

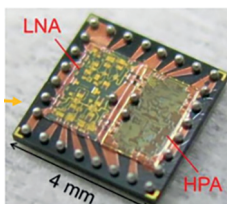
GaN & GaAs Products & Foundry solutions



Mid band & mmw RAN • Fixed Wireless Access 26, 28, 39, 47GHz • 5G Test & Measurement • Repeater & Indoor • V, E, W & D band Radio Backhaul

Innovative design

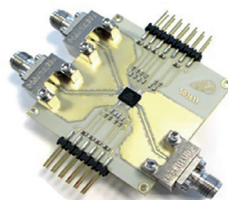
- Front End 39GHz OFDM 5G compliant for MIMO
 - Linear High Power Amplifier
 - Very Low Noise Amplifier
 - Fast & high isolation Switch
- System in Package (SiP)
- Multichip Integration SiGe/ GaAs /GaN
- FOWLP demonstrator



@ CEA-Leti

Products

- New HPAs 5W 26&28GHz
- CHA6682-QCB
- New Front End 37-41GHz
CHC6094 OFDM 5G compliant
- SWaP-C* Full GaN



CHC6094-QKB in QFN 4x4

* Best in class SWaP-C:
Size Weight & Power-Cost

- Linear MPA & HPA up to 43.5GHz
- V & E-Band: MPA, LNA, Mixer
- W-Band: LNA
- Wilkinson compact 2 and 3 way 8 to 35GHz

Technologies

GaN / SiC

- GH15 High power up to 42GHz
- GH25 High power up to 20GHz

GaAs

- PPH15X Power up to 48GHz
- PH10 Low Noise up to 100GHz
- PH15 Medium Power & Low Noise up to 90GHz
- BES Schottky diode up to THz
- ULRC passive process

Package

- QFN available 3x3 to 8x8mm2
- MSL 1, 2, 3



Build your own solution with UMS

www.ums-rf.com



Building blocks for your 5G projects

BUILDING BLOCKS FOR SUB-7GHz (FR1)

MPA	Freq (GHz)	Gain (dB)	IP3 (dBm)	OP1dB (dBm)
CHA4105-QDG	2-4	23	-	24
GaN transistors	Freq (GHz)	small signal Gain (dB) @ freq (GHz)	Power(W)	PAE % @ Freq (GHz)
CHKA012-99F	Up to 4	19@3	140	65@3
CHK015AaQIA	Up to 4	18@3	20	55@3
CHK8101a99F	Up to 6	14@6	20	60@6
CHK9013-99F	Up to 8	18@6	88	65@6
CHK5010-99F	Up to 12	22@6	4	72@6
CHK9014	Up to 13	13@12	60	50@12

BUILDING BLOCKS FOR 6-24GHz (FR3)

LNA	Freq (GHz)	Gain (dB)	IP3 (dBm)	OP1dB (dBm)
CHA3656-QAG	6-17	20	24	14
GaN HPA	Freq (GHz)	Gain (dB)	Psat (dBm)	OIP3 (dBm)
CHA7060-QAB	5.6-8.5	30	41	45
CHA7250-QAB	10-12.75	20	40	45
CHA7063-QCB	12.7-20	20	37	-
MPA / VGA	Freq (GHz)	Gain (dB)	IP3 (dBm)	OP1dB (dBm)
CHA4220-QGG	0.5-20	17	28	20
CHA3024-QGG	2-22	15	28	18
CHA4350-QDG	5.5-11.7	26	32	24
Linear Attenuator	Freq (GHz)	Ins. Loss (dB)	P-1dB In	Amplitude Control (dB)
CHT4690-QAG	5-30	4	25	31
Wilkinson	Freq (GHz)	Loss (dB)	Dyn. Range(dB)	Type
CHW4212-QKA	8-22	0.5	20	>20
Power Detector	Freq (GHz)	Loss (dB)	Dyn. Range(dB)	Type
CHE1270-QAG	5-44	-	30	Wideband

BUILDING BLOCKS FOR 24-30GHz (FR2)

RF Front End	Freq (GHz)	Gain RX/ Gain TX (dB)	Pout RX/ Pout Tx (dBm)	NF RX
CHC6054-QQA	24.25-30.5	18/28	10/31	3.2
HPA	Freq (GHz)	Gain (dB)	IP3 (dBm)	Psat (dBm)
CHA6652-QXG	21-27.5	20	41	33
CHA6682-QKB	24-27.5	25	-	36
CHA6682-98F	24-27.5	25	-	37
CHA8362-99F	26.5-31	25	-	44
CHA6653-QXG	27-33.5	20	38	33
CHA6354-QQA	27.5 - 30	25	-	35
CHA6357-QKB	27.5 - 30	27	-	35
CHA8262-99F	27.5-31.5	24	-	41
MPA	Freq (GHz)	Gain (dB)	IP3 (dBm)	OP1dB (dBm)
CHA3395-QDG	21-30	24	32	20
CHA3409-98F	25-45	23	26	19
CHA3396-QDG	27-33.5	22	30	19
LNA	Freq (GHz)	Gain (dB)	NF (dB)	OP1dB (dBm)
CHA3688aQDG	12.5-30	26	2	14
CHA2069-QDG	18-31	20	3	10.5
CHA2595-QDG	27.5-43.5	19.5	2.3	11
Down-Converter	Freq (GHz)	Conv. Gain (dB)	NF (dB)	IP1dB
CHR2295-99F	24-30	11	3.5	-10
Wilkinson	Freq (GHz)	Ins. Loss (dB)	Isol. Range (dB)	Case
CHW4312-QKA	22-34	0.75	20	DFN
CHW4313-QAG	24-35	0.6	20	QFN

BUILDING BLOCKS FOR 37-52.6GHz (FR2)

LNA	Freq (GHz)	Gain (dB)	NF (dB)	OP1dB (dBm)
CHA2595-98F	27.5-43.5	19.5	2	11
CHA2494-QEG	34-44	22	3	12
CHA2352-98F	46-52	21	3.5	12
MPA	Freq (GHz)	Gain (dB)	IP3 (dBm)	P-1dB (dBm)
CHA3397-QDG	36-40.5	21	29	18
CHA3398-QDG	36-43.5	22	29	18
HPA	Freq (GHz)	Gain (dB)	IP3 (dBm)	Psat (dBm)
CHA6094-QKB	35-42.5	>25	-	33
CHA6095-QKB	35-42.5	>25	-	36
CHA5659-QXG	36-43.5	20	38.5	30
CHA6194-QXG	37-40	20	38	31
CHA7453-99F	37-42	28	-	39.5
CHA7455-99F	39-43.5	28	-	39.5
RF Front End	Freq (GHz)	Gain RX/ Gain TX (dB)	Pout RX/ Pout Tx (dBm)	NF RX
CHC6094-QKB	37-41	16/25	10/33	4.5

BUILDING BLOCKS FOR V-BAND

LNA	Freq (GHz)	Gain (dB)	NF (dB)	OP1dB (dBm)
CHA2159-99F	55-65	20	4	14
CHA2368-98F	50-71	20	3.5	11

Mixer	Freq (GHz)	Freq LO (GHz)	Conv gain (dB)	IP1dB (dBm)
CHM1294-99F	35-45	16-24	-11	0
CHM1298-99F	55-65	27.5-32.5	-12	0

BUILDING BLOCKS FOR E-BAND

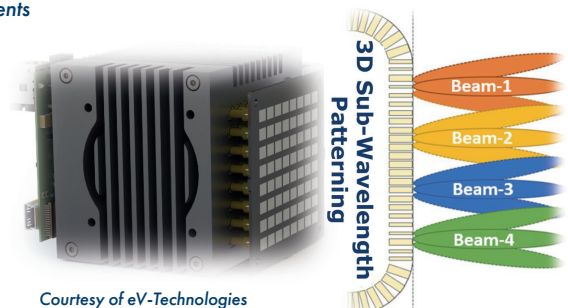
LNA/VGA	Freq (GHz)	Gain (dB)	NF (dB)	OP1dB (dBm)
CHA2080-98F	71-86	22	3.5	10
MPA	Freq (GHz)	Gain (dB)	IP3 (dBm)	OP1dB (dBm)
CHA3080-98F	71-76	16	25	19
CHA3090-98F	81-86	13	23	17
Mixer	Freq (GHz)	Freq LO (GHz)	Conv gain (dB)	IP1dB (dBm)
CHM1080-98F	71-86	34.5-44	-11	10
CHR1080a98F	71-86	34.5-44	8	-10

BUILDING BLOCKS FOR W-BAND

LNA	Freq (GHz)	Gain (dB)	NF (dB)	OP1dB (dBm)
CHA1008-99F	80-105	17	6.5	5

Additional building blocks on www.ums-rf.com

UMS Front-Ends (FE) add 20x to 40x linear power to pure Silicon BeamFormer MIMO antennas helping reduce their size from 512 to 64 elements



Courtesy of eV-Technologies

