

# RF HYBRID COMPONENT

# RF Hybrid Component

## » MMIC



Part Number	Frequency (MHz)	Gain (dB)	N.F (dB)	P1dB (dBm)	OIP3 (dBm)	Voltage (V)	Current (mA)	Package
AP112	50 ~ 2200	17.6	3.4	19.8	35	5	100	SOT-89
		17.3	3.1	17.5	30	4.5	45	
AP201	50 ~ 1000	14	2.5	21	40	6	115	
AP205A	50 ~ 3500	14	2.3	22	43	5	115	
AP209	50 ~ 3500	13.5	2.5	24	43	9	120	
AP211	50 ~ 3000	13	2.5	24	42	5	240	
AP222	50 ~ 3000	13	2.8	26	43	9	240	
AP230	50 ~ 2000	17.4	3.3	21	38	5	220	
AP245	50 ~ 3000	27	2.5	21	42	5	240	
AP249	50 ~ 3500	28	2.5	24	43	9	240	
AP409	50 ~ 3500	15.5	5	18.8	33.5	5	70	SOT-89
		15.3	5.1	18	30	4.8	65	
		15.2	5.1	16.5	27	4.5	52	
AP410	50 ~ 3500	19.5	5.5	20	35	5	85	
		19	5.4	18.7	31.5	4.8	64	
		18.5	5.3	16.7	26.7	4.5	50	

◀ Test Condition : @ 900 MHz

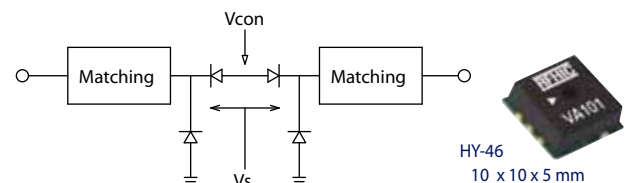
## » E-pHEMT



Part Number	Frequency (MHz)	Gain (dB)	N.F (dB)	P1dB (dBm)	OIP3 (dBm)	Voltage (V)	Current (mA)	Package
AE308	50 ~ 1000	22@1000MHz	2	17	28	5	55	SOT-89
AE608	10 ~ 4000	19.5@50MHz	1	13	25	2.5	25	SOT-143
		13.5@2100MHz	0.7	14	32	3	45	
AE616	500 ~ 4000	20@900MHz	2.7	23	37	5	85	SOT-89
		14.5@2100MHz	1.7	24	39	5	85	
AE663	500 ~ 4000	19.5@900MHz	3	28	41	5	180	SOT-89
		12@2100MHz	2.5	28	42	5	180	

## » Variable Attenuator

- High Linearity
- Single Voltage with Low Cost



Part Number	Frequency (MHz)	Insertion Loss (dB)	Atten. Range (dB)	Return Loss (dB)	Flatness (dB)	Vdd (V)	Vctl (V)	Current (mA)
VA101	50 ~ 3000	3	30@1~2GHz	-15	±0.5	5	0 ~ 10	40 (max)
VA102	100 ~ 3000	2	27@1~2GHz	-15	±0.5	3	0 ~ 12	34 (max)
	100 ~ 3000	3	27@1~2GHz	-15	±0.5	3	0 ~ 4.5	10 (max)
VA103	3000 ~ 4000	2.2	17@3.5GHz	-16	±0.5	3	0 ~ 10	30 (max)

## > Power Transistor

- High Output Power
- High Efficiency
- High Power Gain
- High Linearity



Part Number	Frequency (MHz)	Gain (dB)	P <sub>3dB</sub> (dBm)	OIP <sub>3</sub> (dBm)	Supply Voltage (V)	I <sub>dq</sub> (A)	Package
RT230PD	300 ~ 6000	15	33 (P <sub>1</sub> )	48	9, -1.2	0.5	SP-12
RT550PD	300 ~ 4000	12	39 (P <sub>1</sub> )	51	9 / -1.5	1.5	WP-22
RT232	50 ~ 6000	15	35	42	28 / -1.2	0.1	SP-12
RT233	50 ~ 6000	16	36	43	28 / -1	0.1	WP-22, WP-22EL
RT240J	50 ~ 6000	14	43	50	28 / -1.3	0.3	WP-22, WP-22EL
RT243	50 ~ 4000	12	45	52	28 / -1.3	0.6	WP-12
<b>Push Pull Type</b>							
RT433	50 ~ 6000	15.5	38	45	28 / -1.0	0.2	SP-12
RT440	50 ~ 6000	13.5	45	52	28 / -1.3	0.6	WP-14
RT443	50 ~ 4000	11.5	47	54	28 / -1.3	1.2	WP-14

• Test Condition : @ 2GHz

## > Wideband Amplifier

Part Number	Frequency (MHz)	Gain (dB)	N.F (Typ.)(dB)	P <sub>1dB</sub> (Typ.)(dBm)	OIP <sub>3</sub> (Typ.)(dBm)	V <sub>d</sub> (V)	I <sub>d</sub> (Typ.)(mA)	Package
RFC041	400 ~ 800	19	7.5	30	47	12	550	DP-27
RFC042	400 ~ 800	23	4	30	50	24	400	
RFC091	800 ~ 1000	20	7	29	45	12	550	
RFC092	800 ~ 1000	23	5	30	50	24	400	
1F5500	5 ~ 500	19	6.5	31	49	12	500	
RFC1G19-12	5 ~ 1000	19	7	30	46	12	500	
RFC1G22-24	20 ~ 1000	22	3.5	30	50	24	400	
RFC1G30-24	20 ~ 1000	30	3.3	30	46	24	400	
RFC1G18H4-12	20 ~ 1000	19	3	33	43	12	700	
RFC1G18H4-24	20 ~ 1000	19	3	36	46	24	700	
RFC3020H4-12	100 ~ 300	20	4	35	46	12	700	

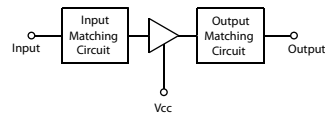
• Test Condition : 800MHz, 20 dBm each tone : Under Development : GaN Power Transistor

# RF Hybrid Component

## > Low Noise Amplifier

- High IP3, Small Size
- Single Supply Voltage (5V) with Ceramic Substrate
- Surface Mount Hybrid on Tape & Reel

No Additional Parts Needed  
 No Additional Matching Needed  
 No Additional Testing Needed  
 High Maximum Input Power  
 Custom Design Available



CP-16A  
10.2 x 10.2 x 4 mm

## > GaAs p-HEMT LNA

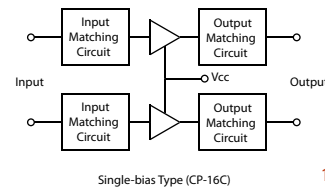
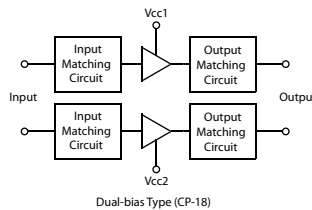
CL series : Low Noise Amplifier

Part Number	Frequency (MHz)	Gain (dB)	N.F (dB)	P1dB (dBm)	OIP3 (dBm)	Id (mA)	MAX Input Power (dBm)	Package
CL0901	800 ~ 894	19	0.5	14	27	65	25	CP-16A
	890 ~ 960	18	0.5	14	27	65	25	
CL0902	824 ~ 894	20.5	0.7	20	31	100	25	
	890 ~ 960	20	0.7	20	31	100	25	
CL1501	1400 ~ 1600	16	0.7	15	27	45	25	
CL1502	1400 ~ 1600	17	0.6	21	33	90	25	
CL1801	1700 ~ 2000	15.5	0.6	16	27	45	25	
CL1802	1700 ~ 2000	16	0.6	21	33	100	25	
CL2101	1850 ~ 2200	14	0.7	16	27	45	25	
CL2102	1850 ~ 2200	15	0.6	20	33	100	25	
CL2701	2300 ~ 2700	12	0.9	16	28	45	25	
CL2702	2300 ~ 2700	12.5	0.8	20	33	100	25	
CL3501	3400 ~ 3600	10	0.9	15	32	45	25	
CL3502	3300 ~ 3600	10.5	1	21	36	100	25	
CL1802D	1700 ~ 2200	15	0.7	20	33	100	30	
CL2102D	2200 ~ 2700	13	0.8	20	33	100	30	

: Under Development

## BL Series

BL series : Balanced LNA

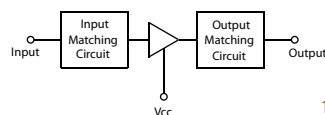


CP-16C  
10.2 x 10.2 x 4 mm

Part Number	Frequency (MHz)	Gain (dB)	N.F (dB)	P1dB (dBm)	OIP3 (dBm)	Id (mA)	MAX Input Power (dBm)	Package
BL0902D	700 ~ 1000	20	0.8	23	33	200	25	CP-18
BL0902S								CP-16C
BL1802D	1700 ~ 2200	16	0.7	24	35	200	25	CP-18
BL1802S								CP-16c

## > Gain Block Amplifier

GB series : Low Noise Gain Block

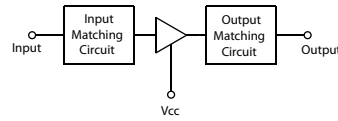


CP-16A  
10.2 x 10.2 x 4 mm

Part Number	Frequency (MHz)	Gain (dB)	N.F (dB)	P1dB (dBm)	OIP3 (dBm)	Vd (V)	Id (mA)	Package
GB0108	60 ~ 400	20	1.9	19	31	5	100	CP-16A
GB0115	60 ~ 400	20	1.9	21	34	5	160	
GB0408	400 ~ 800	18	1.4	19	32	5	100	
GB0415	400 ~ 800	18	1.3	21	34	5	160	
GB0908	824 ~ 960	18	1	20	32	5	90	
GB0915	824 ~ 960	18.5	1	20	35	5	160	
GB1808	1750 ~ 1870	14.5	1.1	20	33	5	90	
GB1815	1750 ~ 1870	15	1.2	21.5	36	5	160	
GB2108	1400 ~ 2000	15.5	1.2	20	33	5	90	
GB2115	1400 ~ 2000	16	1.3	21.5	36	5	160	

> Wideband LNA

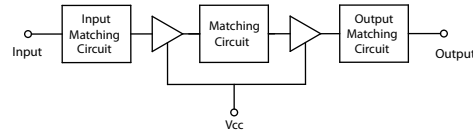
WL series : Wideband Low Noise Amplifier



Part Number	Frequency (MHz)	Gain (dB)	N.F (dB)	P1dB (dBm)	OIP3 (dBm)	Id (mA)	MAX Input Power (dBm)	Package
WL1008	50 ~ 1000	16	1.5	19	31	100	25	CP-16A
WL1015	50 ~ 1000	16	1.7	21	35	160	25	
WL2208	50 ~ 2200	15	1.5	20	31	100	25	
WL2215	50 ~ 2200	15	1.7	21	35	160	25	

> MCM Linear LNA

LCL series : Low Noise Amplifier with high OIP3



Part Number	Frequency (MHz)	Gain (dB)	N.F (dB)	P1dB (dBm)	OIP3 (dBm)	Id (mA)	MAX Input Power (dBm)	Package
LCL0402	380 ~ 520	33.5	1.2	21	40	150 ~ 190	25	CP-16B
LCL0902	800 ~ 894	33.5	0.9	21	36	150 ~ 190	25	
	890 ~ 960	33	0.8	21	36	150 ~ 190	25	
LCL0912	800 ~ 894	35	0.8	21	42	180 ~ 240	20	
	890 ~ 960	34.5	0.7	21	42	180 ~ 240	20	
LCL1502	1300 ~ 1850	28	0.8	21	35	150 ~ 190	25	
LCL1503	1400 ~ 1600	32	0.9	16	30	90 ~ 120	25	
LCL1512	1400 ~ 1600	29	0.8	21	42	180 ~ 240	20	
LCL1802	1750 ~ 1870	27.5	0.9	21	35	150 ~ 190	25	
LCL1803	1750 ~ 1870	31.7	1	18	30	90 ~ 120	25	
LCL1812	1750 ~ 1870	28	0.8	21	42	180 ~ 240	20	
LCL1902	1920 ~ 1980	24.5	0.8	20	35	150 ~ 190	25	
LCL1903	1920 ~ 1980	30	0.9	18	29.5	90 ~ 120	25	
LCL1904	1700 ~ 1900	34	1	18	33	110 ~ 150	25	
	1900 ~ 2200	32	1	19	34	110 ~ 150	25	
LCL2102	2110 ~ 2170	24.5	0.9	20	35	150 ~ 190	25	
LCL2103A	2110 ~ 2170	29	1	18	29.5	90 ~ 120	25	
LCL2112	1920 ~ 2170	24.8	0.8	21	42	180 ~ 240	20	
LCL2302	2200 ~ 2400	21.5	0.9	20	35	150 ~ 190	25	
LCL2304	2200 ~ 2400	31	1.1	20	31	110 ~ 150	25	
LCL2312	2300 ~ 2400	22	1	20	41	180 ~ 240	20	
LCL2603	2500 ~ 2900	28.5 ~ 27	1.2 ~ 1.3	18	30	90 ~ 120	25	
LCL2702	2500 ~ 2700	20.5	1	20	34	150 ~ 190	25	
LCL2712	2300 ~ 2700	20.5	1	20	40	180 ~ 240	20	
LCL3212	2900 ~ 3400	20.5	1.1	21	42	180 ~ 240	20	
LCL3503	3400 ~ 3600	25	1.4 ~ 1.7	18	29	90 ~ 120	25	
LCL3504	3400 ~ 3600	25.7	1.6	19	34	110 ~ 150	25	
LCL3512	3400 ~ 3600	19	1.2	21	42	180 ~ 240	20	
LCL3712	3600 ~ 3800	18.5	1.3	21	42	180 ~ 240	20	



# RF Hybrid Component

## » Drive Amplifier

- High IP3, Small Size
- Single Supply Voltage (5V) with Ceramic Substrate
- Surface Mount Hybrid on Tape & Reel

No Additional Parts Needed  
 No Additional Matching Needed  
 No Additional Testing Needed  
 Custom Design Available



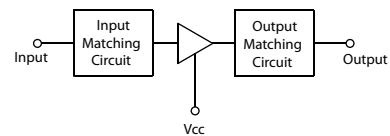
## > E-pHEMT

Part Number	Frequency (MHz)	Gain (dB)	N.F (dB)	P1dB (dBm)	OIP3 (dBm)	Vd (V)	Id (mA)	Package
<b>NEW</b> CE2027	1920 ~ 2170	13	3	28.5	42	5	270	CP-16A
<b>NEW</b> CE2029	1920 ~ 2170	12.5	3	29	45	5	400	
<b>NEW</b> CE2527	2300 ~ 2700	11.5	3	29	41.5	5	270	
<b>NEW</b> CE2529	2300 ~ 2700	11	3	30	45	5	400	

**NEW** : NEW Product

## > Linear Amplifier

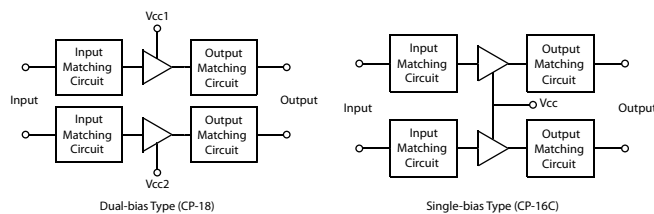
LM series : High OIP3, High P1 dB



Part Number	Frequency (MHz)	Gain (dB)	N.F (dB)	P1dB (dBm)	OIP3 (dBm)	Vd (V)	Id (mA)	Package
LM0105	50 ~ 200	12	5	21.6	40	5	140	CP-16A
LM0409	400 ~ 500	14	2.5	23	43	9	120	
LM0905	800 ~ 1000	14	2.1	22	43	5	140	
LM0909	800 ~ 1000	14	2.6	24	43	9	140	
LM1009	800 ~ 1500	13	2.6	24	43	9	140	
LM1905	1700 ~ 2000	11	2.9	22	43	5	140	
LM1909	1710 ~ 1990	12.5	2.8	24	43	9	140	
LM2105	1900 ~ 2200	10.4	2.8	22	42	5	140	
LM2109	1910 ~ 2110	12	2.8	24	43	9	140	
LM2305	2200 ~ 2500	9.7	2.8	22	43	5	140	
LM2309	2200 ~ 2500	12	2.9	22.5	41	9	130	
LM2505	2500 ~ 2700	10	2.7	22	41	5	140	
LM2509	2500 ~ 2700	9	2.8	24	40	9	140	

## BLM Series

BLM series : Balanced Drive Amplifier

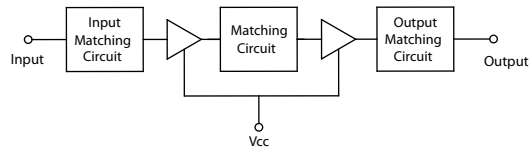


Part Number	Frequency (MHz)	Gain (dB)	N.F (dB)	P1dB (dBm)	OIP3 (dBm)	Vd (V)	Id (mA)	Package
<b>UD</b> BLM0905D	800 ~ 1000	14	3	25	45	5	280	CP-18
<b>UD</b> BLM0905S								CP-16C
<b>UD</b> BLM1909D	1700 ~ 2200	12.5	3.5	27	45	9	280	CP-18
<b>UD</b> BLM1909S								CP-16C

**UD** : Under Development

**> MCM Linear Amplifier**

GLM series : High Gain, High OIP3



Part Number	Frequency (MHz)	Gain (dB)	N.F (dB)	P1dB (dBm)	OIP3 (dBm)	Vd (V)	Id (mA)	Package
GLM0921	824 ~ 960	30	6	21	40	5	220	CP-16B
GLM1521	1429 ~ 1501	27	6	21	40	5	220	
GLM1821	1750 ~ 1870	25	6	21	40	5	220	
GLM2121	1920 ~ 2170	25	6	21	38	5	220	
GLM2123	1800 ~ 2200	26.5	5.9	22	42	5	200	
GLM2521	2100 ~ 3100	22	6	21	39	5	220	
GLM2523	2400 ~ 2600	25.5	6	22	40	5	200	
GLM2723	2500 ~ 2700	24	5.6	22	40	5	200	
GLM3623	3200 ~ 3800	21	5.7	22	40	5	200	

**2LM Series**

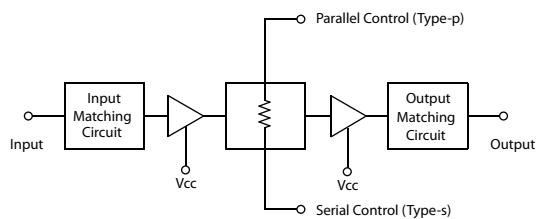
2LM series : High OIP3, High P1 dB

Part Number	Frequency (MHz)	Gain (dB)	N.F (dB)	P1dB (dBm)	OIP3 (dBm)	Vd (V)	Id (mA)	Package
2LM0905	800 ~ 1000	28	2.4	21.5	41	5	240	CP-16B
2LM0909	800 ~ 1000	27	2.9	23	40	9	220	
2LM2105	1700 ~ 2200	20	2.4	22	40	5	220	
2LM2109	1800 ~ 2200	21	2.9	23	40	9	220	

◀ Custom Design Available

**2AM Series**

2AM series : Variable Gain Amplifier



Part Number	Frequency (MHz)	Gain (dB)	N.F (dB)	P1dB (dBm)	OIP3 (dBm)	Vd (V)	Id (mA)	Package
2AM0905P	800 ~ 1000	28	3	21.5	41	5	240	CP-5CP
2AM0905S								CP-5CS
2AM2109P	1800 ~ 2200	21	5	23	40	9	220	CP-5CP
2AM2109S								CP-5CS

◀ Attenuator Insertion : 6 bit. Flexible parallel and serial programming interfaces. Attenuation Range : 31.5dB @ 0.5dB steps.