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Microwave Millimeter Integrated Circuit (MMIC) Brochure



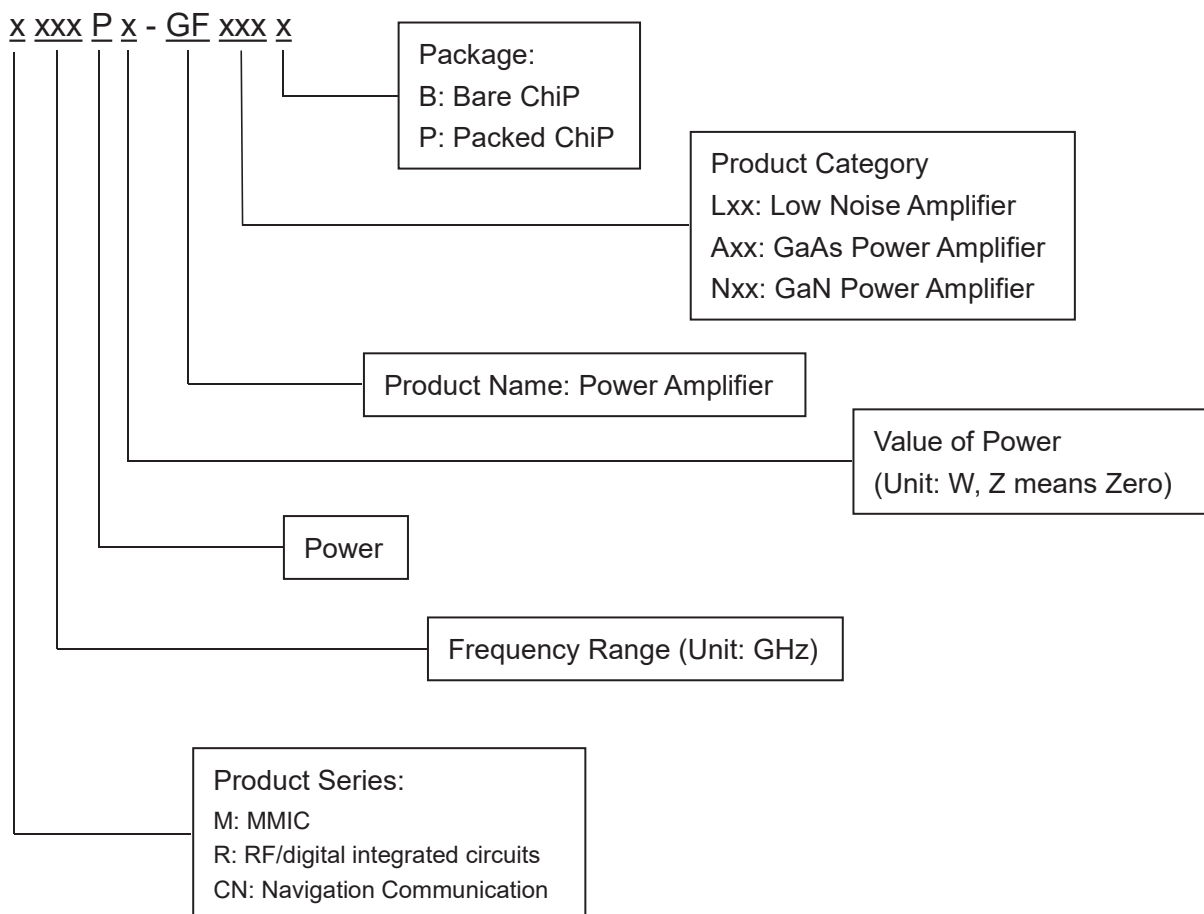
Company Profile

MMIC Department was founded in 2006, with high-tech independent research and development capabilities. It has more than 800 employees, including 550 R&D personnel, and its sales amount in 2023 was 1.2 billion yuan. We independently research and developed low noise amplifier, GaAs power amplifier, GaN power amplifier and navigation/communications amplifier, which can be widely used in radar, satellite, navigation, communication, detection, remote sensing and other field.

We can provide microwave/millimeter system solutions up to 100GHz, covering L-band to W-band, with a maximum frequency of 400GHz.

This brochure contains nearly 300 modules developed by our own company. Also, we can customize different kinds of ChiP according to your needs.

Part Numbering (Not for Navigation/Communications Amplifier)



Product List:

1、 Low Noise Amplifier

Module \ Item	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Noise Figure (dB)	Input Standing Wave	Output Standing Wave	P1dB (dBm)	Power Consumption (V/mA)	Size (mm×mm×mm)
MD2PZ-GFL27B	DC-2	22	±0.5	1.5	2	1.5	22	5/115	1.10×1.20×0.70
MD6PZ-GFL21B	DC-6	31	-	2.5	≤1.5	≤2	8	5/25	0.52×0.50×0.08
M13PZ-GFL20B	0.7-3	29	±0.75	1.6	1.6	1.4	18	5/65	2.12×1.55×0.07
M14PZ-GFL74B	0.8-3.5	28	±0.7	1.5	1.8	1.3	12	5/55	2.70×1.30×0.07
M13PZ-GFL25B	1-3	14	±0.5	2.2	1.5	1.5	20	5/65	1.45×1.15×0.07
M13PZ-GFL10B	1-3	15	±0.7	1.5	1.7	1.5	13	5/30	1.64×1.25×0.07
M18PZ-GFL11B	1-8	21	±0.5	1.8	1.5	1.8	14	5/80	2.40×1.20×0.07
M19PZ-GFL27B	1-9	16	±0.8	1.7	1.6	1.8	18	5/55	1.50×1.30×0.07
M112PZ-GFL16B	1-12	14.5	±1	1.6	1.6	1.3	16	5/35	2.60×1.40×0.07
M13PZ-GFL23B	1.2-2.5	22	±0.5	1.4	1.6	1.6	16	5/80	2.50×1.57×0.07
M22PZ-GFL30B	1.5-1.8	35	±0.5	0.6	1.5	1.5	12	5/35	2.00×1.30×0.70
M22PZ-GFL07B	2-2.4	≥28.5	±0.5	1.05	≤1.5	≤1.6	10	5/50	2.35×1.40×0.07
M24PZ-GFL25B	2-4	16	±0.5	2.2	1.5	1.5	18.5	5/45	1.55×1.55×0.07
M26PZ-GFL64B	2-6	13	±0.6	2	1.6	1.6	17	4/65, 5/65	1.75×1.40×0.07
M26PZ-GFL64BM	2-6	13	±0.6	2	1.6	1.6	17	4/65, 5/65	1.75×1.40×0.07
M26PZ-GFL33B	2-6	25	±1.5	1.5	1.5	1.5	16	5/75	2.15×1.20×0.07
M26PZ-GFL33BM	2-6	25	±1.5	1.5	1.5	1.5	16	5/75	2.15×1.20×0.07
M220PZ-GFL24B	2-20	17	±0.5	2.5	1.6	1.5	13	5/55	3.10×1.40×0.07
M24PZ-GFL20B	2.2-4	32	±0.75	1.2	1.6	1.4	20	5/90	2.10×1.25×0.07
M35PZ-GFL45B	2.5-4.5	≥24	±1	1.3	1.5	1.5	10	5/45	2.50×1.40×0.07
M37PZ-GFL18B	2.5-7	28	±0.2	1.1	1.5	1.5	7	5/20	2.35×1.30×0.07
M37PZ-GFL18BM	2.5-7	28	±0.2	1.1	1.5	1.5	7	5/20	2.35×1.30×0.07
M34PZ-GFL68B	2.6-3.8	24	±0.3	1.05	1.4	1.3	11	5/42	2.48×1.35×0.07
M48PZ-GFL14B	4-8	14	±0.5	1.8	1.6	1.6	14	5/60	1.30×1.05×0.07
M56PZ-GFL80B	5-6	≥13	±0.1	≤1.8	≤1.6	≤2.0	17	5/60	1.40×1.40×0.07
M56PZ-GFL80BM	5-6	≥13	±0.1	≤1.8	≤1.6	≤2.0	17	5/60	1.40×1.40×0.07
M56PZ-GFL47B	5-6	21	±0.3	≤1.0	1.5	1.3	≥11	5/55	2.70×1.30×0.07
M56PZ-GFL47BM	5-6	21	±0.3	≤1.0	1.5	1.3	≥11	5/55	2.70×1.30×0.07
M56PZ-GFL30B	5-6	≥14	±0.2	≤2	≤1.4	≤1.6	18.5	5/65, 8/65	1.40×1.40×0.07
M56PZ-GFL30BM	5-6	≥14	±0.2	≤2	≤1.4	≤1.6	18.5	5/65, 8/65	1.40×1.40×0.07
M56PZ-GFL16B	5.2-5.8	24	±0.4	1	1.4	1.4	10	5/40	2.30×1.20×0.07
M518PZ-GFL26B	5-18	20	±0.5	1.4	2	1.6	11	5/60	1.80×1.20×0.07
M518PZ-GFL26BM	5-18	20	±0.5	1.4	2	1.6	11	5/60	1.80×1.20×0.07
M519PZ-GFL26B	5-19	13	±0.3	2.5	1.8	1.8	10	5/50	1.80×1.20×0.07
M519PZ-GFL26BM	5-19	13	±0.3	2.5	1.8	1.8	10	5/50	1.80×1.20×0.07
M612PZ-GFL69B	6-12	9	±0.7	≤3	≤1.8	≤1.8	13	5/40	1.47×1.10×0.07
M612PZ-GFL69BM	6-12	9	±0.7	≤3	≤1.8	≤1.8	13	5/40	1.47×1.10×0.07
M612PZ-GFL78B	6-12	≥8	±0.7	≤3.5	≤2.1	≤1.9	11	5/30	1.47×1.10×0.07

1、Low Noise Amplifier

Module \ Item	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Noise Figure (dB)	Input Standing Wave	Output Standing Wave	P1dB (dBm)	Power Consumption (V/mA)	Size (mm×mm×mm)
M612PZ-GFL78BM	6-12	≥8	±0.7	≤3.5	≤2.1	≤1.9	11	5/30	1.47×1.10×0.07
M613PZ-GFL25B	6-13	20	±0.4	1.2	1.6	1.6	9	5/30	1.80×1.20×0.07
M613PZ-GFL25BM	6-13	20	±0.4	1.2	1.6	1.6	9	5/30	1.80×1.20×0.07
M618PZ-GFL29B	6-18	17	±0.5	2	2	2	14	5/75	1.70×1.10×0.07
M618PZ-GFL28B	6-18	18	±0.8	1.5	1.8	1.8	9	5/45	1.80×1.10×0.07
M713PZ-GFL18B	7-13	≥11	±0.5	2.8	1.6	1.6	21	5/100	1.85×1.10×0.07
M713PZ-GFL24B	7-13	15	±0.7	2.3	1.6	1.6	15	5/55, 8/55	1.70×1.30×0.07
M714PZ-GFL15B	7-14	≥7	±0.3	≤3.5	≤2.0	≤2.0	21	5/90	1.20×1.10×0.07
M714PZ-GFL15BM	7-14	≥7	±0.3	≤3.5	≤2.0	≤2.0	21	5/90	1.20×1.10×0.07
M812PZ-GFL22B	8-12	9	±0.2	2.5	1.2	1.5	10	5/20	1.30×1.10×0.07
M812PZ-GFL22BM	8-12	9	±0.2	2.5	1.2	1.5	10	5/20	1.30×1.10×0.07
M812PZ-GFL25B	8-12	14	±0.75	3.5	1.6	1.4	9	5/30	1.66×1.00×0.07
M812PZ-GFL25BM	8-12	14	±0.75	3.5	1.6	1.4	9	5/30	1.66×1.00×0.07
M812PZ-GFL19B	8-12	15.5	±0.5	1.7	1.5	1.3	11	3/50	1.30×1.00×0.07
M812PZ-GFL65B	8-12	17	±0.5	1.8	1.5	1.5	18	5/95	2.02×1.05×0.07
M812PZ-GFL65BM	8-12	17	±0.5	1.8	1.5	1.5	18	5/95	2.02×1.05×0.07
M812PZ-GFL16B	8-12	20.5	±0.3	1.3	1.4	1.2	16	5/55	2.00×1.20×0.07
M812PZ-GFL16BM	8-12	20.5	±0.3	1.3	1.4	1.2	16	5/55	2.00×1.20×0.07
M812PZ-GFL17B	8-12	22	±0.3	1.8	1.3	1.5	19	5/85	1.90×1.10×0.07
M812PZ-GFL15B	8-12	≥25	±0.6	≤2	≤1.5	≤1.8	20	5/90	2.15×1.05×0.07
M812PZ-GFL15BM	8-12	≥25	±0.6	≤2	≤1.5	≤1.8	20	5/90	2.15×1.05×0.07
M812PZ-GFL14B	8-12	27	±0.8	1.3	1.5	1.3	2	5/12, 3.3/12	2.70×1.30×0.07
M812PZ-GFL14BM	8-12	27	±0.8	1.3	1.5	1.3	2	5/12, 3.3/12	2.70×1.30×0.07
M813PZ-GFL20B	8-13	21	±0.5	1.8	1.5	1.5	16	5/55	1.75×1.10×0.07
M814PZ-GFL18B	8-14	28	±0.5	1.8	1.6	1.6	17	5/80	2.35×1.30×0.07
M820PZ-GFL21B	8-20	11	±1	3	1.8	1.8	12	5/70	1.70×1.10×0.07
M1017PZ-GFL16B	10-17	28	±1.2	1.5	1.3	1.5	2	5/15	2.35×1.10×0.07
M1017PZ-GFL16BM	10-17	28	±1.2	1.5	1.3	1.5	2	5/15	2.35×1.10×0.07
M1020PZ-GFL20B	10-20	14	±0.6	2.8	1.5	1.5	7	5/25	2.00×1.10×0.07
M1116PZ-GFL15B	11-16	≥20	±1	1.4	1.6	1.5	3	5/15	2.35×1.10×0.07
M1218PZ-GFL22B	12-18	14	±0.5	2.8	1.6	1.8	14	5/60	1.60×1.10×0.07
M1219PZ-GFL17B	12-19	26	±0.6	1.5	1.5	1.5	3	5/15	2.40×0.95×0.07
M1219PZ-GFL17BM	12-19	26	±0.6	1.5	1.5	1.5	3	5/15	2.40×0.95×0.07
M1418PZ-GFL23B	14-18	28	±0.9	1.3	1.8	1.6	10	5/55	2.25×1.05×0.07
M1727PZ-GFL19B	17-27	16	±1.5	3	1.8	1.8	16	5/60	2.00×1.30×0.07
M1825PZ-GFL16B	18-25	25	±0.4	1.8	1.5	1.5	-1	5/10	2.15×0.90×0.07
M1825PZ-GFL16BM	18-25	25	±0.4	1.8	1.5	1.5	-1	5/10	2.15×0.90×0.07
M1826PZ-GFL21B	18-26	22	±0.8	2.3	1.6	1.6	12	5/40	2.00×1.10×0.07

1. Low Noise Amplifier

Item Module	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Noise Figure (dB)	Input Standing Wave	Output Standing Wave	P1dB (dBm)	Power Consumption (V/mA)	Size (mm×mm×mm)
M1923PZ-GFL76B	19-23	23	±1	2	1.8	1.8	10	5/50	2.70×1.35×0.07
M1925PZ-GFL17B	19-25	26	±1	1.8	1.5	1.5	12	4/35, 5/35	2.20×1.10×0.07
M2226PZ-GFL12B	22-26	23	±1	2	1.8	1.8	10	5/48	2.70×1.35×0.07
M2232PZ-GFL17B	22-32	21	±0.5	2	1.8	1.5	1	5/12	1.85×0.80×0.07
M2232PZ-GFL17BM	22-32	21	±0.5	2	1.8	1.5	1	5/12	1.85×0.80×0.07
M2634PZ-GFL28B	26-34	17	±0.3	3.8	1.8	1.8	15	5/60	1.90×1.10×0.07
M2640PZ-GFL22B	26-40	16	±2	2.5	1.8	2	4	5/28	1.90×0.85×0.07
M2833PZ-GFL19B	28-33	≥13	±0.8	≤3.5	≤1.5	≤1.5	≥2	5/12	1.65×0.95×0.07
M2933PZ-GFL19B	29-33	≥14	±0.2	≤3.8	≤1.5	≤1.5	≥8	5/20	1.65×0.95×0.07
M3240PZ-GFL26B	32-40	21	±0.8	2.3	1.6	1.6	4	5/15	1.80×0.80×0.07
M3240PZ-GFL26BM	32-40	21	±0.8	2.3	1.6	1.6	4	5/15	1.80×0.80×0.07
M3240PZ-GFL24B	32-40	13	±1	5	2	2	14	5/50	1.53×0.80×0.07
M3337PZ-GFL21B	33-37	22	±0.7	2.3	≤2	≤2	10	5/50	1.70×0.80×0.07
M4046PZ-GFL21B	40-46	17	±0.7	2.5	2	2	≥0	5/30	1.95×0.80×0.07

2. GaAs Power Amplifier

Item Module	Frequency (GHz)	Psat (dBm)	P1dB (dBm)	Gain (dB)	Gain Flatness (dB)	Add-on Efficiency (%)	Input Standing Wave	Quiescent Current (mA)	Operating Voltage (V)	Size (mm×mm×mm)
MD3PZ-G FA15B	DC-3	24	23	14	-	40	1.5	110	5	0.98×0.98×0.10
M12PZ-G FA0CB	1-1.6	31	29	31	±0.8	≥30	1.7	440	8	2.80×1.65×0.10
M12PZ-G FA27B	1.3-1.9	≥23	21	≥17	±0.5	≥30	2	80	8	1.76×1.72×0.10
M12PZ-G FA29B	1.3-1.9	≥24	≥22	≥9	±0.5	≥30	1.8	100	8	1.60×2.30×0.10
M12PZ-G FA02B	1.4-1.7	-	15	35	±0.5	-	1.5	33	5	1.70×1.30×0.07
M22P2-G FA58B	1.9-2.4	33	-	28	-	45	1.6	460	8	2.30×1.80×0.10
M26PZ-G FA86B	1.9-6.1	30	29	22	±0.75	30	1.8	360	8	3.10×2.50×0.10
M23PZ-G FA1CB	2-3	≥28.5	≥28	15	±0.5	-	2.5	300	5~8	1.42×1.60×0.10
M26PZ-G FA12B	2-6	-	20	-	±0.5	-	1.5	90	5	1.43×1.17×0.07
M23PZ-G FA31B	2.1-2.7	≥33	31	29	±0.5	≥30	2	800	8	2.14×1.58×0.10

2.GaAs Power Amplifier

Item Module	Frequency (GHz)	Psat (dBm)	P1dB (dBm)	Gain (dB)	Gain Flatness (dB)	Add-on Efficiency (%)	Input Standing Wave	Quiescent Current (mA)	Operating Voltage (V)	Size (mm×mm×mm)
M23PZ-G FA32B	2.1-2.7	≥34	33	≥23	±0.5	≥30	2	1000	8	2.50×1.78×0.10
M23PZ-G FA37B	2.2-2.7	24	22	17	±0.5	-	2	100	8	1.62×1.70×0.10
M23PZ-G FA36B	2.2-2.7	26	24	12	±0.5	-	1.7	100	8	1.42×1.80×0.10
M23PZ-G FA38B	2.2-2.9	29	-	22	-	-	1.5	250	5~8	2.50×2.15×0.08
M24PZ-G FA67B	2.2-4.3	≥30	-	25	±1.5	35	1.6	450	8	2.50×2.30×0.10
M34PZ-G FA74B	2.7-3.5	21.5	19.5	13	±0.6	25	1.2	110	5	1.70×1.65× 0.08
M35PZ-G FA26B	3-5	28	-	25	-	30	1.6	380	9	2.60×1.90×0.10
M35PZ-G FA8CB	3-5.3	-	23	23	±0.6	-	≤2	180	5	1.50×1.75×0.10
M48PZ-G FA75B	4-8	23	21.5	18.5	±0.5	-	1.7	96	5	1.60×1.30×0.07
M56PZ-G FA4CB	5-6	≥30	-	22.5	±0.5	-	1.7	550	8	2.38×1.60×0.10
M56PZ-G FA7CB	5-6	≥32.5	31	22.5	±0.5	-	2	650	8	2.38×1.60×0.10
M56PZ-G FA65B	5-6	38	-	26	±0.5	37	1.5	2800	8	3.60×3.15×0.10
M56P10-G FA49B	5-6	40	-	25	±0.4	45	≤2.5	2300	8	3.88×2.85×0.10
M56P12-G FA42B	5-6	40.8	-	23	±0.4	40	2.5	3600	8	4.50×4.20×0.10
M56P16-G FA56B	5-6	42	-	24	±0.4	38	2	3800	8.5	4.35×4.08×0.10
M57PZ-G FA32B	5-7	28	-	20	±0.5	38	2	200	8/5	2.00×1.80×0.10
M520PZ- GFA42B	5-20	20	20	22	±1.5	-	1.5	130	5	1.60×1.20×0.10
M613PZ- GFA3CB	6-13	10.5	9.5	≥8.5	±0.75	-	≤2	35	5~8	1.50×1.50×0.10
M613PZ- GFA3CBM	6-13	-	8	9	±1	-	≤2	35	5~8	1.50×1.50×0.85

2.GaAs Power Amplifier

Item Module	Frequency (GHz)	Psat (dBm)	P1dB (dBm)	Gain (dB)	Gain Flatness (dB)	Add-on Efficiency (%)	Input Standing Wave	Quiescent Current (mA)	Operating Voltage (V)	Size (mm×mm×mm)
M618PZ-GFA55B	6-18	-	21	15.5	±0.5	-	1.8	105	5	1.07×1.07×0.07
M618PZ-GFA44B	6-18	-	21.5	16	±1.5	-	≤2.4	108	5	1.10×1.10×0.07
M618PZ-GFA90B	6-18	19	17	13	±1	-	1.5	70	5	1.08×1.10×0.07
M618PZ-GFA58B	6-18	≥34.5	-	≥18	≤±1	≥20	≤3.5	1100	8	4.30×5.75×0.10
M618PZ-GFA28B	6-18	35	-	19	-	25	1.8	1200	8	4.30×2.90×0.10
M618PZ-GFA78B	6-18	24	22	20	±1	-	1.8	135	5	1.35×1.10×0.07
M618PZ-GFA61B	6-18	-	11	8	±1	-	1.8	28	5	0.76×0.86×0.07
M79PZ-GFA50B	6.5-8.5	30.5	-	≥25	±1	-	≤1.7	400	8	3.20×2.30×0.10
M715PZ-GFA45B	7-15	-	21	18	±1	-	≤2.1	105	5	1.00×1.07×0.07
M812PZ-GFA77B	8-12	27	-	23	±0.75	30	2	150	8	2.50×1.28×0.10
M812PZ-GFA66B	8-12	33	-	24	≤±0.75	≥40	≤2	700	8	2.80×1.50×0.10
M812P16-GFA82B	8-12	38	-	21	±0.5	35	1.5	1840	8	3.05×2.20×0.08
M812P12-GFA77B	8-12	≥41	-	20	±0.5	37	≤2	3200	8	3.50×4.00×0.08
M911P15-GFA71B	8.5-10.5	41.8	-	20	±0.5	37	≤2	3600	8	3.20×4.00×0.08
M1215PZ-GFA48B	12-15	34.5	-	19.5	±0.5	32	2.5	1100	8	3.50×1.62×0.10
M1230PZ-GFA47B	12-30	-	17.5	15.5	±1.5	-	1.6	118	5	2.70×1.20×0.10
M1319P1-GFA31B	13-19	30	29	27	±0.75	30	2	200	8	2.70×1.20×0.08
M1415P4-GFA02B	13.5-14.5	36.3	36	23	±0.5	32	2	1700	7	3.40×2.50×0.08
M1319PZ-GFA20B	13-19	22	20.5	19	±0.5	-	1.6	110	5	1.75×1.00×0.07

2.GaAs Power Amplifier

Item Module	Frequency (GHz)	Psat (dBm)	P1dB (dBm)	Gain (dB)	Gain Flatness (dB)	Add-on Efficiency (%)	Input Standing Wave	Quiescent Current (mA)	Operating Voltage (V)	Size (mm×mm×mm)
M1418PZ- GFA00B	14-18	20	18	18	±0.5	-	1.7	65	5	1.75×1.00×0.07
M1418PZ- GFA01B	14-18	≥31	-	≥19	≤±0.4	30	≤2.5	600	8	3.45×2.65×0.10
M1418PZ- GFA60B	14-18	≥34	-	≥19	±0.4	30	2.0	660	8	3.65×1.70×0.10
M1518PZ- GFA15B	15-17.6	≥33	-	≥19	±0.5	28	2.5	660	8	3.45×1.54×0.10
M1618PZ- GFA00B	16-18	≥34	-	≥19	≤±0.3	35	≤2	660	8	3.45×1.65×0.10
M1821PZ- GFA58B	17.5-20.5	27.5	26.5	20	±1	35	2	70	5	1.83×1.48×0.07
M1822PZ- GFA13B	18-21.5	≥29	≥28	≥21	≤±0.3	≥33	≤2.2	300	6	2.70×1.55×0.07
M1822PZ- GFA48B	18-22	≥26	≥25	≥22	≤±0.5	≥33	≤2.5	180	5	1.85×1.20×0.08
M1923P2- GFA47B	18.5-23	≥34	≥33	≥22	≤±0.5	≥20	≤2	1900	6	4.40×2.50×0.08
M1922PZ- GFA74B	19-22	≥25	≥23	≥23	≤±0.5	≥35	≤2	130	5	1.85×1.10×0.08
M1922PZ- GFA49B	19-22	24.5	23.5	26.5	±1	38	2	110	5	1.90×1.05×0.70
M1923PZ- GFA70B	19-23	≥26	≥25	≥21	≤±0.5	35	≤2	160	5	1.70×1.10×0.08
M1923PZ- GFA52B	19-23	≥20	≥19	≥20	≤±0.25	≥26	≤2	60	5	1.75×1.20×0.07
M2022PZ- GFA08B	19.5-22	≥23	≥22	≥23	≤±0.3	≥30	≤2	80	5	1.84×1.10×0.07
M2227PZ- GFA51B	22-27	32	≥31	≥18	≤±0.5	≥30	≤2.5	800	6	3.37×2.50×0.08
M2427P1- GFA01B	24-27	≥30	≥29	≥22	±0.25	≥35	≤2	350	5.7	2.65×1.55×0.07
M2427PZ- GFA95B	24-27	28	27	22	≤±0.5	≥26	≤2	320	6	2.50×1.55×0.08
M2431P4- GFA10B	24-31	36	35	18	±0.5	22	2	2500	6	4.29×4.50×0.08
M2431P2- GFA11B	24-31	34	33	19	±0.5	22	1.5	1200	6	3.18×2.25×0.08

2. GaAs Power Amplifier

Item Module	Frequency (GHz)	Psat (dBm)	P1dB (dBm)	Gain (dB)	Gain Flatness (dB)	Add-on Efficiency (%)	Input Standing Wave	Quiescent Current (mA)	Operating Voltage (V)	Size (mm×mm×mm)
M2526PZ- GFA63B	24.5-26	≥24	≥23	≥25	≤±0.5	≥35	≤2.5	115	5	1.85×1.20×0.08
M2526PZ- GFA75B	25-26	≥23	≥22	≥21	≤±0.5	≥33	≤2	95	5	2.00×1.10×0.08
M2527PZ- GFA74B	24.5-27	-	≥13	≥8	≤±0.5	-	≤2	20	5	1.80×1.50×0.08
M2527PZ- GFA68B	25-26.5	≥16	≥15	≥23	≤±0.5	≥20	≤2	35	5	2.00×1.10×0.08
M2527PZ- GFA72B	25-27	26	≥25	≥18	≤±0.75	≥35	≤2	140	5	1.80×1.15×0.08
M2527PZ- GFA79B	25-27	≥27	≥26.5	≥21	±0.5	30	2	230	6	2.50×1.55×0.07
M2627PZ- GFA20B	26-27	≥21	≥19	≥24	±0.5	≥35	≤2.5	60	5	1.80×1.10×0.08
M2731PZ- GFA94B	27-31	24	-	≥19	≤±0.5	≥30	≤2	150	5	1.85×1.15×0.08
M2832PZ- GFA48B	28-32	24	23	24	±1	35	2	120	5	2.10×1.10×0.07
M2932PZ- GFA41B	28.5-31.5	-	≥14	≥15	≤±1	-	≤2.5	50	5	1.70×1.10×0.08
M2932PZ- GFA65B	28.5-31.5	≥25	≥24	≥22	≤±0.5	≥30	≤2.5	115	5	2.00×1.10×0.08
M2931P3- GFA32B	29-31	≥35	≥34	≥24	≤±0.3	≥22	≤2.5	1600	6	3.67×2.70×0.07
M2932PZ- GFA07B	29-31.5	≥25.5	≥24	≥25.5	≤±0.3	≥35	≤2.5	110	5	2.10×1.10×0.07
M2933PZ- GFA87B	29-33	22	-	26	±1	40	1.4	55	5	2.00×1.20×0.07
M2933PZ- GFA87BM	29-33	22	-	26	±1	40	1.4	55	5	2.00×1.20×0.07
M3040P1- GFA54B	30-40	30	28	20	±1	20	1.5	630	4.5	3.25×1.80×0.10
M3136PZ- GFA33B	31-36	25	22	22	±1	25	2.5	250	4.5	3.71×1.76×0.10
M3138PZ- GFA29B	31-38	28	26	18	±1	26	2.5	260	5	3.52×1.00×0.10
M3240PZ- GFA53B	32-40	28	25	20	±1	35	1.2	250	5	3.35×1.75×0.10

2. GaAs Power Amplifier

Item Module	Frequency (GHz)	Psat (dBm)	P1dB (dBm)	Gain (dB)	Gain Flatness (dB)	Add-on Efficiency (%)	Input Standing Wave	Quiescent Current (mA)	Operating Voltage (V)	Size (mm×mm×mm)
M3240PZ- GFA67B	32-40	23	20	23	±1	35	2.5	80	5	2.25×1.03×0.10
M3337PZ- GFA45B	33-37	≥27	-	≥16	-	≥20	-	500	5.5	3.95×1.63×0.10
M3436PZ- GFA75B	34-36	≥30	28	17	±1.0	30	2.5	500	6	3.95×1.69×0.10
M3436PZ- GFA16B	34-36	36.5	-	15	±0.5	20	≤2.5	3500	6.5	3.07×3.71×0.10
M3743PZ- GFA14B	37-43	24	22	22	±1	30	2	150	4	1.90×1.18×0.10
M5861PZ- GFA97B	58-61	26	25.5	17.5	±0.75	25	2	220	4	3.50×1.65×0.07
M8896PZ- GFA17B	88-96	20	-	15	±1	12	-	190	4	1.60×4.40×0.07

3. GaN Power Amplifier

Item Module	Frequency (GHz)	Psat (dBm)	Gain (dB)	Gain Flatness (dB)	Add-on Efficiency (%)	Input Standing Wave	Quiescent Current (mA)	Operating Voltage (V)	Operating Conditions	Size (mm×mm ×mm)
M03P10-GF N18B	0.03-3	40	11	±0.5	46	1.6	520	28	Continuous Wave	2.60×1.4 6×0.08
M02P10-GF N87B	0.35-2.0	40	15	-	40	2.5	-	28	Continuous Wave	3.40×1.7 0×0.08
M12P10-GF N75B	0.8-2.0	40	27	±1.5	40	2	500	28	Pulse	1.50×1.3 0×0.10
M22PZ-GF N36B	1.9-2.4	26.2	20	±1.0	20	1.5	75	28	Continuous Wave	2.50×2.6 0×0.10
M24P30-GF N12B	2-4	45	18	±0.5	40	1.5	2200	28	Continuous Wave	3.50×4.2 0×0.10
M26P20-GF N79B	2-6	43	17	±0.5	38	2	1500	28	Continuous Wave	3.00×4.1 0×0.10
M212P10-G FN18B	2-12	40	7	±0.5	29	2	1000	28	Continuous Wave	3.35×2.6 0×0.08
M218P2-GF N47B	2-18	34	7	±1.7	15	2	500	28	Continuous Wave	2.80×2.5 0×0.10
M218P8-GF N51B	2-18	39	7	±1.0	≥ 20	2	880	28	Continuous Wave	2.50×4.8 5×0.10
M218P10-G FN88B	2-18	40	15	-	20	2.5	-	28	Continuous Wave	5.00×3.5 0×0.08

3. GaN Power Amplifier

Item Module	Frequ ency (GHz)	Psat (dBm)	Gain (dB)	Gain Flatness (dB)	Add-on Efficiency (%)	Input Standing Wave	Quiescent Current (mA)	Operating Voltage (V)	Operating Conditions	Size (mm×mm ×mm)
M23P8-GF N48B	2.3-2.5	39	26	±0.4	50	1.6	500	28	Pulse	2.42×2.8 0×0.10
M34PZ-GF N29B	2.7-3.5	20	10	±1	≥ 10	1.5	28	28	Pulse	1.55×1.6 6×0.10
M34P5-GF N20B	2.7-3.5	37	22	±0.5	45	1.7	-	28	-	2.00×2.0 7×0.08
M34P5-GF N14B	2.7-3.5	38	25	±0.5	47	2	-	28	Pulse	2.30×1.8 9×0.10
M34P40-GF N14B	3.4-3.6	47	28	±0.5	40	2	200	28	Continuous Wave	4.40×3.4 0×0.08
M44P8-GF N14B	3.7-4.2	39	22	±0.5	52	2.2	180	28	Continuous Wave	2.36×1.4 1×0.08
M48P20-GF N13B	4-8	43	21	±0.5	35	2	1350	28	Continuous Wave	3.65×4.0 0×0.08
M48P25-GF N34B	4-8	44	22	±1	36	2.4	1500	28	Pulse	3.55×4.1 7×0.10
M55P40-GF N19B	4.8-5.0	46	25	-	37	2	200	28	Continuous Wave	4.75×3.4 0×0.08
M512P40-G FN89B	5-12	46	21	±1	30	1.2	2500	28	Pulse	5.00×5.7 0×0.08
M514P15-G FN13B	5-14	41.5	20	±0.5	38	2	1000	28	Pulse	3.80×2.0 0×0.08
M618P2-GF N18B	6-18	34	18	±1.2	25	2	190	28	Continuous Wave	2.50×1.6 0×0.08
M618P6-GF N13B	6-18	38	17	±0.5	25	2.5	560	28	Continuous Wave	3.00×1.8 0×0.08
M618P10-G FN69B	6-18	40	16	±0.5	20	2.5	1400	28	Continuous Wave	3.40×4.1 0×0.08
M810P60-G FN11B	8-10	48	22	±0.5	45	2	3100	28	Pulse	3.70×4.0 0×0.08
M812P1-GF N77B	8-12	30	21	±0.5	20	1.8	100	28	Continuous Wave	1.92×1.3 0×0.08
M812P20-G FN12B	8-12	43	21	±0.5	35	2	1000	28	Continuous Wave	3.20×2.7 0×0.80
M812P25-G FN17B	8-12	44	22	±0.5	45	2	1800	28	Pulse	3.20×2.5 0×0.80
M812P50-G FN19B	8-12	47	20	±0.8	≥ 40	≤ 2.0	2500	28	Pulse	4.70×5.2 0×0.10

3. GaN Power Amplifier

Item Module	Frequ ency (GHz)	Psat (dBm)	Gain (dB)	Gain Flatness (dB)	Add-on Efficiency (%)	Input Standing Wave	Quiescent Current (mA)	Operating Voltage (V)	Operating Conditions	Size (mm×mm ×mm)
M911P25-G FN11B	8.5-10. 5	44	24	-	48	-	2500	28	Pulse	2.60×3.1 0×0.80
M911P50-G FN10B	8.5-10. 5	47	21	±0.5	45	2	2000	28	Pulse	4.00×5.1 0×0.08
M915P30-G FN12B	9-15	45	20	±0.5	30	2	1500	28	Continuous Wave	2.50×3.5 0×0.10
M1011P50- GFN11B	10-11	47	21	±0.5	40	2	1900	28	Pulse	3.70×4.9 0×0.08
M1018PZ-G FN70B	10-18	27	14	±1.5	13	2.0	170	28	Continuous Wave	1.78×1.4 4×0.10
M1018P22- GFN35B	10-18	44	18	-	25	2	2000	28	Pulse	3.00×3.2 0×0.10
M1113P25- GFN12B	11-13	44	20	±0.5	35	2.5	1500	28	Continuous Wave	4.00×4.1 0×0.10
M1217P40- GFN14B	12-17	46	22	±0.5	36	2	2700	28	Pulse	4.00×4.1 5×0.10
M1218P10- GFN19B	12-18	40	20	±0.5	30	2	900	28	Continuous Wave	3.57×2.3 7×0.80
M1218P30- GFN15B	12-18	45.5	23.5	±0.5	30	2	3000	28	Pulse	4.10×4.1 5×0.10
M1315P30- GFN16B	13-15	45	25	±0.5	30	-	-	28	Continuous Wave	5.00×6.6 5×0.80
M1315P35- GFN12B	13-15	45.5	22	±0.3	33	2	-	28	Continuous Wave	5.00×6.6 5×0.08
M1315P40- GFN19B	13-15	46	23	±0.1	35	2	1800	28	Pulse	4.00×4.5 0×0.10
M1316P4-G FN19B	13-16	36	24	±0.5	40		260	28	Continuous Wave	2.00×1.5 0×0.80
M1416P20- GFN17B	13.5-1 5.5	43	22	±0.25	35	1.6	50	28	Continuous Wave	4.60×3.9 0×0.80
M1415P25- GFN80B	14-15	44	21	±1.5	30	2.5	2000	28	Continuous Wave	3.40×4.1 0×0.10
M1415P30- GFN13B	14-15	45	22	-	35	-	-	28	Continuous Wave	5.00×6.6 5×0.80
M1416P50- GFN91B	14-16	47	21	±0.4	30	2.5	3000	32	Pulse	3.50×5.0 0×0.08
M1418P15- GFN30B	14-18	42	18	±0.5	37	2.5	600	28	Pulse	3.00×2.1 0×0.08

3. GaN Power Amplifier

Item Module	Frequ ency (GHz)	Psat (dBm)	Gain (dB)	Gain Flatness (dB)	Add-on Efficiency (%)	Input Standing Wave	Quiescent Current (mA)	Operating Voltage (V)	Operating Conditions	Size (mm×mm ×mm)
M1418PZ-G FN63B	14-18	26	21	±1	11	2	190	28	Continuous Wave	2.18×1.3 2×0.10
M1518P50- GFN81B	14.5-1 8	47	20	±0.4	35	2.5	3000	32	Pulse	3.50×5.0 0×0.08
M1517P9-G FN10B	15-17	39.5	20	±0.3	37	-	120	28	Pulse	2.30×1.5 0×0.10
M1518P14- GFN15B	15-18	41.5	23	±0.5	35	1.5	1500	28	Pulse	4.10×2.3 0×0.10
M1618P60- GFN13B	15.5-1 7.5	48	20	±0.5	30	2.5	3000	28	Pulse	3.60×5.9 0×0.10
M1618P30- GFN13B	15.5-1 8	45	20	±0.5	33	2.5	2500	28	Pulse	3.60×3.5 0×0.10
M1618P9-G FN10B	16-18	39.5	21	±0.3	36	2	200	28	Pulse	2.30×1.5 0×0.10
M1826P7-G FN10B	18-26	38.5	11	±1.5	18	-	-	22	Continuous Wave	3.20×2.7 0×0.10
M1826P10- GFN16B	18-26	40	12	±0.5	20	-	-	22	Continuous Wave	3.20×3.1 0×0.80
M1921P20- GFN10B	19-21	43	18	±0.5	20	2.5	1500	28	Pulse	3.50×4.1 0×0.80
M2127P10- GFN16B	21-27	40	13	±0.5	20	-	-	22	Continuous Wave	2.90×3.8 0×0.80
M2428P10- GFN13B	24-28	40	17	±0.5	30	2.1	1100	20	Continuous Wave	3.57×3.1 7×0.10
M2428P5-G FN14B	24.25- 27.5	37	18	±0.5	30	2.2	630	20	Continuous Wave	3.21×1.5 7×0.08
M2531P10- GFN19B	25-31	40	20	±1	25	2	500	20	Pulse	3.70×3.0 8×0.08
M2731P10- GFN14B	27-31	40	18	±0.5	24	1.5	1000	20	Continuous Wave	3.60×3.0 8×0.08
M3238P12- GFN96B	32-38	41	13	±0.75	20	2.5	2000	22	Continuous Wave	4.67×4.4 2×0.10
M3238P2-G FN11B	32-38	32	18	±0.5	20	2.5	300	22	Continuous Wave	3.11×1.2 1×0.10
M3238P6-G FN12B	32-38	38	15	±1	22	2.5	1500	22	Pulse	4.70×2.5 0×0.10
M3240P1-G FN73B	32-40	30	18	±1	20	2.0	200	22	Pulse	3.14×1.2 5×0.10

3. GaN Power Amplifier

Item Module	Frequency (GHz)	Psat (dBm)	Gain (dB)	Gain Flatness (dB)	Add-on Efficiency (%)	Input Standing Wave	Quiescent Current (mA)	Operating Voltage (V)	Operating Conditions	Size (mm×mm ×mm)
M3240P10- GFN18B	32-40	40	15	±0.5	20	-	-	22	Pulse	3.70×4.0 0×0.08
M3337P10- GFN74B	33-37	40	14	±2	20	2.5	2400	22	Pulse	5.09×4.5 2×0.10
M3436P14- GFN17B	34-36	41.5	16	±0.3	30	2	560	22	Pulse	5.00×4.4 3×0.08
M3436P15- GFN72B	34-36	41.8	13.8	±0.5	25	2.5	2500	22	Pulse	4.95×4.4 5×0.10
M3436P20- GFN10B	34-36	43	14	±0.5	25	2	3500	22	Pulse	5.37×4.3 6×0.10
M3538P10- GFN11B	34.5-3 7.5	40	12	±1.5	25	2	2000	22	Pulse	4.88×4.4 4×0.10
M4446P10- GFN15B	43.5-4 5.5	40	13	±0.5	20	2	1500	22	Continuous Wave	5.26×5.4 5×0.10
M5763P1-G FN17B	57-63	32	14	±0.5	18	2.5	470	18	Continuous Wave	4.38×1.4 6×0.05
M9096PZ-G FN10B	90-96	25	-	±0.5	17	2.5	90	15-18	Continuous Wave	3.20×1.4 0×0.05
M8896P1-G FN86B	88-96	30	11	±1	15	2	350	15	Continuous Wave	3.30×1.5 0×0.05
M9096P2-G FN16B	90-96	34	10	±0.5	14	1.8	800	18	Continuous Wave	4.32×2.4 7×0.05
M9096P4-G FN16B	90-96	36	9	±0.5	13	1.8	1500	18	Pulse	4.72×4.6 4×0.05

4. Navigation/Communications Amplifier

4.1 Frequency Synthesizer

4.1.1 Frequency Synthesizer ChiP

Item Module	Type	RF Input Frequency (GHz)	Normalize Noise Floor (dBc/Hz)	Spurious Suppression (dBc)	Operating Voltage (V)	Operating Current (mA)	Size (mm×mm×mm)
CN92FB	Multi-Mo dul Integers	0.5~8.0	-226	-80	3.3/5	70	1.43×1.63×0.2
CN93FB	Multi-Mo dul Integers	0.5~8.0	-230	-80	3.3/5	82	1.43×1.63×0.2
CN94FB	Dual-Mod ul Integer	0.3~5.5	-223	-75	3.3/5	18	1.1×1.63×0.2

4. Navigation/Communications Amplifier

4.1 Frequency Synthesizer

4.1.1 Frequency Synthesizer ChiP

Item Module	Type	RF Input Frequency (GHz)	Normalize Noise Floor (dBc/Hz)	Spurious Suppression (dBc)	Operating Voltage (V)	Operating Current (mA)	Size (mm×mm×mm)
CN95FB	Dual-Mod ul Integer	0.3~8.0	-226	-75	3.3/5	28	1.1×1.63×0.2
CN96FB	Multi-Mod ul Decimals	0.5~8.0	-213	-60	3.3/5	82	1.93×1.63×0.2
CN03FB	Low-Freq uency Integers	0.005~0.6	-226	-75	3.3/5	10	1.1×1.63×0.2

4.2 Navigation Communication

4.2.1 Navigation Communication Frequency Conversion ChiP

Item Module	RF Frequen cy (GHz)	LO Frequency (GHz)	IF Frequency (MHz)	Variable Frequency Gain	SSB Noise Figure	IF Output P-1	IF Output OIP3	Power Consum ption (V/mA)	Size (mm×m m×mm)
CN12-049 1FCB	1.2-2.0	1.2-2.0	10-200	12dB@1.268 GHz	9dB@1.26 8GHz	13dBm@46M Hz	22dBm@4 6MHz	3.3/42	1.8×2.6× 0.07
CN00FCB	1.2-2.0	1.2-2.0	10-250	13dB@1.268 GHz	17dB@1.2 68GHz	17dBm@46M Hz	29dBm@4 6MHz	3.3/72	1.9×2.6× 0.07

4.1.2 Frequency Synthesizer ChiP with Integrated VCO

Item Module	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Noise Figure (dB)	Input Standing Wave	Output Standing Wave	P1dB (dBm)	OIP3 (dBm)	Power Consu mption (V/mA)	Size (mm×mm ×mm)
CN06L B	1.1-3	31@1.3 GHz	±1	0.7	≤ 2	≤ 2	3	7	3-11	1.30×1.6 0×0.07
CN15L B	1-2.5	20@1.3 GHz	-	0.7	≤ 2	≤ 1.5	12	20	3.3/15	1.30×1.2 0×0.07

4.3 Mobile Satellite Communications

4.3.1 Power Amplifier for Mobile Satellite Communication

Item Module	Frequency (GHz)	Linear Gain (dB)	Linear Output Power (dBm)	Power Gain (dB)	Power Add-on Efficiency (%)	Quiescent Power Consumption (V/A)	Size (mm×mm×mm)
CN96MSB	1.9-2.1	35	33.5	34	40	3.7/0.2	1.64×1.25×0.08

4.3.2 Low Noise Amplifier for Mobile Satellite Communications

Item Module	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Noise Figure (dB)	Input Standing Wave	Output Standing Wave	P1dB (dBm)	OIP3 (dBm)	Power Consumption (V/mA)	Size (mm×mm ×mm)
CN94LM SB	2.1-2.3	16	±0.5	0.7	≤ 1.5	≤ 1.5	8	15	1.8/11	1.00×1.2 0×0.07

4.4 Universal Communications

4.4.1 Broadband Communication Amplifiers

Item Module	Frequency (GHz)	Gain (dB)	Noise Figure (dB)	Input Standing Wave	Output Standing Wave	P1dB (dBm)	OIP3 (dBm)	Power Consumption (V/mA)	Size (mm×mm×mm)
CN98BCB	DC-4	20@1GHz	2.8	≤ 1.8	≤ 1.8	20@ 1GHz	36@ 1GHz	5-87	0.56×0.45×0.07
CN05BCB	0.03-1	-15~32 (Variable)	-	≤ 2	≤ 2	13	-	3.3/45	1.58×0.98×0.30
CN19BCB	DC-0.6	16.4@0.2 GHz	3.2	<1.3	<1.3	13.7@ 0.2GHz	33.6@ 0.2GHz	5-47	0.98×0.53×0.30
CN0990QB	DC -10	23.4@1G Hz	2.2	≤ 1.8	≤ 1.8	17.5@ 1GHz	-	5-80	1.00×0.55×0.08
CN79BCB	0.01-1.5	19.5	0.9	≤ 2	≤ 2	17	30	3/30, 5/45	1.00×0.80×0.07
CN80BCB	0.05-0.2	0-30	-	≤ 2	≤ 2	8	-	5/100	2.51×1.125×0.07

4.4.2 Wideband SOI Switches

Item Module	Frequency (GHz)	Insertion Loss @2.6GHz (dB)	Isolation @2.6GHz (dB)	Max. Switching Rate (Hz)	Switching RF (90%) Settling Time (ns)	0.1dB Compression Point @3GHz (dBm)	Power Consumption (V/mA)
CN11WB	0.01-8	0.5	-54	25k	600	36	3.3/0.1
CN13WB	0.01-8	0.31	-31	25k	1300	36	3.3/0.05

Precautions

1. Operating & Storage

MMIC products are electrostatic sensitive devices. Pay high attention to anti-static during storage and operating.

- ① Operating in a purified environment: cleanliness is the most important. ChiP box shall only be opened in the purification area where ChiP is to be installed.
- ② Anti-static: operator must wear anti-static wristbands and ensure well grounded; surface of the work bench must be anti-static and well grounded; operator must wear conductive shoes and floor should be grounded; Please use conductive capacitors for bare ChiP during transportation.
- ③ Protection against electromagnetic pulses: voltage transient overshoot of power supplies and instrumentation needs to be prevented; and protected signal and bias cables can effectively prevent interference and induction.
- ④ Pickup: It is strictly forbidden to touch surface of ChiP with bare hands. It is recommended to use special tweezers or tips.
- ⑤ Do not clean the ChiP surface with dry or wet chemical methods.
- ⑥ The smallest package unit with bare ChiP should be designed to be hermetically sealed
- ⑦ The internal atmosphere of package unit needs to be controlled: if there are bare ChiP inside, please perform dehydrogenation treatment.
- ⑧ Temperature characteristics: The application design and assembly of the chip should ensure the junction temperature control, and the junction temperature of aerospace products should consider the derating design.
- ⑨ It is recommended to store ChiP in the initial product container with dry and nitrogen environment. Pay attention to anti-static during storage.

2. Mounting

- ① Sinter: It is recommended to use 80/20 gold tin solder. Sintering temperature shall not exceed 300°C, and sintering time should be as short as possible, no more than 30 seconds.
- ② Bond: It is forbidden that Chips with a power dissipation of more than 0.8 watts are bonding with various types of conductive adhesives.

3. Bonding

- ① Both ball and wedge bonding can be used. Be ensuring reliable bonding and minimize ultrasonic energy and shorten bonding time.
- ② It is recommended to use 2 bonding wires for RF input and output (gold wire with diameter 25 μm). The bond wire should be as short as possible, not longer than 300 μm .

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