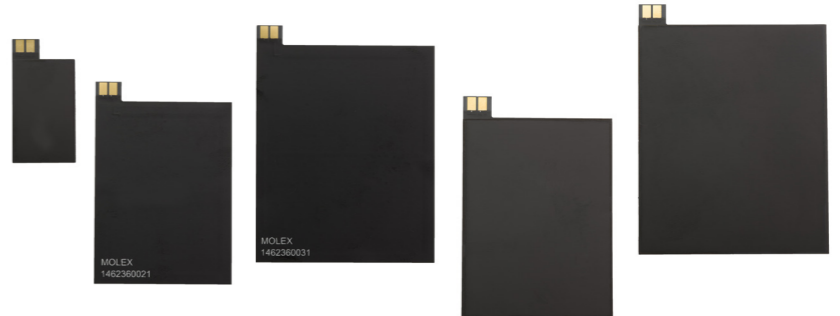
Ultra wide band (UWB) antennas

SERIES	146184
Name	Ultra wide band PCB antenna
Size	47.00 x 17.6mm
Material	PCB
Antenna type	Dipole, balanced
Cable length	100mm
Frequency range	3 GHz to 6 GHz
Return loss	<-6 dB
Total radiation efficiency	70%
Peak gain	4.5 dBi
Polarisation	Linear
Input impedance	50 ohms
Product image	

Industrial, scientific and medical (ISM) antennas

SERIES	105262		204287
Name	868/915 MHz ISM standalone antenna		433 MHz ISM antenna
Size	79.00 x 10.00mm		90.00 x 40.00mm
Material	Flexible		Flexible
Antenna type	MoblighuA technology, balanced		Dipole-type, balanced
Cable length	50, 100, 150, 200, 250, 300mm		50, 100, 150, 200, 250, 300mm
Frequency range	863 - 870 MHz	902 - 928 MHz	433 MHz
Return loss	<-6 dB		<-10 dB
Total radiation efficiency	50%	66%	>56% (50mm cable), >55% (100mm cable), >54% (150mm cable), >52% (200mm), >51% (250mm), >50% (300mm)
Peak gain	0.4 dBi (100mm cable) 0.3 dBi (150mm cable) 0.2 dBi (200mm cable)	1.4 dBi (100mm cable) 1.3 dBi (150mm cable) 1.2 dBi (200mm cable)	0.8 dBi (50mm cable), 0.7 dBi (100mm cable), 0.6 dBi (150mm cable), 0.5 dBi (200mm), 0.4 dBi (250mm), 0.3 dBi (300mm)
Polarisation	Linear		Linear
Input impedance	50 ohms		50 ohms
Product image			

Near field communication (NFC) antennas

SERIES	146236	
Name	NFC antenna without ferrite	NFC antenna with ferrite
Sizes	15.00 x 15.00mm 23.00 x 27.00mm 34.00 x 46.00mm 45.00 x 55.00mm	
Material	FPC	FPC + ferrite
Antenna type	Near field coupling	
Frequency range	13.56 MHz	
Inductor @ 13.56 MHz	2.11 µH 2.09 µH 2.76 µH 2.59 µH	3.32 µH 3.22 µH 4.25 µH 3.92 µH
Product image		

Molex antenna portfolio

Category	Protocol	Series no.	Operating frequency		Antenna type		SMD mounting type		PCB/flexible antenna mounting		Cable alignment with antenna		Cable diameter (mm)		Cable length (mm)		Connector type		
			2.4 GHz	5.0 GHz	Embedded	Internal cable assembly	PCB corner	PCB centre-edge	Peel-and-stick	Screw mounting	Parallel	Perpendicular	1.13	50/100/150 200/250/300 200/250/300	Custom length	UFL MHF1	Custom		
BT/Wi-Fi	Zigbee Bluetooth BLE Thread Wi-Fi	47948	•		•		•												
		146175	•	•	•		•												
		203006	•	•	•			•											
		146153	•	•		•			•		•	•	•	•	•	•	•	•	•
		204281	•	•		•			•		•	•	•	•	•	•	•	•	•
		146187	•	•		•				•		•	•	•	•	•	•	•	•

Category	Protocol	Series No.	Operating frequency (MHz)			Antenna type		Polarisation			Mounting		Antenna size (mm)
			1561	1575	1602	Passive	Active	RHCP	Elliptic	Linear	SMD	Pin & adhesive	
GNSS	GPS Glonass Beidou Galileo	146235	•	•	•	•		•			•		3x5x4
		146216	•	•	•	•		•			•		11.8x11.55x6
		146168		•		•		•				•	25x25x4
		204286	•	•	•	•		•				•	25x25x4
		204283	•	•	•	•					•	•	3.2x1.6x1.1

Category	Protocol	Series no.	Operating frequency (MHz)			Antenna type		Flexible antenna mounting		Cable alignment w/ antenna		Cable diameter (mm)		Cable length (mm)		Connector type	
			433	868	915	Embedded	Internal cable assembly	Peel-and-stick	Parallel	Perpendicular	1.13	100/150/200 50/250/300	Custom length	UFL MHF1	Custom		
ISM	Sigfox Neul Z-wave LoRa	105262		•	•	•		•		•	•	•	•	•	•	•	•
		204287	•				•		•	•	•	•	•	•	•	•	•

Molex antenna portfolio

Category	Protocol	Series no.	Operating frequency (MHz)				Antenna type		SMD mounting type		Flex antenna mounting		Cable alignment w/ antenna		Cable diameter (mm)		Cable length (mm)		Connector type	
			698 to 960	790 to 960	824 to 960	1710 to 2700	Embedded	Internal cable assembly	PCB end	Peel-and-stick	Parallel	Perpendicular	1.13	100/150/200 50/250/300	Custom length	UFL MHF1	Custom			
Cellular	2G/3G/4G LTE LPWA (Cat-M1/ NB1)	105263			•	•		•			•		•	•	•	•	•	•		
		146185			•	•		•		•		•	•	•	•	•	•	•		
		146200	•			•	•		•											
		204774		•		•	•		•		•									

Category	Protocol	Series no.	Operating frequency band		Antenna type		PCB/Flex antenna mounting		Cable alignment with antenna		Cable diameter (mm)		Cable length (mm)		Connector type	
			2.4/5 GHz+GPS	2.4/5 GHz+900 MHz	Embedded	Internal cable assembly	Peel-and-stick	Screw mounting	Parallel	Perpendicular	1.13	50, 100, 150, 200, 250, 300	Custom length	UFL MHF1	Custom	
Combo	Wi-Fi + GPS; Wi-Fi + 900 MHz	146186	•			•	•			•	•	•	•	•	•	•
		146220	•			•		•		•	•	•	•	•	•	•
		203007	•		•											
		201932		•		•										

Category	Protocol	Series no.	Frequency		Antenna type		Flex antenna mounting		Cable alignment with antenna		Cable diameter (mm)		Cable length (mm)		Connector type	
			3 to 6 GHz		Embedded	Internal cable assembly	Peel-and-stick	Parallel	Perpendicular	1.13	50, 100, 150, 200, 250, 300	Custom length	UFL MHF1	Custom		
UWB	UWB	146184	•		•	•	•	•	•	•	•	•	•	•	•	•

Category	Protocol	Series no.	Frequency 13.56 MHz		With ferrite		Without ferrite		Size (mm)	
			With cable	Without cable	With cable	Without cable	15 x 15; 23 x 27; 34 x 46; 45 x 55			
NFC	NFC	146236	•	•	•	•	•	•	•	

This document provides a brief overview only, no binding offers are intended. No guarantee as to the accuracy or completeness of any information.

All information is subject to change, modifications and amendments without notice. Printed on FSC certified paper. Copyright © 2018 Avnet, Inc. AVNET, "Reach Further," and the Avnet logo are registered trademarks of Avnet, Inc. All other brands are the property of their respective owners. K1112r201803

Avnet
2211 S. 47th Street
Phoenix, AZ 85034
1-800-332-8638
avnet.com