MMIC Chips

GaAs devices and MMIC products

METDA offers a broad range of GaAs Devices and MMIC products widely served in Communication and Radar markets, sets of transmitting and receiving chips are provided in full band range. Customized products can be offered according to specific request.

1. GaAs MMIC Products

1.1 Low Noise Amplifiers

1.2 Power Amplifiers

1.3 Digital Phase Shifter

1.4 Digital Delay line chip

1.5 Digital Attenuators

1.6 Equalizer IC

1.7 VCO

1.8 Multi-functional chip

1.9 Switches

1.10 Mixers

1.11 Frequency Multiplier/Divider chip

1.12 Limiters

1.13 Power Bias Circuit chip

1.14 Power Combiners/Splitters

1.15 Power Detector chip

1.16 Directional Coupler Chip

肯耐國際股份有限公司

10627 台北市大安區忠孝東路四段 148 號 12 樓之 1 Add: 12F-1., No. 148, Sec. 4, Zhongxiao E. Rd., Taipei 10627, Taiwan Tel: (886-2) 6617-6112 Fax: (886-2) 8771-8345
www.kennine.com

1.Microwave MMIC Products

1.1 Low Noise Amplifier

	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	NF (dB)	VSWRin	VSWRout	P-1(dBm)	(V/mA)
NC1054C-0612	0.6-1.2	29.5*	±0.5	1.5*	1.9*	1.3*	10*	5/48
NC1074C-0835	0.8-3.5	28*	±0.7*	1.5*	1.8*	1.3*	12*	5/55
NC1031C-108	1-8	19*	±1.2*	≤1.9	1.8*	1.8*	10*	5/90
NC1061C-108	1-8	26*	±0.5*	≤1.8	1.8	1.5	10*	5/85
NC1084C-109	1-9	21*	±0.5*	≤1.8	2.0*	1.5*	14*	5/110
NC1067C-1225	1.2-2.5	18*	±0.5*	1.4	1.8	1.8*	≥9	5/45
NC1007C-2224A	2-2.4	≥28.5	±0.5*	1.05*	≤1.5	≤1.6	10	5/50
NC1052C-225	2-2.5	≥23.5	±0.4	≤1.4	≤1.8	≤1.6	10*	5/50
NC1064C-206	2-6	13*	±1*	1.5*	2.0*	1.7*	16*	5/70
NC1033C-206A	2-6	≥24	±2* (+slope)	1.5*	≤1.8	≤1.8	16*	5/80
NC1021C-206	2-6	≥26	±0.75*	≤1.6	≤1.6	≤1.8	13*	5/80
NC1026C-218	2-18	≥11	±1.25*	3.5*	≤2.0	≤1.7	10*	9/70
NC1023C-2328	2.3-2.8	≥33	±0.5*	≤1.2	≤1.3	≤1.5	11*	5/50
NC1022C-2330	2.3-3	≥22	±0.5*	≤1.25	≤1.9	≤1.8	3*	5/30
NC1009C-2330	2.3-3	≥35	±1*	≤1.35	≤1.3	≤2.0	5*	5/30
NC1062C-2540	2.5-4	≥26	±0.3	≤1.5	≤1.8	≤1.5	14*	5/60
NC1045C-2545	2.5-4.5	≥24	±1.0* (+slope)	1.3*	1.5*	1.5*	10*	5/45
NC1068C-2638	2.6-3.8	24*	±0.3*	1.05*	1.4*	1.3*	11*	5/42
NC1053C-3843	3.8-4.3	≥32	±0.2	≤1.4	1.5*	1.3*	17*	5/105

	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	NF (dB)	VSWRin	VSWRout	P-1(dBm)	(V/mA)
NC1046C-506A	4-7	14*	±0.2*	1.6*	1.6*	1.6*	10*	5/35
NC1057C-506A	4-7	25*	±0.5*	0.9*	1.4*	1.2*	9*	5/55
NC1034C-408	4-8	25*	±0.2*	1.4*	≤1.6	≤2.0	13*	5/60
NC1080C-506(M)	5-6	≥13	±0.1*	≤1.5	≤1.6	≤2.0	17*	5/60
NC1047C-506A	5-6	21*	±0.3*	≤1.0	1.5*	1.3*	≥11	5/65
NC1048C-506	5-6	30*	±0.5*	≤1.2	1.5*	1.5*	≥12	5/75
NC1058C-506	5-6	40*	±0.6*	≤1.2	1.5*	1.5*	≥0	4/50
NC1049C-506	5-6	40*	±0.5*	≤1.2	1.5*	1.5*	≥10	5/95
NC1086C-507	5-7	25*	±0.9*	1.0*	1.5*	1.5*	12*	5/55
NC1002C-910	6-11	≥24	±0.25*	1.0*	1.3*	1.3*	10*	5/40
NC1069C-612(M)	6-12	9*	±0.7*(+slope)	≤3.0	≤1.8	≤1.8	13*	5/40
NC1019C-618	6-18	≥16	±0.6*	≤2.9	≤1.9	≤1.7	≥5	5/30
NC1035C-519(M)	6-18	20*	±0.5*	2.3*	≤2.0	≤2.0	8*	5/50
NC1041C-618	6-18	≥22	±0.4*	2.0*	≤2.0	≤2.0	≥11	5/80
NC1036C-713(M)	7-13	20*	±0.6* (+slope)	≤1.5	≤1.7	≤1.5	9.5*	5/40
NC1082C-713	7-13	22*	±0.6*	1.8*	1.6*	1.7*	17*	5/95
NC1037C-713	7-13	24.5*	±1.0* (+slope)	≤1.6	≤1.5	≤1.5	11.5*	5/60
NC1081C-713	7-13	28*	±0.75*(+slope)	1.4*	1.5*	1.6*	3*	3~5/33
NC1079C-720	7-20	13*	±1.5*(+slope)	3*	1.5*	2.0*	15*	5/90

NC1001C-812(S)	8-12	≥20	±0.25*	1.2*	≤1.5	≤1.5	8*	5/40
NC1072C-812	8-12	27*	±0.7*	1.8*	1.5*	1.5*	18*	5/150
NC1040C-820	8-20	20*	±2.0* (+slope)	2.2*	≤2.0	≤2.0	≥10	5/55
NC1075C-1015	10-15	28*	±0.5*	1.7*	1.6*	1.6*	11*	5/50
NC1083C-1118	11-18	25*	±1*(+slope)	1.8*	1.7*	1.4*	14*	5/60
NC1060C-1218	12-18	29*	±0.5*(+slope)	≤1.8	1.6*	1.3*	10*	5/65
NC1089C-1418	14-18	19*	±0.4*	1.8*	1.3*	1.5*	10*	5/55
NC1088C-1418	14-18	27*	±0.9*(+slope)	1.6*	1.3*	1.5*	11*	5/60
NC1027C-1622	16.5-22.5	≥20	±2*	2.5*	≤2.0	≤1.7	8*	5/50
NC1077C-1824	18-24	23*	±1*	1.9*	1.3*	1.5*	13*	5/50
NC1076C-1923	19-23	25*	±0.5*	1.9*	1.3*	2.1*	14*	5/50
NC1028C-2030	20-30	≥24	±2*	2.5*	1.8*	2.0*	10*	5/55
NC1063C-2640	26-40	23*	±1.5*(+slope)	3.0*	2.0*	2.0*	8*	3/55
NC1085C-2832	28-32	19*	±0.5*	2.8*	1.5*	2.0*	10*	5/70
NC1066C-3040	30-40	≥23	±0.75*(+slope)	2.5*	1.9*	2.0*	8*	5/65
NC1070C-3438	32-38	23*	±0.2*	2.3*	1.8*	1.8*	8*	5/65
NC1071C-3337	33-37	23*	±0.2*	2.3*	2*	1.5*	8*	5/65

1.2 Power Amplifier

	Frequency (GHz)	Psat (dBm)	P-1 (dBm)	Gain (dB)	Gain Flatness (dB)	P.A.E (%)	VSWRin	Current (mA)	Voltage (V)
NC11133C-0020	DC-20	-	22*	15	±1.5*	-	1.5*	180	8
NC11134C-0020	DC-20	-	17*	14	±1.5*	-	1.2*	85	8
NC11123C-0035	DC-3.5	17*	15.7*	13.6*	-	-	-	53	5
NC1170C-1216	1-1.6	≥29	28*	≥27	±0.5	≥30	1.5*	320	8
NC1171C-1216	1-1.6	≥32	31*	≥25	±0.5	≥35	1.7*	720	8
NC11127C-1319	1.3-1.9	≥23	21*	≥17	±0.5*	≥30	2.0*	80	8
NC11129C-1319	1.3-1.9	≥24	≥22	≥9	±0.5*	≥30	1.8*	100	8
NC1121C-203M	2-3	≥28.5	≥28	15*	±0.5*	-	2.5*	300	5~8

	Frequency (GHz)	Psat (dBm)	P-1 (dBm)	Gain (dB)	Gain Flatness (dB)	P.A.E (%)	VSWRin	Current (mA)	Voltage (V)
NC1106C-218	2-18	11*	10*	6*	±0.7*	-	2.0*	40	5~8
NC11135C-0220	2-20	-	15*	14	±1.5*	-	1.8*	85	5
NC11137C-2227	2.2-2.7	24	22	17	±0.5	-	2.0	100	8
NC11136C-2227	2.2-2.7	26	24	10	±0.5	-	2.0	100	8
NC11131C-2127	2.1-2.7	≥33	31*	29	±0.5	≥30	2.0	800	8
NC11132C-2127	2.1-2.7	≥34	33*	≥23	±0.5*	≥30	2.0*	1000	8
NC1164C-2742	2.7-4.2	≥34.5	≥33	≥25	±0.5*	-	≤1.8	1000	8
NC1157C-2844	2.8-4.4	≥37	-	≥19	±0.35	≥30	≤1.7	2000	8~9
NC11109C-2941	2.9-4.1	-	≥25	≥19	±0.5	-	≤1.8	170	8
NC1128C-3045	3.0-4.5	-	21	≥21	±1.5* (+slope)	-	≤2.2	160	5~8
NC1174C-3846	3.8-4.6	≥41.5	-	≥22	±0.3*	≥33	≤2.0		8
NC1163C-408	4-8	33*	-	15*	±1.5	30*	2*	850	8
NC11114C-4854	4.8-5.4	≥26	-	≥23	±0.5	-	1.5*	200	8
NC1104C-5258(M)	5-6	21*	19*	19.5*	±0.1*	-	1.4*	70	8
NC11105C-5258	5-6	22*	20*	21*	±0.2*	-	1.5*	70	8
NC11125C-506	5-6	25*	23*	20*	±0.2*	-	1.5*	110	8
NC11152C-506(M)	5-6	28*	26*	21*	±0.2*	-	1.8*	150	8
NC1194C-506	5-6	≥30	-	22.5*	±0.5*	-	1.7*	550	8
NC1187C-506	5-6	≥32.5	31*	22.5*	±0.5*	-	2*	650	8

NC11108C-506(M)	5-6	37*	-	≥27	≤±0.3	≥40	≤1.5	1700	8
NC11142C-520	5-20	20*	20*	22*	±1.5*	-	1.5*	130	5
NC11117C-506	5.2-5.9	≥42	40	23*	±0.3	≥34	≤2.0	3800	8.5
NC11113C-506	5.2-6	≥28	-	≥25	±0.5	-	1.5*	270	8
NC1113C-613	6-13	10.5*	9.5*	≥8.5	±0.75*	-	≤2.0	35	5~8
NC1178C-618	6-18	22	21	12	±0.75*	-	≤2.2	100	7
NC11141C-618	6-18	22.5*	20*	15.5*	±1.5*	-	1.5*	100	5
NC11128C-618	6-18	35*	-	19*	-	25*	1.8*	1200	8
NC11120C-618	6-18	37*	-	16*	-	18*	≤1.8	-	8
NC11150C-6585	6.5-8.5	30.5	-	≥25	±1	-	≤1.7	400	8
NC1109C-6510A	6.5-10	31*	29*	≥15	±1*	-	2.0*	430	8
NC11154C-6785	6.7-8.5	40*	8*	≥13	≤±0.5*	35*	2.5*	5000	8
NC11153C-7785(M)	7.7-8.5	36*	-	≥26	≤±0.4*	35*	2.0*	1800	8
NC1115C-810	7.7-10.7	≥24.5	24.5*	15*	±2*	-	1.8*	250	8
NC11146C-812	8-12	17*	15*	17*	±0.5*	-	2.0*	60	8
NC11121C-812	8-12	23*	21*	10*	±0.8*	-	1.4*	70	8
NC1129C-812	8-12	23	21	20*	±1*	-	1.5*	80	8
NC1144C-812	8-12	≥26	≥24	≥27	±0.75	≥30	2.0*	200	8
NC11126C-812	8-12	24*	22*	23*	±0.9*	-	1.5*	130	8
NC1183C-812	8-12	≥30	-	20*	±1	≥26	2.5	600	8

NC1126C-812	8-12	≥33	-	20*	±0.5	≥30	1.8*	600	8
NC1168C-812	8-12	41*	-	20*	±0.5	35*	2.0*	3000	8
NC1169C-8511	8.5-10.5	≥41	40*	≥22	±0.5*	≥35	≤2.0	2400	8
NC1134C-910	9-10	≥27	-	≥27	±0.3	≥20	≤1.7	330	8
NC11157C-1112	11-12	35*	-	≥25	±0.2*	40*	2.0*	1000	8
NC11122C-1116	11-16	27*	25*	17*	±1.5*	-	1.5*	170	8
NC1161C-1112	11.9-12.3	≥40	-	≥23	±0.3	30*	≤2.0	2400	8
NC11148C-1215	12-15	34.5*	-	19.5*	±0.5*	32*	2.5*	1100	8

	Frequency (GHz)	Psat (dBm)	P-1 (dBm)	Gain (dB)	Gain Flatness (dB)	P.A.E (%)	VSWRin	Current (mA)	Voltage (V)
NC11147C-1230	12-30	18*	18*	15.5*	±1.5*	-	1.6*	118	5
NC11140C-1216	12.2-16	≥37	-	20*	±0.7*	≥27	2.5*	2300	8
NC11143C-1317	13-17	24*	22*	20*	±1.8*	-	1.5*	130	8
NC11102C-1315	13.5-14.5	32.8*	-	13*	±0.3	30*	2.5*	720	8
NC1189C-1318	13-18	29*	-	≥19	±0.5	30*	2.5*	320	8
NC11130C-1415	14-15	37*	-	19*	±0.2*	35*	2.5*	1800	8
NC11124C-1417	14-17	34*	-	20*	±0.5*	25*	2.5*	1400	8
NC1162C-1417	14-17	40	-	≥18	±0.75	≥20	≤2.3	4000	8.5
NC1118C-1518	14.5-18	31*	-	22*	±1.0	25*	2.0*	700	8
NC1175C-1518	15-17.6	≥41	-	≥17	±0.3	≥25	2.0*	3500	8.5
NC1195C-1517	15-18	30*	-	18*	±0.5	-	2.0*	550	8
NC1140C-1418	15-19	25	23	19	±1.0	-	1.8	180	8
NC11115C-1518	15-17.6	≥33	-	≥19	±0.5*	28*	25*	1000	8
NC1119C-1618	16-18	≥22	≥19	22*	±0.5	-	≤2.0	240	5
NC1176C-1618	16.5-17.5	41.6*	-	≥16	±0.3	≥25	2.0*	4000	8.5
NC1152C-1617	16.6-17.6	≥36	-	≥17	±1.25	≥17	2.0*	1700	8~9
NC11156C-1921	19-21	≥27.5	-	≥29	±0.5*	≥26	-	250	8
NC11111C-1927	19-27	≥30	-	≥16	±0.75	≥22	≤2.5	700	6
NC11112C-2022	20-22	≥37	≥36	≥21	±0.5	≥20	≤2.5	3400	6

NC11116C-2124	21-24.5	≥36	-	≥19	±0.75	≥17	≤2.5	4000	6
NC11118C-2224	22-24	≥37	-	≥19	±0.5	≥20	≤2.5	4000	6
NC11151C-2227	22-27	-	≥32	≥18	±0.5	≥30	≤2.5	800	6
NC1123C-2440	24-40	≥27	-	≥14	±1	≥12	≤2.5	1000	5
NC11155C-2528	25-28	-	≥25	≥16	≤±0.5	≥27	≤2.5	200	6
NC11119C-2631	26-31	36*	-	16*	≤±0.75	22*	≤2.5	3000	6
NC11144C-3040	30-40	-	22*	20*	±1.5*	-	1.7*	240	6
NC1198C-3238	32.5-38	≥24	-	≥26	-	30*	-	200	5
NC11145C-3337	33-37	≥27	-	≥16	-	≥20	-	100	5.5
NC1188C-3436	34-36	≥30	-	≥16	-	≥28	-	600	6~7
NC11107C-3436	34-36	≥33	-	≥15	-	≥20	-	900	6~7
NC1199C-3436	34-36	35*	-	19*	±1.0*	15*	2.5*	3000	6~7

1.3 Digital Phase Shifter

	Frequency (GHz)	Bits	Insert Loss (dB)	RMS(°)	VSWRin	VSWRout	IL Variation （dB）	Control Voltage (V)
NC1220C-112	1-1.2	6	4.8*	1*	1.3*	1.4*	±0.15*	0/-5
NC1254C-112	1-1.2	8	6*	1*	1.3*	1.5*	±0.3 *	0/-5
NC1252C-1214	1.2-1.4	6	4.8*	1*	1.4*	1.4*	±0.2*	0/-5
NC1213C-1518	1.5-1.8	8	6*	1*	1.5*	1.5*	±0.4*	0/-5
NC1255C-2023	2-2.3	2	≤3	≤1.5	≤1.4	≤1.4	±0.3	0/-5
NC1224C-225A	2-2.5	6	≤5.5	≤2.5	≤1.7	≤1.7	±0.5	0/-5
NC1217C-206	2-6	5	≤11	8*	≤2.5	≤2.3	±1.0*	0/-5
NC1215C-2735	2.7-3.5	6	≤5.8	≤2.5	≤1.7	≤1.7	±0.4	0/-5
NC1232C-3134	3.1-3.4	6	≤5.6	≤1.5	≤1.5	≤1.4	±0.3	0/-5
NC1233C-3840	3.8-4	6	≤5.6	≤0.9	≤1.4	≤1.3	±0.2	0/-5
NC1225C-3845	3.8-4.5	6	≤6.0	≤1.1	≤1.5	≤1.4	±0.4	0/-5
NC1238C-506	5-6	5	≤5.8	≤1.5	≤1.3	≤1.4	±0.2*	0/-5
NC1235C-506A	5-6	6	≤6.3	≤2.0	≤1.4	≤1.5	±0.35	0/-5

	Frequency (GHz)	Bits	Insert Loss (dB)	RMS(°)	VSWRin	VSWRout	IL Variation （dB）	Control Voltage (V)
NC1230C-618	6-18	1	≤2.8	5.0*	≤1.7	≤1.9	±0.75	0/-5
NC1229C-618	6-18	4	≤5.5	≤2.5	≤1.7	≤1.8	±0.5	0/-5
NC1210C-618	6-18	6	≤12	≤5	≤2.2	≤2.2	±1.0*	0/-5
NC1270C-6585	6.5-8.5	6	7.3	3*	1.7	1.7	±0.8	0/-5
NC1245C-709	7-9	5	≤8.5	1.5*	1.6*	1.7*	±0.6	0/-5
NC1247C-812	8-12	6	8.0*	≤3.5	1.4*	1.6*	±0.5*	0/-5
NC1265C-812PD	8-12	6	9*	2.5*	1.5*	1.5*	±0.7*	TTL
NC1267C-8510	8.5-10	5	7.3	1.6	1.3	1.5	±0.4	0/-5
NC1259C-8510	8.5-10.5	6	7.5*	1.5*	1.3*	1.5*	±0.35*	0/-5
NC1231C-1215	12-15	6	10*	3*	1.5*	1.5*	±0.5	0/-5
NC1269C-1418	14-18	1	1.8	3	1.3	1.3	-	0/-5
NC1271C-1418	14-18	6	8*	4*	2.0	2.0	±0.75*	0/-5
NC1237C-1518	15-18	5	10*	3*	1.5*	1.5*	±0.4	0/-5
NC1228C-2224	22-24	5	≤13	7*	≤2.0	≤2.0	±1	0/-5
NC1227C-3138	31-38	1	≤2.8	-	≤2.5	≤1.7	-	0/-5
NC1253C-3436	34-36	5	8.6	3	2	2	±0.5	0/-5

1.4 Digital Delay line Chip

	Frequency (GHz)	Bits (bit)	Insert Loss (dB)	VSWRin	VSWRout	Delay Range(ps)
NC1906C-218	2-18	6	≤22	≤2.5	≤3.0	0-315
NC1902C-305	3-5	8	≤18	1.5*	1.5*	0-637.5
NC1904C-812	8-12	3	≤13	1.6*	1.6*	100-700
NC1905C-812	8-12	1	≤6	≤1.6	≤1.6	0/400
NC1907C-910	9-10	6	≤7	≤1.6	≤1.6	0-102.5

1.5 Digital / Electrically Controlled / Discrete Attenuators

Ⅰ) Digital Attenuators

	Frequency (GHz)	Bits	Insert Loss (dB)	Step (dB)	Attenuation Range (dB)	Additional Phase (°)	VSWRin	VSWRout	Control voltage (V)
NC1349C-109	DC-9	1	≤1.0	-	0/25	±45	≤1.5	≤1.5	0/-5
NC1347C-109	DC-9	1	2.0*	-	0/32	±45	≤1.6	≤1.6	0/-5
NC1362C-112	DC-12	1	1*	-	0/20	±30	≤1.5	≤1.5	0/-5
NC1358C-112	DC-12	1	1.2*	-	0/40	±55	≤1.5	≤1.5	0/-5
NC1322C-118	DC-18	1	≤1.6	-	0/16	±7	≤1.3	≤1.3	0/-5
NC1323C-118	DC-18	1	≤1.5	-	0/20	±35	≤1.2	≤1.2	0/-5
NC1348C-118	DC-18	1	≤2.0	-	0/32	±60	≤1.6	≤1.6	0/-5
NC1352C-118	1-18	1	≤0.7	-	0/10	±20	≤1.3	≤1.3	0/-5
NC1308C-506	2-9	1	0.6*	-	0/22	±45	1.25*	1.25*	0/-5
NC1359-506	5-6	1	≤0.7	-	0/16	±1.5	≤1.5	≤1.5	0/-5
NC1364C-506	5-6	1	≤0.9	-	0/32	±5.5	≤1.5	≤1.5	0/-5
NC1351C-812	8-12	1	1.0*		0/32*	±20	1.5*	1.5*	0/-5
NC1361C-1517	15-17	1	≤3	-	0/32	±1.5	≤1.5	≤1.5	0/-5
NC1312C-108	DC-8	3	≤1.0	0.8	0.8-5.6	±4	≤1.35	≤1.35	0/-5
NC1363C-112	DC-12	3	≤3.2	10	10-70	-	≤1.8	≤1.8	0/-5
NC1333C-108	0.5-8.5	3	≤1.8	3	3-21	±5	≤1.4	≤1.4	0/-5
NC1325C-118	0.5-18	3	≤2.8	5	5-35	-	≤1.6	≤1.4	0/-5

	Frequency (GHz)	Bits	Insert Loss (dB)	Step (dB)	Attenuation Range (dB)	Additional Phase (°)	VSWRin	VSWRout	Control voltage (V)
NC1341C-118	0.5-18	3	≤3.5	5	5-35	±5	≤1.5	≤1.6	0/-5
NC1310C-110	DC-10	4	1*	0.3	0.3-4.5	±3	≤1.5	≤1.5	0/-5
NC1326C-118	0.5-18	4	≤1.6	0.25	0.25-3.75	±2.5	≤1.4	≤1.6	0/-5
NC1342C-812	8-12	4	≤2.8	2	2-30	±25	≤1.5	≤1.3	0/-5
NC1380C-2540	25-40	4	≤3	0.5	0.5-7.5	±6	≤1.8	≤1.7	0/-5
NC1367C-123	DC-23	5	≤3.5	0.25	0.25-7.75	±8	≤1.6	≤1.6	0/-5
NC1314C-108	DC-8	5	≤3.0	1	1-31	±15	≤1.5	≤1.5	0/-5
NC1307C-618	0.5-18	5	3.3*	0.5	0.5-15.5	±3	≤1.6	≤1.6	0/-5
NC1313C-506	1-10	5	≤1.7	0.5	0.5-15.5	±1.5	≤1.5	≤1.5	0/-5
NC1305C-910	9-10	5	2.2*	0.5	0.5-15.5	±3	≤1.7	≤1.8	0/-5
NC1374C-1830	18-30	5	≤3	0.5	0.5-15.5	±10	≤2.0	≤2.0	0/-5
NC1376C-2428	24-28	5	≤3	0.5	0.5-15.5	±5	≤1.9	≤1.8	0/-5
NC1377C-2540	25-50	5	≤3.5	0.25	0.25-7.75	±6	≤1.8	≤1.7	0/-5
NC1373C-2632	26-32	5	≤3	0.5	0.5-15.5	±5	≤1.8	≤1.8	0/-5
NC1378C-2640	26-40	5	≤3.5	0.5	0.5-15.5	±10	≤1.8	≤1.8	0/-5
NC1365C-3436	34-36	5	≤6	6	1-31	-	≤2.2	≤2.2	0/-5
NC1344C-3436	34-36	5	≤4.5	0.5	0.5-15.5	±16	≤2.2	≤2.0	0/-5
NC1315C-108A	DC-8	6	≤3.2	0.5	0.5-31.5	±8	≤1.7	≤1.7	0/-5

NC1302C-108(K)	DC-8	6	≤4.0	-	1-51	-	≤1.7	≤1.7	0/-5
NC1320C-118	0.5-18	6	≤4.5	0.5	0.5-31.5	-	≤1.4	≤1.4	0/-5
NC1324C-618	0.5-18	6	≤5.9	0.5	0.5-31.5	±5.5	≤1.5	≤1.5	0/-5
NC1321C-118	0.5-18	6	≤6.1	1	1-63	-	≤1.4	≤1.4	0/-5
NC1346C-812	8-12	6	≤4.1	0.5	0.5-31.5	±4	≤1.6	≤1.6	0/-5
NC1370C-1218	12-18	6	≤4.5	0.5	0.5-31.5	±8	≤1.6	≤1.7	0/-5
NC1375C-1923	19-23	6	≤3.5	0.5	0.5-31.5	±10	≤2.0	≤2.0	0/-5
NC1379C-3036	30-36	6	≤4.5	0.5	0.5-31.5	±15	≤1.9	≤1.7	0/-5
NC1369C-218	2-18	7	≤4.5	0.125	0.125-15.875	-	≤1.7	≤1.7	0/-5

Ⅱ) Electrically Controlled Attenuators

	Frequency (GHz)	Insert Loss (dB)	Attenuation Range (dB)	Additional Phase (°)	VSWRin	VSWRout	Control voltage (V)
NC1372C-203	2-3	1*	0-30	±15	1.3*	2.5*	0～2

Ⅲ) Discrete Attenuators

	Frequency (GHz)	Attenuation (dB)	VSWRin	VSWRout
NC1338C-120(A/B/C/D/E/F/G)	DC-20	11/10/9/6/3/2/0	≤1.3	≤1.3
NC1368C-150 (A/B/C/D/E/F/G/H/K/L/M)	DC-50	0/0.2/0.5/1/2/3 /5/6/9/10/11	≤1.6	≤1.6
NC1388C-167 (A/B/C/D/E/F/G/H/K/L/M/N/P/Q/R)	DC-67	0/0.5/1/2/3/4/5/6/7 /8/9/10/11/15/20	≤1.6	≤1.6

1.6 Equalizer IC

	Frequency (GHz)	Insert Loss (dB)	Balance Range (dB)	VSWRin	VSWRout
NC1340C-206	0.5-8	0.8dB@8GHz	6dB	1.2	1.2
NC1332C-120	0.5-20	1.4@20GHz	14dB	1.2@20GHz	1.2@20GHz
NC1332C-120(A/B/C)	0.5-20	1.1/1.3/1.2	12dB/14dB/16dB	1.2*	1.2*
NC1381C-212A	2-12	0.4dB@12GHz	4dB	1.2*	1.2*

	Frequency (GHz)	Insert Loss (dB)	Balance Range (dB)	VSWRin	VSWRout
NC1382C-218A	2-18	0.8dB@18GHz	8dB	1.3*	1.3*
NC1345C-812	8-12	1.1@12GHz	3dB	1.3@12GHz	1.3@12GHz
NC1383C-1418	14-18	1.65dB@18GHz	5dB	1.4*	1.4*

1.7 VCO

	Frequency (GHz)	Tuning voltage (V)	Output Power (dBm)	SSB phase noise@10KHz(dBc)	Harmonic Suppression (dBc)	Tuning Sensitivity (MHz/V)	Power Dissipation (V/mA)
NC1405C-2629	2.6-2.9	0-12	6.5*	-86*	-7*	18*	3/41
NC1406C-2933	2.9-3.3	0-12	7.3*	-86*	-7*	18*	3/44
NC1407C-3336	3.3-3.6	0-12	8*	-85*	-8*	18*	3/45
NC1408C-3539	3.5-3.9	0-12	7.5*	-83*	-8*	18*	3/48
NC1409C-4045	4.0-4.5	0-8	4.2*	-78*	-8*	18*	3/42
NC1403C-408	4-8	0-14	5*	-70*	-14*	6*	5/56
NC1411C-4550	4.5-5.0	0-8	3*	-80*	-7*	18*	3/39
NC1412C-5056	5.0-5.6	0-8	5*	-78*	-14*	18*	3/40
NC1410C-510	5.0-10.0	0-16	4*	-75*	-14*	42*	5/52
NC1413C-5561	5.5-6.1	0-8	5*	-76*	-13*	18*	3/41
NC1414C-708	7.0-8.0	0-8	3*	-75*	-6*	18*	3/51
NC1404C-812	8-12.5	0-16	5.5*	-65*	-13*	16*	5/44

1.8 Multi-functional chip

Ⅰ) Digital Phase Shifter- Attenuation chip

	Frequency (GHz)	Insert Loss (dB)	Phase range (°)	Attenuation range (dB)	VSWRin	VSWRout	Control voltage (V)
NC1502C-3436	34-36	13.5*	11.25-348.75	0.5-15.5	2.0	2.0	0/-5

Ⅱ) Multi-functional Transceiver chip

	Frequency (GHz)	Rx Gain (dB)	Rx NF (dB)	Tx Gain (dB)	Tx Power (dBm)	Control voltage (V)
NC1515C-1518	15-18	≥24	3	28	25*	+4/-4
NC1514C-1923	19-23	≥25	3	≥25	24*	+4.5/-3
NC1504C-3337	33-37	≥25	4	≥25	20	+4/-5
NC1510C-3337	33-37	10*	8	10*	15*	+5
NC1511C-3337	33-37	≥21	4.2	30*	20*	+4/-4
NC1503C-3337	33-37	≥21	3	≥23	≥18	+4/-5

III) Multi-functional chip of Amplitude and Phase control

	Frequency (GHz)	Tx Gain (dB)	Rx Gain (dB)	VSWR in/out	Tx P-1 (dBm)	Bits	Phase Accuracy (°)	Bits	Atten Accruracy (dB)	Type	Control voltage (V)
NC1506C-506	5-6	13	13	1.6	21	5	3.5	-	-	Para	+5/-5
NC1509C-506	5-6	-9	-9	1.5	-	6	4	6	0.5	Seri	-5
NC1513C-7075	7.0-7.5	1.5	4	1.5	10	5	1.5	5	0.2	Para	+5/-5
NC1517C-812	8-12	6	5	≤1.8	12	6	≤3.5	6	1	Seri	+5/-5

1.9 Switches

Ⅰ) GaAs FET Switch Series（Negative voltage control）

	Type	Frequency (GHz)	Insert Loss (dB)	Isolation (dB)	VSWRon	VSWRoff	P-1(dBm)	Switching Time (ns)	Control voltage (V)
NC1620C-106	SPDT	DC-6	≤1.2	≥55	1.4*	1.4*	20	10	0/-5
NC1615C-112	SPST	DC-12	≤1.0	35*	≤1.4	≤1.8	23	10	0/-5
NC1603C-110	SPDT	DC-12	≤1.2	50@3GHz 43@10GHz	≤1.5	N/A	23	5	0/-5
NC1628C-112	SPDT	DC-12	≤1.0	≥35	≤1.4	N/A	23	5	0/-5
NC1604C-112	SP3T	DC-12	≤1.5	50@6GHz 40@12GHz	≤1.5	N/A	23	8	0/-5
NC1605C-112	SP3T	DC-12	≤1.8	50@6GHz 43@12GHz	1.5*	N/A	23	8	0/-5
NC1627C-118	SP3T	DC-18	≤3.4	≥40	≤1.5	N/A	23	8	0/-5
NC1601C-118	SPST	DC-18	≤2.0	60@10GHz 45@18GHz	≤1.5	≤1.5	23	10	0/-5
NC1602C-118	SPDT	DC-18	≤2.0	60@10GHz 45@18GHz	≤1.5	≤1.5	23	10	0/-5
NC1607C-118	SP3T	DC-18	≤1.5	50@10GHz 35@18GHz	1.4*	N/A	20	8	0/-5
NC1626C-118	SP3T	DC-18	2.5*	40*	≤2.0	≤2.0	20	8	0/-5
NC1619C-120	ECAL	DC-20	≤3.5	≥40	≤1.5	≤1.5	-	10	0/-5
NC1624C-120	SP4T	DC-20	≤2.3	≥25	≤1.8	N/A	23	10	0/-5
NC1625C-120	SP4T	DC-20	≤2.3	≥20	≤1.4	≤1.4	23	10	0/-5
NC1608C-140	SPST	DC-40	0.8*	25*	≤1.5	N/A	N/A	10	0/-5
NC1621C-140	ECAL	DC-40	≤5	≥30	2.0*	2.0*	-	10	0/-5
NC1629C-812	SPDT	8-12	≤2.6	≥29	≤1.5	N/A	N/A	10	0/-5
NC1610C-1830	SPDT	18-30	1.0@25GHz	30*	2.0*	N/A	N/A	10	0/-5
NC1611C-2030	SP3T	20-30	1.5@25GHz	30*	2.0*	N/A	N/A	10	0/-5
NC1616C-2540	SPDT	25-40	1.4*	27*	1.7*	N/A	N/A	10	0/-5

Ⅱ) GaAs FET Switch Series（Positive voltage control）

	Type	Frequency (GHz)	Insert Loss (dB)	Isolation (dB)	Return Loss(dB)	High Power (dBm)	Switching Time (ns)	Control voltage (V)
NC16511C-0006	SPDT	DC-6	≤0.5	≥28	≥20	+30	80	+5/0
NC16512C-0003	SPDT	DC-3	≤0.5	≥30	≥18	+30	100	+5/0
NC16514C-0003	SP3T	DC-3	≤0.5	≥27	≥15	+36	100	+5/0
NC16515C-0006	SP4T	DC-6	≤1.0	≥26	≥18	+36	100	+5/0
NC16521C-0006	DPDT	DC-6	≤1.0	≥22	≥18	+33	-	+5/0
NC16581C-102	2X2 Matrix	1-2	≤5.0	≥36	≥13	-	-	+5/0
NC16582C-103	4X2 Matrix	1-3	≤5.5	≥33	≥13	-	-	+5/0

Ⅲ) GaAs PIN Switch Series

	Type	Frequency (GHz)	Insert Loss (dB)	Isolation (dB)	VSWRon	VSWRoff	High Power (dBm)	Switching Time (ns)	Control voltage (V)
NC1663C-206	SPDT	2-6	≤0.7	≥50	≤1.4	N/A	+30(CW)	20	+5/-5
NC1669C-218	SPST	2-18	≤0.5	≥45	≤1.25	N/A	+33(CW)	20	+5/-5
NC1670C-218	SPDT	2-18	≤1.0	≥50	≤1.5	N/A	+30(CW)	20	+5/-5
NC1676C-409	SPDT	4-9	0.5*	70*	1.2*	N/A	+30(CW)	20	+5/-5
NC1667C-618	SPDT	6-18	0.6*	≥50	≤1.5	N/A	-	20	+5/-5
NC1668C-812	SPDT	8-12	≤0.6	50*	≤1.4	N/A	-	≤20	+5/-5
NC1679C-1220	SPDT	12-20	≤0.8	40	1.5	-	+33(CW)	20	±5
NC1666C-1540R	SPST	15-40	≤1.0	40*	≤1.6	N/A	-	20	+5/-5

NC1677C-1830(R)	SPDT	18-30	≤1.2	≥40	≤1.6	N/A	-	20	+5/-5
NC1680C-1827(R)	SPDT	18-27	≤2.0	≥40	≤2.0	≤2.5	-	20	±5
NC1671C-2040	SPST	20-40	≤1.0	≥35	≤1.4	N/A	+33(CW)	20	+5/-5
NC1672C-2432	SPDT	24-32	≤0.7	≥43	≤1.5	N/A	-	20	+5/-5
NC1678C-2540(R)	SPDT	25-40	≤1.2	≥45	≤1.7	N/A	+33(CW)	20	+5/-5
NC1674C-2838	SPDT	28-38	≤0.8	≥38	≤1.5	N/A	+34(CW)	20	+5/-5
NC1662C-3036	SPST	30-36	≤0.6	35*	≤1.5	N/A	-	-	+5/-5
NC1665C-3337R	DPDT	33-37	≤1.3	27*	≤1.4	N/A	-	-	+5/-5
NC1681C-3337R	SPDT	33-37	0.8	24	1.5	1.5	+33(CW)	20	-5/+10

R：Anti-logic circuits.

1.10 Mixer

Ⅰ) Passive Double-balanced Mixer chip

	Frequency RF&LO(GHz)	IF (GHz)	Frequency Conversion Insert Loss (dB)	LO-RF Isolation (dB)	LO-IF Isolation (dB)	RF-IF Isolation (dB)	Oscillator Power (dBm)
NC1707C-0717	0.7-1.7	DC-0.5	≤9.5	≥46	≥41	≥14	13*
NC1706C-1545	1.5-4.5	DC-1.5	≤8.5	≥36	≥31	≥15	13*
NC1702C-1537	1-4	DC-1	≤10	≥40	≥27	≥14	13*
NC1709C-185	1.8-5	DC-2	≤9	≥40	≥26	≥12	13*
NC1714C-1922	1.9-2.2	0.2	≤9	≥40	≥32	≥12	8*
NC1705C-265	2-6.5	DC-2.5	≤9	≥37	≥25	≥12	13*
NC1701C-2570	2.5-7	DC-2.5	≤8.5	≥30	≥23	≥13	13*
NC1708C-308	3-8	DC-3	≤8.5	≥34	≥23	≥12	13*
NC1704C-410	4-10	DC-4	≤9	≥32	≥21	≥14	13*
NC1719C-612	6-12	DC-5	≤9	≥33	≥24	≥11	13
NC1703C-7514	7-14	DC-3	≤9	≥28	≥25	≥18	13*
NC1710C-812	RF：8-12 LO：10-16	2-4	≤8.5	≥27	≥22	≥15	15
NC1717C-1020	10-20	DC-8	≤9.5	≥26	≥16	≥10	13
NC1733C-1318	13-28	DC-10	≤10	≥25	≥15	≥8	13
NC1734C-1530	15-30	DC-10	≤10	≥23	≥15	≥9	13
NC1718C-1850	18-50	DC-16	≤11	≥25	≥23	≥10	15

Ⅱ) I/Q Mixer chip

	Frequency RF&LO (GHz)	IF (GHz)	Frequency Conversion Insert Loss (dB)	Image Rejection (dB）	LO-RF Isolation (dB)	LO-IF Isolation (dB)	RF-IF Isolation (dB)	Oscillator Power (dBm)
NC1726C-203	2-3	DC-0.5	≤10	≥17	≥45	≥20	≥15	15
NC1721C-405	4-5.5	DC-0.5	≤9	≥20	≥40	≥20	≥15	15
NC1729C-812	8-12	DC-0.7	≤10	≥20	≥35	≥20	≥15	15

Ⅲ) Oscillator Driving Double-balanced Mixer chip

	Frequency RF&LO (GHz)	IF (GHz)	Frequency Conversion Insert Loss (dB)	LO-RF Isolation (dB)	LO-IF Isolation (dB)	RF-IF Isolation (dB)	Oscillator Power (dBm)	(V/mA)
NC1722C-1924	1.9-2.2	0.2	≤10	≥25	≥20	≥12	-3	5/21
NC1713C-206	2-6	DC-2.5	≤9	≥37	≥25	≥12	0	5/80
NC1725C-714	7-14	DC-4	≤10	≥12	≥12	≥17	0	5/90

Ⅳ) Multi-functional down-converter chip

	RF Frequency (GHz)	Oscillator Frequency (GHz)	IF (GHz)	Gain (dB)	Noise (dB)	Output 1dB Compression point (dBm)	Output IP3 (dBm)	LO-RF Isolation (dB)	Oscillator Power (dBm)	(V/mA)
NC1720C-2035	2.0-3.5	2.4-3.1	0.4-0.5	10	9	9	15.5	≥42	0	5/105
NC1738C-2125	2.1-2.5	2.3-2.8	0.25-0.3	12	≤10	≥16	≥21	≥36	0	5/108
NC1731C-518	3-6	3-6	DC-1.8	2	≤11	3.7	7.5	≥42	+3	5/59
NC1711C-3134	3.1-3.4	2.67-2.97	0.4-0.46	≥14	≤10	≥12	≥21	≥36	0	5/108
NC1723C-812	8-12	10-16	2-4	3	-	≥16	-	≥17	+3	5/156

Ⅴ) Multi-functional up-converter chip

	IF (GHz)	Oscillator Frequency (GHz)	RF Frequency (GHz)	Gain (dB)	Noise (dB)	Output 1dB Compression point (dBm)	Output IP3 (dBm)	LO-RF Isolation (dB)	Oscillator Power (dBm)	(V/mA)
NC1732C-0518	DC-1.8	3-6	3-6	5	≤11	7.5	17.5	≥18	+3	5/59
NC1712C-3134	0.4-0.46	2.67-2.97	3.1-3.4	≥15	≤7	≥10	≥23	≥5	0	5/120
NC1728C-2035	2.0-3.5	2.4-3.1	0.4-0.5	17	≤10	≥14	≥22	≥16	0	5/105

Note：All chips above can be supplied with packaged or module products. *：Typical Value

1.11 Frequency Multiplier/Divider chip

Ⅰ) Active Multiplier MMIC Series

	Input Signal Frequency (GHz)	Output Signal Frequency (GHz)	Output power (dBm)	F0 Insertion (dBc)	3F0 Insertion (dBc)	SSB Harmonic @100kHz (dBc/Hz)	(V/mA)
NC1771C-618	3-9	6-18	13*	30*	33*	-135	3.5/80
NC1780C-1424	7-12	14-24	14	22*	26*	-135	5.0/97
NC1779C-1830	9-15	18-30	14.5	24*	20*	-135	3.5/60
NC1781C-1925	9.5-12.5	19-25	12	23*	17*	-135	5.0/87
NC1778C-2736	13.5-18	27-36	18	35*	40*	-135	5.0/90
NC1782C-3244	16-22	32-44	15	23*	20*	-135	5.0/86

Ⅱ) Passive Multiplier MMIC Series

	Input Signal Frequency (GHz)	Output Signal Frequency (GHz)	Conversion Gain (dB)	F0 Insertion (dBc)	3F0 Insertion (dBc)	4F0 Insertion (dBc)	Input Power (dBm)
NC1772C-1024	1-2.4	2-4.8	-15*	45*	45*	45*	12-18
NC1773C-204	2-4	4-8	-15*	45*	45*	45*	12-18
NC1774C-306	3-6	6-12	-15*	50*	45*	45*	12-18
NC1775C-408	4-8	8-16	-15*	40*	40*	-	12-18
NC1776C-812	8-12	16-24	-15*	30*	-	-	12-18

Ⅲ) Divider MMIC Series

	Frequency (GHz)	Frequency Division Ratio	Operation Voltage (V)	Power Dissipation (mW)	Input Power (dBm)	Output Power@3GHz (dBm)
NC1752C-109	DC-9	2	+5	≤450	>-10	>-2.5
NC1753C-108	DC-8	4	+5	≤450	>-10	>-5.0
NC1754C-108	DC-8	8	+5	≤450	>-10	>-5.0

Note：All chips above can be supplied with packaged or module products. *：Typical Value

1.12 Limiter

	Frequency (GHz)	Insert Loss (dB)	VSWRin	VSWRout	Leakage Power (dBm)	Max Input Power (CW) (dBm)
NC1811C-108	1-8	0.35*	≤1.3	≤1.4	15*	40
NC1807C-206	2-6	≤0.5	≤1.5	≤1.5	15*	37
NC1803C-218	2-18	0.6*	≤2.0	≤2.0	15*	36
NC1805C-506	5-6	≤0.6	≤1.5	≤1.5	15*	40
NC1808C-618	6-18	≤0.5	1.4*	1.4*	15*	36
NC1810C-812	8-12	≤0.5	≤1.4	≤1.4	15*	40
NC1809C-812	8-12	≤0.7	≤1.4	≤1.4	16*	42
NC1815C-1418	14-18	≤0.9	≤1.5	≤1.5	15*	40
NC1812C-3436	34-36	1.0*	≤1.6	≤1.6	17*	33

1.13 Power Bias Circuit chip

	Frequency (GHz)	Insert Loss (dB)	VSWR	Isolation (dB)
NC1931C-620	6-20	≤0.3	≤1.5	≥40
NC1932C-620	6-20	≤0.4	≤1.5	≥30

1.14 Power Combiner/Splitter

Ⅰ) 90°Lange

	Frequency (GHz)	Insert Loss (dB)	Insert Loss flatness (dB)	VSWR	Amplitude unbalance (dB)	Phase unbalance (°)	Isolation (dB)
NC1951C-506	5-6	≤0.6	±0.1	≤1.3	±0.3	±2	—
NC1953C-812(M)	8-12	≤0.5	±0.1	≤1.4	±0.3	±1	≥20
NC1954C-618(M)	6-18	≤0.9	±0.35	≤1.5	±0.9	±2	≥18

Ⅱ) 0°Dual Power Combiners

	Frequency (GHz)	Insert Loss (dB)	Insert Loss Flatness (dB)	VSWR	Isolation (dB)
NC1961C-206	2-6	≤0.9	±0.2	≤1.5	≥17
NC1962C-208	2-8	≤1.1	±0.2	≤1.7	≥16
NC1963C-618	6-18	≤1.0	±0.2	≤1.6	≥17
NC1964C-1826	18-26	≤0.7	±0.2	≤1.6	≥17
NC1965C-2631	26-31	≤0.7	±0.2	≤1.6	≥17
NC1966C-2640	26-40	≤0.7	±0.2	≤1.6	≥17
NC1967C-3040	30-40	≤0.7	±0.2	≤1.6	≥17
NC1968C-3436	34-36	≤0.7	±0.2	≤1.6	≥17

1.15 Power Detector chip

	Frequency (GHz)	Insert Loss (dB)	VSWRin	VSWRout	Dymatic range (dB)	Voltage (V)
NC1981C-104	1-4	≤2	≤2.2	≤1.7	≥20	5
NC1982C-206	2-6	≤0.6	≤1.2	≤1.2	≥20	5

1.16 Directional Coupler chip

	Frequency (GHz)	Insert Loss (dB)	Degree of coupling (dB)	Degree of coupling Flatness (dB)	VSWR
NC1991C-206	2-6	≤0.6	15	≤3.5	≤1.2
NC1992C-206	2-6	≤0.4	20	≤3.5	≤1.2
NC1993C-618	6-18	≤0.7	15	≤3.5	≤1.2
NC1994C-618	6-18	≤0.6	20	≤3.5	≤1.3

Note：All chips above can be supplied with packaged or module products. *：Typical Value