



Wi-Fi Equipment Front-End Solutions

High Linearity and Low Power Consumption Devices for Wi-Fi Applications

qorvo
all around you



Leveraging Qorvo Technologies for Wi-Fi 6 (802.11ax)

Qorvo® continuously develops a portfolio of leading products for Wi-Fi, always following the newest standards. Products include customer premises equipment (CPE), enterprise systems and Internet of Things (IoT) applications. We capitalize on our front-end differentiators and focus on reduced power consumption and interference resolution while maintaining high throughput and excellent range. We create the most efficient solutions providing reliable coverage in the smallest form factor.

Qorvo Wi-Fi Front Ends

Most Efficient Solutions Providing Reliable Coverage in Smallest Form Factor

Best Energy Efficiency

- Up to 25% reduced power dissipation (2W in x4 MIMO)
- Enables compact fanless and ventless box design

Highest Capacity

- First to market enabling 1024QAM – 1.2 Gbps
- Primary 11ax front ends with announced chipset solutions

Interference Robustness

- Doubled Rx sensitivity in LTE/Wi-Fi systems
- Integrated filtering reduces layout area by 45%

Improved Range & Coverage

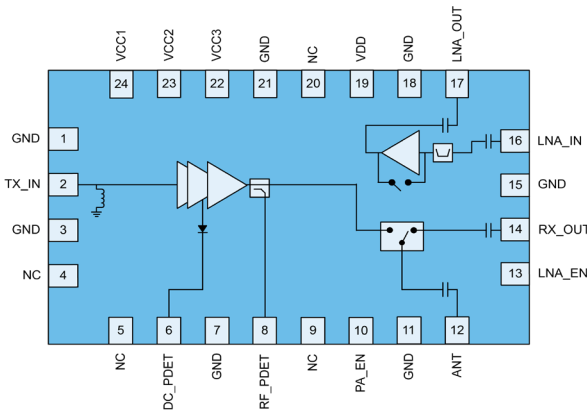
- 2x the power at bandedge channels
- 30% extended range with integrated digital pre-distortion support

Wi-Fi 6 (11ax Solutions)

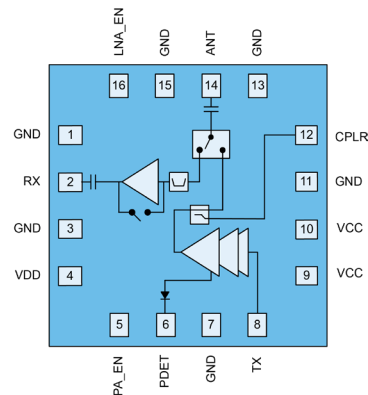
Qorvo enables Wi-Fi 6 applications to achieve up to 8x8 MU-MIMO in both conventional and power over ethernet (PoE) systems.

5 GHz

Functions	V _{CC} (V)	MCS11 -47 dB P _{OUT} (dBm)	MCS11 I _{CC} (mA)	P _{DISS} (W)	MCS11 -43 dB P _{OUT} (dBm)	MCS11 I _{CC} (mA)	MCS9 -35 dB P _{OUT} (dBm)	MCS9 I _{CC} (mA)	MCS7 -30 dB P _{OUT} (dBm)	MCS7 I _{CC} (mA)	MCS0 P _{OUT} (dBm)	Tx Gain (dB)	Noise Figure (dB)	Rx Gain (dB)	Bypass Loss (dB)	2.4 GHz Rej (dB)	Package (mm)	Part Number
PA+SW+LNA+CPLR	5	16	195	0.98	18	215	23	290	24	320	26	33	2	16	7	30	5x3	QPF4588
PA+SW+LNA+CPLR	3.3	12.5	120	0.40	15	135	18	155	19	165	21	30	2	15	7	35	3x3	QPF4528



QPF4588



QPF4528

2.4 GHz

Functions	V _{CC} (V)	MCS11 -47 dB P _{OUT} (dBm)	MCS11 I _{CC} (mA)	P _{DISS} (W)	MCS11 -43 dB P _{OUT} (dBm)	MCS11 I _{CC} (mA)	MCS9 -35 dB P _{OUT} (dBm)	MCS9 I _{CC} (mA)	MCS7 -30 dB P _{OUT} (dBm)	MCS7 I _{CC} (mA)	MCS0 P _{OUT} (dBm)	Tx Gain (dB)	Noise Figure (dB)	Rx Gain (dB)	Bypass Loss (dB)	5 GHz Rej (dB)	Package (mm)	Part Number
PA+SW+LNA+CPLR	5	16	235	1.18	19	275	24.5	375	26	450	28	33	1.8	15.5	7	11	5x3	QPF4288
PA+SW+LNA+CPLR	3.3	13	110	0.36	14	120	17	140	18	150	21	33	2.2	15	7	15	3x3	QPF4228

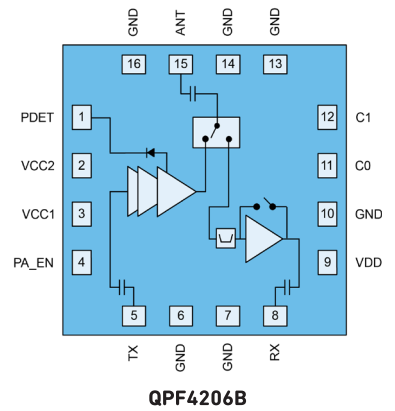
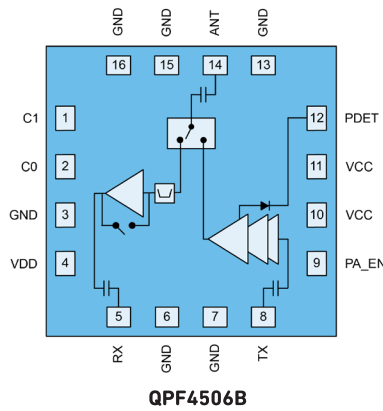
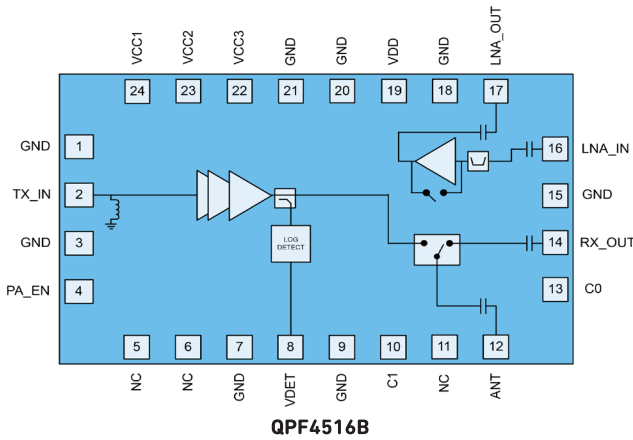
Enabling 160 MHz channels for 4x4 MIMO Wi-Fi 6 systems.

5 GHz

Functions	V _{CC} (V)	MCS11	MCS9	MCS9	MCS9	MCS7	MCS7	MCS0	Tx	Noise	Rx	Bypass	2.4 GHz	Package (mm)	Part Number	
		-43 dB	P _{OUT} (dBm)	I _{CC} (mA)	P _{DISS} (W)	P _{OUT} (dBm)	I _{CC} (mA)	P _{OUT} (dBm)	I _{CC} (mA)	P _{OUT} (dBm)	Gain (dB)	Figure (dB)	Gain (dB)			Loss (dB)
PA+SW+LNA	5	17	200	1.00	23	285	24	310	27	33	2	15	6	35	5x3	QPF4516B
PA+SW+LNA	5	15	150	0.75	21	200	23	230	25	30	1.7	13.5	6	28	3x3	QPF4506B

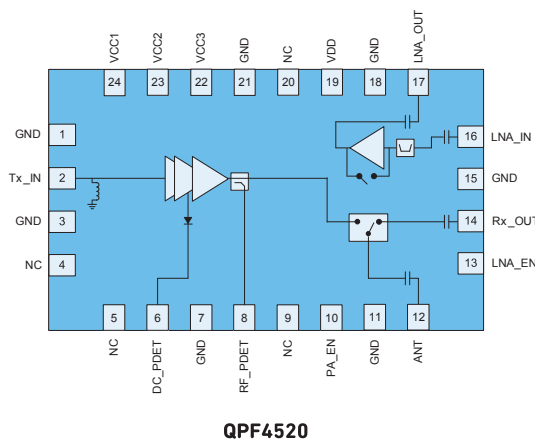
2.4 GHz

Functions	V _{CC} (V)	MCS11	MCS9	MCS9	MCS9	MCS7	MCS7	MCS0	Tx	Noise	Rx	Bypass	5 GHz	Package (mm)	Part Number	
		-43 dB	P _{OUT} (dBm)	I _{CC} (mA)	P _{DISS} (W)	P _{OUT} (dBm)	I _{CC} (mA)	P _{OUT} (dBm)	I _{CC} (mA)	P _{OUT} (dBm)	Gain (dB)	Figure (dB)	Gain (dB)			Loss (dB)
PA+SW+LNA	5	18	280	1.4	24	340	25	365	26	32	1.8	15.5	7	15	5x3	QPF4216B
PA+SW+LNA	5	19	230	1.15	21	260	22.5	280	25	33	2.1	15	6	25	3x3	QPF4206B



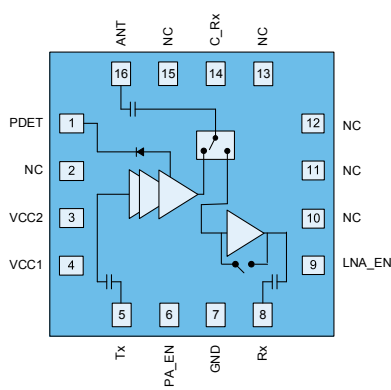
5 GHz

Functions	V _{CC} (V)	MCS11	MCS9	MCS9	MCS9	MCS7	MCS7	MCS0	Tx	Noise	Rx	Bypass	2.4 GHz	Package (mm)	Part Number	
		-43 dB	P _{OUT} (dBm)	I _{CC} (mA)	P _{DISS} (W)	P _{OUT} (dBm)	I _{CC} (mA)	P _{OUT} (dBm)	I _{CC} (mA)	P _{OUT} (dBm)	Gain (dB)	Figure (dB)	Gain (dB)			Loss (dB)
PA+SW+LNA	5	21	250	1.25	23	280	25	350	27	34	2	15	6	35	5x3	QPF4520
PA+SW+LNA	5	17	165	0.83	21	210	22	220	25	31	2.1	15	7.5	20	2.5x2.5	QPF4550
PA+SW+LNA	3.3	15	135	0.45	18	155	19	165	21	30	2	15	7	37	3x3	QPF4530

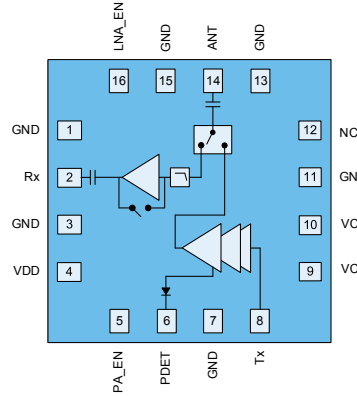


2.4 GHz

Functions	MCS11		MCS9		MCS9		MCS7		MCS7		Tx Gain (dB)	Noise Figure (dB)	Rx Gain (dB)	Bypass Loss (dB)	2.4 GHz Rej (dB)	Package (mm)	Part Number
	V _{cc} (V)	P _{out} (-43 dBm)	I _{cc} (mA)	P _{diss} (W)	P _{out} (-35 dBm)	I _{cc} (mA)	P _{out} (-30 dBm)	I _{cc} (mA)	P _{out} (dBm)								
PA+SW+LNA	5	22	320	1.6	24.5	370	25.5	385	27	32	1.8	15	7	19	5x3	QPF4220	
PA+SW+LNA	5	19	230	1.15	21	260	22.5	280	25	33	2.1	15.5	6	25	3x3	QPF4200	
PA+SW+LNA	3.3	14	120	0.4	17	140	18	150	21	33	2.2	15	7	15	3x3	QPF4230	



QPF4200



**QPF4230
QPF4530**

BAW Filtering Solutions

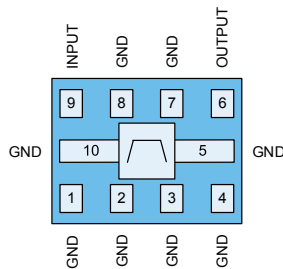
Qorvo creates the most efficient RF solutions providing reliable coverage in the smallest form factor.

2 GHz Bandedge Filtering

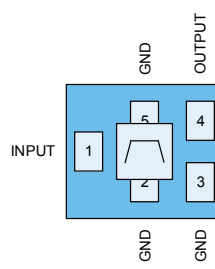
Function	Wi-Fi Channels	Insertion Loss (dB)	Attenuation			Package (mm)	Part Number
			2370-2390 MHz (dB)	2483.5-2500 MHz (dB)	2500-2520 MHz (dB)		
2.4 GHz FCC Bandedge	1-11	0.8	31	24	25	1.1x0.9	885136
2.4 GHz FCC Bandedge	1-11	0.8	19	24	38	1.7x1.3	885070
2.4 GHz EU Bandedge	1-12	0.8	19	20	33	1.7x1.3	885135

Wi-Fi/LTE Coexistence Filtering

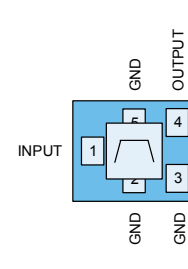
Function	Wi-Fi Channels	Insertion Loss (dB)	Attenuation					Package (mm)	Part Number
			2300-2370 MHz (dB)	2370-2375 MHz (dB)	2375-2380 MHz (dB)	2500-2505 MHz (dB)	2505-2570 MHz (dB)		
2.4 GHz Wi-Fi/BT to LTE CoExist	1-13	1.0	41	-	-	36	61	1.4x1.2	QPQ1907
2.4 GHz Wi-Fi/BT to LTE CoExist	1-13	1.1	39	-	-	41	55	1.1x0.9	885128
2.4 GHz Wi-Fi/BT to LTE CoExist	1-13	1.5	53	61	49	41	55	1.4x1.2	885062
2.4 GHz Wi-Fi/BT to LTE CoExist	1-13	1.5	53	-	-	57	54	1.4x1.2	885071



885070



QPQ1907



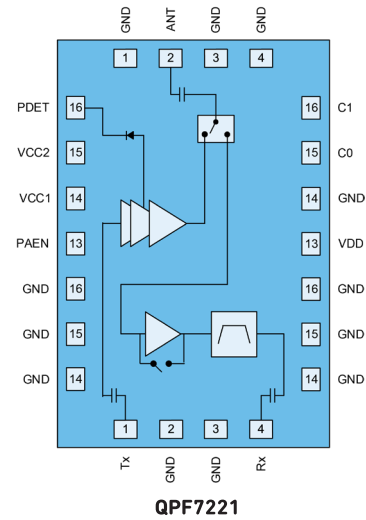
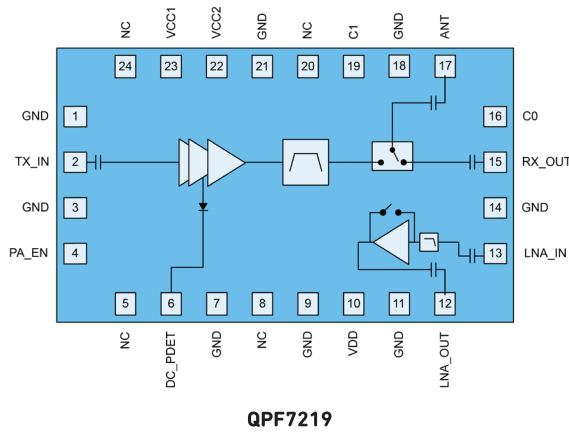
885136

Integrated Front-End Modules (iFEM)

Using Qorvo Wi-Fi BAW filtering, customers can achieve regulatory bandedge compliance at higher power levels across all channels. This enables applications to maximize range, opt to work at lower power levels and reduce the number of MIMO chains needed to achieve maximum allowed power.

Joining Qorvo Active Technologies with Qorvo BAW

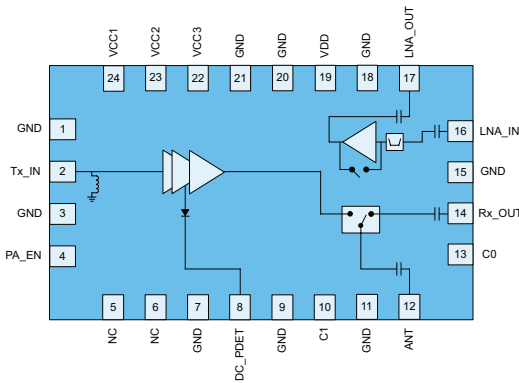
Functions	Std	MCS11 -43 dB		MCS11		MCS9 -35 dB		MCS9		MCS7 -30 dB		MCS7		MCS0	Tx Gain (dB)	Noise Figure (dB)	Rx Gain (dB)	Bypass Loss (dB)	5 GHz Rej (dB)	Package (mm)	Part Number
		V _{cc} (V)	P _{out} (dBm)	I _{cc} (mA)	P _{diss} (W)	P _{out} (dBm)	I _{cc} (mA)	P _{out} (dBm)	I _{cc} (mA)	P _{out} (dBm)	I _{cc} (mA)	P _{out} (dBm)	I _{cc} (mA)								
PA+FCC BE FLTR+SW+LNA	Wi-Fi 6	5	18.5	225	1.12	22	350	23	370	25	31	2	15	6	20	5x3	QPF7219				
PA+SW+LNA+LTE COEX FLTR	Wi-Fi 6	5	18	240	1.2	21	280	22	320	24	34	2.2	15	10.5	>35	3x4.5	QPF7221				
PA+FCC BE FLTR+SW+LNA+LTE COEX FLTR	Wi-Fi 4	5	-	-	-	Wi-Fi CH1-11		25	650	25	37	2	12	8	>30	8x5.5	QPF7200				
						Wi-Fi CH12-13		20	435	20	38										



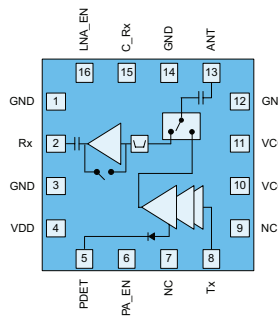
Wi-Fi 5 & Prior Front-End Solutions

5 GHz Front-End Modules

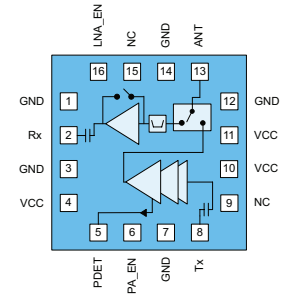
Functions	Std	V _{CC} (V)	MCS9			MCS7			Tx Gain (dB)	Noise Figure (dB)	Rx Gain (dB)	Bypass Loss (dB)	2.4 GHz Rej (dB)	Package (mm)	Part Number
			P _{OUT} (dBm)	I _{CC} (mA)	P _{DISS} (W)	P _{OUT} (dBm)	I _{CC} (mA)	P _{OUT} (dBm)							
PA+SW+LNA	Wi-Fi 5	5	23	280	1.40	24.5	320	27	32	2	16	6.5	25	5x3	QPF4519
PA+SW+LNA+CPLR	Wi-Fi 5	5	23	280	1.40	24.5	320	27	32	2	16	6.5	25	5x3	QPF4518
PA+SW+LNA+CPLR	Wi-Fi 5	5	23	280	1.40	24.5	320	27	32	2	16	6.5	25	5x3	QPF4518M
PA+SW+LNA+CPLR	Wi-Fi 6	3.3	21	285	0.94	22.5	320	24	31	1.9	15	6.5	35	5x3	QPF4578
PA+SW+LNA	Wi-Fi 5	5	20.5	179	0.90	21	180	24	32	2.5	14	5	15	2.5x2.5	RFFM4558
PA+SW+LNA	Wi-Fi 5	5	20	175	0.88	21	185	24	32	2.3	14	5	15	3x3	RFFM4552
PA+SW+LNA	Wi-Fi 6	3.3	18	155	0.51	19	165	21	30	2	15	7	35	3x3	QPF4530
PA+SW+LNA	Wi-Fi 5	3.3	17.5	155	0.51	18.5	165	21	30	2.5	14.5	6	15	2.5x2.5	QPF4538
PA+SW+LNA	Wi-Fi 5	3.3	17	210	0.69	18	215	21	28	2.5	12.5	5	45	2.3x2.3	QPF8538
PA+SW+LNA	Wi-Fi 5	3.3	17	260	0.86	18	290	21	30	2.5	14	6	15	3x3	RFFM4551
PA+SW+LNA	Wi-Fi 5	3.3	17.5	225	0.74	19	250	20	28	2.5	13	3	-	2.3x2.3	RFFM8528P
PA+SW+LNA	Wi-Fi 5	3.3	18	230	0.76	19.5	275	21	28	2.5	12	8	-	3x3	RFFM4501F
PA+SW+LNA	Wi-Fi 5	3.3	17	240	0.79	18	280	20	28	2.5	12.5	8	-	3x3	RFFM4501E
PA+SW+LNA	Wi-Fi 4	-	-	-	-	17	225	20	27	2.5	12.5	8	-	3x3	RFFM4501
PA+SW+LNA	Wi-Fi 5	3.6	18	225	0.81	19	240	21	28	2.5	14	6	-	2.5x2.5	RFFM8511
PA+SW+LNA	Wi-Fi 5	3.6	17.5	230	0.83	19.5	260	21	28	2.5	12	8	-	2.5x2.5	RFFM8505



QPF4519



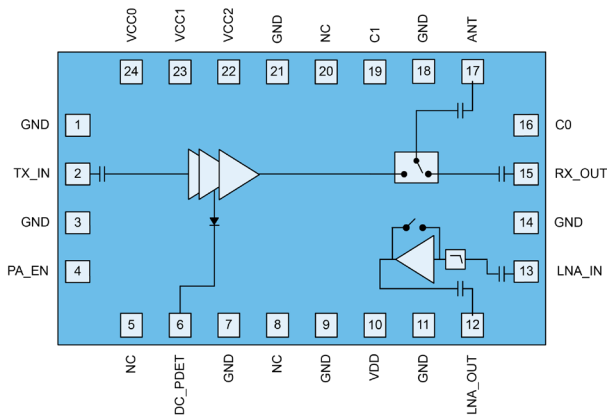
RFFM4558



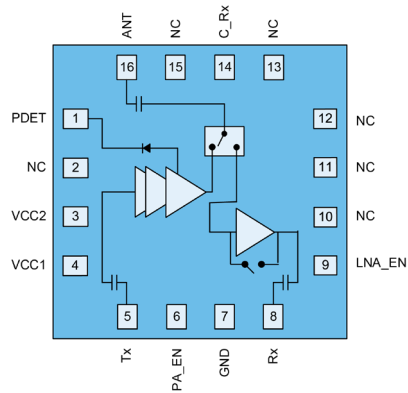
QPF8538

2.4 GHz Front-End Modules

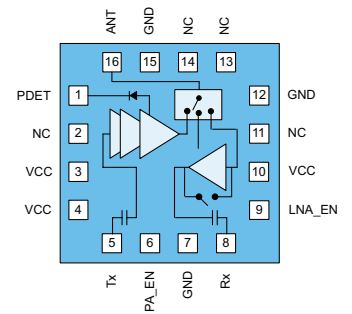
Functions	Std	V _{CC} (V)	MCS9 -35 dB			MCS7 -30 dB			MCS0 P _{OUT} (dBm)	Tx Gain (dB)	Noise Figure (dB)	Rx Gain (dB)	Bypass Loss (dB)	5 GHz Rej (dB)	Package (mm)	Part Number
			P _{OUT} (dBm)	I _{CC} (mA)	P _{DISS} (W)	P _{OUT} (dBm)	I _{CC} (mA)									
PA+SW+LNA	Wi-Fi 5	5	24.5	360	1.8	25.5	375	27	33	1.8	16	7	19	5x3	QPF4219	
PA+SW+LNA	Wi-Fi 6	5	21	255	1.28	22.5	275	25	33	2.1	15	6	25	3x3	QPF4200	
PA+SP3T+LNA	Wi-Fi 5	5	21	230	1.15	22	250	24	29	2.5	15	7	13	3x3	RFFM4252	
PA+SP3T+LNA	Wi-Fi 5	3.3	18.5	220	0.73	20	235	22	29	2.5	15	7	13	3x3	RFFM4251	
PA+SW+LNA	Wi-Fi 6	3.3	17	145	0.48	18	150	21	33	2.2	14	7	12	3x3	QPF4230	
PA+SP3T+LNA	Wi-Fi 4	3.3	-	-	-	19	230	21	27	2.3	13	7.5	10	3x3	RFFM4203	
		5	-	-	-	21.5	260	23								
PA+SW+LNA+SW	Wi-Fi 5	3.3	17.5	190	0.63	19	205	22	29	2	13	5	9.5	2.3x2.3	QPF8248	
PA+SP3T+LNA	Wi-Fi 5	3.3	18	195	0.64	19	205	22	28	2.4	15	1.5	-	2.3x2.3	RFFM8228P	
PA+SP3T+LNA	Wi-Fi 4	3.6	-	-	-	20	195	21	27	2.5	12	6	10	2.5x2.5	RFFM8211	



QPF4219



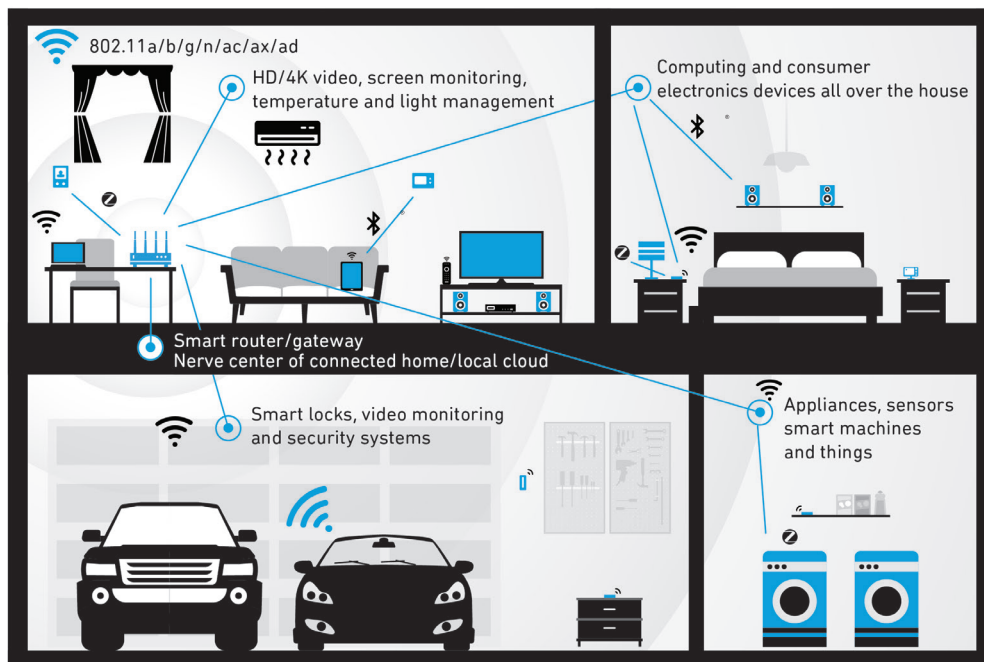
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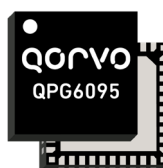
QPF8248

Distributed Wi-Fi for the Smart Home

Distributed Wi-Fi, or Wi-Fi Mesh, allows full home coverage. A single pod positioned in each room increases Wi-Fi range and capacity, and also relays for other IoT wireless communication standards.



Qorvo is the only Wi-Fi front-end provider that designs and manufactures advanced filtering solutions along with multi-protocol SoC and transceiver solutions for Bluetooth® Low Energy/Thread/Zigbee – providing full system expertise for the converged IoT market evolution. Qorvo’s ultra lower-power future proof IoT controllers enable the radio technology in many of the latest smart home and IoT solutions.



QPG7015M

Application	Smart Home Gateways
Protocols	802.15.4, Zigbee 3.0, Zigbee rf4ce, Zigbee Green Power, OpenThread, Bluetooth Low Energy 5.0
Multi-Stack	Yes
Multi-Channel Listening	Yes
Power	+10 dBm, +20 dBm
Type	Transceiver

QPG6095

Application	Smart Home Devices
Protocols	802.15.4, Zigbee 3.0, Zigbee Green Power, Thread, Bluetooth Low Energy
Multi-Stack	Yes
Multi-Channel Listening	Yes
Power	+10 dBm
Type	System on Chip

For more information, download our IoT brochure or visit www.qorvo.com/smart-home.