



1 GaN MMIC Power Amplifier

Frequency	Power Gain	P _{sat}	OIP3	Efficiency	Power Supply	Size	Part Number
(GHz)	(dB)	(dBm)	(dBm)	(%)	(V/mA)	(mm)	
0.5~3.0	10	39	—	40	28/700	3.00×1.7×0.08	BW247
2.7~3.5	20	46	—	50	28/3000	4.00×3.50×0.08	BW257
2.7~3.5	20	43.5	—	45	28/1800	3.27×2.24×0.08	BW258
2.7~3.5	21	41	—	45	28/1000	2.94×2.24×0.08	BW259
2.0~6.0	30	30	—	—	28/130	2.40×1.40×0.08	BW568
2.0~6.0	17	26	—	—	28/100	1.80×1.50×0.08	BW575
4.4~6.0	20	43		47	28/1700	3.00×2.24×0.08	BW252
5.0~6.0	21	29	—	—	28/100	1.50×1.20×0.08	BW562
5.0~6.0	20	36		48	28/350	1.80×1.50×0.08	BW251
8.0~12.0	17	24	—	—	28/100	2.00×1.40×0.12	BW570
8.0~12.0	16	26	—	—	28/130	1.80×1.40×0.08	BW571
8.0~12.0	20	43		40	28/1800	3.00×2.00×0.08	BW253
11.2~12.2	20	45	—	40	28/2900	3.50×3.25×0.08	BW256
15.0~17.0	22	41		35	28/1500	3.00×2.00×0.08	BW255
14.0~18.0	22	42		36	28/1700	3.00×2.00×0.08	BW254
13.5~15.5	20	45	—	38	28/2000	3.90×3.40×0.10	NC11602C-1315P30
8.5~10.5	≥21	≥44.8	—	≥40	28/3000	3.50×4.08×0.10	NC11603C-8510P30
8~12	20	41.8	—	≥37	8/700	2.00×3.00×0.10	NC11604C-812P15
14.5~16.5	20	45	—	35	28/2500	3.70×3.50×0.10	NC11608C-1416P30
6~18	≥16	≥40	—	20	24/1000	4.50×3.40×0.10	NC11609C-618P10
2~6	25	43	—	30	28/2200	3.86×5.16×0.10	NC11610C-206P20
0.9~2	25	43	—	33	26/2000	3.14×5.14×0.10	NC11611C-102P20
15.5~18	20	45	—	33	28/2500	3.60×3.50×0.10	NC11613C-1618P30
33~37	15	38	—	18	22/1500	3.65×2.62×0.10	NC11617C-3337P6A*
34~36	15.5	41.5	—	20	22/3000	5.05×4.84×0.10	NC11618C-3436P13A*
8~12	23.25	≥47	—	≥40	28/2000	4.80×5.30×0.10	NC11619C-812P50
5~6	20	48	—	40	28/2100	3.67×5.54×0.08	NC11621C-506P60
90~96	≥12	≥27	—	13	12~15/280	3.42×1.40×0.05	NC11625C-9096



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(GHz)	(dB)	(dBm)	(dBm)	(%)	(V/mA)	(mm)	
8~12	19	39	—	35	28/1000		NC11626C-812P8
0.5~4	≥19	40	—	20	28/1000	3.10×2.50×0.08	NC11627C-104P10
2.7~3.5	21	39	—	40	28/800	2.30×2.80×0.10	NC11628C-2735P8
2.7~3.5	10	20	—	≥10	28/28	1.55×1.66×0.10	NC11629C-2735
14~18	17.5	42.5	—	≥37	28/650	3.00×2.10×0.08	NC11630C-1418P15
14~18	≥21	≥39	—	≥35	28/350	2.30×1.50×0.10	NC11632C-1418P7*
14~18	≥21	≥39	—	≥35	28/350	2.30×1.50×0.10	NC11632C-1418P7M*
4~8	22	44	—	36	28/1500	3.55×4.17×0.10	NC11634C-408P25
10~18	18	44	—	25	28/2000	3.00×3.20×0.10	NC11635C-1018P22
2.7~3.5	25	48	—	43	28/2500	3.50×4.90×0.10	NC11637C-2735P64
2~4	≥20	≥45	—	35	28/1500	3.00×4.75×0.10	NC11638C-204P32
10~18	19	43	—	30	28/24/1000	3.00×3.25×0.10	NC11639C-1018P25*
8~12	21	47	—	40	28/2000	3.35×4.00×0.10	NC11640C-812P50*
5~6	≥21	46	—	40	28/1200	3.20×4.20×0.10	NC11644C-506P40*
5~6	≥28	≥27	—	30	28/100	2.40×1.60×0.10	NC11645C-506
2~18	≥6	≥33	—	≥10	28/450	2.50×2.80×0.10	NC11647C-218P2
2.3~2.5	≥25	≥39	—	≥50	28/700	2.42×2.80×0.10	NC11648C-2325P8
14~18	18	≥24	—	≥10	28/100	2.00×1.20×0.10	NC11649C-1418
8~12	22	44	—	40	28/1000	3.10×2.15×0.10	NC11650C-812P25*
2~18	≥6	≥39	—	≥18	28/880	2.50×4.85×0.10	NC11651C-218P8
90~96	9	21	—	13	12~15/70	3.58×1.50×0.05	NC11652C-9096
2~6	19	45	—	28	28/2500	3.54×5.10×0.10	NC11653C-206P30*
0.9~1.4	29	45	—	45	28/1500	4.30×5.10×0.10	NC11654C-0914P30*
0.96~1.26	26	47	—	45	28/2000	4.30×5.10×0.80	NC11655C-0912P50*
11~14	20	45.8	—	30	28/2500	4.20×5.30×0.10	NC11612C-1114P35

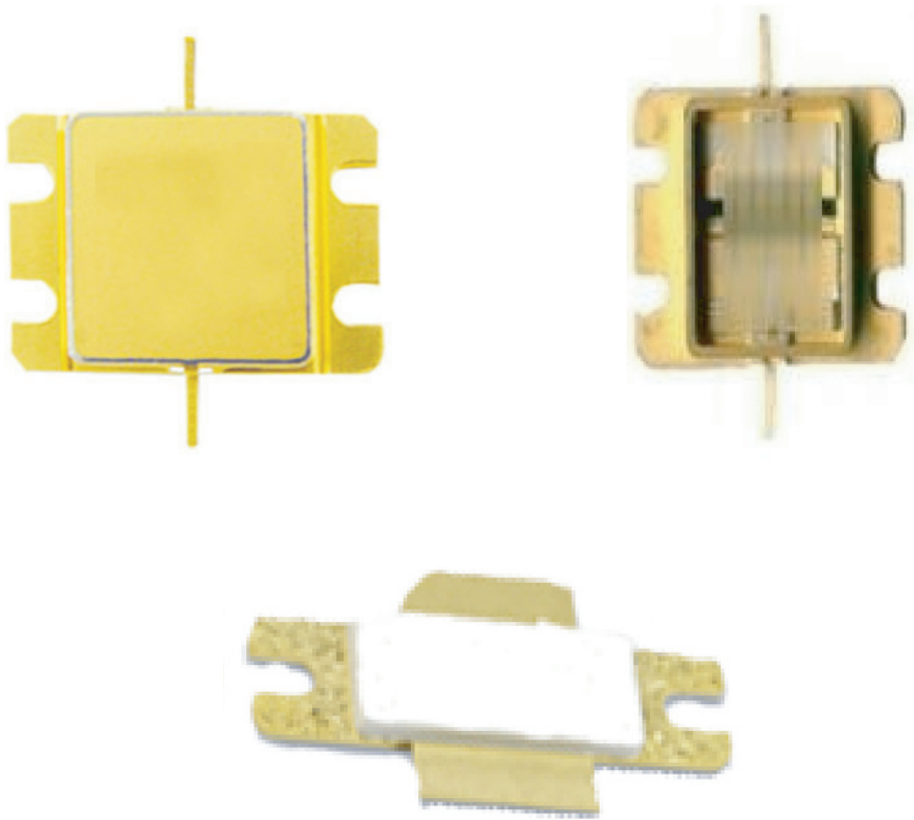


2 GaN Power Modules

NO.	Part Number	Frequency/ GHz	Power/ W	P.A. E.	Gain/ dB	Power Supply /V	Package	Note	Matching Method
1	JGF406	0.425-0.485	50	60%	28	28	Substrate	Pulse	Internally matched
2	HEG010D	1.2-1.4	10	55%	11	28	QF92-4	CW	Internally matched
3	HEG001D	1.2-1.4	20	55%	10	28	QF92-4	CW	Internally matched
4	HEG206A	1.2-1.4	50	55%	23	28	Substrate	Pulse	Internally matched
5	HEG205B	1.2-1.4	60	55%	10	28	QF92-4	Pulse	Internally matched
6	HEG804M	1.2-1.4	400	48%	13	50	QF1034-2A	Pulse	Pre-matching
7	JGF407	1.3-1.45	60	60%	24	28	Substrate	Pulse	Internally matched
8	HEG209B	1.35-1.4	60	73%	11	28	QF136H	CW	Internally matched
9	HEG805M	1.3-1.45	600	60%	13	50	QF1034-2A	Pulse	Pre-matching
10	HEG806M	1.3-1.45	500	60%	15	50	QF1034-2A	Pulse	Pre-matching
11	HEG807M	1.3-1.45	400	60%	13	36	QF1034-2A	Pulse	Pre-matching
12	HEG013D	1.605-1.625	40	55%	10	28	QF92-4	CW	Internally matched
13	HEG008D	2-2.3	8	50%	10	28	QF92-4	CW	Internally matched
14	HEG023D	2-2.3	13	55%	10	28	QF92-4	CW	Internally matched
15	HEG201B	2-2.3	60	60%	11	28	QF136H	CW	Internally matched
16	HEG403E	2.3-2.8	80	50%	11	28	QF136HG	Pulse	Internally matched
17	HEG405B	2.7-3.1	80	60%	12	28	QF136H	Pulse	Internally matched
18	HEG616B	2.7-3.1	200	50%	12	32	QF136P	Pulse	Internally matched
19	HEG401E	3.1-3.5	80	55%	12	28	QF136HG	Pulse	Internally matched
20	HEG400A4	3.1-3.4	80	55%	12	32	Substrate	Pulse	Internally matched
21	HEG612B	3.1-3.5	160	58%	11	28	QF136H	Pulse	Internally matched
22	HEG803B	3.1-3.5	220	58%	11	28	QF136P	Pulse	Internally matched
23	HEG006D	2.4-3.6	10	36%	33	28	QF92-4	CW	Internally matched
24	HEG009L	2.4-3.6	10	45%	20	28	QF089	CW	Internally matched
25	HEG002D	2.7-3.5	20	45%	20	28	QF089	Pulse	Internally matched
26	HEG200B	2.7-3.5	60	55%	11	28	QF136H	CW	Internally matched
27	HEG400A3	2.7-3.5	80	55%	11	32	Substrate	Pulse	Internally matched
28	HEG212A	2.7-3.5	65	55%	11	28	Substrate	Pulse	Internally matched
29	HEG605A	2.7-3.5	200	55%	11	28	Substrate	Pulse	Internally matched
30	HEG211H	2.0-4.0	50	33%	8.5	36	Box	CW	Internally matched
31	HEG013C	4.4-5.0	30	60%	11	28	QF92B	CW	Internally matched
32	HEG202C	4.4-5.0	60	50%	10	28	QF92B	CW	Internally matched
33	HEG602B	4.4-5.0	100	55%	10	28	QF136H	CW	Internally matched
34	HEG603B	5.0-5.8	100	55%	9	28	QF136H	CW	Internally matched
35	HEG203A	5.0-6.0	60	50%	8	28	Substrate	Pulse	Internally matched
36	HEG203C	5.0-6.0	60	50%	8	28	QF92B	Pulse	Internally matched
37	HEG618J	3.1-3.4	100	53%	40	28	QF3045	Pulse	Internally matched
38	HEG619N	1.9-2.1	100	60%	12	50	QF106A	Pulse	Internally matched



NO.	Part Number	Frequency/ GHz	Power/ W	P.A. E.	Gain/ dB	Power Supply /V	Package	Note	Matching Method
39	HEG811N	2.3-2.4	250	60%	13	50	QF106A	Pulse	Internally matched
40	HEG215C	6.2-6.6	60	45%	8	28	QF92B	Pulse	Internally matched
41	NC41627S-80 9P150	8-9	150	43	8.5	44	QF136P	pluse width: 1ms, duty cycle: 35%	Internally matched
42	NC41610S-91 0P100	9-10	100	45	8	32	QF136P	pluse width: 1ms duty cycle: 10%	Internally matched
43	NC41620S-91 0P130	9-10	130	43	8	32	QF136P	pluse width: 1ms, duty cycle: 35%	Internally matched
44	NC41628S-91 0P150	9-10	150	43	±0.5	44	QF136P	pluse width: 1ms duty cycle: 10%	Internally matched
45	NC4301S-951 0P100	9-10	100	40	43	28	QF136P	pluse width: 1ms duty cycle: 10%	Internally matched





3 T/R Module Chipset and Functional MMIC

3.1 T/R Module Chipset

Frequency Band	Part Number	Description
L Band, 1.6GHz~2.0GHz	NC1811C-108	Limiter
	NC1067C-1225	Low Noise Amplifier
	NC12116-1620	Phase Shifter
	NC1315C-108A	Attenuator
	NC1605C-112	Switch
	NC11266C-1620P3	Driving Amplifier
	40W IM Transistor	Power Amplifier
C Band, 5GHz~6GHz	NC1016C-5258	Low Noise Amplifier
	NC1506C-506	Multi-Functional Chip: Integrated Amplifier, Phase Shifter, Parallel Driver;
	NC1326C-118	Attenuator
	NC11165C-506	Power Amplifier
X Band, 8~12GHz	NC1810C-812A	Limiter
	NC1001C-812S	Low Noise Amplifier
	NC1037C-812A	Low Noise Amplifier
	NC1247C-812	Phase Shifter
	NC1346C-812	Attenuator
	NC1605C-112S	SP3T Switch
	NC1129C-812	Power Amplifier
	NC1185C-812	Power Amplifier
X Band, 8~12GHz	NC1810C-812	Limiter
	NC1001C-812S	Low Noise Amplifier
	NC10143C-812	Low Noise Amplifier
	NC1517C-812SD	Multi-Functional Chip: SPDT Switch, 6 Bit Phase Shifter, 6 bits Attenuator, Amplifier, Amplitude Balancer, Serial to Parallel Circuit, Switch Driving Circuit
	NC11225C-812	Power Amplifier
	NC1185C-812	Power Amplifier
Ku Band, 16GHz~18GHz	NC1821C-1218	Limiter
	NC10175C-1219	Low Noise Amplifier
	NC15307C-1618SD	Multi-Functional Chip: Integrated Amplifier, Phase Shifter, Attenuator, Serial Driver
	NC1189C-1318	Driving Amplifier
	NC11601C-1517P16	Power Amplifier
Receiving Channel 19-21.5GHz, Transmitting Channel 29-31.5GHz	NC10176C-1826	Low Noise Amplifier
	NC1273C-1923	6 Bits Digital Controlled Phase Shifter
	NC1273C-1923M	6 Bits Digital Controlled Phase Shifter
	NC1375C-1923	6 Bits Digital Controlled Attenuator
	NC1375C-1923M	6 Bits Digital Controlled Attenuator
	NC6524C-1826U	Power Splitter
	NC1295C-2932	6 Bits Digital Controlled Phase Shifter
	NC1399C-2634	6 Bits Digital Controlled Attenuator
	NC6518C-2040	Power Splitter
	NC11264C-2931	Power Amplifier
	NC11265C-2931	Power Amplifier
W Band, 90-96GHz	NC10137C-9096	Low Noise Amplifier
	NC1749C-9096	Balance Mixer
	NC1684C-9096	SPDT Switch
	NC1788C-2836	Frequency Tripler
	NC11652C-9096	Driving Power Amplifier
	NC11625C-9096	Power Amplifier

3.2 MMIC Digital Phase Shifter

Frequency (GHz)	Function	Insertion Loss (dB)	Return Loss (dB)	Phase Shift Accuracy (RMS)	Amplitude Fluctuation (dB)	Size (mm)	Part Number	Replacement
0.8~2GHz	6bit, LSB: 5.625°	12	15	3	±0.5	5.6X3.9X0.1	BW327	
1.2~1.6	8bit, LSB: 1.4°	5	16	1.0°	±0.3	3.05x3.55x0.1	BW316	
1.5~1.8	8bit, LSB: 1.4°	5	15	1.5°	±0.5	2.90x3.15x0.1	BW319	
1.6~3.2	6bit, LSB: 5.625°	10	15	2.5°	±0.5	5.00x3.00x0.1	BW326	
2.1~3.2	6bit, LSB: 5.625°	11.5	15	2.0°	±0.5	4.60x2.80x0.1	BW310	
2.5~3.7	6bit, LSB: 5.625°	5	16	1.5°	±0.3	4.00x1.58x0.1	BW311	
5.0~6.0	6bit, LSB: 5.625°	6	18	1.0°	±0.3	3.89x1.45x0.1	BW312	
8.5~11.5	6bit, LSB: 5.625°	8	15	1.0°	±0.5	4.05x1.60x0.1	BW313	
8.0~12.0	6bit, LSB: 5.625°	7.3	15	2.5°	±0.6	4.05x1.60x0.1	BW321	
8.0~12.0	0°, ±10°, ±20°	0.2	22	—	±0.1	1.33x1.74x0.1	BW339	
12.0~15.0	6bit, LSB: 5.625°	8	16	2.5°	±0.4	3.00x1.30x0.1	BW314	
6.0~18.0	6bit, LSB: 5.625°	12	15	6.0°	±2.5	2.81x3.39x0.1	BW324	
14.0~18.0	6bit, LSB: 5.625°	8.5	16	2.0°	±0.3	3.00x1.30x0.1	BW315	HMC644
32~37	5bit, LSB: 11.25°	8.5	12	2.0°	±0.8	2.30x1.00x0.1	BW323	

3.3 GaN T/R Multifunctional Chips

Frequency (GHz)	Rx					Tx				Size (mm)	Part Number
	Gain (dB)	Noise Figure (dB)	P ₋₁ (dBm)	OIP3 (dBm)	Power Supply (V/mA)	Power Gain (dB)	P _{sat} (dBm)	Efficiency (%)	Power Supply (V/A)		
8.0~12.0	20	2.2	10	-	10V/50	20	42	35	28V/1.8	4.60×3.00×0.08	BWM301
14.5~17.5	16	2.8	16	-	15V/50	20	40.5	30	28V/1.5	4.00×2.80×0.08	BWM303

3.4 Amplitude Phase Control Multifunctional Chips

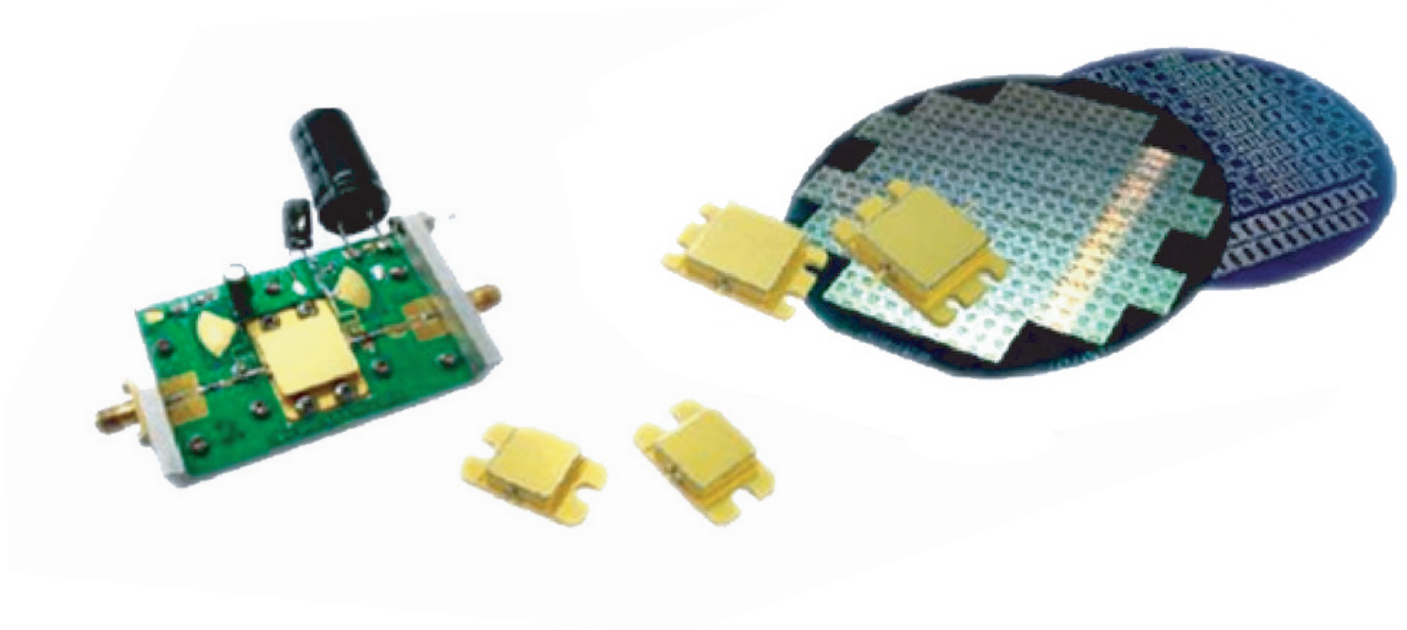
Frequency (GHz)	Tx Gain (dB)	Rx Gain (dB)	Return Loss (dB)	Tx P1dB (dBm)	Phase Shift Digit	Phase Shift Accuracy (RMS)	Attenuation Digit	Attenuation Accuracy (dB)	Control Relation	Size (mm)	Part Number
8~12GHz	13	12	12	13	6	3	6	1	Serial TTL	5.0X3.6X0.1	BWM245
8~12GHz	13	12	12	13	6	3	6	1	Parallel TTL	5.0X3.6X0.1	BWM247
14-18GHz	24	8	12	21	6	5	6	1	Parallel TTL	4.8X3.8X0.1	BWM243

3.5 GaN MMIC Switch

Frequency (GHz)	Function	Insertion Loss (dB)	Isolation (dB)	Return Loss (dB)	Input P _{0.1} (dBm)	Driving Method (V)	Size	Part Number
DC~6	SPDT , 10W	0.5	32	20	40	0/ -28	1.8x1.0x0.1	BW1047
8~12	SPDT , 10W	0.62	35	20	40	0/ -28	2.0x2.1x0.1	BW137
8~12	SPDT , 20W	0.72	37	20	43	0/ -28	2x2.35x0.1	BW1048
8~12	SPDT , 40W	0.86	30	16	46	0/ -28	2x2.35x0.1	BW138
6~18	SPDT , 10W	1.15	35	15	43	0/ -28	2.4x1.9x0.1	BW136
12~18	SPDT , 10W	0.88	36	17	40	0/ -28	2.0x1.8x0.1	BW135

3.6 MMIC Limiter

Frequency (GHz)	Insertion Loss (dB)	Return Loss (dB)	Limiting Level (dBm)	Max. Input Power (CW) W	Size (mm)	Part Number
1~2	0.4	-15	+14.5	100	1.75x1.25x0.1	BW484
2~4	0.4	-15	+15	40	1.80x1.15x0.1	BW485
1~6	0.5	-12	+16	20	1.80x1.30x0.1	BW487
5~6	0.4	-15	+15.5	20	1.90x1.15x0.1	BW486
DC~10	0.3	25	+15	5	1.17x0.94x0.1	BW480
DC~18	0.5	20	+16	2	1.23x0.66x0.1	BW481
8~12	0.6	-15	+16	20	1.45x1.00x0.1	BW488





3.7 Mixing Multifunctional Chips

RF Frequency (GHz)	LO Frequency (GHz)	Function	IF Frequency (GHz)	Frequency Conversion Gain (dB)	LO/RF Isolation (dB)	LO Level (dBm)	Voltage/ Current (V/mA)	Size (mm)	Part Number
0.7~2.0	0.7~2.0	Double balanced mixer, integrated with LO driving amplifier and RF bilateral amplifier	DC~1.0	4	15	-7	+5/60+50	3.45x3.1x0.1	BWM210
0.7~2.0	0.7~2.0	Double balanced mixer, integrated with LO driving amplifier	DC~1.0	-8	30	-7	+5/60	2.0x3.1x0.1	BWM211
1.0~3.0	1.0~3.0	Double balanced mixer, integrated with LO driving amplifier	DC~1.0	-8	35	-5	+5/65	1.7x3.4x0.1	BWM209
1.8~6.0	1.8~6.0	Double balanced mixer, integrated with LO driving amplifier	DC~2.5	-8	28	0~+6	+5/49	1.05x2.45x0.1	BWM251
4.0~8.0	4.0~8.0	Double balanced mixer, integrated with LO driving amplifier and RF bilateral amplifier	DC~3.0	10	8	-7	+5/60+50	3.5x2.2x0.1	BWM218
6~12	6~18	Double balanced mixer, integrated with LO driving amplifier and three-port low pass filter	DC~6.0	-8	30	-5	+5/56	1.52x2.9x0.1	BWM252
7~13	7~17	Double balanced mixer, integrated with LO driving amplifier	DC~4.0	-8	22	-3	+5/60	2.2x0.9 x 0.1	BWM215
7~13	7~17	Double balanced mixer, integrated with LO driving amplifier and RF bilateral amplifier	DC~4.0	11	0	-3	+5/60+45	2.2x2.8 x 0.1	BWM216
7~17	7~17	Double balanced mixer, integrated with LO driving amplifier and IF low pass filter	DC~3.0	-7.5	30	-5	+5/65	3.0x1.36x0.1	BWM214
18~25	18~25	Double balanced mixer, integrated with LO driving amplifier and RF and IF low pass filter	DC~7.0	-8	22	0	+5/60	1.2x2.3x0.1	BWM217

