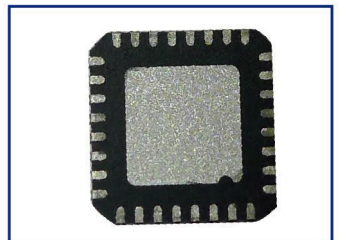
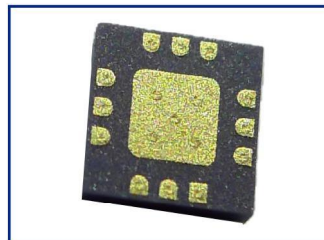
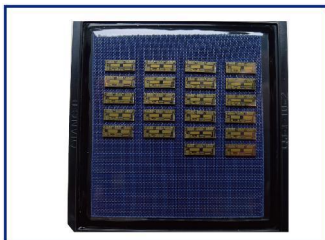




Hisiwell Microwave Group



Hisiwell Microwave Group was founded in 2004 and is located in Chengdu, the hometown of giant pandas. It is a company which designs, develops and sells Microwave, Millimeter Wave and Terahertz Wave chips, transistors as well as modules. Hisiwell Microwave Group is supported by UESTC and CETC, and consists of 2 research institutes and 3 business units. Our products include amplifiers, switches, attenuators, phase shifters, mixers, VCO, power transistors and capacitors, and are widely used in fields such as microwave communication, radar, electronic countermeasure, electronic measurement, navigation, aviation, space etc.






Business Unit 2

Hisiwell



Down Converters

Model	Function	Frequency RF (GHz)	Frequency LO (GHz)	Frequency IF (GHz)	LO Driving Power (dBm)	Conversion Gain (dB)	Noise Figure (dB)	Image Rejection (dBc)	P-1 (dBm)	Isolation (dB)	Package
HX135SP4	down conversion	17.5~21.5	7.25~12.5	DC~3.5	2~8	15	2.3	23	-8	2LO-RF@45	4*4 QFN-24L
HX136SP4	down conversion	21~24	8.4~13.5	DC~3.5	2~8	14.5	2.5	24	-8.5	2LO-RF@50	4*4 QFN-24L
HX137SP4	down conversion	21~27	8.3~15	DC~3.5	2~8	12	2.3	18	-8	2LO-RF@45	4*4 QFN-24L
HX138SP4	down conversion	21~30	9~14	DC~3.5	2~8	12	2.5	18	-8	2LO-RF@45	4*4 QFN-24L



IQ Frequency Mixer

Model	Function	Frequency RF (GHz)	Frequency LO (GHz)	Frequency IF (GHz)	LO Driving Power (dBm)	Conversion Gain (dB)	IP3 (dBm)	Image Rejection (dBc)	P-1 (dBm)	Isolation (dB)	Chip/Package
 HX211	IQ frequency mixing	8~14.5	8~14.5	DC~3.5	13~19	8.5	17	27	15	LO-RF@48	1.59mm*1.546mm
 HX211SP4	IQ frequency mixing	8~14.5	8~14.5	DC~3.5	13~19	8.5	17	27	15	LO-RF@48	4*4 QFN-24L
 HX212	IQ frequency mixing	15~24	15~24	DC~3.5	13~19	10.5	20	16	16	LO-RF@48	1.600mm*1.596mm



Active Frequency Multipliers

Model	Function	Fin (GHz)	Fout (GHz)	Pout (dBm)	Input RL (dB)	Output RL (dB)	F0 Isolation (dB)	Chip/Package
 HX125	Frequency Multiplying	7.5~13	15~26	16	-15	-8	20	2.4mm*1.4mm*0.1mm
 HX126SP3B	Frequency Multiplying	10~15.5	20~31	17	-10	-10	20	3*3 12 pin QFN

Power Dividers

Model	Function	Frequency (GHz)	Max input power (W)	Amplitude Uniformity (dB)	Phase Equalization (deg)	Isolation (dB)	Insertion Loss (dB)	VSWR (dB)	Chip/Package
HX121SP4	Power Dividing	2~25	3	<0.3	<5	21@12.5GHz	0.8~2.4	17	4*4 QFN-24L
HX123SP4	Power Dividing	1.8~12.5	2.5	<0.5	<5	25@7.5GHz	0.8~1.8	17	4*4 QFN-24L
 HX202	Power Dividing	0.5~2	NA	0.1	0.7	18	4	14.8	1.75*1.4mm
 HX202SP4	Power Dividing	0.5~2	NA	0.1	0.7	18	4	14.8	4*4 QFN-24L



Couplers

Model	Function	Frequency (GHz)	Max Pin (W)	Insertion Loss (dB)	Coupling Loss (dB)	Isolation (dB)	Phase Difference (dB)	Coupling Flatness (°)	Input RL (dB)	Output RL (dB)	Coupling RL (dB)	Chip/Package
 HX203	coupling	3~20	1.5	4.5	4.5	20	90±3	±2.5	15	16	20	1.75*1.40mm
 HX203SP4	coupling	3~18	1.5	4.5	4.5	24	90±4	±2	20	20	20	4*4 QFN-24L

Fixed Attenuators

Model	Function	Frequency (GHz)	Attenuation (dB)	*Power Capacity (W)	Tolerance (dB)	RL (dB)	Chip/Package
HX151	Fixed Attenuating	DC~40	1	2.5	± 0.3	21	Die 1.20*1.00mm
HX152	Fixed Attenuating	DC~40	2	2.5	± 0.3	21	Die 1.20*1.00mm
HX153	Fixed Attenuating	DC~40	3	2.5	± 0.3	21	Die 1.20*1.00mm
HX154	Fixed Attenuating	DC~40	4	2.5	± 0.3	21	Die 1.20*1.00mm
HX155	Fixed Attenuating	DC~40	5	2.5	± 0.2@0~25GHz ± 0.4@25~40GHz	21	Die 1.20*1.00mm
HX156	Fixed Attenuating	DC~40	6	2.5	± 0.2@0~25GHz ± 0.4@25~40GHz	21	Die 1.20*1.00mm
HX157	Fixed Attenuating	DC~40	7	2.5	± 0.3@0~25GHz ± 0.4@25~40GHz	21	Die 1.20*1.00mm
HX158	Fixed Attenuating	DC~40	8	2.5	± 0.2@0~25GHz ± 0.6@25~40GHz	21	Die 1.20*1.00mm
HX150	Fixed Attenuating	DC~40	10	2.5	± 0.2@0~25GHz ± 0.6@25~40GHz	21	Die 1.20*1.00mm
HX151SP2	Fixed Attenuating	DC~25	1	2.5	±0.25	18	DFN-6L 2*2mm
HX152SP2	Fixed Attenuating	DC~25	2	2.5	±0.25	18	DFN-6L 2*2mm
HX153SP2	Fixed Attenuating	DC~25	3	2.5	±0.25	18	DFN-6L 2*2mm
HX154SP2	Fixed Attenuating	DC~25	4	2.5	±0.30	18	DFN-6L 2*2mm
HX155SP2	Fixed Attenuating	DC~25	5	2.5	±0.30	18	DFN-6L 2*2mm
HX156SP2	Fixed Attenuating	DC~25	6	2.5	±0.35	18	DFN-6L 2*2mm
HX157SP2	Fixed Attenuating	DC~25	7	2.5	±0.35	18	DFN-6L 2*2mm
HX158SP2	Fixed Attenuating	DC~25	8	2.5	±0.35	18	DFN-6L 2*2mm
HX150SP2	Fixed Attenuating	DC~25	10	2.5	±0.35	18	DFN-6L 2*2mm


Digital Analog Converter

Model	Function	Output Range (V)	Resolution (bit)	INL (LSB)	DNL (LSB)	Rail-to-rail time (us)	Power Dissipation (mW)	Chip/Package
HX163SP4	Current DAC	0.5~VIN-0.5	10	±1.8	±0.2	0.1 (10%~90%)	144	4*4 QFN-24L
HX164	High SR Voltage DAC	0.5~16.5	10	±0.5	±0.3	0.2 (10%~90%)	38	1.819*1.630
 HX164SP4	High SR Voltage DAC	0.5~16.5	10	±0.5	±0.3	0.2 (10%~90%)	38	4*4 QFN-24L
HX165	Low PD Voltage DAC	0.5~16.5	10	±0.5	±0.3	5 (10%~90%)	9.7	1.819*1.630
 HX165SP4	Low PD Voltage DAC	0.5~16.5	10	±0.5	±0.3	5 (10%~90%)	9.7	4*4 QFN-24L








Staticizer

Model	Function	SPI speed (MHz)	HIGH Level Output Voltage (V)	Low Level Output Voltage (V)	response time (ns)	Chip size (mm)
HX161	8 bit SPI 串并转换	50	VDD-0.01	0.01	< 10	1.789*1.226
HX162	16 bit SPI 串并转换	50	VDD-0.01	0.01	< 10	1.789*1.226


PIN Drivers

Model	Function	SPI speed (MHz)	HIGH Level Output Voltage (V)	Low Level Output Voltage (V)	response time (ns)	VDD voltage (V)	VDD IDDQ (mA)	Chip/Package
HX159	8bit PIN driving	50	1.8	-2.8	20	3~3.6	0.1	1.76*1.216mm
HX160	8bit PIN driving	50	1.8	-14.8	40	3~3.6	0.1	1.789*1.760mm
 HX160SP4	8bit PIN driving	50	1.8	-14.8	40	3~3.6	0.1	4*4 QFN-24L







Gain Block Amplifiers

Model	Function	Frequency (GHz)	Gain (dB)	P1dB (dBm)	IP3 (dBm)	Psat (dBm)	Noise (dB)	Voltage (V)	Current (mA)	Chip/Package (mm)
 HX204	Gain Block	DC~3	22	12	24.5	13.5	3.5	5	33	0.62*0.62
 HX204SP2	Gain Block	DC~3	22	12	24.5	13.5	3.5	5	33	2*2 DFN-6L
 HX205	Gain Block	DC~6	17	14	28	15	3.6	5	50	0.62*0.50
 HX205SP2	Gain Block	DC~6	17	14	28	15	3.6	5	50	2*2 DFN-6L
 HX207	Gain Block	DC~12	20	18@1GHz	29@1GHz	18.5	3.5	5	65	0.62*0.50
 HX207SP2	Gain Block	DC~12	20	18@1GHz	29@1GHz	18.5	3.5	5	65	2*2 DFN-6L
 HX207T3	Gain Block	DC~10	20	18@1GHz	29@1GHz	19	3.5	5	65	SOT-89

Intermediate Power Amplifiers

Model	Function	Frequency (GHz)	Gain (dB)	P1dB (dBm)	IP3 (dBm)	Psat (dBm)	Noise (dB)	Voltage (V)	Current (mA)	Chip Size (mm)
 HX130	IPA	8~14	17	20.5	29.5	21.3	8.5	5	141	1.04*1.38






Low Noise Amplifiers

Model	Function	Frequency (GHz)	Gain (dB)	P1dB (dBm)	IP3 (dBm)	Psat (dBm)	Noise (dB)	Voltage (V)	Current (mA)	Chip/Package (mm)
 HX172SP2B	LNA	0.6~6	21	19.5	37	20	0.6	5	65	2*2 QFN-8L
 HX208	LNA	DC~2	18	20.3	35	-	0.9	5	75	1.0*0.9
 HX209	LNA	0.5~1.8	17.4	17	29	-	1.25	5	37	1.6*0.99
 HX214	LNA	2.5~6.5	22.6	15	29	-	1.8~2.5	5	65	1.05*1.35
 HX215	LNA	8~14.5	19.7	14	26	-	1.4	5	65	1.05*1.35
 HX134SP4	LNA	15~28	22	15	25	-	2.3	4	79	4*4 QFN-24L
HX3024T3	Broadband LNA	0.01~3	20	18.5	33	20.5	0.9~1.3	5	58	SOT-89
HX3024SP3	Broadband LNA	0.01~3	20	18.5	32	19.5	0.9~1.4	5	50	3*3 QFN-16L
HX067	Broadband LNA	1~14	15	18	28	20	1.7	5	55	1.5*1.07 DIE
HX068	Broadband LNA	0.01~8	19	20	30	21.5	1.4	5	65	1.05*1.07 DIE

Broadband LNA

Model	Function	Frequency (GHz)	Gain (dB)	P1dB (dBm)	IP3 (dBm)	Psat (dBm)	Noise (dB)	Voltage (V)	Current (mA)	Chip/Package (mm)
HX068SP2	Broadband LNA	0.01~8	19	20.5	34	22.5	1.4	5	65	2*2 Plastic QFN-6L
HX069	Broadband LNA	0.01~10	16.5	19.5	30	21.5	1.5	5	65	1.05*1.07 DIE
HX069SP2	Broadband LNA	0.01~10	15	20	35	22	1.4	5	65	2*2 Plastic QFN-6L
HX070	Broadband LNA	0.01~10	15	18.5	28	20	2.1	5	65	1.05*1.07 DIE
HX070SP2	Broadband LNA	0.01~10	14.5	19	35	21	1.8	5	65	2*2 Plastic QFN-6L
HX071	Broadband LNA	6~18	18.8	15	28	17	1.5	3.5	70	1.4*1.07 DIE
HX071SP3	Broadband LNA	6~18	18	15	25	17.5	1.7	3.5	75	3*3 Plastic QFN-16L
HX071SP4	Broadband LNA	7~14	17.5	13.5	25	16	1.7	3	77	4*4 Plastic QFN-24L
HX072	Broadband LNA	1~27	16	14	22	17	2.5	5	60	1.3*3 DIE
HX072SP5	Broadband LNA	1~24	14.2	13	24	15	2.5	5	58	5*5 Plastic QFN-32L
HX073	Broadband LNA	22~43.5	21	10	22	13	2.3	5	54	1.97*1.2 DIE
HX074	Broadband LNA	20~40	20.5	9	20	12	2.5	3	50	1.97*1.07 DIE
HX075	Broadband LNA	23~40	18	12	22	15	2.5	3	65	1.97*1.07 DIE
HX075SP4	Broadband LNA	22~40	20	13	23	15.5	2.7	3	65	4*4 Plastic QFN-24L
HX076	Broadband LNA	3~10	14	17	26	18	1.7	5	45	1.4*1.4 DIE
HX076SP4	Broadband LNA	3~10	13.5	17	33	18.5	1.7	5	45	4*4 Plastic QFN-24L
HX077	Broadband LNA	DC~27	16	16	26	20	2.7	7	70	3*1.5 DIE
HX077SP5	Broadband LNA	DC~24	15	16	26	19	2.7	8	80	5*5 Plastic QFN-32L
HX078SP5	Broadband LNA	DC~24	15	15	29	19	2.7	7	55	5*5 Plastic QFN-32L
HX079	Broadband LNA	22~42	10	12	24	15	3.2	5	48	1.5*1.4 DIE
HX095	Broadband LNA	3~21	17	15	28	17	1.5	3.5	70	1.4*1.07 DIE
HX095SP3	Broadband LNA	3~21	16	13.5	24	16	1.8	3.5	80	3*3 Plastic QFN-16L
HX095SP4	Broadband LNA	7~14	16	13	24	15	1.65	3	82	4*4 Plastic QFN-24L

Switches

Model	Function	Frequency (GHz)	Insertion loss (dB)	Isolation (dB)	RL (dB)	Bias Voltage (V)	ESD (HBM) (V)	Chip/Package (mm*mm)
 HX216	SPDT	1~15	1.3	47	16	3~5 *power/control both positive	power/control >2000 *switch time<15ns	1.81*1.85 DIE
 HX128SP4	SP5T (Absorptive)	1~9	1.9	45	13	3~5	-	4*4 Plastic QFN-24
 HX190SP4	SPDT (Absorptive)	1~10	1.6	43	14	3~5	-	3*3 Plastic QFN-16
HX029	SPDT (Reflective)	DC~40	1.4~2.0	60dB@DC~15GHz 50dB@15GHz~30GHz 38dB@30GHz~40GHz	15	-5	-	1.49*1.10 DIE
HX030	SPDT (Reflective)	DC~20	1.1~1.5	56dB@DC~6GHz 37dB@6GHz~11GHz 34dB@11GHz~20GHz	15	-5	-	1.49*0.977 DIE
HX032	SPDT (Absorptive)	DC~15	1.3~1.8	65dB@DC~10GHz 45dB@10GHz~15GHz	15	-5	-	1.49*1.223 DIE
HX032SP3	SPDT (Absorptive)	0.1~15	1.5~2.5	50dB@0.1GHz~10GHz 40dB@10GHz~15GHz	17	-4.8	-	3*3 Plastic QFN-16L
HX037	SP4T (Absorptive)	DC~20	2~3.2	50dB@DC~10GHz 55dB@10GHz~20GHz	17	-4.8	-	2.45*2.22 DIE
 HX037SP4	SP4T (Absorptive)	DC~20	2~3.2	50dB@DC~10GHz 55dB@10GHz~20GHz	17	-4.8	power/control >1500V *switch time<16ns	4*4 Plastic QFN-24L
HX041	SPSP (Absorptive)	DC~30	1.3~1.8	60dB@DC~15GHz 50dB@15GHz~20GHz 40dB@20GHz~30GHz	15	-5	Power >2000	1.60*1.00 DIE
HX084SP3	SPDT (Absorptive)	0.1~6	0.65~1	60dB@0.1GHz~2GHz 50dB@2GHz~4GHz 45dB@4GHz~6GHz	20	3.3	-	3*3 Plastic QFN-16L
HX085SP3	SP4T (Absorptive)	0.1~6	0.8~1.4	65dB@0.1GHz~2GHz 55dB@2GHz~4GHz 42dB@4GHz~6GHz	20	3.3	-	3*3 Plastic QFN-16L
HX109SP3	SP4T (Absorptive)	DC~6	0.8~1.4	65dB@9KHz~2GHz 55dB@2GHz~4GHz 42dB@4GHz~6GHz	20	3~5.3	-	3*3 Plastic QFN-16L
 HX110SP3	SP4T (Absorptive)	DC~12	1.5	40	14	3~5	-	3*3 Plastic QFN-16L
HX111SP3	SPDT (Absorptive)	DC~8	0.65~1	50dB@DC~2GHz 40dB@2GHz~6GHz 32dB@6GHz~8GHz	16	3~5.3	-	3*3 Plastic QFN-16L
HX113SP4	SP4T (Absorptive)	DC~8	0.65~1	65dB@9KHz~10MHz 40dB@10MHz~6GHz 32dB@6GHz~8GHz	25	3~5.3	-	4*4 Plastic QFN-24L








Vol tage Control led Oscillators

Model	Function	Frequency (GHz)	Pout (dBm)	Phase Noise (dBc/@100KHz)	Tuning Vol tage (V)	Operating Vol tage (V)	Operating Current (mA)	Harmonic Suppressi on (dBc)	Frequency Pushi ng (MHz/V)	Frequency Temperature Drift (MHz/°C)	Package (mm*mm)
HX007SP4	Narrow-band VCO	8.5~10	8	-111	0~5	5	129	60@1/2harmoni cs 60@3/2harmoni cs	16	1	4*4 Plastic QFN-24L
HX008SP4	Narrow-band VCO	19.5~22.5	5.5	-104	0~5	5	140	30@1/2harmoni cs 35@3/2harmoni cs	16	2	4*4 Plastic QFN-24L
HX009SP4	Narrow-band VCO	23.5~26.8	5	-102	0~5	5	148	30@1/2harmoni cs 40@3/2harmoni cs	40	2.55	4*4 Plastic QFN-24L
HX025SP4	Narrow-band VCO	24.5~28.5	1.5	-102	0~5	5	148	30@1/2harmoni cs 40@3/2harmoni cs	40	2.55	4*4 Plastic QFN-24L
HX092SP4	Narrow-band VCO	23.8~24.8	12	-96	2~13	5	125	25@1/2harmoni cs 35@3/2harmoni cs	40	2	4*4 Plastic QFN-24L
HX093SP5	Narrow-band VCO	12.17~13.33	12	-112	2~13	5	190	25@1/2harmoni cs 20@3/2harmoni cs	15	1	5*5 Plastic QFN-32L
HX094SP5	Narrow-band VCO	12.47~13.9	12	-112	2~13	5	190	25@1/2harmoni cs 20@3/2harmoni cs	15	1	5*5 Plastic QFN-32L
HX096SP5	Narrow-band VCO	13.6~14.9	11	-111	2~13	5	190	25@1/2harmoni cs s20@3/2harmoni cs	15	1	5*5 Plastic QFN-32L
HX097SP5	Narrow-band VCO	11.5~12.8	12	-113	2~13	5	190	25@1/2harmoni cs 20@3/2harmoni cs	15	1	5*5 Plastic QFN-32L
HX099SP5	Narrow-band VCO	11.17~12.02	13	-113	2~13	5	190	25@1/2harmoni cs 20@3/2harmoni cs	15	1	5*5 Plastic QFN-32L


Broadband Vol tage Control led Oscillators

Model	Function	Frequency (GHz)	Pout (dBm)	Phase Noise (dBc/@100KHz)	Tuning Vol tage (V)	Operating Vol tage (V)	Operating Current (mA)	Harmonic Suppressi on (dBc)	Frequency Pushi ng (MHz/V)	RF RL (dB)	Package (mm*mm)
HX018SP4	Integrated Divider Multi-stage Broadband VCO	8.5~17	7	-101	0~5	5	136	28@1/2harmoni cs 30@3/2harmoni cs 26@2harmoni cs 40@3harmoni cs	25	8	4*4 Plastic QFN-24L
HX019SP4	Integrated Divider Multi-stage Broadband VCO	8~16	7	-103	0~5	5	138	28@1/2harmoni cs 30@3/2harmoni cs 26@2harmoni cs 40@3harmoni cs	20	8	4*4 Plastic QFN-24L
HX100SP4	Integrated Divider Multi-stage Broadband VCO	10~20	8	-101	0~5	5	162	36@1/2harmoni cs 30@3/ 2harmoni cs 22@2harmoni cs 33@3harmoni cs	25	8	4*4 Plastic QFN-24L

Digital Attenuators

Model	Function	Frequency (GHz)	Insertion Loss (dB)	Max Attenuation (dB)	Attenuation Accuracy (dB)	RL (dB)	Voltage (V)	ESD (HBM) (V)	Package (mm*mm)
 HX218	6-bit digital attenuator	1~12	5.5 *Switch time <15ns	31.5	-(0.2+7% of Atten. Setting) Max	13	3~5 *Power/Control both positive -5	Power/Control >2000	1.85*3.80 DIE
 HX043	6-bit digital attenuator	DC~3	1.4	47	± 0.2+1% of Atten. Set Max	15	-5	Power/Control >2000	2.20*1.20 DIE
 HX045	1-bit digital attenuator	DC~5	0.88	20	-0.5	28	-5	Power/Control >2000	1.30*0.80 DIE
 HX047	6-bit digital attenuator	DC~3	1.5	31.5	± 0.2 + 1% of Atten. Setting Ma	15	-5	Power/Control >2000	1.90*1.20 DIE
 HX191P10	5-bit digital attenuator	0.5~3.8	1.02	15.5	± (0.25 + 3% of Atten. Setting)	20	3.3~5	500V	eMSOP10L
HX034	1-bit digital attenuator	DC~6	0.7	31	-(0.2+10% of Atten. Setting) Max	13	-5	-	1.60*1.25 DIE
HX035	1-bit digital attenuator	DC~40	0.8dB@DC~15GHz 1.1dB@15GHz~20GHz 1.3dB@20GHz~40GHz	10	-(0.2+10% of Atten. Setting) Max	13	-5	-	1.49*0.977 DIE
HX036	2-bit digital attenuator	DC~40	1.6dB@DC~15GHz 2.1dB@15GHz~20GHz 2.4dB@20GHz~40GHz	20	-(0.2+10% of Atten. Setting) Max	13	-5	Power>2000	1.223*1.00 DIE
HX038	3-bit digital attenuator	DC~40	3.0dB@DC~20GHz 3.4dB@20GHz~30GHz 3.5dB@30GHz~40GHz	30	-(0.2+10% of Atten. Setting) Max	13	-5	Power>2000	1.92*1.49 DIE
HX040	4-bit digital attenuator	DC~40	1.6dB@DC~10GHz 3.0dB@10GHz~30GHz 3.6dB@30GHz~40GHz	15	-(0.2+4% of Atten. Setting) Max	15	-5	-	1.92*1.25 DIE
HX042	5-bit digital attenuator	DC~40	1.8dB@DC~10GHz 2.6dB@10GHz~30GHz 3.2dB@30GHz~40GHz	15.5	-(0.2+6% of Atten. Setting) Max	15	-5	-	1.92*1.49 DIE
 HX044	6-bit digital attenuator (ESD>2000V)	DC~40	4dB@DC~20GHz 5dB@20GHz~30GHz 5.6dB@30GHz~40GHz	31	-(0.2+8% of Atten. Setting) Max	15	-5	Power>2000	2.45*1.49 DIE
 HX044SP4	5-bit digital attenuator (ESD>2000W)	DC~35	3.5dB@DC~20GHz 5.0dB@20GHz~32GHz 7.0dB@32GHz~35GHz	31	2.3	12	-5	Power>2000	4*4 Plastic QFN-24L
HX046	6-bit digital attenuator	DC~13	2.4dB@DC~4GHz 3.0dB@4GHz~8GHz 4.0dB@8GHz~13GHz	31.5	-(0.2+10% of Atten. Setting) Max	12	-5	Power/Control >2000	1.6*1.49 DIE
HX046SP3	6-bit digital attenuator	DC~15	2.5dB@DC~8.5GHz 3.2dB@8.5GHz~15GHz	31.5	2.3	15	-5	Power/Control >2000	3*3 Plastic QFN-16L
HX048	3-bit digital attenuator	DC~40	0.4dB@DC~20GHz 0.6dB@20GHz~30GHz 0.7dB@30GHz~40GHz	0.875	-(0.2+15% of Atten. Setting) Max	17	-5	-	1.49*0.83 DIE

Digital Attenuators

Model	Function	Frequency (GHz)	Low Insertion Loss (dB)	Max Attenuation (dB)	Attenuation Accuracy (dB)	RL (dB)	Voltage (V)	ESD (HBM) (V)	Package (mm*mm)
HX082SP4	7-bit digital attenuator	0.1~8	0.5dB@0.1GHz~2GHz 0.9dB@2GHz~4GHz 1.4dB@4GHz~6GHz 1.7dB@6GHz~8GHz	31.75	1.6	14	3.3	Power/Control >1000	4*4 Plastic QFN-24L
HX114SP4	7-bit digital attenuator	0.1~6	1.4dB@0.1GHz~2GHz 1.8dB@2GHz~4GHz 2.0dB@4GHz~6GHz	31.75	-0.3~2.0	18	3~5.3	-	4*4 Plastic QFN-24L
 HX116SP5	7-bit digital attenuator	9KHz~12GHz	1.2dB @9KHz~2GHz 1.4dB @2GHz~4GHz 2.5dB @4GHz~12GHz	31.75	0.35~2.8	15	3~5	-	5*5 Plastic QFN-32L

Mixers

Model	Function	RF/LO Frequency (GHz)	LO Driving Power (dBm) 1	Loss (dB)	LO-RF Isolation (dB)	LO-IF Isolation (dB)	IF Bandwidth (GHz)	P-1 (dBm)	IP3 (dBm)	Package (mm*mm)
HX086	Double Balanced Mixer	3~9	13~19	7	48	32	DC~3	12	25	1.25*1.1 DIE
HX086P8	Double Balanced Mixer	2.5~6	13~19	8.5	40	30	DC~2	12	20.5	eSOP-8L Plastic
HX086SP3B	Double Balanced Mixer	2.5~8	13~19	8.5	48	25	DC~3	12	25	3*3 Plastic QFN-12L
HX086SP4	Double Balanced Mixer	2.5~8	13~19	8.5	45	30	DC~3	12	23	4*4 Plastic QFN-24L
HX087	Double Balanced Mixer	3~10	13~19	8.5	42	30	DC~4.5	13	22	1.25*0.83 DIE
HX087SP3B	Double Balanced Mixer	3~9	13~19	8.5	55	38	DC~4.5	15	23	3*3 Plastic QFN-12L
HX088	Double Balanced Mixer	6~15	13~19	7	42	28	DC~6	15	26	0.9*1.1 DIE
HX088SP3B	Double Balanced Mixer	6~15	13~19	9	40	26	DC~6	15	26	3*3 Plastic QFN-12L
HX089	Double Balanced Mixer	9~21	13~19	7.5	42	33	DC~8	15	26	0.9*0.977 DIE
HX089SP3B	Double Balanced Mixer	9~21	13~19	8.5	40	33	DC~8	15	27	3*3 Plastic QFN-12L
HX090	Double Balanced Mixer	5.5~10	13~19	7.5	42	24	DC~3.5	12	25	1.25*0.977 DIE
HX090SP3B	Double Balanced Mixer	5.5~10	13~19	7.5	42	24	DC~3.5	12	25	3*3 Plastic QFN-12L
HX091	Double Balanced Mixer	14~30	13~19	9	40	35	DC~14	15	26	1.25*0.977 DIE
HX091SP3B	Double Balanced Mixer	14~26	13~19	9	38	33	DC~12	15	26	3*3 Plastic QFN-12L
HX098SP3B	Double Balanced Mixer	3~7	15~21	8.5	48	42	DC~3.5	18	28	3*3 Plastic QFN-12L
HX139	Double Balanced Mixer	14~30	11~17	8	35	32	DC~16	12	22	1.40*2.40 Die
HX139SP3B	Double Balanced Mixer	14~30	11~17	8	35	32	DC~16	12	22	3*3 Plastic QFN-12L



Mixers

Model	Function	RF/LO Frequency (GHz)	LO Driving Power (dBm)	Loss (dB)	LO-RF Isolation (dB)	LO-IF Isolation (dB)	IF Bandwidth (GHz)	P-1 (dB)	IP3 (dBm)	Package (mm*mm)
HX8002P8	Double Balanced Mixer	2~7	13~19	8.5	58	40	DC~2	12	20.5	eSOP-8L Plastic
HX8002SP3B	Double Balanced Mixer	1.8~6	13~19	8.5	55	35	DC~2	12	20.5	3*3 Plastic QFN-12L
HX8003SP3B	Double Balanced Mixer	4~9.5	13~19	8.5	55	40	DC~4.5	13	23	3*3 Plastic QFN-12L
HX8004SP3B	Double Balanced Mixer	6~18	13~19	9	45	35	DC~6	12	24	3*3 Plastic QFN-12L
HX8005SP3B	Double Balanced Mixer	9.5~15	13~19	9	38	35	DC~3	13	23	3*3 Plastic QFN-12L
HX8006SP4	Low LO Power Mixer	2.5~9	0~8	9	38	30	DC~3	15	23	4*4 Plastic QFN-24L
HX8007SP3B	Low LO Power Mixer	2.5~7.5	0~8	9	45	30	DC~3	15	23	3*3 Plastic QFN-12L
HX8008SP3B	Low LO Power Mixer	2.5~7	0~8	9	40	35	DC~3	20	28	3*3 Plastic QFN-12L
HX8009SP4B	Low LO Power Mixer	1.8~7	0~8	8.5	34	25	DC~3	12	21	4*4 Plastic QFN-16L
HX8010SP4B	Low LO Power Mixer	2.5~8	0~8	8	34	27	DC~3	12	21	4*4 Plastic QFN-16L




Programmable Frequency Extender

Model	Function	Frequency (GHz)	Loss (mA)	Pout (dBm)	Phase Noise (dBc/Hz) @100KHz (Fout=3GHz)	Vol tage (V)	Current (mA)	Package (mm*mm)
HX001SP3	/1, 2, 4, 8 x2 dividing/multiplying	DC~30	33mA@N=1, 47mA@N=8, +31mA@X2	-2dBm@dividing 3dBm@multiplying	-154	3.3	47	3*3 Plastic QFN-16L



Programmable Frequency Dividers

Model	Function	Frequency (GHz)	Loss (mA)	Pout (dBm)	Phase Noise (dBc/Hz) @100KHz (Fout=3GHz)	Vol tage (V)	Current (mA)	Package (mm*mm)
 HX182SP3	1, 2, 4, 8, 16, 32, 64, 128 Programmable Dividing	0.1~24	59mA@N=1, 121mA@N=128	-2~3	-158 (N=2)	3.3	121	3*3 Plastic QFN-16L
 HX185SP4	1~17 Programmable Dividing	0.1~8	68mA@N=1, 177mA@N=17	-2~3	-156 (N=2)	3.3	177	4*4 Plastic QFN-24L
HX005SP3	/1, 2, 4, 8 Programmable Dividing	DC~30	32mA@N=1, 45mA@N=8	-2	-154	3.3	45	3*3 Plastic QFN-16L
HX027SP3	/1, 2, 4, 8 Programmable Dividing	DC~21	30mA@N=1, 43mA@N=8	-2	-153	3.3	20	3*3 Plastic QFN-16L

Fixed Frequency Dividers

Model	Function	Frequency (GHz)	Loss (mA)	Pout (dBm)	Phase Noise (dBc/Hz) @100KHz (Fout=3GHz)	Vol tage (V)	Current (mA)	Package (mm*mm)
 HX180	div 3/ Fixed dividing	0.1~15	65	0~2	-159 (Fout=2GHz)	3.3	65	1.217*0.664mm
 HX180SP3	Div 3/ Fixed dividing	0.1~15	65	0~2	-159 (Fout=2GHz)	3.3	65	3*3 Plastic QFN-16L
 HX181	Div 5/ Fixed dividing	0.1~15	72	0~2	-161 (Fout=1.2GHz)	3.3	72	1.217*0.664mm
HX002SP3	div 2/ Fixed dividing	DC~30	36	-5.1~1.2	-154	3.3	36	3*3 Plastic QFN-16L
HX003SP3	div 4/ Fixed dividing	DC~30	39	-4.3~1.4	-154	3.3	39	3*3 Plastic QFN-16L
HX004SP3	div 8/ Fixed dividing	DC~30	40	-4.3~1.2	-153	3.3	40	3*3 Plastic QFN-16L

Phase-Locked Loop

Model	Function	Phase Discriminating Frequency (GHz)	RF Fin (GHz)	RF Dividing	Phase Noise (dBc/Hz) @100KHz	Vol tage (V)	Current (mA)	Chip size
 HX186	phase discriminating	0.1~1.3	0.1~1.3	1	-155 (f _{pd} =100MHz)	3.3	115	1.712*1.012mm
 HX187	PLL	0.1~1.3	0.1~7	12~259	-155 (f _{pd} =100MHz)	3.3	235	1.712*1.976

Multifunctional Receiver

Model	Function	Frequency (GHz)	Low Power Loss (mA)	Low PhaseNoise (dBc/Hz)@100KHz	Tuning Vol tage (V)	TX2Tuning Sensitivity (MHz/V)	Noise Figure (dB)	TX-RX Isolation (dB)	Vol tage (V)	总电流 (mA)	Package (mm*mm)
HX010SP3	Multifunctional Receiver	21~24.5	120/160	-95	0~5	1100	9	33	5	VCCT1 OFF-120 VCCT1 ON-160	3*3 Plastic QFN-16L

Analog Phase Shifters

Model	Function	Frequency (GHz)	Phase Shift Range (deg)	Insertion Loss (dB)	RL (In&Out) (dB)	VT Voltage (V)	VT Current (uA)	Sensitivity (deg/V)	Phase Shifter Switching Time (us)	Package (mm*mm)
HX012SP4	180 deg Continuous Phase Shift	2~7	>180	2	15	0~14	1	15	0.24	4*4 Plastic QFN-24L
HX013SP4	180 deg Continuous Phase Shift	3~13	>180	2.5	14	0~13	1	18	0.14	4*4 Plastic QFN-24L
HX014SP4	180 deg Continuous Phase Shift	5~18	>180	2.5	15	0~13	1	18	0.14	4*4 Plastic QFN-24L
HX015SP4	360 deg Continuous Phase Shift	7~12.5	>360	4	14	0~14	1	28	0.15	4*4 Plastic QFN-24L
HX016SP4	360 deg Continuous Phase Shift	11~18	>360	5	14	0~14	1	26.5	0.12	4*4 Plastic QFN-24L
HX017SP4	360 deg Continuous Phase Shift	18~26.5	>360	4.5	15	0~16	1	24	0.12	4*4 Plastic QFN-24L
HX050SP5	360 deg Continuous Phase Shift	0.95~2	>360	5	18	0~14	10	28	0.24	5*5 Plastic QFN-32L
HX051SP5	360 deg Continuous Phase Shift	1.8~3.8	>360	4	20	0~14	10	27	0.24	5*5 Plastic QFN-32L
HX052SP5	360 deg Continuous Phase Shift	3~6	>360	3.5	15	0~14	1	26	0.25	5*5 Plastic QFN-32L
HX053SP4	180 deg Continuous Phase Shift	6~18	>180	3	15	0.5~15	10	15	0.14	4*4 Plastic QFN-24L
HX054SP3	360 deg Continuous Phase Shift	24.5~31	>360	5	13	0~14	1	35	0.12	3*3 Plastic QFN-16L
HX064SP5	360 deg Continuous Phase Shift	2.3~5	>360	4.5	18	0.3~14	10	29	0.24	5*5 Plastic QFN-32L

Delay Line

Model	Function	Frequency (GHz)	Adjustable Delay (ps)	Insertion Loss (dB)	RL (In&Out) (dB)	VT Voltage (V)	VT Current (uA)	Delay Sensitivity (ps/V)	Switching time (ns)	Package (mm*mm)
HX066	ESC Delay	DC~20	0~25	3	20	0~15	10	2	120	2.285*0.77 DIE

Filters

Model	Function	Frequency (GHz)	Insertion Loss (dB)	Equalization (dB)	Voltage (V)	Current (mA)	Pin (dBm)	Switching Time (ns)	Package (mm*mm)
HX056	ESC Filtering	2~4	5~7.5	3	@VT=0-15	@VT=10uA	15	350	3.3*1.2
HX056SP5	ESC Filtering	2~4	5~7.5	3	@VT=0-15	@VT=10uA	15	350	5*5 Plastic QFN-32L
HX057SP5	Active ESC Band-pass Filtering	2~4	3.5~7	-	5	30	15	250	5*5 Plastic QFN-32L
HX058SP4	ESC Band-pass Filtering	4~8	3.7~5	1.3	@VT=0-15	@VT=10uA	15	200	4*4 Plastic QFN-24L
HX059SP4	ESC Band-pass Filtering	5~10	4~6	2	@VT=0-15	@VT=10uA	15	160	4*4 Plastic QFN-24L
HX060SP5	Active ESC Band-pass Filtering	4~8	5~8	-	5	30	15	250	5*5 Plastic QFN-32L
HX061SP3	ESC Band-pass Filtering	8~16	6.6~9.1	2.5	@VT=0-15	@VT=10uA	15	120	3*3 Plastic QFN-16L
HX062SP3	ESC Band-pass Filtering	10.5~20	7~9	2	@VT=0-15	@VT=10uA	15	100	3*3 Plastic QFN-16L
HX063SP4	ESC Low-pass Filtering	2~4	2~2.8	-	@VT=0-15	@VT=10uA	15	200	4*4 Plastic QFN-24L

Equalizer

Model	Function	Frequency (GHz)	Insertion Loss (dB)	Equalization (dB)	Voltage (V)	Current (mA)	Pin (dBm)	Switching Time (ns)	Package (mm*mm)
HX055SP3	ESC Equalization	2~7	0.7	4~9.5	@VT=0-14	@VT=10uA	15	150	3*3 Plastic QFN-16L