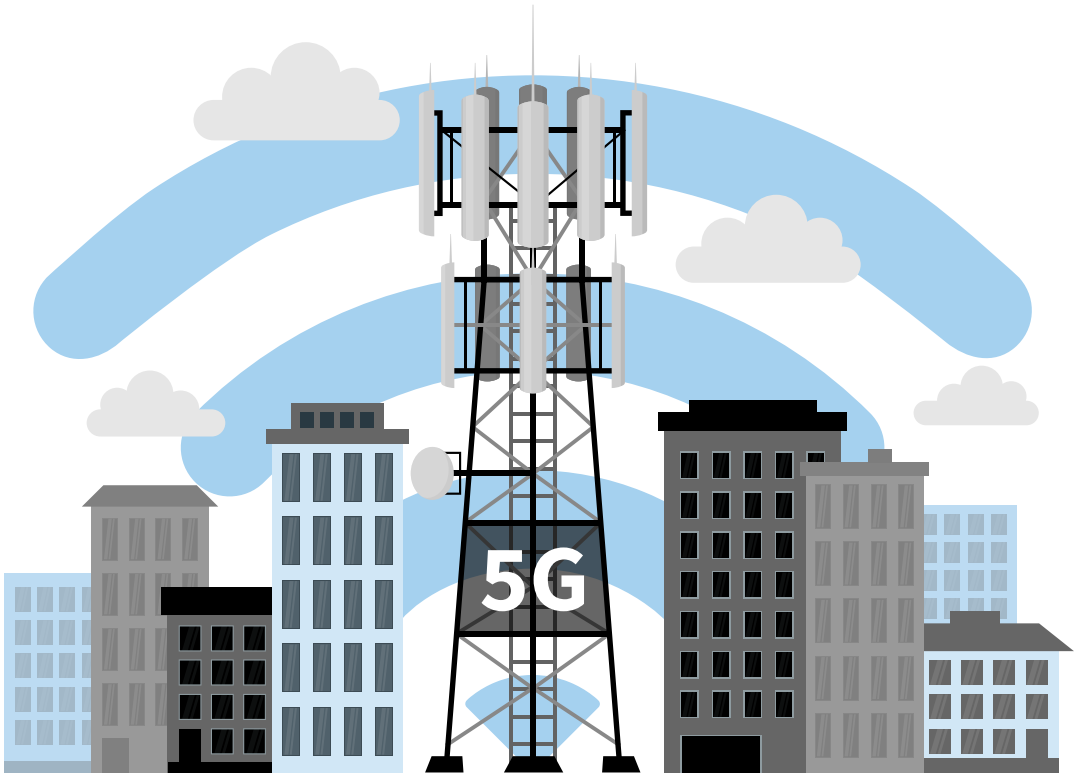
Enabling Higher Data Rates and Increased Capacity

Qorvo® 5G Solutions Continue to Transform the World



qorvo®

all around you

Qorvo is making 5G deployment a reality and supporting the growth of mobile data with a broad range of RF connectivity solutions. Our robust RF portfolio for both infrastructure and smartphone applications include PAs, phase shifters, amplifiers, switches, integrated modules and other high-performance RF solutions. Qorvo's early start in 5G comes from our legacy of millimeter wave (mmW) R&D and product development in the defense and aerospace markets, as well as a leading supplier of sub-6 GHz RF solutions to the world's leading 2G, 3G and 4G base station manufacturers.

Qorvo offers a family of high-performance discrete RF components to provide flexibility to system designers, as well as the highest level of integration of multifunction building blocks to reduce size, lower costs and accelerate time to market.

Our highly integrated front-end modules feature switch LNA modules in a single- or dual-channel configuration and are targeted for 5G massive MIMO or TDD macro base stations.

Switch LNA Modules for Sub-6 GHz 5G

Frequency (GHz)	# of Channels	IL (dB)	Noise Figure (dB)	Gain (dB)	OP1dB (dBm)	OIP3 (dBm)	Tx Pin (W)	Package (mm)	Part Number
1.7-4.2	2	0.5	1.2	37	20	35	15	6x6	QPB9348
2.3-2.7	1	0.5	1.2	33	23	34	52	8x8	QPC9314
3.4-3.6	1	0.5	1.2	33.8	18.4	33	52	8x8	QPB9324
3.6-3.8	1	0.5	1.2	34	19	32	52	8x8	QPB9325
3.8-5	2	1.1	1.8	31.5	16.5	33	8	7x7	QPB9329

Qorvo continues to lead the industry with lowest noise figure amplifiers across multiple process technologies. Qorvo's portfolio includes gain block amplifiers to be used in systems where additional gain is required.

Low Noise Amplifiers for Sub-6 GHz 5G

Frequency (GHz)	Noise Figure (dB)	Gain (dB)	OP1dB (dBm)	OIP3 (dBm)	Vd (V)	Package (mm)	Part Number
0.1-6	0.3	19.5	23	38	5	2x2	QPL9547
1-5	0.6	18	21	35	5	2x2	QPL9058
0.7-4.5	0.5	20	19	35	5	2x2	QPL9057
2-6	0.7	21.5	18	34.5	5	2x2	QPL9504
0.6-4.2	0.67	20	21.7	41.5	5	2x2	TQL9093
0.05-6	0.65	16.5	22.5	37	5	2x2	TQP3M9035

Gain Block Amplifiers for Sub-6 GHz 5G

Frequency (GHz)	Gain (dB)	OP1dB (dBm)	OIP3 (dBm)	Noise Figure (dB)	Vd (V)	Package (mm)	Part Number
1-6	16	20	35	1.4	5	2x2	QPL9126
1-6	20	19.5	35	1.4	5	2x2	QPL9127
0.05-6	16	21.3	40.3	1.5	5	2x2	TQL9062
0.05-4	14.5	20.8	35.5	1.6	5	2x2	TQL9047
0.02-4	22	22	39.5	1.3	5	3x3	TQP3M9019
0.02-4	20.5	21	37	1.3	5	3x3	TQP3M9018
0.05-4	21.8	22	39.5	1.3	5	SOT-89	TQP3M9009
0.05-4	20.6	20	36	1.3	5	SOT-89	TQP3M9008
0.05-4	14.9	21.6	39.5	2	5	3x3	TQP3M9038
0.05-4	14.5	20.7	40	1.8	5	SOT-89	TQP3M9028
0.1-4	13	23.6	41	1.3	5	SOT-89	TQP3M9007

Driver Amplifiers for Sub-6 GHz 5G

Frequency (GHz)	Gain (dB)	OP1dB (dBm)	OIP3 (dBm)	Noise Figure (dB)	Vd (V)	Id (mA)	Package (mm)	Part Number
1.7-5	28	22	36	1.5	5	95	3x3	QPA9120
2.3-5	27	25.5	34	5	5	95	3x3	QPA9121
2.3-5	35	25.5	34	5.5	5	95	3x3	QPA9122
2.7-3.8	18.5	25	38	2.3	5	280	5x5	QPA9842

100 Ω Differential Gain Block Amplifiers for Sub-6 GHz 5G

Frequency (GHz)	Input/Output Differential	Gain (dB)	OP1dB (dBm)	OIP3 (dBm)	Noise Figure (dB)	Vd (V)	Id (mA)	Package (mm)	Part Number
2.3-4	Input	18	18	34	2	5	70	2x2	QPA9143
2.3-4	Output	18	18	34	2	5	70	2x2	QPA9154
3.3-5	Input	18	18	34	2.5	5	70	2x2	QPA9133
3.3-5	Output	18	18	34	2	5	70	2x2	QPA9124

Doherty® Power Amplifier Modules (PAM) for Sub-6 GHz 5G

Frequency (GHz)	P_{AVG} (W)	P_{SAT} (W)	PAE (%)	Gain (dB)	Package (mm)	Part Number
3.7-4	8	50	49	31	10x8	QPA3908
4.5-4.6	5	40	40	24	10x8	QPA4605
4.4-5	1.25	23	27	34	10x8	QPA4501

48V Asymmetric Doherty Amplifier for Sub-6 GHz 5G

Frequency (GHz)	I_{DQ} (mA)	P_{AVG} (W)	P_{SAT} (W)	Efficiency (%)	Gain (dB)	Package (mm)	Part Number
2.5-2.7	40	8	54	55	14	7x6.5	QPD0012
2.5-2.7	65	16	107	57	15	7x6.5	QPD0010J
3.4-3.6	40	8	54	57	15	7x6.5	QPD0009J
3.4-3.6	65	16	107	57	15	7x6.5	QPD0011J

48V Symmetric Doherty Amplifiers for Sub-6 GHz 5G

Frequency (GHz)	P_{AVG} (W)	P_{SAT} (W)	Max DE (%)	Gain (dB)	Package (mm)	Part Number
0.7-2.7	5	22	80	22	7x6.5	QPD0210
3.3-4	5	22	78	22	7x6.5	QPD0305
4.4-5	5	22	75	18.5	7x6.5	QPD0405

48V GaN Transistor Solutions for Sub-6 GHz 5G

Frequency (GHz)	Gain (dB)	Drain Efficiency (%)	P_{PEAK} (dBm)	ACPR (dBc)	Package (mm)	Condition Note	Part Number
2.3-5	18	20	39	-30	4x4.5	@ P_{OUT}=24 dBm	QPD0005M
2.3-5	18	20	39	-30	4x4.5	@ P_{OUT}=24 dBm	QPD0006
3.4-3.8	18	20	40	-30	4x4.5	@ P_{OUT}=29 dBm	QPD0007

Switch Solutions for Sub-6 GHz 5G

Frequency (GHz)	Type	Termination Type	IL (dB)	Isolation (dB)	P_{IN} Max (dBm)	Vcc (V)	Package (mm)	Part Number
0.005-6	SP2T	R	0.3	37	37	3 to 5	2x2	RFSW1012
0.005-6	SP2T	R	0.25	46	37	3 to 5	1.1x.5	QPC1022
0.005-6	SP4T	R	0.45	34	35	3 to 5	2.5x2.5	RFSW6042
0.005-6	SP6T	R	0.5	28	32	3 to 5	2x2	RFSW6062
0.005-6	SP2T	A	0.7	70	35	3 to 5	4x4	RFSW6024
0.005-8	SP4T	R	0.48	30	38	2.7 to 5.5	1.9x1.9	QPC6041
0.005-6	SP4T	A	0.98	50	36	3 to 5	4x4	QPC6044
0.005-6	SP5T	A	1.1	57	36	3 to 5	4x4	QPC6054
0.005-6	SP6T	A	1.1	57	36	3 to 5	4x4	QPC6064

© Qorvo US, Inc. | 04-2021

Higher frequency mmW bands are expected to expand both network capacity and wireless use cases, with theoretical 5G transfer speeds of up to 10 gigabits per second. These mmW bands operate over a significantly shorter range than lower frequency bands, driving a significant increase in residential and commercial placements of short-range, smaller cell sites.

Qorvo has over a decade of experience supporting mmW applications and solutions. Qorvo combines mmW systems expertise and the industry's most comprehensive high-power RF product and technology portfolio to help leading manufacturers quickly launch next-generation infrastructure products.

Solutions for mmW 5G

Frequency (GHz)	Function	Channels	RF NF (dB)	Rx Gain (dB)	Tx Psat (W)	Tx Gain (dB)	Tx PAE (%)	Package (mm)	Part Number
26.5-29.5	FEM	1	3.5	17	1	27	8**	5x4	QPF4001
37-40.5	FEM	2	4.2	18	2	23	7**	6x4.5	QPF4006
		1			2			4.5x4	QPF4005
24.25-27.5	FEM	1	4	13.5	0.17	17	–	4x4	QPF4010

** PAE at backed off linear operating power

Frequency (GHz)	Function	Tx Psat (W)	Tx Gain (dB)	Package (mm)	Part Number
26-31	PA	1.6	23	5x5	TGA4544-SM

Frequency (GHz)	Function	Noise Figure (dB)	Gain (dB)	P1dB (dBm)	OIP3 (dBm)	Bias (V)	Package (mm)	Part Number
18-40	LNA	4	16	–	7	3	4x4	CMD299K4
22-32	LNA	1.6	23	19	27	3.5	4x4	QPA2628
DC-40	Dist. Amp	5	10.5	17.5	26	5-8	4x4	CMD242K4

RF Filters and Diplexers

Frequency (MHz)	Bands	Description	Technology	IL Typ (dB)	Package (mm)	Part Number
699-716, 729-756, 777-787	B12/B13 UL/DL	LTE Band 12/Band 13 Triplexer Filter Module	TC-SAW	3 max	4x5	QPQ1214
880-915, 925-960	B8	Band 8 TC-SAW Duplexer	TC SAW	2.9, 3.4	2x2.5	QPQ6108
1710-1775	B3	1747.5 MHz RF BAW Filter-Band 3 Uplink	BAW	2.4	3x3	TQQ7303
1710-1785, 1805-1880	B3	Band 3 BAW Duplexer	BAW	2.3	2x2.5	QPQ1297
1850-1915	B25	Band 25 Uplink BAW Filter	BAW	2	3x3	QPQ1296
1710-1785, 1920-1980	B1, B3	LTE Band 1/Band 3 Uplink BAW Diplexer	BAW	3.1, 3	3x3	TQQ1231
1710-1785, 1920-1980	B1 UL, B3 UL	Band 1/Band 3 Dual BAW Filter	BAW	2.1, 2.5	3x3	QPQ1029
1930-1995	B25	Band 25 Downlink BAW Filter	BAW	1.9	3x3	QPQ1295
1920-1980, 2110-2170	B1	Band LTE 1 BAW Duplexer	BAW	2	2x2.5	QPQ1282
1710-1780, 2110-2180	B4, B10	LTE Extended Band 4/Band 10 Duplexer	BAW	2-2.3	2x2.5	QPQ1289
2320-2370	B40	Band 40 Sub-band Bandpass Filter	BAW	1.9	2x1.6	QPQ1286
2300-2390	B40	2345 MHz RF BAW Filter-Band 40	BAW	2.8	2x1.6	QPQ1288
2300-2400	B40	2350 MHz RF BAW Filter-Band 40	BAW	3.1	2x1.6	QPQ1287
2570-2620	B38	2595 MHz RF Filter-Band 38	BAW	1.5	1.4x1.2	885026
2515-2675	B41	Band 41, 160 MHz Sub-Band Filter	BAW	2.5	2x1.6	QPQ1298
2496-2690	B41	2593 MHz RF Filter-Band 41 Tx/Rx	BAW	3.5	2x1.6	QPQ1285
2500-2570, 2620-2690	B7	Band 7 BAW Duplexer	BAW	2.4	2x2.5	QPQ1270
1920-1980, 2110-2170 1710-1785, 1805-1880 2500-2570, 2620, 2690	B1, B3, B7	Band 1/3/7 Multiplexer	BAW	1.9	2.6x3.2	QPQ2601
3300-3600	B52, B42	Band 52+42, 300 MHz Bandpass Filter	BAW	3.2 max	2x1.6	QPQ3501*
3400-3600	B42	Band 42, 200 MHz Bandpass Filter	BAW	3.2 max	2x1.6	QPQ3500
4800-4960	n79	Sub-band n79, 160 MHz Bandpass Filter	BAW	2.2 max	2x1.6	QPQ4900*

* Coming Soon

QORVO and ALL AROUND YOU are registered trademarks of Qorvo US, Inc.

www.qorvo.com/5G
info-5G@qorvo.com