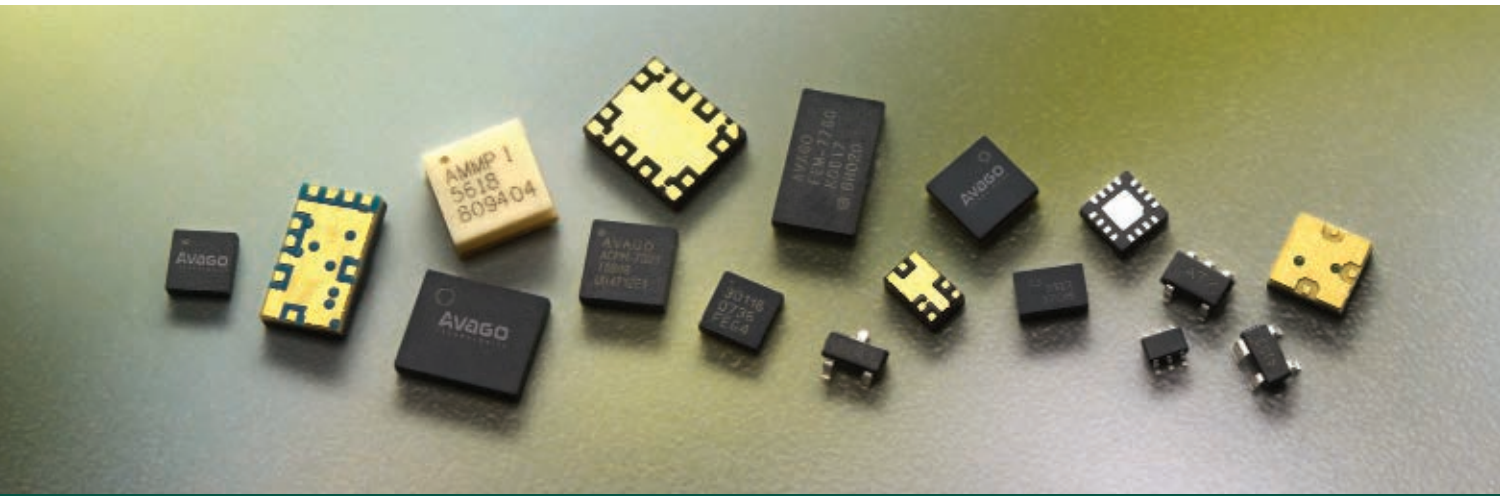
AVAGO TECHNOLOGIES

Wireless Semiconductor Selection Guide



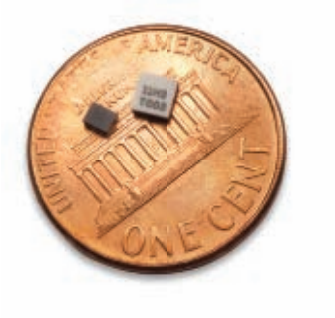
System Application Block Diagrams and Product Suggestions

Your Imagination, Our Innovation

Sense • Illuminate • Connect

Accelerating Progress in Wireless Communications

Mobile communications are changing the way industries and individuals manage their lives, homes, offices and businesses. Avago Technologies is at the forefront of the wireless revolution, offering a broad range of mobile connectivity and wireless solutions, and is the partner of choice for leading wireless manufacturers and service providers around the globe. Avago products add value to every stage in the wireless production cycle.



Avago Technologies' tiny RFICs have helped lead to smaller wireless products with increased battery life.

RF Component Solutions

Avago Technologies RF component innovations have been instrumental in driving the wireless revolution. Avago CoolPAM™ power amplifiers, Film Bulk Acoustic Resonator (FBAR) filters, and Enhancement-mode pHEMT low noise amplifiers have set new benchmarks for performance, size and battery life. Avago products combine innovative technology, three decades of microwave and RF design experience, and expertise in system, protocol and regulatory understanding to create solutions that can help customers meet the most demanding technical specifications and the most difficult regulatory tests around the world.

Manufacturing Technologies

- Film Bulk Acoustic Resonator
- Gallium Arsenide Heterojunction Bipolar Transistor
- Pseudomorphic High Electron Mobility Transistor
- Enhancement Mode Pseudomorphic High Electron Mobility Transistor
- Silicon

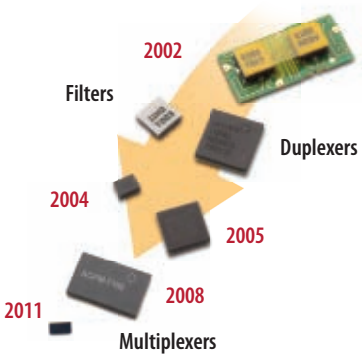
Product Offerings

- Filters, Duplexers, and Multiplexers
- Power Amplifier Modules for many standards, including GSM, CDMA, W-CDMA, TD-SCDMA, LTE, and WiMAX
- Low Noise Amplifiers
- Front End Modules including Power Amplifier – Duplexers and Filter-LNAs
- RFICs
- Schottky and PIN Diodes
- Field Effect and Bipolar Transistors
- Millimeter Wave MMICs

Film Bulk Acoustic Resonator (FBAR) Filters, Duplexers, Multiplexers and GPS Front-end Modules

Today's smartphones face many challenges, including support for difficult band plans and the need for coexistence between multiple radio systems. The exceptional performance of Avago FBAR filtering technology helps designers meet these challenges by providing low loss filtering with steep rejection characteristics. Microcap wafer-to-wafer bonding technology enables flexible, miniature packaging, including true chip-scale WaferCap filters. FBAR filters are also combined with EpHEMT LNAs to create a line of high performance modules that support demanding GPS applications.

Avago Technologies created a new filter technology with FBAR that helps designers solve tough filtering problems.



Features

- Steep roll-off
- Low insertion loss
- High Isolation
- Excellent power handling
- Low temperature coefficient

Benefits

- Supports more efficient use of spectrum
- Extends battery life
- Supports coexistence of simultaneously operating radio systems
- Improves phones sensitivity, enhancing data rate and network performance
- Can support multiple standards

FBAR Duplexer (Package size: 2 x 2.5 x 0.95 mm)

UMTS Band 1	UMTS Band 2 / CDMA PCS	UMTS/LTE Band 3	LTE/UMTS Band 4/CDMA AWS-1	LTE Band 7	UMTS Band 8
ACDM-7614	ACMD-7407	ACMD-6003	ACMD-7609	ACMD-6007	ACMD-7606
ACMD-7617	ACMD-7410				ACMD-7610
	ACMD-4102 (2 x 2.5 x 1.05 mm)				

FBAR Quadplexer

Part No.	Standard	Package Size
ACFM-7109	CDMA PCS & Cellular	3.0x5.0x1.05 mm
ACFM-7110	CDMA PCS & Cellular	3.0x5.0x1.05 mm
ACFM-7107	CDMA PCS & Cellular	4.0x7.0x1.2 mm
ACFM-7325	Extended PCS & Cellular (BC10/BC14)	4.0x7.0x1.2 mm

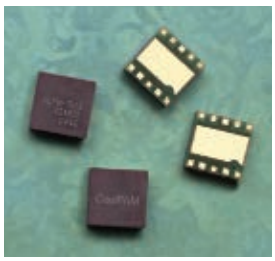
FBAR Filters

Part No.	Standard	Passband	Package Size
ACPF-7005	CDMA PCS+BC14/B25	1850-1915 MHz	1.6 x 2.0 x 1.1mm
ACPF-7024	ISM/WLAN/BT	2401-2482 MHz	1.6 x 2.0 x 0.95 mm
ACPF-7025	WiMAX B41	2496-2690 MHz	2.5 x 2.5 x 1.0 mm

GPS & GLONASS Front-End-Modules

Part No.	Passband	Configuration	Package Size
ALM-2712	1574.42-1576.42 MHz	Filter-LNA-Filter	3.0x2.5x1.0 mm
ALM-1712	1574.42-1576.42 MHz	Filter-LNA-Filter	4.5x2.2x1.1 mm
ALM-1912	1574.42-1576.42 MHz	Filter-LNA	2.9x2.0x1.0 mm
ALM-1412	1574.42-1576.42 MHz	LNA-Filter	3.3x2.1x1.1 mm
ALM-2412	1574.42-1576.42 MHz	LNA-Filter	3.3x2.1x1.1 mm
MGA-310G	1565-1606 MHz	LNA only	1.1x1.13x0.5 mm
MGA-24106	1565-1606 MHz	LNA only	1.5x1.2x0.5 mm
MGA-231T6	1565-1606 MHz	LNA only	2.0x1.3x0.4 mm

Power Amplifier Modules and PA-Duplexer Front End Modules



Avago Technologies CoolPAM and FEM technologies offer superior performance.

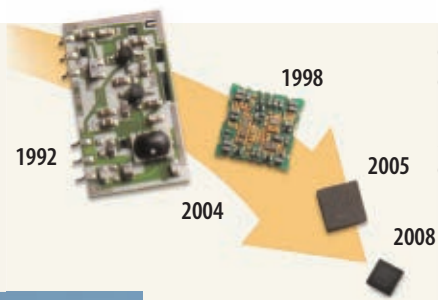
Battery life is one of the most important issues facing designers of next-generation mobile handsets. Not only is it inconvenient to frequently recharge the battery, but lower power consumption in the power amplifier frees more energy for other features like large displays. Avago has developed a technology called CoolPAM™ that helps to optimize battery life by only turning on as much of the power amplifier as is needed, thus greatly enhancing efficiency. Avago has over 15 years of design and manufacturing expertise in power products, and offers power amplifier modules for many different applications. Additionally, Avago has combined its industry-leading FBAR and CoolPAM. technologies to offer a range of integrated modules By combine multiple "best in class" technologies and optimizing partitioning and device interfaces, these devices can provide superior electrical performance, allowing designers get their products to market faster, with less risk and higher yields.

Features

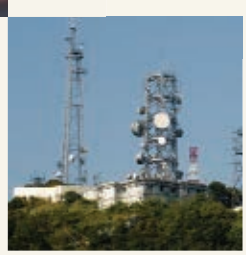
- High Efficiency
- Integrated high directivity coupling
- Support for multiple standards, including CDMA, W-CDMA, GSM/EDGE, LTE, TD-SCDMA, and WiMAX
- Support for most major bands in a common footprint

Benefits

- Extends battery life
- Excellent power control
- Supports complex 3G and 4G architectures
- Can support multiple standards



Avago Technologies has more than 15 years of design and manufacturing expertise in power products resulting in smaller size and higher efficiency.



CDMA and TD-SCDMA Power Amplifiers

	CDMA Cell	CDMA PCS	CDMA Japan	TD-SCDMA	Package Size
Single Band	WS1105	WS1405		ACPM-5201	3 x 3mm PA
	WS1106			ACPM-2001	
			ACPM-7822	ACPM-7887	4 x 4 mm PA
	AFEM-7750	AFEM-7758			4 x 7mm FEM
	AFEM-7751				
Multi-Band	ACPM-7353	ACPM-7353			4 x 5mm PA
	ACPM-7351		ACPM-7351		
	ACPM-7354	ACPM-7354			3 x 5mm PA

UMTS and GSM/EDGE Power Amplifiers

	UMTS Band 1	UMTS Band 2	UMTS Band 4	UMTS Band 5	UMTS Band 8	GSM/EDGE	Package Size
Single Band	ACPM-5001	ACPM-5002	ACPM-5004	ACPM-5005	ACPM-5008		3 x 3mm PA
	ACPM-5201	ACPM-5202	ACPM-5204	ACPM-5205	ACPM-5208		
	ACPM-5501	ACPM-5502	ACPM-5504	ACPM-5505	ACPM-5508		
	ACPM-2001	ACPM-2002		ACPM-2005	ACPM-2008		
	ACPM-2101	ACPM-2102		ACPM-2105	ACPM-2108		
						ACPM-7868	5 x 5mm PA
						ACPM-7870	
Multi-Band	ACPM-5251			ACPM-5251			4 x 5mm PA
	ACPM-5281				ACPM-5281		
		ACPM-5252		ACPM-5252			
		ACPM-5552		ACPM-5552			3 x 5mm PA
	ACPM-5551			ACPM-5551			
	ACPM-5581				ACPM-5581		
Multi-Mode, Multi-Band CDMA LTE UMTS	ACPM-7281				ACPM-7281	ACPM-7281	5 x 7.5mm PA
	ACPM-7051			ACPM-7051		ACPM-7051	
	ACPM-7081				ACPM-7081	ACPM-7081	
	ACPM-7251			ACPM-7251		ACPM-7251	

LTE Power Amplifiers

	LTE Band 1	LTE Band 3/4	LTE Band 7	LTE Band 11	LTE Band 13	LTE Band 17	LTE Band 20	LTE Band 38	LTE Band 40	Package Size
Single Band	ACPM-5601	ACPM-5004	ACPM-5007	ACPM-5011	ACPM-5013	ACPM-5017	ACPM-5020	ACPM-5038	ACPM-5040	3x3mm PA

System Block Diagrams and Suggested Products

Wireless Infrastructure

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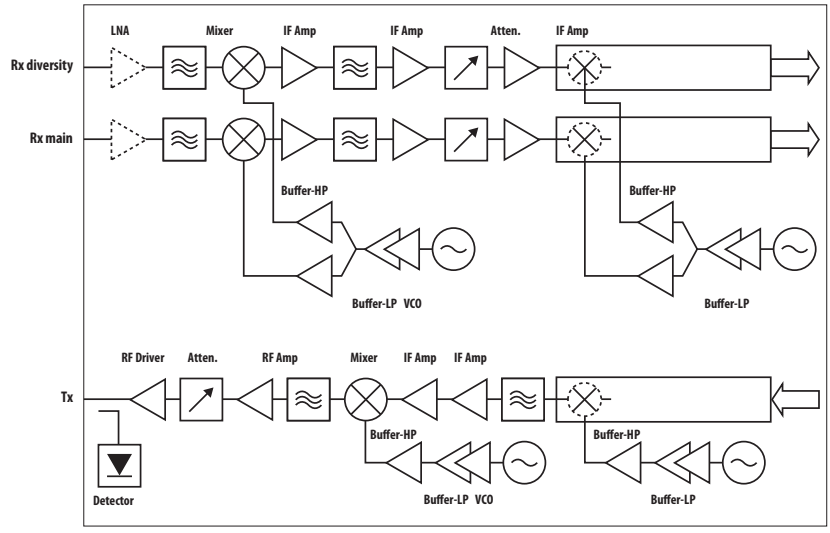
Basestation Radiocard



Radiocard Suggested Components

Application	Part Number	Typ. Bias V/ mA	Frequency Range/GHz	Gain/dB[1] @ 2GHz	P1dB/dBm[1] @ 2GHz	OIP3/dBm @ 2GHz	NF/dB[2] @ 2GHz	Device Type and Package (mm)
LNA	**MGA-13116**	5/55	0.4 - 1.5	38	23.3	41.4	0.51	QFN 4x4x0.85
	MGA-13216	5/53	1.5 - 2.5	35.8	23.6	40.5	0.61	QFN 4x4x0.85
	MGA-14516	5/45	1.4 - 2.7	31.7	–	23.5	0.66	QFN 4x4x0.85
	MGA-16516[8]	5/50	0.7 - 1.7	17.5	18.0	11.5 (IIP3)	0.45	QFN 4x4x0.85
	MGA-17516	5/50	1.7 - 2.7	17.2	21.5	13.7 (IIP3)	0.52	QFN 4x4x0.85
	MGA-53543	5/54	0.4 - 6	15.4	18.6	39.1	1.5	E-pHEMT MMIC, SOT343
	MGA-53589	5/52	0.05 - 3.0	15.8	18.2	37	1.7	SOT-89
	MGA-631P8[5]	4/60	0.4 - 1.5	17.5	18.0	33.1	0.53	E-pHEMT MMIC, LPCC 2x2
	MGA-632P8[5]	4/60	1.4 - 3	17.6	19.2	34.8	0.62	E-pHEMT MMIC, LPCC 2x2
	MGA-633P8	5/54	0.45 - 2	18	–	37	0.37	QFN 2x2x0.75
	MGA-634P8	5/48	1.5 - 2.3	17.4	22	36	0.37	QFN 2x2x0.75
	MGA-635P8	5/56	2.3 - 4.0	18	21.9	35.9	0.56	QFN 2x2x0.75
	MGA-636P8	4.8/105	0.45 - 1.5	18.5	23	41.5	0.5	QFN 2x2x0.75
	MGA-637P8	4.8/70	1.5 - 2.5	17.5	22	41.5	0.6	QFN 2x2x0.75
	MGA-638P8	4.8/90	2.5 - 4	17.5	22	39.5	0.8	QFN 2x2x0.75
	ATF-58143	3/30	0.45 - 6	16.5	19	30.5	0.5	E-pHEMT FET, SOT343
	ATF-54143	3/60	0.45 - 6	16.6	20	36.2	0.5	E-pHEMT FET, SOT343
	ALM-12124	5/227.7	1.880-2.025	39	23.5	36.5	0.85	MCOB 8.0x8.0x1.2
	ALM-12224	5/228.7	2.30-2.40	36.8	22.7	38.5	0.99	MCOB 8.0x8.0x1.2
	ALM-1222	5/280	1.8 - 2.2	31.0	27.5	43.7	0.62	MCOB 5.0x6.0x1.1
	ALM-1322	5/100	1.8 - 2.2	29.9	17	35.6	0.57	MCOB 5.0x6.0x1.1
	ALM-1522[9]	5/240	0.7 - 1.1	31	27.7	43	0.60	MCOB 5.0x6.0x1.1

Recommended Parts in **Bold**.

Notes:

1. Gain and P1dB performance for discrete FETs when matched for best IP3.
2. NFmin figures for discrete FETs.
3. High reverse isolation: 50dB typical.
4. Current adjustable: 20-60mA.
5. Both MGA-631P8 and MGA-632P8 come with integrated active bias circuit. MGA-631P8 data tested at 900MHz.
6. MGA-30116, ALM-31122 and ALM-32120 data tested at 900MHz.
7. MGA-30316, ALM-31322 and ALM-32320 data tested at 3.5GHz.
8. MGA-16516 data tested at 850MHz
9. ALM-1522 and ALM-80110 data tested at 900MHz
10. ALM-12124 data tested at 2018MHz
11. ALM-12224 data tested at 2400MHz

Basestation Radiocard

Radiocard Suggested Components

Application	Part Number	Typ. Bias V/mA	Frequency Range/GHz	Gain/dB[1] @ 2GHz	P1dB/dBm[1] @ 2GHz	OIP3/dBm @ 2GHz	NF/dB[2] @ 2GHz	Device Type and Package (mm)
RF Amplifier	**MGA-30116**[6]	5/202.8	0.75 - 1	17	–	44.1	2	QFN 3x3
	MGA-30216	5/206	1.7 - 2.7	14.2	–	45.3	2.8	QFN 3x3
	MGA-30316[7]	5/198	3.3 - 3.9	12.8	–	44.4	2.7	QFN 3x3
	MGA-30489	5/97	0.25 - 3.0	13.3	23.3	39	3	SOT-89
	MGA-30689	5/104	0.04 - 2.6	14.6	22.5	40	3.3	SOT-89
	MGA-30789	5/100	2 - 6	11.7	–	41.8	3.3	SMT 4.5x4.1x1.5
	MGA-30889	5/65	0.04 - 2.6	15.5	–	38	1.9	SMT 4.5x4.1x1.5
	MGA-30989	5/51	2 - 6	12	–	36.8	2	SMT 4.5x4.1x1.5
	MGA-31189	5/111	0.05 - 2	21	24	42	3	SOT-89
	MGA-31289	5/124	1.5 - 3	18.7	24	41.8	3	SOT-89
	MGA-31389	5/73	0.05 - 2	21.3	22.2	38.6	2	SOT-89
	MGA-31489	5/69	1.5 - 3	19.5	21.9	37.3	1.9	SOT-89
	MGA-31589	5/146	0.45 - 1.5	20.4	27.2	45.3	1.9	SOT-89
	MGA-31689	5/168	1.5 - 3	18.1	27.6	44.9	1.9	SOT-89
	MGA-53543	5/54	0.4 - 6	15.4	18.6	39.1	1.5	E-pHEMT MMIC, SOT343
	MGA-53589	5/52	0.05 - 3.0	15.8	18.2	37	1.7	SOT-89
	MGA-545P8	3.3/127	0.05 - 7	18.6	21.7	34	2.7	E-pHEMT MMIC, LPCC
	MGA-61563[4]	3/41	0.5 - 4	15.5	15.1	31.7	1	E-pHEMT MMIC, SOT363
	ATF-52189	4.5/200	0.05 - 6	16	27	42	1.21	E-pHEMT FET, SOT89
	ATF-521P8	4.5/200	0.05 - 6	17	26.5	42	0.96	E-pHEMT FET, LPCC
	ATF-53189	4/135	0.05 - 6	15.5	23	40	0.62	E-pHEMT FET, SOT89
	ATF-531P8	4/135	0.05 - 6	20	24.5	38	0.6	E-pHEMT FET, LPCC
	ADA-4789	4.1/80	DC - 2.5	16.3	16.9	29	4.5	Si MMIC, SOT89
Variable Gain Amplifier	ALM-80110[9]	5/110	0.4 - 1.6	(-27) to 13.6	23.3	40.3	4.8	MCOB 5.0x5.0x1.1
	ALM-80210	5/110	1.6 - 2.6	(-25.5) to 9.8	23.6	40.8	5.3	MCOB 5.0x5.0x1.1
RF Driver	**MGA-30489**	5/97	0.25 - 3.0	13.3	23.3	39	3	SOT-89
	MGA-30689	5/104	0.04 - 2.6	14.6	22.5	40	3.3	SOT-89
	MGA-30789	5/100	2 - 6	11.7	–	41.8	3.3	SMT 4.5x4.1x1.5
	MGA-30889	5/65	0.04 - 2.6	15.5	–	38	1.9	SMT 4.5x4.1x1.5
	MGA-30989	5/51	2 - 6	12	–	36.8	2	SMT 4.5x4.1x1.5
	MGA-31189	5/111	0.05 - 2	21	24	42	3	SOT-89
	MGA-31289	5/124	1.5 - 3	18.7	24	41.8	3	SOT-89
	MGA-31389	5/73	0.05 - 2	21.3	22.2	38.6	2	SOT-89
	MGA-31489	5/69	1.5 - 3	19.5	21.9	37.3	1.9	SOT-89
	MGA-31589	5/146	0.45 - 1.5	20.4	27.2	45.3	1.9	SOT-89
	MGA-31689	5/168	1.5 - 3	18.1	27.6	44.9	1.9	SOT-89
	MGA-53589	5/52	0.05 - 3.0	15.8	18.2	37	1.7	SOT-89
	ATF-50189	4.5/280	0.05 - 6	15.5	29	45	1.1	E-pHEMT FET, SOT89
	ATF-501P8	4.5/280	0.05 - 6	14.7	28	45	–	E-pHEMT FET, LPCC
	ATF-511P8	4.5/200	0.05 - 6	14.8	30	41.7	1.4	E-pHEMT FET, LPCC
	ALM-31122[6]	5/394	0.7 - 1	15.6	–	47.6	2	MCOB 5.0x6.0x1.1
	ALM-31222	5/415	1.7 - 2.7	14.9	–	47.9	2.7	MCOB 5.0x6.0x1.1
	ALM-31322[7]	5/413	3.3 - 3.9	13.2	–	47.7	2.8	MCOB 5.0x6.0x1.1
	ALM-32120[6]	5/800	0.7 -1.0	14	–	52	2.5	MCOB 7.0x10.0x1.1
	ALM-32220	5/800	1.7 - 2.7	14.8	–	50	3.5	MCOB 7.0x10.0x1.1
	ALM-32320[7]	5/800	3.3 - 3.9	12.5	–	50	2.5	MCOB 7.0x10.0x1.1

Recommended Parts in **Bold**.

Notes:

1. Gain and P1dB performance for discrete FETs when matched for best IP3.
2. NFmin figures for discrete FETs.
3. High reverse isolation: 50dB typical.
4. Current adjustable: 20-60mA.
5. Both MGA-631P8 and MGA-632P8 come with integrated active bias circuit. MGA-631P8 data tested at 900MHz.
6. MGA-30116, ALM-31122 and ALM-32120 data tested at 900MHz.
7. MGA-30316, ALM-31322 and ALM-32320 data tested at 3.5GHz.
8. MGA-16516 data tested at 850MHz
9. ALM-1522 and ALM-80110 data tested at 900MHz

Basestation Radiocard

Radiocard Suggested Components

Application	Part Number	Typ. Bias V/ mA	Frequency Range/GHz	Gain/dB[1] @2GHz	P1dB/dBm[1] @2GHz	OIP3/dBm @2GHz	NF/dB[2] @2GHz	Device Type and Package (mm)
Mixer	**IAM-92516**	5/26	0.4 - 3.5	6 (CL)	9	27 (IIP3)	12.5	E-pHEMT MMIC, LPCC(3x3)
Buffer-High Power	**MGA-565P8**[3]	5/67	0.1 - 3.5	21.8	20 (Psat)	–	–	E-pHEMT MMIC, LPCC
	ABA-54563	5/79	DC - 3.4	23	16.1	27.3	4.4	Si MMIC, SOT363
Buffer-Low Power	ABA-31563	3/14	DC - 3	21.5	2.2	13.1	3.8	Si MMIC, SOT363
	ABA-32563	3/37	DC - 3	19	8.4	19.5	3.5	Si MMIC, SOT363
	ABA-51563	5/18	DC - 3.5	21.5	1.8	11.4	3.7	Si MMIC, SOT363
	ABA-52563	5/35	DC - 3.5	21.5	9.8	19.9	3.3	Si MMIC, SOT363
	ABA-53563	5/46	DC - 3.5	21.5	12.7	22.9	3.5	Si MMIC, SOT363
	AVT-50663	5/36	DC-6000	15.3	12.5	25	4	SOT-363 (SC70)
	AVT-51663	5/37	DC-6000	19.6	12.9	25.1	3.2	SOT-363 (SC70)
	AVT-52663	5/45	DC-6000	15.3	12.7	27	4	SOT-363 (SC70)
	AVT-53663	5/48	DC-6000	19.6	15.1	26.5	3.2	SOT-363 (SC70)
	AVT-54689	5/48	0.05 - 6	17.1	17.4	29.6	4.1	SOT-89
	AVT-55689	5/75	0.05 - 6	17.2	19.5	32.5	4.3	SOT-89

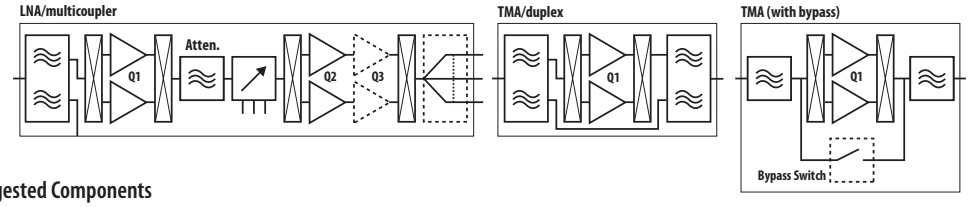
Application	Part Number	Typ. Bias V/ mA	Frequency Range/GHz	Gain/dB[1] @500MHz	P1dB/dBm[1] @500MHz	OIP3/dBm @500MHz	NF/dB[2] @500MHz	Device Type and Package (mm)
IF Amplifier	**MGA-30489**	5/97	0.25 - 3.0	18.8	22.7	37	3.3	SOT-89
	MGA-30689	5/104	0.04 - 2.6	14.4	22.2	44	3.0	SOT-89
	MGA-30789	5/100	2 - 6	11.7	–	41.8	3.3	SMT 4.5x4.1x1.5
	MGA-30889	5/65	0.04 - 2.6	15.5	–	38	1.9	SMT 4.5x4.1x1.5
	MGA-30989	5/51	2 - 6	12	–	36.8	2	SMT 4.5x4.1x1.5
	MGA-31189	5/111	0.05 - 2	21	24	42	3	SOT-89
	MGA-31289	5/124	1.5 - 3	18.7	24	41.8	3	SOT-89
	MGA-31389	5/73	0.05 - 2	21.3	22.2	38.6	2	SOT-89
	MGA-31489	5/69	1.5 - 3	19.5	21.9	37.3	1.9	SOT-89
	MGA-31589	5/146	0.45 - 1.5	20.4	27.2	45.3	1.9	SOT-89
	MGA-31689	5/168	1.5 - 3	18.1	27.6	44.9	1.9	SOT-89
	MGA-62563[4]	3/55	0.1 - 3	22	18	35	0.8	E-pHEMT MMIC, SOT363
	MGA-545P8	3.3/135	0.1 - 7	22	19	36	2	E-pHEMT MMIC, LPCC
	ADA-4789	4.1/80	DC - 2.5	17	18.8	35	4.2	Si MMIC, SOT89
	ADA-4743	(3.8)/60	DC - 2.5	16.5	17.1	34	4.2	Si MMIC, SOT343
	ADA-4643	(3.5)/35	DC - 2.5	17.3	14	29	4	Si MMIC, SOT343
	ADA-4543	(3.4)/15	DC - 2.5	15.5	2.4	15	3.7	Si MMIC, SOT343
	ABA-54563	5/81	DC - 3	23	18	32	3	Si MMIC, SOT363
	ABA-53563	5/46	DC - 3.5	21.5	15	27.5	2.9	Si MMIC, SOT363
	ABA-52563	5/35	DC - 3.5	21.8	12.5	28	2.7	Si MMIC, SOT363
Detector - Schottky Diodes	**HSMS-282x**	Ct max = 1pF @0V						SOT323/363/23/143
	HSMS-286x	Ct max = 0.3pF @0V						SOT323/363/23/143
Attenuator - PIN Diodes	**HSMP-381x**	Very low distortion, Ct typ. = 0.2pF @0V, see AN1048 & AN5262 pi-attenuator design						SOT323/23/25/SOD-323
	HSMP-386x	Lower current, low cost, Ct typ. = 0.2pF @0V, see AN1048 pi-attenuator design						SOT323/363/23/25/SOD-323
Attenuator - Module	ALM-38140	Low distortion, high dynamic range attenuator module						MCOB 3.8x3.8x1.0
Switch - Module	ALM-40220	High Power 10W SPDT switch for TD-SCDMA						MCOB 5.0x5.0x1.0

Recommended Parts in **Bold**.

Notes:

1. Gain and P1dB performance for discrete FETs when matched for best IP3.
2. NFmin figures for discrete FETs.
3. High reverse isolation: 50dB typical.
4. Current adjustable: 20-60mA.
5. Both MGA-631P8 and MGA-632P8 come with integrated active bias circuit. MGA-631P8 data tested at 900MHz.
6. MGA-30116, ALM-31122 and ALM-32120 data tested at 900MHz.
7. MGA-30316, ALM-31322 and ALM-32320 data tested at 3.5GHz.

Basestation Low Noise Amplifier (LNA)
Basestation Tower Mounted Amplifiers (TMA)



LNA & TMA Suggested Components

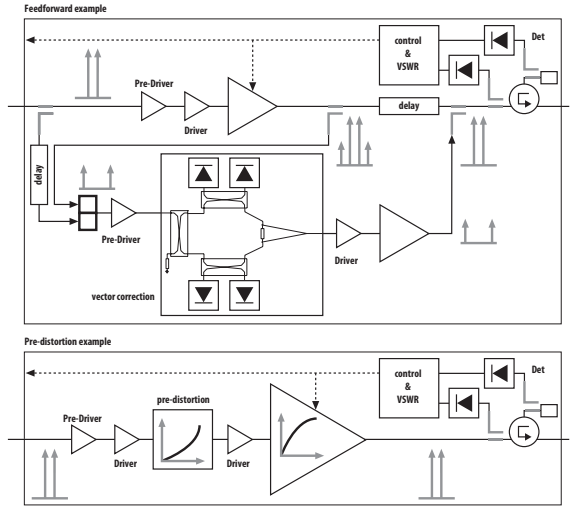
Application	Part Number	Typ. Bias V/ mA	Frequency Range/GHz	Gain/dB[1] @ 2GHz	P1dB/dBm[1] @ 2GHz	OIP3/dBm @ 2GHz	NF/dB[2] @ 2GHz	Device Type and Package (mm)
Q1	**MGA-13116**	5/55	0.4 - 1.5	38	23.3	41.4	0.51	QFN 4x4x0.85
	MGA-13216	5/53	1.5 - 2.5	35.8	23.6	40.5	0.61	QFN 4x4x0.85
	MGA-14516	5/45	1.4 - 2.7	31.7	–	23.5	0.66	QFN 4x4x0.85
	MGA-16516[6]	5/50	0.7 - 1.7	17.5	18.0	11.5 (IIP3)	0.45	QFN 4x4x0.85
	MGA-17516	5/50	1.7 - 2.7	17.2	21.5	13.7 (IIP3)	0.52	QFN 4x4x0.85
	MGA-631P8[3]	4/60	0.4 - 1.5	17.5	18.0	33.1	0.53	E-pHEMT MMIC, LPCC 2x2
	MGA-632P8[3]	4/60	1.4 - 3	17.6	19.2	34.8	0.62	E-pHEMT MMIC, LPCC 2x2
	MGA-633P8	5/54	0.45 - 2	18	–	37	0.37	QFN 2x2x0.75
	MGA-634P8	5/48	1.5 - 2.3	17.4	22	36	0.37	QFN 2x2x0.75
	MGA-635P8	5/56	2.3 - 4.0	18	21.9	35.9	0.56	QFN 2x2x0.75
	ALM-11036	5/92	0.776 - 0.87	15.6	4	37.6	0.78	SMT 7x10
	ALM-11136	5/92	0.87 - 0.915	15.4	4.5	38.2	0.76	SMT 7x10
	ALM-11236	5/99	1.71 - 1.85	15.9	3.5	32.3	0.67	SMT 7x10
	ALM-11336	5/100	1.85 - 1.98	15.3	3.8	35.5	0.72	SMT 7x10
	ATF-58143	3/30	0.45 - 6	16.5	19	30.5	0.5	E-pHEMT FET, SOT343
	ATF-54143	3/60	0.45 - 6	16.6	20	36.2	0.5	E-pHEMT FET, SOT343
	ATF-55143	2.7/10	0.45 - 6	17.7	14	24.2	0.6	E-pHEMT FET, SOT343
	ATF-53189	4/135	0.05 - 6	15.5	23	40	0.62	E-pHEMT FET, SOT89
	ATF-531P8	4/135	0.05 - 6	20	24.5	38	0.6	E-pHEMT FET, LPCC
	ALM-1222	5/280	1.8 - 2.2	31.0	27.5	43.7	0.62	MCOB 5.0x6.0x1.1
	ALM-1322	5/100	1.8 - 2.2	29.9	17	35.6	0.57	MCOB 5.0x6.0x1.1
	ALM-1522[7]	5/240	0.7 - 1.1	31.0	27.7	43.0	0.60	MCOB 5.0x6.0x1.1
Q2/Q3	**MGA-30116**[4]	5/202.8	0.75 - 1	17	-	44.1	2	QFN 3x3
	MGA-30216	5/206	1.7 - 2.7	14.2	-	45.3	2.8	QFN 3x3
	MGA-30316[5]	5/198	3.3 - 3.9	12.8	-	44.4	2.7	QFN 3x3
	MGA-53543	5/54	0.4 - 6	15.4	18.6	39.1	1.5	E-pHEMT MMIC, SOT343
	MGA-53589	5/52	0.05 - 3.0	15.8	18.2	37	1.7	SOT-89
	MGA-636P8	4.8/105	0.45 - 1.5	18.5	23	41.5	0.5	QFN 2x2x0.75
	MGA-637P8	4.8/70	1.5 - 2.5	17.5	22	41.5	0.6	QFN 2x2x0.75
	MGA-638P8	4.8/90	2.5 - 4	17.5	22	39.5	0.8	QFN 2x2x0.75
	ATF-50189	4.5/280	0.05 - 6	15.5	29	45	1.1	E-pHEMT FET, SOT89
	ATF-501P8	4.5/280	0.05 - 6	14.7	28	45	–	E-pHEMT FET, LPCC
	ATF-511P8	4.5/200	0.05 - 6	14.8	30	41.7	1.4	E-pHEMT FET, LPCC
	ATF-52189	4.5/200	0.05 - 6	16	27	42	1.21	E-pHEMT FET, SOT89
	ATF-521P8	4.5/200	0.05 - 6	17	26.5	42	0.96	E-pHEMT FET, LPCC
	ATF-53189	4/135	0.05 - 6	15.5	23	40	0.62	E-pHEMT FET, SOT89
	ATF-531P8	4/135	0.05 - 6	20	24.5	38	0.6	E-pHEMT FET, LPCC
Bypass Switch - PIN Diodes	**HSMP-389x**	General purpose switch, Ct typ. = 0.4pF @0V						SOT-323/363/23/143/SOD-323
	HSMP-489x	Low inductance, shunt, Ct typ. = 0.4pF @0V						SOT323/23
	HSMP-386x	Higher linearity switch, Ct typ = 0.2pF @0V						SOT323/363/23/25/SOD-323
Attenuator - PIN Diodes	**HSMP-381x**	Very low distortion, Ct typ. = 0.2pF @0V, see AN1048 & AN5262 pi-attenuator design						SOT323/23/25/SOD-323
	HSMP-386x	Lower current, low cost, Ct typ. = 0.2pF @0V, see AN1048 pi-attenuator design						SOT323/363/23/25/SOD-323
Attenuator-Module	ALM-38140	Low distortion, high dynamic range attenuator module						MCOB 3.8x3.8x1.0

Recommended Parts in **Bold**.

Notes:

1. Gain and P1dB performance for discrete FETs when matched for best IP3.
2. NFmin figures for discrete FETs.
3. Both MGA-631P8 and MGA-632P8 come with integrated active bias circuit. MGA-631P8 data tested at 900MHz.
4. MGA-30116 data tested at 900MHz.
5. MGA-30316 data tested at 3.5GHz.
6. MGA-16516 data tested at 850MHz
7. ALM-1522 data tested at 900MHz

Basestation Multi-carrier Power Amplifier (MCPA)



MCPA Suggested Compoments

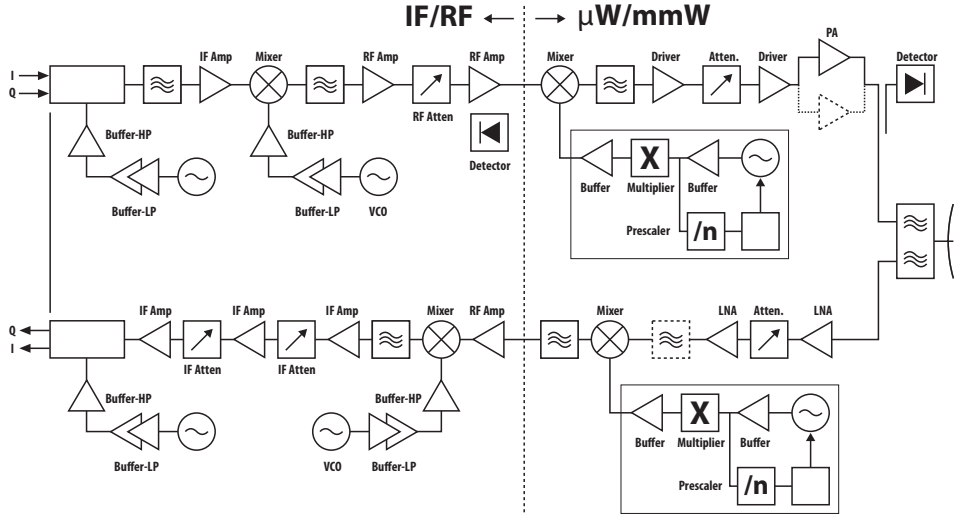
Application	Part Number	Typ. Bias V/ mA	Frequency Range/GHz	Gain/dB[1] @ 2GHz	P1dB/dBm[1] @ 2GHz	OIP3/dBm @ 2GHz	NF/dB[2] @ 2GHz	Device Type and Package (mm)
Pre-Driver	**MGA-30116**[3]	5/202.8	0.75 - 1	17	–	44.1	2	QFN 3x3
	MGA-30216	5/206	1.7 - 2.7	14.2	–	45.3	2.8	QFN 3x3
	MGA-30316[4]	5/198	3.3 - 3.9	12.8	–	44.4	2.7	QFN 3x3
	MGA-30489	5/97	0.25 - 3.0	13.3	23.3	39	3	SOT-89
	MGA-30689	5/104	0.04 - 2.6	14.6	22.5	40	3.3	SOT-89
	MGA-30789	5/100	2 - 6	11.7	–	41.8	3.3	SMT 4.5x4.1x1.5
	MGA-30889	5/65	0.04 - 2.6	15.5	–	38	1.9	SMT 4.5x4.1x1.5
	MGA-30989	5/51	2 - 6	12	–	36.8	2	SMT 4.5x4.1x1.5
	MGA-31189	5/111	0.05 - 2	21	24	42	3	SOT-89
	MGA-31289	5/124	1.5 - 3	18.7	24	41.8	3	SOT-89
	MGA-31389	5/73	0.05 - 2	21.3	22.2	38.6	2	SOT-89
	MGA-31489	5/69	1.5 - 3	19.5	21.9	37.3	1.9	SOT-89
	MGA-31589	5/146	0.45 - 1.5	20.4	27.2	45.3	1.9	SOT-89
	MGA-31689	5/168	1.5 - 3	18.1	27.6	44.9	1.9	SOT-89
	MGA-53543	5/54	0.4 - 6	15.4	18.6	39.1	1.5	E-pHEMT MMIC, SOT343
	MGA-53589	5/52	0.05 - 3.0	15.8	18.2	37	1.7	SOT-89
	MGA-545P8	3.3/127	0.05 - 7	18.6	21.7	34	2.7	E-pHEMT MMIC, LPCC
	ATF-52189	4.5/200	0.05 - 6	16	27	42	1.21	E-pHEMT FET, SOT89
	ATF-521P8	4.5/200	0.05 - 6	17	26.5	42	0.96	E-pHEMT FET, LPCC
	ATF-53189	4/135	0.05 - 6	15.5	23	40	0.62	E-pHEMT FET, SOT89
	ATF-531P8	4/135	0.05 - 6	20	24.5	38	0.6	E-pHEMT FET, LPCC
	ADA-4789	4.1/80	DC - 2.5	16.3	16.9	29	4.5	Si MMIC, SOT89
Driver	**ATF-50189**	4.5/280	0.05 - 6	15.5	29	45	1.1	E-pHEMT FET, SOT89
	ATF-501P8	4.5/280	0.05 - 6	14.7	28	45	–	E-pHEMT FET, LPCC
	ATF-511P8	4.5/200	0.05 - 6	14.8	30	41.7	1.4	E-pHEMT FET, LPCC
	ALM-31122[3]	5/394	0.7 - 1	15.6	–	47.6	2	MCOB 5.0x6.0x1.1
	ALM-31222	5/415	1.7 - 2.7	14.9	–	47.9	2.7	MCOB 5.0x6.0x1.1
	ALM-31322[4]	5/413	3.3 - 3.9	13.2	–	47.7	2.8	MCOB 5.0x6.0x1.1
	ALM-32120[3]	5/800	0.7 -1.0	14	–	52	2.5	MCOB 7.0x10.0x1.1
	ALM-32220	5/800	1.7 - 2.7	14.8	–	50	3.5	MCOB 7.0x10.0x1.1
	ALM-32320[4]	5/800	3.3 - 3.9	12.5	–	50	2.5	MCOB 7.0x10.0x1.1
Detector - Schottky Diodes	**HSMS-282x**	Ct max = 1pF @0V						SOT323/363/23/143
	HSMS-286x	Ct max = 0.3pF @0V						SOT323/363/23/143
Vector Correction - PIN Diodes	**HSMP-481x**	Low inductance, shunt, very low distortion, Ct typ. = 0.2pF @0V						SOT323/23
	HSMP-381x	Very low distortion, Ct typ. = 0.2pF @0V						SOT323/23/SOD-323

Recommended Parts in **Bold**.

Notes:

1. Gain and P1dB performance for discrete FETs when matched for best IP3.
2. NFmin figures for discrete FETs.
3. MGA-30116, ALM-31122 and ALM-32120 data tested at 900MHz.
4. MGA-30316, ALM-31322 and ALM-32320 data tested at 3.5GHz.
5. ALM-1522 data tested at 900MHz

Microwave Link (Point-point/point-multipoint)



Microwave Link MMICs Suggested Components

Application	Part Number	Bias V/mA	Freq Range GHz	Typical Performance				Package (mm)
				Gain dB	P1dB dBm	OIP3 dBm	NF dB	
Power Amplifiers	AMMP-6408	5/650	6 -18	18	28	38	4.5	SM 5x5
	AMMC-6408	5/650	6 -18	19	29	38	4.3	chip
	AMMC-6425	5/900 - 0.6	18 - 28	18.5	28.5	38	/	chip
	AMMC-6431	5/0.65	25-33	19	28.5	38	/	chip
	AMMP-6441	5/450	36 - 40	20	26	32	/	SM 5x5
	AMMC-6442	5/0.7	37-40	23	30	18	/	chip
Driver/Buffer Amps[1]	AMMP-5618	5/107	6 - 20	13	19	30	4.4	SM 5x5
	AMMC-5618	5/107	6 - 20	14.5	19.5	26	4.4	chip
	AMMP-5620	5/95	6 - 20	17.5	15	22.5	5.1	SM 5x5
	AMMC-5620	5/95	6 - 20	19	15	23.5	4.2	chip
	AMMC-5040	4.5/300 - 0.45	20 - 45	25	19.5	30	/	chip
	AMMP-6333	5/230	18-33	22	23	30	/	SM 5x5
	AMMC-6333	5/230	18-33	22	23	30	/	chip
	AMMC-6345	5/480 - 0.7	20 - 45	20	24	32	/	chip
	AMMP-6421	5/600	13 -16	26	29	36	5	SM 5x5
Low Noise Amplifiers	VMMK-1225	2/20	0.5 - 26	11	8	23	1	SM
	VMMK-1218	3/20	0.5 - 18	10.7	12	12	0.81	SM 1x0.5
	AMMP-6220	3/55	6 - 20	22	10	20	2.5	SM 5x5
	AMMC-6220	3/55	6 - 20	23	9	19	2	chip
	AMMP-6222	4/120	7 -21	24	15.5	29	2.3	SM 5x5
	AMMC-6222	4/120	7 -21	25	16	29	2.1	chip
	AMMP-6232	4/138	18 - 32	23	18	29	3	SM 5x5
	AMMC-6232	4/138	18 - 32	24	19	29	2.8	chip
	AMMP-6233	3/65	18 - 32	23	8	19	2.6	SM 5x5
	AMMC-6241	3/60	26 - 43	20	10	20	2.7	chip
Travelling Wave Amplifiers	AMMP-5024	7/200	(30k) - 40	15	22	30	4.4	SM 5x5
	AMMC-5024	7/200 - 3	(30k) - 40	16	22.5	30	4.6	chip
	AMMC-5026	7/150 - 1	2 - 35	10.5	24	31	3.6	chip

Recommended Parts in **Bold**.

Notes:

1. Also see Low Noise Amplifiers.

Microwave Link (Point-point/point-multipoint)

Microwave/Millimeter Wave Diode Suggested Components

Application	Part Number	Description	Package
Detector - Schottky diodes	HSCH-5310/5330	Si single, Ct=0.1pF, med. barrier/low barrier	Beamlead
	HSCH-5312/5332	Si single Ct=0.15pF, med. barrier/low barrier	Beamlead
Mixers - Schottky diodes	**HSCH-5310/5330**	Si single, Ct=0.1pF, med. barrier/low barrier	Beamlead
	HSCH-5312/5332	Si single Ct=0.15pF, med. barrier/low barrier	Beamlead
	HSCH-5531	Si series pair, Ct=0.15pF, low barrier/ Ct=0.1pF, med. barrier	Beamlead
Multiplier - Schottky diodes	**HSCH-5310/5330**	Si single, Ct=0.1pF, med. barrier/low barrier	Beamlead
	HSCH-5312/5332	Si single Ct=0.15pF, med. barrier/low barrier	Beamlead
	HSCH-5531	Si series pair, Ct=0.15pF, low barrier/ Ct=0.1pF, med. barrier	Beamlead
Attenuator - PIN diodes	HPND-4005	Si single, Ct=17fF, t=100ns	Beamlead
Switch - PIN diodes	HPND-4005	Si single, Ct=17fF, t=100ns	Beamlead
	HPND-4028/4038	Si single. Ct=45fF, t=36ns / Ct=65ns, t=45ns	Beamlead

Recommended Parts in **Bold**.

Microwave Link - RF Component Suggestions

Application	Part Number	Typ. Bias V/mA	Frequency Range/GHz	Gain (dB) @ 2GHz	P1dB (dBm) @ 2GHz	OIP3 (dBm) @ 2GHz	NF (dB) @ 2GHz	Device Type and Package (mm)
RF Amplifier	MGA-30489	5/97	0.25 - 3.0	13.3	23.3	39	3	SOT-89
	MGA-30689	5/104	0.04 - 2.6	14.6	22.5	40	3.3	SOT-89
	MGA-30789	5/100	2 - 6	11.7	–	41.8	3.3	SMT 4.5x4.1x1.5
	MGA-30889	5/65	0.04 - 2.6	15.5	–	38	1.9	SMT 4.5x4.1x1.5
	MGA-30989	5/51	2 - 6	12	–	36.8	2	SMT 4.5x4.1x1.5
	MGA-31189	5/111	0.05 - 2	21	24	42	3	SOT-89
	MGA-31289	5/124	1.5 - 3	18.7	24	41.8	3	SOT-89
	MGA-31389	5/73	0.05 - 2	21.3	22.2	38.6	2	SOT-89
	MGA-31489	5/69	1.5 - 3	19.5	21.9	37.3	1.9	SOT-89
	MGA-31589	5/146	0.45 - 1.5	20.4	27.2	45.3	1.9	SOT-89
	MGA-31689	5/168	1.5 - 3	18.1	27.6	44.9	1.9	SOT-89
	MGA-53543	5/54	0.4 - 6	15.4	18.6	39.1	1.5	E-pHEMT MMIC, SOT343
	MGA-53589	5/52	0.05 - 3.0	15.8	18.2	37	1.7	SOT-89
	MGA-545P8	3.3/127	0.05 - 7	18.6	21.7	34	2.7	E-pHEMT MMIC, LPCC
	MGA-61563[1]	3/41.6	0.1 - 6	15.5	15.1	31.7	1	E-pHEMT MMIC, SOT363
	ABA-53563	5/35	DC - 3.5	21.5	12.7	22.9	3.5	Si MMIC, SOT363
	ABA-54563	5/81	DC - 3	22.5	16	26	4.2	Si MMIC, SOT363
	ADA-4789	4.1/80	DC - 2.5	16.3	16.9	29	4.5	Si MMIC, SOT89
Mixer	IAM-92516	5/26	0.4 - 3.5	6 (CL)	9	27 (IIP3)	12.5	E-pHEMT MMIC, LPCC(3x3)
Buffer-High Power	MGA-565P8[2]	5/67	0.1 - 3.5	21.8	20 (Psat)	–	–	E-pHEMT MMIC, LPCC
	ABA-54563	5/81	DC - 3	22.5	16	27.3	4.4	Si MMIC, SOT363
Buffer-Low Power	ABA-31563	3/14	DC - 3	21.5	2.2	13.1	3.8	Si MMIC, SOT363
	ABA-32563	3/37	DC - 3	19	8.4	19.5	3.5	Si MMIC, SOT363
	ABA-51563	5/18	DC - 3.5	21.5	1.8	11.4	3.7	Si MMIC, SOT363
	ABA-52563	5/35	DC - 3.5	21.5	9.8	19.9	3.3	Si MMIC, SOT363
	ABA-53563	5/35	DC - 3.5	21.5	12.7	22.9	3.5	Si MMIC, SOT363
	AVT-50663	5/36	DC-6000	15.3	12.5	25	4	SOT-363 (SC70)
	AVT-51663	5/37	DC-6000	19.6	12.9	25.1	3.2	SOT-363 (SC70)
	AVT-52663	5/45	DC-6000	15.3	12.7	27	4	SOT-363 (SC70)
	AVT-53663	5/48	DC-6000	19.6	15.1	26.5	3.2	SOT-363 (SC70)
	AVT-54689	5/48	0.05 - 6	17.1	17.4	29.6	4.1	SOT-89
	AVT-55689	5/75	0.05 - 6	17.2	19.5	32.5	4.3	SOT-89

Recommended Parts in **Bold**.

Notes:

1. Current Adjustable: 20-60mA.
2. High Reverse Isolation: 50dB typical.

Microwave Link (Point-point/point-multipoint)

Microwave Link - RF Component Suggestions

Application	Part Number	Features	Device Type and Package
Detector - Schottky Diodes	HSMS-282x	Ct max = 1pF @0V	SOT323/363/23/143
	HSMS-286x	Ct max = 0.3pF @0V	SOT323/363/23/143
RF Attenuator - PIN Diodes	HSMP-381x	Very low distortion, Ct typ. = 0.2pF @0V, see AN1048 & AN5262 pi-attenuator design	SOT323/23/25/SOD-323
	HSMP-386x	Lower current, low cost, Ct typ. = 0.2pF @0V, see AN1048 pi-attenuator design	SOT323/363/23/25/SOD-323
Attenuator - Module	ALM-38140	Low distortion, high dynamic range attenuator module	MCOB 3.8x3.8x1.0mm

Application	Part Number	Typ. Bias V/mA	Frequency Range/GHz	Gain (dB) @ 500MHz	P1dB (dBm) @ 500MHz	OIP3 (dBm) @ 500MHz	NF (dB) @ 500MHz	Device Type and Package
IF Amplifier	MGA-62563[1]	3/55	0.1 - 3	22	18	35	0.8	E-pHEMT MMIC, SOT363
	MGA-545P8	3.3/135	0.1 - 7	22	19	36	2	E-pHEMT MMIC, LPCC
	MGA-30489	5/97	0.25 - 3.0	18.8	22.7	37	3.3	SOT-89
	MGA-30689	5/104	0.04 - 2.6	14.4	22.2	44	3.0	SOT-89
	MGA-30889	5/65	0.04 - 2.6	15.5	–	38	1.9	SMT 4.5x4.1x1.5
	MGA-31189	5/111	0.05 - 2	21	24	42	3	SOT-89
	MGA-31389	5/73	0.05 - 2	21.3	22.2	38.6	2	SOT-89
	ADA-4789	4.1/80	DC - 2.5	17	18.8	35	4.2	Si MMIC, SOT89
	ADA-4743	(3.8)/60	DC - 2.5	16.5	17.1	34	4.2	Si MMIC, SOT343
	ADA-4643	(3.5)/35	DC - 2.5	17.3	14	29	4	Si MMIC, SOT343
	ADA-4543	(3.4)/15	DC - 2.5	15.5	2.4	15	3.7	Si MMIC, SOT343
	ABA-54563	5/81	DC - 3	23	18	32	3	Si MMIC, SOT363
	ABA-53563	5/46	DC - 3.5	21.5	15	27.5	2.9	Si MMIC, SOT363
	ABA-52563	5/35	DC - 3.5	21.8	12.5	28	2.7	Si MMIC, SOT363
	AVT-50663	5/36	DC-6000	15.3	12.5	25	4	SOT-363 (SC70)
	AVT-51663	5/37	DC-6000	19.6	12.9	25.1	3.2	SOT-363 (SC70)
	AVT-52663	5/45	DC-6000	15.3	12.7	27	4	SOT-363 (SC70)
	AVT-53663	5/48	DC-6000	19.6	15.1	26.5	3.2	SOT-363 (SC70)
	AVT-54689	5/48	0.05 - 6	17.1	17.4	29.6	4.1	SOT-89
	AVT-55689	5/75	0.05 - 6	17.2	19.5	32.5	4.3	SOT-89

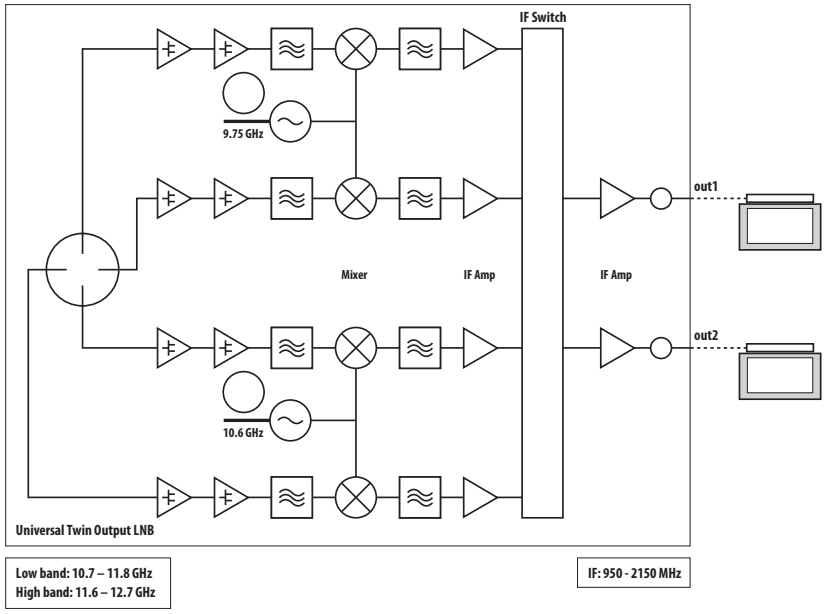
Application	Part Number	Features	Package
Attenuator - PIN Diodes	HSMP-381x	Very low distortion, Ct typ. = 0.2pF @0V, see AN1048 & AN5262 pi-attenuator design	SOT323/23/25/SOD-323
	HSMP-386x	Lower current, low cost, Ct typ. = 0.2pF @0V, see AN1048 pi-attenuator design	SOT323/363/23/25/SOD-323
Attenuator - Module	**ALM-38140**	Low distortion, high dynamic range attenuator module	MCOB 3.8x3.8x1.0mm

Recommended Parts in **Bold**.

Notes:

1. Current Adjustable: 20-60mA

DBS Satellite TV System

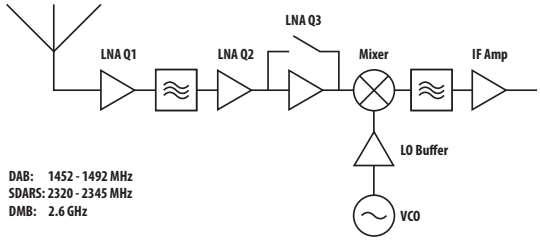


DBS Satellite TV System Suggested Components

Application	Part number	Typ. Bias V/ mA	Frequency Range/GHz	Gain/dB @ 2GHz	P1dB/dBm @ 2GHz	OIP3/dBm @ 2GHz	NF/dB @ 2GHz	Device Type and Package
IF Amplifier	**ABA-31563**	3/14	DC - 3	21.5	2.2	13.1	3.8	Si MMIC, SOT363
	ABA-32563	3/37	DC - 3	19	8.4	19.5	3.5	Si MMIC, SOT363
	ABA-51563	5/18	DC - 3.5	21.5	1.8	11.4	3.7	Si MMIC, SOT363
	ABA-52563	5/35	DC - 3.5	21.5	9.8	19.9	3.3	Si MMIC, SOT363
	ABA-53563	5/46	DC - 3.5	21.5	12.7	22.9	3.5	Si MMIC, SOT363
	ABA-54563	5/79	DC - 3.4	23	16.1	27.8	4.4	Si MMIC, SOT363
	AT-41511	5/25	10GHz ft	12.5 (MAG)	14.5	25	2.5	Si BJT, SOT143
	AVT-50663	5/36	DC-6000	15.3	12.5	25	4	SOT-363 (SC70)
	AVT-51663	5/37	DC-6000	19.6	12.9	25.1	3.2	SOT-363 (SC70)
	AVT-52663	5/45	DC-6000	15.3	12.7	27	4	SOT-363 (SC70)
	AVT-53663	5/48	DC-6000	19.6	15.1	26.5	3.2	SOT-363 (SC70)
	AVT-54689	5/48	0.05 - 6	17.1	17.4	29.6	4.1	SOT-89
	AVT-55689	5/75	0.05 - 6	17.2	19.5	32.5	4.3	SOT-89
	MGA-61563	3/41	0.1 - 6	15.5	15.1	31.7	1.0	E-pHEMT MMIC, SOT363
IF Switch	**HSMP-386x**	Higher linearity switch, Ct typ = 0.2pF @0V						SOT323/363/23/SOD-323
	HSMP-389x	General purpose switch, Ct typ. = 0.4pF @0V						SOT323/23/SOD-323
	HMPS-389x	General purpose switch, Ct typ. = 0.4pF @0V						Minipak
Mixer - Schottky Diodes	**HSMS-8202**	Ct max = 0.26pF @0V						SOT23
		RD max = 14W @ IF=5Ma						

Recommended Parts in **Bold**.

Mobile DAB/SDARS/DMB-S Digital Receivers



Mobile DAB/SDARS/DMB-S Digital Receivers Suggested Components

Application	Part number	Typ. Bias V/ mA	Gain/dB[1] DAB SDARS DMB-S	OIP3/dBm DAB SDARS DMB-S	NF/dB[2] DAB SDARS DMB-S	Device Type and Package (mm)
LNA Q1/Q2	**ATF-55143**	2.7/10	20.0 17.0 16.0	23.0 24.0 24.0	0.3 0.45 0.5	E-pHEMT FET, SOT343
	ATF-551M4	2.7/10	20.0 16.5 16.0	23.0 24.2 24.2	0.3 0.45 0.5	E-pHEMT FET, MiniPak
	MGA-21108	1.4/17	12.5 12.0 13.0	(-2) 0 1.0 (IIP3)	2.8 2.2 1.8	STSLP 2.5x2.5x0.55
	MGA-635T6	2.85/4.9	14.6 12.0 –	3.5 4.5 –	0.86 0.96 –	E-pHEMT, UTSLP 2x1.3x0.4
LNA Q3	**MGA-645T6**	3/7	– 15.0 14.2	– 7 7.8	– 1.1 1.15	E-pHEMT, UTSLP 2x1.3x0.4
	MGA-71543[3]	3/10[4]	16.5 15.2 14.6	19.5 18.2 17.6	0.7 0.8 0.85	GaAs MMIC, SOT343
	MGA-72543[3]	3/20[4]	14.3 13.2 12.8	24.8 23.7 23.3	1.4 1.45 1.45	GaAs MMIC, SOT343
	MGA-725M4[3]	3/20[4]	16.6 15.3 14.6	26.5 25.2 24.5	1.2 1.3 1.3	GaAS MMIC, MiniPak
Mixer	**IAM-91563**	3/9 to 15	9.5 7.5 7.0	3.0 to 4.5	7.5 11.0 11.5	GaAs MMIC, SOT363

Notes:
1. Gain for discrete FETs when matched for best IP3.
2. NFmin figures for LNA parts.
3. LNA bypass switch included.
4. Current adjustable to set linearity performance

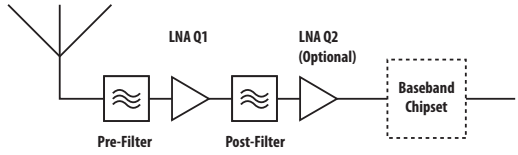
Application	Part number	Typ. Bias V/ mA	Frequency Range/GHz	Gain/dB @ 2GHz	P1dB/dBm @ 2GHz	OIP3/dBm @ 2GHz	NF/dB @ 2GHz	Device Type and Package
LO Buffer	**ABA-31563**	3/14.5	DC - 3	21	2	13	3.8	Si MMIC, SOT363
	ABA-32563	3/38	DC - 2.5	18.5	8	19	3.4	Si MMIC, SOT363

Recommended Parts in **Bold**.

DMB-T/ISDB-T Receivers Suggested Components

Application	Part number	Typ. Bias V/mA	Gain/dB @ 500MHz	OIP3/dBm @ 500MHz	NF/dB @ 500MHz	Device Type and Package (mm)
LNA Q1/Q2	**MGA-685T6**	3.0/10	18.9	18.7	0.93	E-pHEMT, UTSLP 2x1.3x0.4
	MGA-68563	3.0/10	19.7	20.0	1.0	E-pHEMT MMIC, SOT363
LNA Q3	**MGA-785T6**	3.0/10	15.7	16.8	1.5	E-pHEMT, UTSLP 2x1.3x0.4
	MGA-725M4	3.0/9	14	16.5	1.7	GaAs MMIC, MiniPak

GPS Receivers



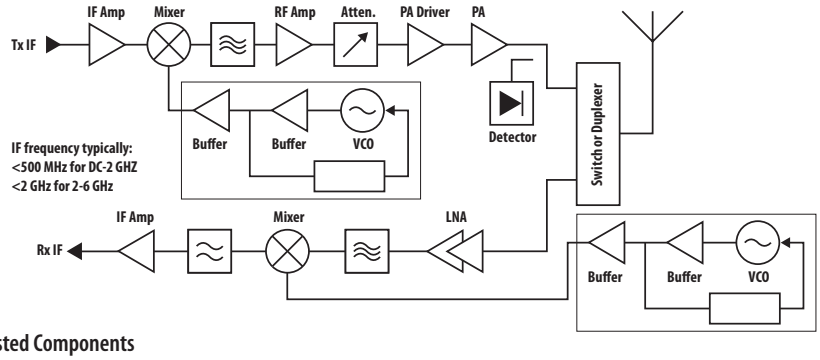
Mobile GPS Receivers Suggested Components

Application	Part Number	Typ. Bias V/ mA	NF/dB	Gain/dB	IIP3/dBm	Device Type and Package (mm)
LNA Q1/Q2	ALM-1106	2.85/8	0.8	14.3	4.7	E-pHEMT MMIC, MCOB 2 x 2
	ALM-2506	2.85/8	0.8	14.3	4.7	E-pHEMTF, MCOB 2x2x1.1
	MGA-231T6	2.85/6	0.9	18.5	2.0	E-pHEMT, UTSLP 2x1.3x0.4
	MGA-24106	2.7/3.3	0.97	17.9	-2.0	uDFN 1.5x1.3x0.5
	MGA-61563	3.0/9	1.18	16	-3	E-pHEMT MMIC, SOT-363
	MGA-635T6	2.85/4.9	0.86	14.6	3.5	E-pHEMT, UTSLP 2x1.3x0.4
	MGA-665P8	3.0/21	1.22	20.8	-0.5	E-pHEMT MMIC, LPCC 2 x 2
	*ATF-55143	2.0/10	0.6	17.4	-0.6	E-pHEMT FET, SOT343

Note:
*Refer to Application Note 1376.

Application	Part Number	Typ. Bias V/ mA	NF/dB	Gain/dB	IIP3/dBm	Cell-Band Rejection/dBc	PCS-Band Rejection/dBc	Device Type and Package (mm)
LNA Q1 with Integrated Post Filter	ALM-1412	2.85/8	0.82	13.5	7	54	63	MCOB 3.3x2.1x1.1
	ALM-1612	2.7/6	0.95	18.2	2	69	67	MCOB 3.3x2.1x1.0
	ALM-2412	2.85/9	0.85	13.5	6.1	63	65	MCOB 3.3x2.1x1.1
	ALM-2712	2.7/7.5	12.6	14.2	2	–	–	MCOB 3x2.5x1
LNA Q1 with Integrated Pre and Post Filters	ALM-1712	2.7/8	1.65	12.8	3	104	92.6	E-pHEMT & FBAR, MCOB 4.5x2.2x1.0
	ALM-1812	2.8/6	1.9	18.5	2	95	90	E-pHEMT & FBAR, MCOB 4.5x2.2x1.0
	ALM-1912	2.7/6	1.62	19.3	1.5	>57	>53	MCOB 2.9x2x1

2-6 GHz Systems (including 802.11 a/b/g and 802.16)



2-6 GHz Systems Suggested Components

Application	Part Number	Typical Performance					Package (mm)
		Test Bias V/mA	Test Freq GHz	Gain[1] dB	Linear Pout dBm	EVM %	
PA	MGA-22003	–	2.5	35	–	–	Small Size 3x3x1
	MGA-23003	–	3.5	35	–	–	Small Size 3x3x1
	MGA-25203	–	5.4	30	–	–	Small Size 3x3x1
	MGA-412P8	3.3/95	2.452	25.5	19	3.0	E-pHEMT MMIC. LPCC
	MGA-425P8[2]	3.3/58	5.25	16.0	12	3.0	E-pHEMT MMIC. LPCC
	MGA-43228	5 /500	2.4	38.5	29.2	2.5	QFN 5x5x0.85
	MGA-43328	5 /470	2.6	37.3	29.3	2.5	QFN 5x5x0.85
	MGA-545P8	3.3/127	5.825	11.5	16	5.6	E-pHEMT MMIC, LPCC
	ALM-42216	3.3/240	2.5	30	23.5	2.5	MCOB 5.0x5.0x1.1
	ALM-42316	3.3/240	3.5	30	23	2.5	MCOB 5.0x5.0x1.1
	ALM-31222	5/415	2	14.9	–	–	MCOB 5.0x6.0x1.1
	ALM-31322	5/413	3.5	13.2	–	–	MCOB 5.0x6.0x1.1
	ALM-32220	5/800	2	14.8	–	–	MCOB 7.0x10.0x1.1
	ALM-32320	5/800	3.5	12	–	–	MCOB 7.0x10.0x1.1

Application	Part Number	Typical Performance						Package (mm)
		Test Bias V/mA	Test Freq GHz	Gain[1] dB	P1dB[1] dBm	OIP3 dBm	NF dB	
PA Driver	MGA-30216	5/206	2	14.2	–	45.3	2.8	QFN 3x3
	MGA-30316	5/198	3.5	12.8	–	44.4	2.7	QFN 3x3
	MGA-53543	5/54	1.9	15.4	18.6	39.1	1.5	E-pHEMT MMIC. SOT343
	ATF-501P8	4.5/280	2	15	29	45.5	1	E-pHEMT FET, LPCC
	ATF-511P8	4.5/200	2	14.8	30	41.7	1.4	E-pHEMT FET, LPCC
	ATF-521P8	4.5/200	2	17	26.5	42	1.5	E-pHEMT FET, LPCC
	ATF-531P8	4/135	2	20	24.5	38	0.6	E-pHEMT FET, LPCC
	ATF-541M4	3/60	2	17.5	21.4	35.8	0.5	E-pHEMT FET, MiniPak
	ATF-54143	3/60	2	16.6	20.4	36.2	0.5	E-pHEMT FET, SOT343
WiFi/WiMAX	AFEM-S257		2.5 - 2.7	16 QAM WiMAX EVM <-30dB min. (2.5%) at 24dBm				MCOB 5x7x1
	AFEM-S102		2.4 - 2.5	SP3T Switch 2.5GHz WiFi/Bluetooth Fem				Small Size 2.2x2.2x0.55
	AFEM-S105		5.1 - 5.9	EVM <-32.5dB at 15dBm, <-35dB at 12dBm				Small Size 3.2x3.2x0.6
	MGA-22103		2.5-2.7	16 QAM WiMAX EVM <-32dB (2.5%) at 25 dBm				Small Size 3x3x1

Notes:

1. Gain and P1dB performance for discrete FETs when matched for best IP3.
2. Current adjustable: 10 - 80mA.
3. Current adjustable 10 - 60mA.
4. High reverse isolation: 50dB typical.

2-6 GHz Systems (including 802.11 a/b/g and 802.16)

2-6 GHz Systems Suggested Components

Application	Part Number	Typical Performance						Package
		Test Bias V/ mA	Test Freq GHz	Gain[1] dB	P1dB[1] dBm	OIP3 dBm	NF dB	
RF Amplifier	MGA-61563[3]	3/41	2	15.5	15.1	31.7	1	E-pHEMT MMIC, SOT363
Buffer Amplifier	ABA-31563	3/14	2	21.5	2.2	13.1	3.8	Si MMIC, SOT363
	ABA-32563	3/37	2	19	8.4	19.5	3.5	Si MMIC, SOT363
	ABA-51563	5/18	2	21.5	1.8	11.4	3.7	Si MMIC, SOT363
	ABA-52563	5/35	2	21.5	9.8	19.9	3.3	Si MMIC, SOT363
	ABA-53563	5/46	2	21.5	12.7	22.9	3.5	Si MMIC, SOT363
	ABA-54563	5/79	2	23	16.1	27.8	4.4	Si MMIC, SOT363
	MGA-565P8[4]	5/67	2	21.8	20 (Psat)			E-pHEMT MMIC, LPCC
	MGA-61563[3]	3/41	2	15.5	15.1	31.7	1	E-pHEMT MMIC, SOT363

Application	Part Number	High Isolation, High Linearity switch with Detector	Package
Switch De[a]tector Module	AFEM-S260	2 - 4	MCOB 3x4x1

Notes:
1. Gain and P1dB performance for discrete FETs when matched for best IP3.
2. Current adjustable: 10 - 80mA.
3. Current adjustable 10 - 60mA.
4. High reverse isolation: 50dB typical.

Application	Part Number	Test Bias	Test Freq	Gain[1]	P1dB[1]	OIP3	NF	Package (mm)
Low Noise Amplifiers	MGA-14516	5.0/45	1.95	31.7	23.5	38	0.68	QFN 4x4x0.85
	MGA-21108	1.4/17	3.5	17.6	5.3	20.9	1.4	STSLP 2.5x2.5x0.55
	MGA-61563[2]	3/41	2	15.5	15.1	31.7	1	E-pHEMT MMIC, SOT363
	MGA-632P8	4/60	1.95	17.6	18.3	35.4	0.6	LPCC 2x2
	MGA-645T6	3/7	2.4	15	9.0	22	1.1	E-pHEMT, UTSLP 2x1.3x0.4
	MGA-655T6	3/10	3.5	14.7	12.0	20.2	1.17	E-pHEMT, UTSLP 2x1.3x0.4
	MGA-665P8	3/20.5	5.25	16	11.4	18.2	1.45	E-pHEMT MMIC, LPCC
	MGA-675T6	3.0/10	5.5	17.8	(-10) IP1dB	(-3) IIP3	1.75	E-pHEMT, UTSLP 2x1.3x0.4
	MGA-64606	3/7	2.4	15.3	-3.0 (IP1dB)	20.3	0.95	UTSLP 2.0x1.3
	MGA-65606	3/7	3.5	15.3	-2.4 (IP1dB)	21	1.05	UTSLP 2.0x1.3
	MGA-71543[3]	2.4/10	2.01	15.9	7.4	18.9	1.1	pHEMT MMIC, SOT343
	MGA-85563	3/15	2	19	0.9	11.5	1.85	pHEMT MMIC, SOT363
	MGA-87563	3/4.5	2	14	-2	8	1.8	pHEMT MMIC, SOT363
	ATF-36077	1.5/10	12	12	5		0.5	pHEMT FET, ceramic
	ATF-36163	1.5	12	10	5		1.2	pHEMT FET, SOT363
	ATF-551M4	2.7/10	2	17.5	14.6	24.1	0.5	E-pHEMT FET, MiniPak
	ATF-55143	2.7/10	2	17.7	14.4	24.2	0.6	E-pHEMT FET, SOT343
	ALM-2812	3.3/15	2.45	16.7	(-5.8) IP1dB	6.1 IIP3	0.8	MCOB 3x3x1.1
		3.3/23.4	5.5	23.2	(-12.8) IP1dB	(-2.1) IIP3	1.4	MCOB 3x3x1.1
	VMMK-1218	3/20	10	10.7	12	12	0.7	SM 1x0.5
	VMMK-1225	2/20	12	11	8	23	0.9	SM 1x0.5
Mixers	IAM-91563	3/9	1.89	9	-8	-6	8.5	pHEMT MMIC, SOT363

Notes
1. Gain and P1dB performance for discrete FETs when matched for best IP3
2. Current adjustable 10 - 60mA
3. Source grounded configuration

2-6 GHz Systems (including 802.11 a/b/g and 802.16)

2-6 GHz Systems Suggested Components

Application	Part Number	Ct max @0V	Package
Detector	HMPS-282x	1pF	Schottky, MiniPak
	HSMS-282x	1pF	Schottky, SOT323/363/23/143
	HSMS-286x	0.3pF	Schottky, SOT323/363/23/143
Switch	HMPP-389x	0.35pF	PIN, MiniPak
	HSMP-389x/489x	0.4pF	SOT323/363/23/143/SOD-323
	HMPP-386x	0.2pF	PIN, MiniPak
	HSMP-386x	0.2pF	SOT323/363/23/SOD-323

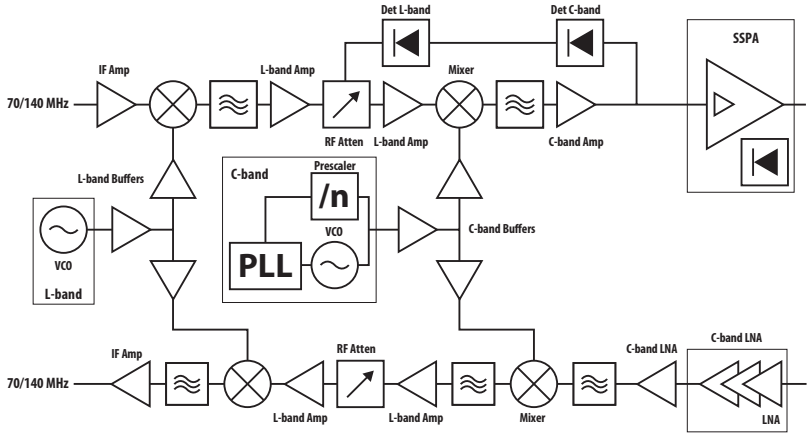
Application	Part Number	Typ. Bias V/ mA	Frequency Range/GHz	Gain/dB @ 2GHz	P1dB/dBm @ 2GHz	OIP3/dBm @ 2GHz	NF/dB @ 2GHz	Device Type and Package
IF Amplifier	MGA-62563[1]	3/55	0.1 - 3	22	18	35	0.8	E-pHEMT MMIC, SOT363
	MGA-545P8	3.3/135	0.1 - 7	22	19	36	2	E-pHEMT MMIC, LPCC
	ADA-4789	4.1/80	DC - 2.5	16.3	16.9	29	4.5	Si MMIC, SOT89
	ADA-4743	(3.8)/60	DC - 2.5	16.5	17.1	34	4.2	Si MMIC, SOT343
	ADA-4643	(3.5)/35	DC - 2.5	17.3	14	29	4	Si MMIC, SOT343
	ADA-4543	(3.4)/15	DC - 2.5	15.5	2.4	15	3.7	Si MMIC, SOT343
	ABA-54563	5/81	DC - 3	23	18	32	3	Si MMIC, SOT363
	ABA-53563	5/46	DC - 3.5	21.5	15	27.5	2.9	Si MMIC, SOT363
	ABA-52563	5/35	DC - 3.5	21.8	12.5	28	2.7	Si MMIC, SOT363
	AVT-50663	5/36	DC-6000	15.3	12.5	25	4	SOT-363 (SC70)
	AVT-51663	5/37	DC-6000	19.6	12.9	25.1	3.2	SOT-363 (SC70)
	AVT-52663	5/45	DC-6000	15.3	12.7	27	4	SOT-363 (SC70)
	AVT-53663	5/48	DC-6000	19.6	15.1	26.5	3.2	SOT-363 (SC70)

Recommended Parts in **Bold**.

Notes

1. Current adjustable 20 - 60mA

C-Band



Tx/GHz: 5.880-6.425, 5.725-6.275, 6.725-7.025, 6.425-6.725
Rx/GHz: 3.625-4.200, 3.400-3.950, 4.500-4.800, 3.400-3.700

VSAT Suggested Components

Application	Part number	Typ. Bias V/ mA	Frequency Range/GHz	Gain/dB @ 500MHz	P1dB/dBm @ 500MHz	OIP3/dBm @ 500MHz	NF/dB @ 500MHz	Device Type and Package
IF Amplifier	MGA-62563[1]	3/55	0.1 - 3	22	18	34.8	0.8	E-pHEMT MMIC, SOT363
	MGA-545P8	3.3/135	0.1 - 7	22	19	36	2	E-pHEMT MMIC, LPCC
	ADA-4789	4.1/80	DC - 2.5	17	18.8	35	4.2	Si MMIC, SOT89
	ADA-4743	(3.8)/60	DC - 2.5	16.6	17.1	34	4.2	Si MMIC, SOT343
	ABA-53563	5/46	DC - 3.5	21.5	15	27.5	2.9	Si MMIC, SOT363
	ABA-52563	5/35	DC - 3.5	21.8	12.5	28	2.7	Si MMIC, SOT363

Application	Part number	Typ. Bias V/ mA	Frequency Range/GHz	Gain/dB @ 2GHz	P1dB/dBm @ 2GHz	OIP3/dBm @ 2GHz	NF/dB @ 2GHz	Device Type and Package
L-band Amplifier	MGA-53543	5/54	0.4 - 6	15.4	18.6	39.1	1.5	E-pHEMT MMIC, SOT343
L-band Buffer - Low Power	MGA-61563[1]	3/41.6	0.1 - 6	15.5	15.1	31.7	1	E-pHEMT MMIC, SOT363
	MGA-82563	3/84	0.1 - 6	13.2	17.3	31	2.2	GaAs MMIC, SOT363
	MGA-81563	3/42	0.1 - 6	12.4	14.8	27	2.8	GaAs MMIC, SOT363
	ABA-53563	5/46	DC - 3.5	21.5	12.7	22.9	3.5	Si MMIC, SOT363
	ABA-52563	5/35	DC - 3.5	21.5	9.8	19.9	3.3	Si MMIC, SOT363
	ABA-51563	5/18	DC - 3.5	21.5	1.8	11.4	3.7	Si MMIC, SOT363
	MGA-85563[3]	3/15 to 30	0.8 - 6	19	1 to 8	12 to 17	1.9	GaAs MMIC, SOT363
L-band Buffer-High Power	MGA-565P8[2]	5/67	0.1 - 3.5	21.8	20 (Psat)	–	–	E-pHEMT MMIC, LPCC
	MGA-82563	3/84	0.1 - 6	13.2	17.3	31	2.2	GaAs MMIC, SOT363

Recommended Parts in **Bold**.
Notes:
1. Current adjustable 10-60mA.
2. High reverse isolation: 50dB typical.
3. Reverse Isolation 40dB typical.

C-Band

VSAT Suggested Components

Application	Part Number	Description	Package
L-band/C-band Detector - Schottky Diodes	**HSMS-282x**	Ct max = 1pF @0V	SOT323/363/23/143
	HSMS-286x	Ct max = 0.3pF @0V	SOT323/363/23/143
RF Attenuator - PIN Diodes	**HSMP-381x**	Very low distortion, Ct typ. = 0.2pF @0V, see AN1048 pi-attenuator design	SOT323/23/25/SOD-323
	HSMP-386x	Lower current, low cost, Ct typ. = 0.2pF @0V, see AN1048 pi-attenuator design	SOT323/363/23/25/SOD-323
RF Attenuator - Module	ALM-38140	Low distortion, high dynamic range attenuator module	MCOB 3.8x3.8x1.0mm

Recommended Parts in **Bold**.

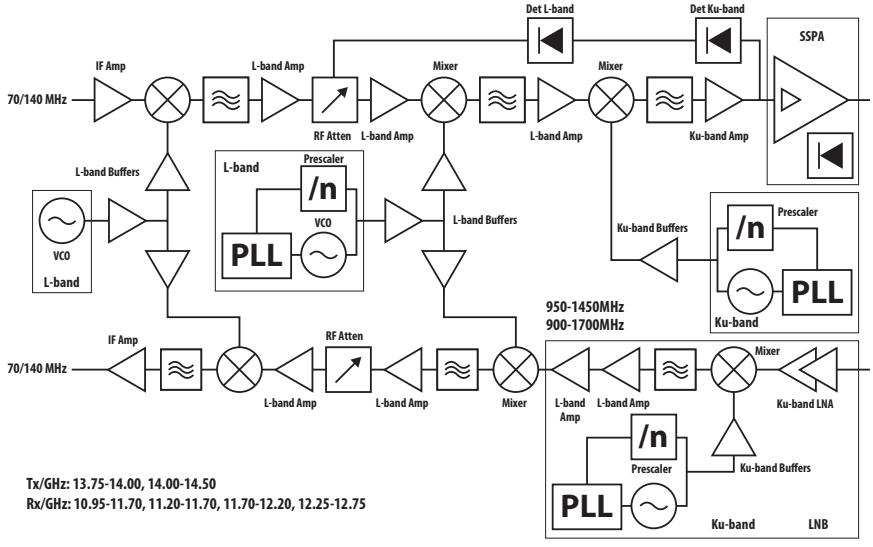
Application	Part number	Typ. Bias V/ mA	Frequency Range/GHz	Gain/dB[1] @ 5GHz	P1dB/dBm[1] @ 5GHz	OIP3/dBm @ 5GHz	NF/dB[2] @ 5GHz	Device Type and Package
C-band LNA	ATF-36077	1.5/10	2 - 18	16	5	–	0.3	PHEMT FET, ceramic
	ATF-36163	1.5/10	1.5 - 18	15	5	–	0.61	PHEMT FET, SOT363
	ATF-551M4	2.7/10	0.5 - 6	12	14.5	24.5	0.75	E-pHEMT FET, MiniPak
	ATF-55143	2.7/10	0.5 - 6	12	13.5	24	0.9	E-pHEMT FET, SOT343
C-band Amplifier C-band Buffer	MGA-545P8	3.3/135	0.1 - 6	12	21	34	3.6	E-pHEMT MMIC, LPCC
	MGA-82563	3/84	0.1 - 6	9.5	17	31	2.6	GaAs MMIC, SOT363
	MGA-81563	3/42	0.1 - 6	10.5	14.5	27	3.2	GaAs MMIC, SOT363
	MGA-85563	3/15 to 30	0.8 - 6	16	1 to 8	12 to 18	1.6	GaAs MMIC, SOT363
	ATF-541M4	3/60	0.5 - 8	11	19.5	37.5	1.02	E-pHEMT FET, MiniPak
	ATF-54143	3/60	0.5 - 6	11	18	36	0.93	E-pHEMT FET, SOT343
	ATF-521P8	4.5/200	0.5 - 6	10	27	39	1.75	E-pHEMT FET, LPCC

Recommended Parts in **Bold**.

Notes:

1. Gain and P1dB performance for discrete FETs when matched for best IP3
2. NFmin figures for discrete FETs

Ku-Band



VSAT Suggested Components

Application	Part number	Typ. Bias V/ mA	Frequency Range/GHz	Gain/dB[1] @ 12GHz	P1dB/dBm[1] @ 12GHz	OIP3/dBm @ 12GHz	NF/dB[2] @ 12GHz	Device Type and Package (mm)
Ku-band LNA	ATF-36077	1.5/10	2 - 18	12	5	–	0.5	PHEMT FET, Ceramic
	ATF-36163	1.5/10	1.5 - 18	9.4	5	–	1	PHEMT FET, SOT363
	AMMP-6220	3/60	6 - 20	23	10	23	2.2	SM 5x5
	VMMK-1225	2/20	0.5 - 26	11	8	23	0.9	SM 1x0.5
	VMMK-1218	3/20	0.5 - 18	10.7	12	12	0.7	SM 1x0.5
Ku-band Amplifier	AMMP-5618	5/107	6 - 20	13	19	30	4.4	SM 5x5
Ku-band Buffer	AMMP-6408	5/650	6 - 18	18	28	38	4.5	SM 5x5
Ku-band Mixer (IRM)	AMMP-6530	-1/0	5 - 30	-10	8	18	10	SM 5x5

Recommended Parts in **Bold**.
Notes:
1. Gain and P1dB performance for discrete FETs when matched for best noise.
2. NFmin figures for discretes FETs.

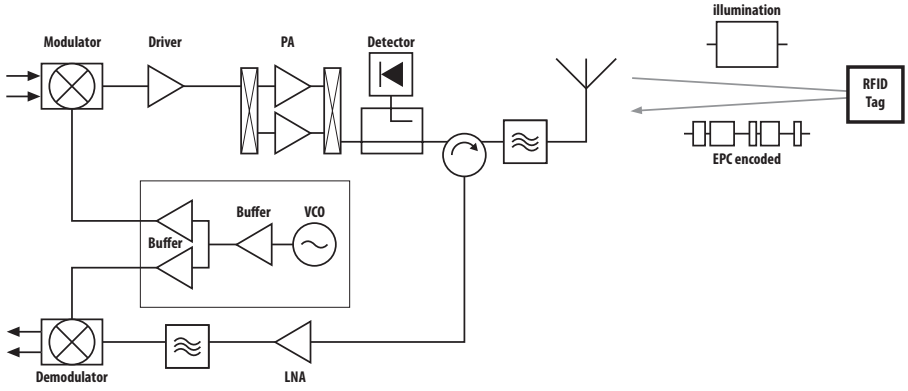
Ku-Band

VSAT Suggested Components

Application	Part Number	Description	Package
Ku-band Detector - Schottky diodes	**HSMS-286x**	Ct max = 0.3pF @0V	SOT323/363/23/143
	HSCH-5310/5330	Si single, Ct=0.1pF, med. barrier/low barrier	beamlead
	HSCH-5312/5332	Si single Ct=0.15pF, med. barrier/low barrier	beamlead
Ku-band Mixer - Schottky diodes	**HSMS-8202**	Si series pair, Ct=0.26pF, low-cost	SOT23
	HSCH-5312/5332	Si single Ct=0.15pF, med. barrier/low barrier	beamlead
	HSCH-5531	Si series pair, Ct=0.15pF, low barrier/ Ct=0.1pF, med. barrier	beamlead

Recommended Parts in **Bold**.

RFID 900 MHz Reader



RFID 900MHz Reader Suggested Components

Application	Part number	Typ. Bias V/ mA	Frequency Range/GHz	Gain/dB[1] @ 0.9GHz	P1dB/dBm[1] @ 0.9GHz	OIP3/dBm @ 0.9GHz	NF/dB[2] @ 0.9GHz	Device Type and Package (mm)
LNA	MGA-53543	5/54	0.4 - 6	17.4	19.3	39.7	1.3	E-pHEMT MMIC, SOT343
	MGA-72543[5]	3/20	0.1 - 6	14.8	12	23	1.35	E-pHEMT MMIC, SOT343
	ATF-54143	3/60	0.45 - 6	23.4	18.4	35.5	0.3	E-pHEMT FET, SOT343
	ATF-58143	3/30	0.45 - 6	23.1	18.1	28.6	0.3	E-pHEMT FET, SOT343
Driver Amplifier	MGA-53543	5/54	0.4 - 6	17.4	19.3	39.7	1.3	E-pHEMT MMIC, SOT343
	MGA-545P8	3.3/127	0.05 - 7	22.4	21.5	34	2.6	E-pHEMT MMIC, LPCC
	MGA-61563[4]	3/41	0.1 - 6	19.3	15.4	30.5	0.9	E-pHEMT MMIC, SOT363
	ATF-52189	4.5/200	0.05 - 6	16.5	27.2	42	1	E-pHEMT FET, SOT89
	ATF-521P8	4.5/200	0.05 - 6	17.2	26.5	42.5	0.7	E-pHEMT FET, LPCC
	ATF-53189	4/135	0.05 - 6	17.2	21.7	42	0.41	E-pHEMT FET, SOT89
	ATF-531P8	4/135	0.05 - 6	25	23	37	0.26	E-pHEMT FET, LPCC
	ADA-4789	4.1/80	DC - 2.5	16.9	18.8	33.2	4.3	Si MMIC, SOT89
	ADA-4743	3.8/60	DC - 2.5	16.5	17.1	32.6	4.2	Si MMIC, SOT343
Power Amplifier	ATF-50189	4.5/280	0.05 - 6	21.5	28.5	44	1	E-pHEMT FET, SOT89
	ATF-501P8	4.5/280	0.05 - 6	16.6	27.3	42	1	E-pHEMT FET, LPCC
	ATF-511P8	4.5/200	0.05 - 6	17.8	29.6	43	1.2	E-pHEMT FET, LPCC
Mixer	IAM-92516	5/26	0.4 - 3.5	6.5 (CL)	16 (IP1dB)	29.3 (IIP3)	7.1	E-pHEMT MMIC, LPCC(3x3)
Buffer-High Power	MGA-565P8[3]	5/67	0.1 - 3.5	28	22 (Psat)	–	–	E-pHEMT MMIC, LPCC
	ABA-54563	5/79	DC - 3.4	23	18	34	4.2	Si MMIC, SOT363
Buffer-Low Power	ABA-31563	3/14	DC - 3.5	21.3	3	15	3.8	Si MMIC, SOT363
	ABA-32563	3/37	DC - 2.5	20.5	9.5	22.5	3.1	Si MMIC, SOT363
	ABA-51563	5/18	DC - 3.5	21	3.5	15	3.4	Si MMIC, SOT363
	ABA-52563	5/35	DC - 3.5	21.3	12	26	2.9	Si MMIC, SOT363
	ABA-53563	5/46	DC - 3.5	21.5	14.5	26.5	3.1	Si MMIC, SOT363
Detector	HSMS-282x	Ct max = 1pF @0V						SOT323/363/23/143

Notes:

1. Gain and P1dB performance for discrete FETs when matched for best IP3.
2. NFmin figures for discrete FETs.
3. High reverse isolation: 50dB typical.
4. Current adjustable: 20-60mA.
5. Includes integral bypass function. Current adjustable between 5 – 60mA.

Product Selection Guides
RFICs (GaAs and Silicon)

GaAs RFICs

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Vdd (V)	Idq (mA)	NF (dB)	Gain (dB)	P1dB (dBm)	OIP3 (dBm)	Package
GaAs Fixed Gain Amplifiers	MGA-52543	0.4 - 6	1.9	5	53	1.9	14.2	+17.4	+32	SOT-343 (SC-70)
	MGA-53543	0.4 - 6	1.9	5	54	1.5	15.4	+18.6	+39	SOT-343 (SC-70)
	MGA-53589	0.05 - 6	1.9	5	52	1.66	15.8	+18.5	+37	SOT-89
	MGA-81563	0.1 - 6	2.0	3	42	2.8	12.4	+14.8	+27	SOT-363 (SC-70)
	MGA-82563	0.1 - 6	2.0	3	84	2.2	13.2	+17.3	+31	SOT-363 (SC-70)
	MGA-85563	0.8 - 6	2.0	3	15 to 30	1.9	18.0	+1 to +8	+12 to +17	SOT-363 (SC-70)
	MGA-86563	0.5 - 6	2.0	5	14	1.5	22.7	+4.1	+15	SOT-363 (SC-70)
	MGA-86576	1.5 - 8	4.0	5	16	1.6	23.1	+6.3	+16	SM Ceramic
	MGA-87563	0.5 - 4	2.0	3	4.5	1.6	14.0	-2	+8	SOT-363 (SC-70)

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Vdd (V)	Idsat (mA)	PAE (%)	Gain (dB)	PSAT (dBm)	OIP3 (dBm)	Package (mm)
GaAs Medium Power Amplifiers	MGA-30789	2 - 6	3.5	5	100		11.7	–	41.8	SMT 4.5x4.1x1.5
	MGA-30889	0.04 - 2.6	0.9	5	65		15.5	–	38	SMT 4.5x4.1x1.5
	MGA-30989	2 - 6	3.5	5	51		12	–	36.8	SMT 4.5x4.1x1.5
	MGA-412P8	2.4 - 2.5	2.4	3.3	95	NA	25.5	+25.3	38	LPCC 2X2
	MGA-425P8	2 - 10	5.25	3.3	65	47.0	16.0	+20.3	32.9	LPCC 2x2
	MGA-545P8	0.05 - 7	5.825	3.3	92	46.0	11.5	+22	+34	LPCC 2x2
	MGA-83563	0.5 - 6	2.4	3	152	37.0	22.0	+22	+29	SOT-363 (SC-70)

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Vdd (V)	Idq (mA)	NF (dB)	Gain (dB)	OP1dB (dBm)	OIP3 (dBm)	Package (mm)
GaAs Match-Pair Dual LNA	MGA-16516	0.7 - 1.7	0.85	5	50	0.45	17.5	18	11.5 (IIP3)	QFN 4x4x0.85
	MGA-17516	1.7 - 2.7	1.95	5	50	0.52	17.2	21.5	13.7 (IIP3)	QFN 4x4x0.85

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Vdd (V)	Idq (mA)	NF (dB)	Gain (dB)	P1dB (dBm)	OIP3 (dBm)	Package (mm)
GaAs Smart Bias Amplifier	MGA-14516	1.4 - 2.7	1.95	5	45	0.66	31.7	23.5	38	QFN 4x4x0.85
	MGA-61563	0.1 - 6	2	3	41	1.2	16.6	+15.8	+28.5	SOT-363 (SC-70)
	MGA-62563	0.1 - 3	0.5	3	60	0.9	22.0	+17.8	+32.9	SOT-363 (SC-70)
	MGA-631P8	0.4 - 1.5	0.9	4	60	0.5	17.5	18	32.8	LPCC2x2
	MGA-632P8	1.4 - 3	1.95	4	60	0.6	17.6	18.3	35.4	LPCC2x2
	MGA-685T6	0.1 - 1.5	0.5	3	10	0.9	18.9	17.3	+18.7	UTSLP 2.0x1.3x0.4
	MGA-68563	0.1 - 1.5	0.5	3	11	1	19.7	17.5	20.7	SOT-363

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Vdd (V)	Idq (mA)	NF (dB)	Gain (dB)	PAE (%)	OIP3 (dBm)	Package (mm)
GaAs High Linearity Amplifier	ALM-31122	0.7 - 1	0.9	5	394	2	15.6	52.5	47.6	MCOB 5.0x6.0x1.1
	ALM-31222	1.7 - 2.7	2	5	415	2.7	14.9	52.6	47.9	MCOB 5.0x6.0x1.1
	ALM-31322	3.3 - 3.9	3.5	5	413	2.8	13.2	51.5	47.7	MCOB 5.0x6.0x1.1
	ALM-32120	0.7 - 1.0	0.9	5	800	2.5	14	47	52	MCOB 7.0x10.0x1.1
	ALM-32220	1.7 - 2.7	2	5	800	3.5	14.8	47.5	50	MCOB 7.0x10.0x1.1
	ALM-32320	3.3 - 3.9	3.5	5	800	2.5	12	43	49	MCOB 7.0x10.0x1.1
	MGA-30116	0.75 - 1	0.9	5	202.8	2	17	47	44.1	QFN 3x3
	MGA-30216	1.7 - 2.7	2	5	206	2.8	14.2	48.9	45.3	QFN 3x3
	MGA-30316	3.3 - 3.9	3.5	5	198	2.7	12.8	51.3	44.4	QFN 3x3
	MGA-30489	0.25 - 3.0	1.9	5	97	3	13.3	–	39	SOT-89
	MGA-30689	0.04 - 2.6	1.95	5	104	3.3	14.6	–	40	SOT-89
	MGA-31189	0.05 - 2	0.9	5	111	3	21	42.5	42	SOT-89
	MGA-31289	1.5 - 3	1.9	5	124	2	18.7	36.4	41.8	SOT-89
	MGA-31389	0.05 - 2	0.9	5	73	2	21.3	41.2	38.6	SOT-89
	MGA-31489	1.5 - 3	1.9	5	69	1.9	19.5	39.1	37.3	SOT-89
	MGA-31589	0.45 - 1.5	0.9	5	146	1.9	20.4	45	45.3	SOT-89
	MGA-31689	1.5 - 3	1.9	5	168	1.9	18.1	48	44.9	SOT-89
	MGA-53589	50MHz - 6GHz	1.9	5	54	1.66	18.6	–	37	SOT-89

RFICs (GaAs and Silicon)

GaAs RFICs

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Vdd (V)	Idsat (mA)	Isolation (dB)	Gain (dB)	Psat (dBm)	Package (mm)
GaAs LO Buffer Amplifier	MGA-565P8	0.1 - 3	2	5	67	50.0	21.8	+20	LPCC2x2

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Vd/Id (V/mA)	Switch Insertion Loss (dB)	NF (dB)	Gain (dB)	P1dB (dBm @ mA)	IIP3 (dBm @mA)	Package (mm)
GaAs Amplifier with Bypass Switch	MGA-645T6	1.7 - 3	2.4	3/7	4.5	1.1	15.0	+9 @ 7	+7 @ 7	UTSLP 2.0x1.3x0.4
	MGA-64606	1.5 -3	2.4	3/7	4.5	0.95	15.3	-3.0(IP1dB)	+5@7	UTSLP 2.0x1.3
	MGA-655T6	2.5 - 4	3.5	3/10	4.2	1.17	14.7	+12 @ 10	+5.5 @ 10	UTSLP 2.0x1.3x0.4
	MGA-65606	2.5 - 4	3.5	3/7	4.2	1.05	15.3	-2.4(IP1dB)	+5.7@7	UTSLP 2.0x1.3
	MGA-71543	0.1 - 6	2	2.7/10	5.6	0.8	15.4	+7.4 @ 10	+3 @ 10	SOT-343 (SC-70)
	MGA-72543	0.1 - 6	2	2.7/20	2.5	1.4	13.6	+11.2 @ 20	+10.5 @ 20	SOT-343 (SC-70)
	MGA-725M4	0.1 - 6	2	2.7/20	1.6	1.3	15.7	+13.1 @ 20	+9.9 @ 20	MiniPak Package
	MGA-785T6	0.1 - 1.5	0.6	3/10	2.6	1.5	15.7	3.2 @ 10	+1.10 @ 10	UTSLP 2.0x1.3x0.4

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Vd (V)	Id (mA)	NF (dB)	Gain (dB)	P1dB (dBm)	OIP3 (dBm)	Package (mm)
GaAs LNA with Power Down	MGA-665P8	0.5 - 6	5.25	3	21	1.5	16.5	11.1	15.4	LPCC2x2
GaAs LNA Module	MGA-13116	0.4 - 1.5	0.9	5	55	0.51	38	23.3	41.4	QFN 4x4x0.85
	MGA-13216	1.5 - 2.5	1.95	5	53	0.61	35.8	23.6	40.5	QFN 4x4x0.85
	MGA-21108	1.5 - 8.0	3.5	1.4	17	1.4	17.6	5.3	20.9	STSLP 2.5x2.5x0.55
	MGA-231T6	0.9 - 3.5	1.575	2.7	6	0.9	18.5	(-8) IP1dB	2 (IIP3)	E-pHEMT, UTSLP 2x1.3x.04
	MGA-24106	0.9 - 3.5	1.575	2.7	3.3	0.97	17.9	-9.7 (IP1dB)	-2.0 (IIP3)	uDFN 1.5x1.3x0.5
	MGA-633P8	0.45 - 2	0.9	5	54	0.37	18	22	37	QFN 2x2x0.75
	MGA-634P8	1.5 - 2.3	1.9	5	48	0.44	17.4		36	QFN 2x2x0.75
	MGA-635P8	2.3 - 4	2.5	5	56	0.56	18	21.9	35.9	QFN 2x2x0.75
	MGA-636P8	0.45 - 1.5	0.7	4.8	105	0.5	18.5	23	41.5	QFN 2x2x0.75
	MGA-637P8	1.5 - 2.5	1.7	4.8	70	0.6	17.5	22	41.5	QFN 2x2x0.75
	MGA-638P8	2.5 - 4	2.5	4.8	90	0.8	17.5	22	39.5	QFN 2x2x0.75
	MGA-635T6	0.9 - 2.4	1.575	2.85	4.9	0.86	14.6	1 (IP1dB)	3.5 (IIP3)	UTSLP 2.0x1.3x0.4
	MGA-675T6	4.9 - 6.0	5.5	2.7	5	0.9	16.3	NA	14.7	UTSLP
	ALM-11036	0.776 - 0.87	0.849	5	92	0.78	15.6	4	37.6	SMT 7x10
	ALM-1106	0.9 - 2.5	1.575	2.85	8	0.8	14.3	1.8 (IP1dB)	4.7 (IIP3)	MCOB 2x2x1.1
	ALM-11136	0.87 - 0.915	0.915	5	92	0.76	15.4	4.5	38.2	SMT 7x10
	ALM-11236	1.71 - 1.85	1.785	5	99	0.67	15.9	3.5	32.3	SMT 7x10
	ALM-11336	1.85 - 1.98	1.98	5	100	0.72	15.3	3.8	35.5	SMT 7x10
	ALM-2506	0.9 - 2.5	1.575	2.85	8	0.8	14.3	1.9 (IP1dB)	4.7 (IIP3)	MCOB 2x2x1.1

Component	Part Number	Test Freq. (GHz)	Vd/Id (V/mA)	NF (dB)	Gain (dB)	IP1dB (dBm)	IIP3 (dBm)	Cell-Band Rejection	PCS-Band Rejection	Package (mm)
GPS LNA/Filter Module	ALM-1412	1.575	2.85/8	0.82	13.5	2.7	7	54	63	MCOB 3.3x2.1x1.1
	ALM-1612	1.575	2.7/6	0.95	18.2	-8	2	69	67	MCOB 3.3x2.1x1.0
	ALM-2412	1.575	2.85/9	0.85	13.5	2.2	6.1	63	65	MCOB 3.3x2.1x1.1
	ALM-2712	1.575	2.7/7.5	12.6	14.2	5	2	–	–	MCOB 3x2.5x1
GPS Filter/LNA/Filter Module	ALM-1712	1.575	2.7/8	1.65	12.8	3	3	104	92.6	E-pHEMT & FBAR, MCOB 4.5x2.2x1.0
	ALM-1812	1.575	2.8/6	1.9	18.5	-8	2	95	90	E-pHEMT & FBAR, MCOB 4.5x2.2x1.0
	ALM-1912	1.575	2.7/6	1.62	19.3	-8	1.5	>57	>53	MCOB 2.9x2x1

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Vd (V)	Id (mA)	NF (dB)	Gain (dB)	OIP3 (dBm)	P1dB (dBm)	Package (mm)
Variable Gain Amplifier	ALM-80110	0.4 - 1.6	0.9	5	110	4.8	(-27) to 13.6	40.3	23.3	MCOB 5.0x5.0x1.1
	ALM-80210	1.6 - 2.6	1.9	5	110	5.3	(-25.5) to 9.8	40.8	23.6	MCOB 5.0x5.0x1.1

RFICs (GaAs and Silicon)

GaAs RFICs

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Vd (V)	Id (mA)	NF (dB)	Gain (dB)	OIP3 (dBm)	P1dB (dBm)	Package (mm)
WaferCap Amplifier	VMMK-2103	0.5 - 6.0	3	5	24	1.7	13.9	8 (IIP3)	0 (IP1dB)	1x0.5x0.25
	VMMK-2203	0.9 - 11	6	5	25	1.9	16.5	14	5	1x0.5x0.25
	VMMK-2303	0.5 - 6.0	6	1.8	20	1.9	14.1	22	9	1x0.5x0.25
	VMMK-2403	1.5 - 4.0	3	3	38	1.8	15	29	16.5	1x0.5x0.25
	VMMK-2503	1.0 - 12	6	5	65	3.3	14	27	17	1x0.5x0.25
	VMMK-3503	0.5 - 18	–	5	30	3.6	12	10	–	1x0.5x0.25
	VMMK-3603	1 - 6	–	5	35	1.5	17	25	9	1x0.5x0.25
	VMMK-3803	3 - 10	–	3	20	1.7	18.5	18	4.5	1x0.5x0.25

Component	Part Number	Freq. Range (GHz)	Bias (V@mA)	IRL (dB)	ORL (dB)	Insertion Loss (dB)	Directivity (dB)	Package (mm)
WaferCap Detector	VMMK-3113	2 - 6	1.5V@0.15mA	20	20	0.2 - 0.35	15	1x0.5x0.25
	VMMK-3213	6 - 18	1.5V@0.15mA	20	20	0.15 - 0.5	15	1x0.5x0.25
	VMMK-3313	15 - 33	1.5V@0.15mA	20	20	0.25 - 0.7	15	1x0.5x0.25
	VMMK-3413	25 - 45	1.5V@0.15mA	20	20	0.4 - 0.8	18 - 7	1x0.5x0.25

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Voltage (Vdg)	Current (mA)	NF (dB)	Gain (dB)	P1dB (dBm)	OIP3 (dBm)	Package (mm)
Mixers-Downconverter	IAM-91563	0.8 - 6	1.9	3	9	8.5	9.0	-8	-6	SOT-363 (SC-70)
	IAM-92516	0.4 - 3.5	1.9	5	26	12.5	-6.0	9	27 (IIP3)	LPCC 3x3

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Vdd (V)	Idq (mA)	Gain (dB)	P1dB (dB)	Pout @ 2.5% EVM	Atten (dB)	Package (mm)
GaAs WiMAX Power Amplifier Module	ALM-42216	2.3 - 2.7	2.5	3.3	240	30	30	23.5	20	MCOB 5.0x5.0x1.1
	ALM-42316	3.3 - 3.8	3.5	3.3	240	30	30.5	23	18	MCOB 5.0x5.0x1.1
	MGA-43128	0.7 - 0.8	0.75	5	780	33.4	36	29.2	1.8	QFN 5x5
	MGA-43228	2.3 - 2.5	2.4	5	1023	38.5	36	29.1	23.8	QFN 5x5
	MGA-43328	2.5 - 2.7	2.6	5	1017	37.4	36	29.3	24.5	QFN 5x5
	MGA-43428	0.86 - 0.97	0.85	5	800	>30	36	28dBm@ 50dBc ACLR	–	MCOB 5x5
	MGA-43528	1.8 - 2.0	1.9	5	1000	>30	35		–	MCOB 5x5
	MGA-43628	2.0 - 2.2	2.1	5	1000	>30	35		–	MCOB 5x5

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	BCTRL	Gain (dB)	PAE of 19%	IP1dB (dBm)	Package (mm)
WiMAX/WiFi Amplifier Module	MGA-22003	2.3 - 2.7	2.5	2.8	35	19	31	Small Size 3x3x1
	MGA-22103	2.5 - 2.7	16 QAM WiMAX EVM <-32dB (2.5%) at 25 dBm					Small Size 3x3x1
	MGA-23003	3.3 - 3.8	3.5	2.8	35	18	31	Small Size 3x3x1
	MGA-25203	5.1 - 5.9	5.4	2.8	30	13	30	Small Size 3x3x1
	AFEM-S257	2.5 - 2.7	16 QAM WiMAX EVM <-30dB min. (2.5%) at 24dBm					MCOB 5x7x1
	AFEM-S102	2.4 - 2.5	SP3T Switch 2.5GHz WiFi/Bluetooth Fem					Small Size 2.2x2.2x0.55
	AFEM-S105	5.1 - 5.9	EVM <-32.5dB at 15dBm, <-35dB at 12dBm					Small Size 3.2x3.2x0.6

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Vdd (V)	Idq (mA)	NF (dB)	Gain (dB)	IIP3 (dBm)	IP1dB (dBm)	Package (mm)
WiFi Dual Band LNA Module	ALM-2812	2.4 - 2.5	2.45	3.3	15	0.8	16.7	6.1	5.8	MCOB 3.0x3.0x1.1
		4.9 - 6.0	5.5	3.3	23.4	1.4	23.2	2.2	12.8	MCOB 3.0x3.0x1.1

InGap HBT

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Vd (V)	Id (mA)	Gain (dB)	NF (dB)	P1dB (dBm)	OIP3 (dBm)	Package (mm)
Gain Block	AVT-50663	DC-6000	2	5	36	15.3	4	12.5	25	SOT-363 (SC70)
	AVT-51663	DC-6000	2	5	37	19.6	3.2	12.9	25.1	SOT-363 (SC70)
	AVT-52663	DC-6000	2	5	45	15.3	4	12.7	27	SOT-363 (SC70)
	AVT-53663	DC-6000	2	5	48	19.6	3.2	15.1	26.5	SOT-363 (SC70)
	AVT-54689	0.05 - 6	2	5	58	4.1	17.1	17.4	29.6	SOT-89
	AVT-55689	0.05 - 6	2	5	75	4.3	17.2	19.5	32.5	SOT-89

RFICs (GaAs and Silicon)

Silicon RFICs

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Voltage (Vdg)	Current (mA)	NF (dB)	Gain (dB)	P1dB (dBm)	OIP3 (dBm)	Package
Silicon Broadband Amplifiers	ABA-31563	DC - 3.5	2.0	3	14.5	3.8	21.0	+2.0	13.0	SOT-363 (SC-70)
	ABA-32563	DC - 2.5	2.0	3	38	3.4	18.5	+8.0	19.0	SOT-363 (SC-70)
	ABA-51563	DC - 3.5	2.0	5	18	3.7	21.5	+1.8	11.4	SOT-363 (SC-70)
	ABA-52563	DC - 3.5	2.0	5	35	3.3	21.5	+9.8	19.9	SOT-363 (SC-70)
	ABA-53563	DC - 3.5	2.0	5	46	3.5	21.5	+12.7	22.9	SOT-363 (SC-70)
	ABA-54563	DC - 3	2.0	5	79	4.4	23.0	+16.1	27.8	SOT-363 (SC-70)
Silicon Darlington Amplifiers	ADA-4543	DC - 2.5	0.9	3.4	15	3.7	15.1	+1.9	15.0	SOT-343 (SC-70)
	ADA-4643	DC - 2.5	0.9	3.5	35	4.0	17.0	+13.4	28.3	SOT-343 (SC-70)
	ADA-4743	DC - 2.5	0.9	3.8	60	4.2	16.5	+17.1	32.6	SOT-343 (SC-70)
	ADA-4789	DC - 2.5	0.9	3.8	60	4.2	16.5	+17.1	32.6	SOT-89
Silicon Fixed Gain Amplifiers	MSA-0300	DC - 2.8	1 Typ	5	35	6	12.5	10	23	Chip
	MSA-0600	DC - 1	0.5 Typ	3.5	16	2.8	19.5	2	14.5	Chip
	MSA-0836	DC - 4	1.0	7.8	36	3.0	23.0	+12.5	27.0	35 Micro-X
	MSA-0870	DC - 4	1.0	7.8	36	3.0	23.5	+12.5	27.0	70 mil
	MSA-0886	DC - 4	1.0	7.8	36	3.3	22.5	+12.5	27.0	86 Plastic
	MSA-3111	DC - 0.5	1.0	4.5	29	3.5	18.4	+9	23.0	SOT-143
	MSA-3186	DC - 0.5	1.0	4.7	29	3.5	18.7	+9	21.0	86 Plastic
	MSA-2011	DC - 1.0	1.0	5	32	4.3	16.2	+9	22.0	SOT-143
	MSA-2086	DC - 1.1	1.0	5	32	3.7	16.6	+9	22.0	86 Plastic
	MSA-0711	DC - 1.9	1.0	3.8	22	5.0	12.0	+5.5	18.0	SOT-143
	MSA-0736	DC - 2.4	1.0	4	22	4.5	13.0	+5.5	19.0	35 Micro-X
	MSA-0770	DC - 2.5	1.0	4	22	4.5	13.0	+5.5	19.0	70 mil
	MSA-0786	DC - 2.0	1.0	4	22	5.0	12.5	+5.5	19.0	86 Plastic
	MSA-0986	0.1 - 5.5	2.0	7.8	35	6.2	7.2	+10.5	23.0	86 Plastic
	MSA-0236	DC - 2.7	1.0	5	25	6.5	12.0	+4.5	17.0	35 Micro-X
	MSA-0270	DC - 2.8	1.0	5	25	6.5	12.0	+4.5	17.0	70 mil
	MSA-0286	DC - 2.5	1.0	5	25	6.5	12.0	+4.5	17.0	86 Plastic
	MSA-0420	DC - 4.0	1.0	6.3	90	6.5	8.5	16	30.0	200 mil BeO
	MSA-0436	DC - 3.8	1.0	5.25	50	6.5	8.5	+12.5	25.5	35 Micro-X
	MSA-0470	DC - 4.0	1.0	5.25	50	6.5	8.5	+12.5	25.5	70 mil
	MSA-0486	DC - 3.2	1.0	5.25	50	7.0	8.0	+12.5	25.5	86 Plastic
	MSA-0505	0.02 - 2.3	1.0	8.4	80	6.5	7.0	18	29.0	05 Plastic
	MSA-0520	0.02 - 2.8	1.0	12	165	6.5	8.5	+23	33.0	200 mil BeO
	MSA-9970	DC - 2.0	1.0	7.8	35		16.0	+14.5	25.0	70 mil
	MSA-0311	DC - 2.3	1.0	4.7	35	6.0	11.0	+9	22.0	SOT-143
	MSA-0336	DC - 2.7	1.0	5	35	6.0	12.0	+10	23.0	35 Micro-X
	MSA-0370	DC - 2.8	1.0	5	35	6.0	12.0	+10	23.0	70 mil
	MSA-0386	DC - 2.4	1.0	5	35	6.0	12.0	+10	23.0	86 Plastic
	MSA-0611	DC - 0.7	0.5	3.3	16	3.0	18.0	+2	14.0	SOT-143
	MSA-0636	DC - 0.9	0.5	3.5	16	2.8	19.0	+2	14.5	35 Micro-X
	MSA-0670	DC - 1.0	0.5	3.5	16	2.8	19.5	+2	14.5	70 mil
	MSA-0686	DC - 0.8	0.5	3.5	16	3.0	18.5	+2	14.5	86 Plastic
	MSA-1105	0.05 - 1.3	0.5	5.5.	60	3.6	12.0	+17.5	30.0	05 Plastic
	MSA-1110	0.05 - 1.6	0.5	5.5	60	3.5	12.0	+17.5	30.0	100 mil
	MSA-1120	0.05 - 1.6	0.5	5.5	60	3.5	12.0	+17.5	30.0	200 mil BeO
	MSA-2111	DC - 0.5	0.9	3.6	29	3.3	17.5	10	20.0	SOT-143

Transistors

Transistors

Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Voltage (V)	NF (dB)	Gain (dB)	P1dB (dBm)	S21E (dB)	OIP3 (dBm)	Package
Silicon Bipolar Transistor	AT-30511	DC - 5	0.9	2.7	1.1	16.0	+7.0	17.9	17.0	SOT-143
	AT-30533	DC - 5	0.9	2.7	1.1	13.0	+7.0	15.2	17.0	SOT-23
	AT-31011	DC - 5	0.9	2.7	0.9	13.0	+9.0	19.1	20.0	SOT-143
	AT-31033	DC - 5	0.9	2.7	0.9	11.0	+9.0	15.8	20.0	SOT-23
	AT-32011	DC - 5	0.9	2.7	1.0	14.0	+13.0	18.9	24.0	SOT-143
	AT-32032	DC - 6	0.9	2.7	1.0	15.0	+13.0	11.5	23.0	SOT-323
	AT-32033	DC - 5	0.9	2.7	1.0	12.5	+13.0	15.1	24.0	SOT-23
	AT-32063	DC - 5	0.9	2.7	1.1	14.5	+12.0	17.0	24.0	SOT-363 (SC-70)
	AT-41435	DC - 6	2.0	8.0	1.7	14.0	+19.0	17.2		35 micro-X
	AT-41486	DC - 6	1.0	8.0	1.4	18.0	+18.0	17.5		86 mil Plastic
	AT-41535	DC - 6	2.0	8.0	1.7	14.0	19.0	11.0	–	35 micro-X
	AT-41500	DC - 6	2.0	8.0	1.7	12.5	18	11.0	–	Chip
	AT-41511	DC - 5	0.9	5.0	1.0	15.5	+14.5	15.8	25.0	SOT-143
	AT-41532	DC - 6	0.9	5.0	1.0	15.5	+14.5	13.3	25.0	SOT-323
	AT-41533	DC - 5	0.9	5.0	1.0	14.5	+14.5	13.9	25.0	SOT-23
	AT-41586	DC - 6	1.0	8.0	1.4	17.0	+18.0	17.0		86 mil Plastic
	AT-42000	DC - 6	2 Typ	8.0	1.9	14.0	21	11.5		Chip
	AT-42010	DC - 6	2.0	8.0	1.9	13.5	21	11.5	–	100 mil
	AT-42035	DC - 6	2.0	8.0	2.0	13.5	+21.0	11.0		35 micro-X
	AT-42036	DC - 6	2.0	8.0	1.9	13.5	+21.0	16.6		36 micro-X
	AT-42070	DC - 6	2.0	8.0	1.9	14.0	+21.0	17.3		70 mil stripline
	AT-42085	DC - 6	2.0	8.0	1.9	13.5	+20.5	17.0		85 mil Plastic
	AT-42086	DC - 6	2.0	8.0	1.9	13.0	+20.5	16.5		86 mil Plastic

Component	Part Number	Freq. Range (GHz)	Voltage (V)	Test Freq. (GHz)	P1dB (dBm)	G1dB (dBm)	Package
Medium Power Si Transistor	AT-64020	DC - 4	16	2	+28	10	200 mil BeO disk
	AT-64023	DC - 4	16	4	26.5	9.5	230 mil BeO disk
	AT-64000	DC - 4	16	4	26.5	9.5	Chip

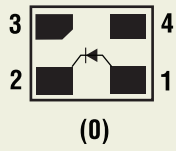
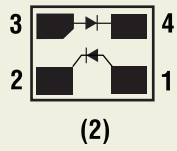
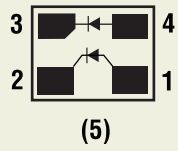
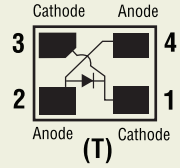
Transistors

Transistors

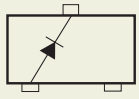
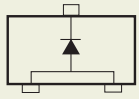
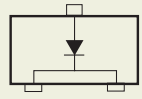
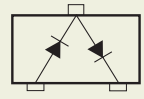
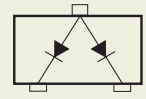
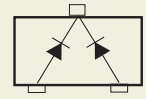
Component	Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Vdd / Idq (V)	NF (dB)	Ga (dB)	P1dB (dBm)	OIP3 (dBm)	Gate Width (um)	Package (mm)
Single Voltage Low Noise GaAs E-pHEMTs	ATF-501P8	.05 - 6	2	4.5/280	1.8	14.6	+28	+47	6400	LPCC 2x2
	ATF-50189	.05 - 6	2	4.5/280	1.1	15.5	+29.1	+45.3	6400	SOT-89
	ATF-511P8	.05 - 6	2	4.5/200	1.4	14.8	+30	+42	6400	LPCC 2x2
	ATF-521P8	05 - 6	2	4.5/200	1.5	17.0	+26.5	+42	3200	LPCC 2x2
	ATF-52189	05 - 6	2	4.5/200	1.5	16.0	+27.0	+42	3200	SOT-89
	ATF-531P8	05 - 6	2	4.0/135	0.6	20.0	+24.5	+38	1600	LPCC 2x2
	ATF-53189	05 - 6	2	4.0/135	0.85	15.5	+23.0	+40	1600	SOT-89
	ATF-54143	.45 - 6	2	3.0/60	0.5	16.6	+20.4	+36	800	SOT-343 (SC-70)
	ATF-541M4	.45 - 10	2	3.0/60	0.5	17.5	+21.4	+36	800	MiniPak Package
	ATF-55143	.45 - 6	2	2.7/10	0.6	17.7	+14.4	+24	400	SOT-343 (SC-70)
	ATF-551M4	.45 - 10	2	2.7/10	0.5	17.5	+14.6	+24	400	MiniPak Package
	ATF-58143	.45 - 6	2	3.0/30	0.5	16.5	+19	+30.5	800	SOT-343 (SC-70)
Low Noise GaAs pHEMTS	ATF-33143	.45 - 6	2	4.0/80	0.5	15.0	+22	+33.5	1600	SOT-343 (SC-70)
	ATF-331M4	.45 - 6	2	4.0/80	0.6	15.0	+19	+31	1600	MiniPak Package
	ATF-34143	.45 - 6	2	4.0/60	0.5	17.5	+20	+31.5	800	SOT-343 (SC-70)
	ATF-35143	.45 - 6	2	2.0/15	0.4	18.0	+11	+21	400	SOT-343 (SC-70)
	ATF-38143	.45 - 6	2	2.0/10	0.4	16.0	+12	+22	800	SOT-343 (SC-70)
	ATF-36077	1.5 - 18	12	1.5	0.5	12.0	+5	–	200	70 mil SM
	ATF-36163	1.5 - 18	12	1.5	1.2	10.0	+5	–	200	SOT-363 (SC-70)
	VMMK-1218	0.5 - 18	–	3/20	0.7	10.7	12	12	–	SM 1x0.5
	VMMK-1225	0.5 - 26	–	2/20	0.9	11	8	23	–	SM 1x0.5

Diodes — PIN

MiniPak

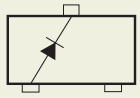
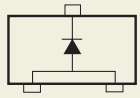
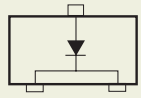
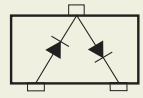
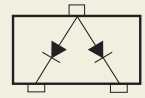
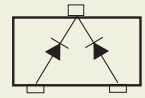
	Single	Anti-parallel	Parallel	Shunt Switch
Configuration				
PIN	HMPP-3860	HMPP-3862	HMPP-3865	
	HMPP-3890	HMPP-3892	HMPP-3895	HMPP-389T

3 Lead Diodes SOT-3223 (SC-70)

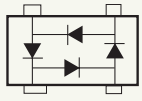
	Single	Dual Anode	Dual Cathode	Series Pair	Common Anode	Common Cathode
Configuration						
PIN	HSMP-381B		HSMP-481B	HSMP-381C	HSMP-381E	HSMP-381F
	HSMP-386B			HSMP-386C	HSMP-386E	HSMP-386F
	HSMP-389B	HSMP-489B		HSMP-389C	HSMP-389E	HSMP-389F
		HSMP-482B				

Diodes — PIN

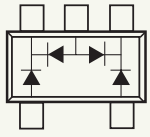
3 Lead Diodes SOT-23

	Single	Dual Anode	Dual Cathode	Series Pair	Common Anode	Common Cathode
Configuration						
PIN	HSMP-3810		HSMP-4810	HSMP-3812	HSMP-3813	HSMP-3814
	HSMP-3860			HSMP-3862	HSMP-3863	HSMP-3864
	HSMP-3890	HSMP-4890		HSMP-3892	HSMP-3893	HSMP-3894
	HSMP-3820	HSMP-4820		HSMP-3822	HSMP-3823	HSMP-3824
	HSMP-3830			HSMP-3832	HSMP-3833	HSMP-3834
				ASML-5822		
				ASML-5829		

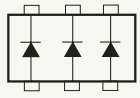
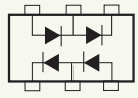
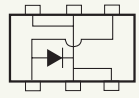
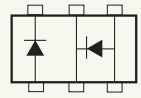
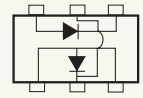
4 Lead Diodes SOT-143

	Unconnected Pair
Configuration	
PIN	HSMP-386D
	HSMP-389D

5 Lead Diodes SOT-25

	Pi Quad
Configuration	
PIN	HSMP-3816
	HSMP-3866

6 Lead Diodes SOT-363 (SC-70)

	Unconnected Trio	Dual Mode Switch	Low Inductance	Series Shunt Pair	High Frequency Series Shunt Pair
Configuration					
PIN	HSMP-386L				
	HSMP-389L	HSMP-389R	HSMP-389T	HSMP-389U	HSMP-389V

Diodes — PIN

PIN Diodes

Application	Part Number	C_t (pF) (max/typ)	RS (Ω) (max)	V_{BR} (V) (min)	T_{rr} (nS) (typ)	Lifetime (nS) (typ)
Low Distortion Attenuator	HSMP-381x	0.35/0.27	3.0	100	300	1500
Low Distortion/Low Inductance Attenuator	HSMP-481x	0.40/0.35	3.0	100	300	1500
Low Resistance Limiter	HSMP-382x	0.8/0.6	0.6	50	7	70
Low Inductance Limiter	HSMP-482x	1.0/0.75	0.6	50	7	70
Low Current Switch/ Attenuator	HSMP-383x	0.3/0.2	1.5	200	80	500
Low Current Switch/ Attenuator	HMPP/HSMP-386x	- / 0.2	1.5 typ	50	80	500
Low Resistance Switch	HMPP/HSMP-389x	0.30/0.20	2.5	50	–	200
Low Resistance/Low Inductance Switch	HSMP-489X	0.38/0.33	2.5	50	–	200

Beam Lead PIN Diodes

Part Number	C_t (pF)	RS (Ω)	V_{BR} (V)	T_{rr} (nS)	Lifetime (nS)	Configuration	Package
HPND-4005	0.017	4.7	120	n/a	100	Single	Beam Lead
HPND-4028	0.045	2.3	60	3	36	Single	Beam Lead
HPND-4038	0.065	1.5	60	2	45	Single	Beam Lead

Component	Part Number	Freq Range (MHz)	TX-ANT IL (dB)	ANT-RX IL (dB)	TX RL (dB)	RX RL (dB)	TX-ANT ISO (dB)	ANT-RX ISO (dB)	TX-RX ISO (dB)	RX-TX ISO (dB)	TX P0.1dB (dBm)	TX IIP3 (dBm)	Package (mm)
TD-SCDMA SPDT Switch	ALM-40220	2010-2025	0.45	0.6	25	25	27	40	40	26	41	60	5.0x5.0x1.0 5-PIN MCOB

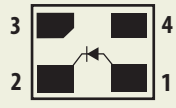
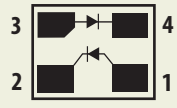
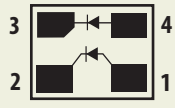
Component	Part Number	Freq Range (MHz)	IIP3 (dBm)	IP1dB (dBm)	Dynamic Range (dB)	IL (dB)	VSWR (dB)	Package (mm)
50MHz – 4GHz PIN Diode Variable Attenuator Module	ALM-38140	50-1000	50	28.8	38	2.8	1.4	3.8x3.8x1.0 MCOB
		1000-2000	48.9	35.6	36	3.2	1.4	

Component	Part Number	Freq Range (MHz)	IIP3 (dBm)	IP1dB (dBm)	ISO (dB)	IL (dB)	RL (dB)	Package
PIN Diode Diversity Switch	HSMP-386D	900	56.8	47.4	25.4	0.35	27.0	SOT-143
	HSMP-389D	900	55.4	46.3	25.7	0.36	28.0	

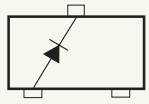
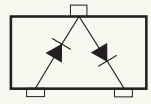
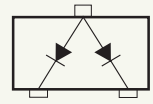
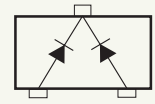
Component	Part Number	Freq Range (MHz)	OP1dB (dBm)	IL (dB)	RL (dB)	Package
Schottky Assisted PIN Diode Low Power Limiter	ASML-5822	900	2.85	0.85	10.9	SOT-323
	ASML-5829	900	6.05	0.33	15.6	

Diodes — Schottky Diode

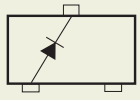
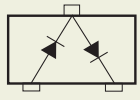
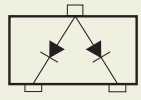
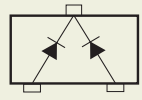
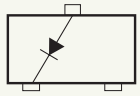
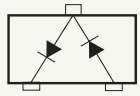
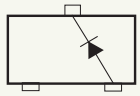
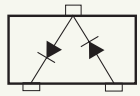
MiniPak

	Single	Anti-parallel	Parallel
Configuration	 (0)	 (2)	 (5)
Schottky	HMPS-2820	HMPS-2822	HMPS-2825

3 Lead Diodes SOT-323 (SC-70)

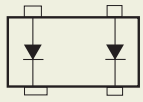
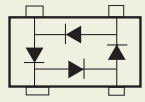
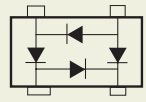
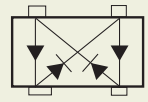
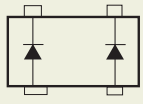
	Single	Series Pair	Common Anode	Common Cathode
Configuration				
Schottky	HBAT-540B	HBAT-540C		
	HSMS-270B	HSMS-270C		
	HSMS-280B	HSMS-280C	HSMS-280E	HSMS-280F
	HSMS-281B	HSMS-281C	HSMS-281E	HSMS-281F
	HSMS-282B	HSMS-282C	HSMS-282E	HSMS-282F
	HSMS-285B	HSMS-285C		
	HSMS-286B	HSMS-286C	HSMS-286E	HSMS-286F

3 Lead Diodes SOT-23

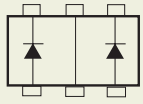
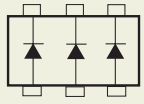
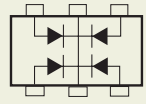
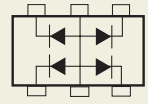
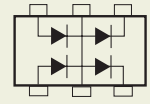
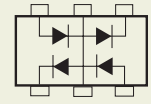
	Single	Series Pair	Common Anode	Common Cathode
Configuration				
Schottky	HBAT-5400	HBAT-5402		
	HSMS-2700	HSMS-2702		
	HSMS-2800	HSMS-2802	HSMS-2803	HSMS-2804
	HSMS-2810	HSMS-2812	HSMS-2813	HSMS-2814
	HSMS-2820	HSMS-2822	HSMS-2823	HSMS-2824
	HSMS-2860	HSMS-2862	HSMS-2863	HSMS-2864
				
	HSMS-2850	HSMS-2852		
				
	HSMS-8101	HSMS-8202		

Diodes — Schottky Diode

4 Lead Diodes SOT-143

	Unconnected Pair	Ring Quad	Bridge Quad	Crossover Quad
Configuration				
Schottky	HSMS-2805		HSMS-2808	
	HSMS-2815	HSMS-2817	HSMS-2818	
	HSMS-2825	HSMS-2827	HSMS-2828	HSMS-2829
	HSMS-2865			
		HSMS-8207		HSMS-8209
				
	HSMS-2855			

6 Lead Diodes SOT-363 (SC-70)

	High Isolation Unconnected Pair	Unconnected Trio	Common Cathode Quad	Common Anode Quad	Bridge Quad	Ring Quad
Configuration						
Schottky	HSMS-280K	HSMS-280L	HSMS-280M	HSMS-280N	HSMS-280P	HSMS-280R
	HSMS-281K	HSMS-281L				
	HSMS-282K	HSMS-282L	HSMS-282M	HSMS-282N	HSMS-282P	HSMS-282R
		HSMS-285L			HSMS-285P	
	HSMS-286K	HSMS-286L			HSMS-286P	HSMS-286R

Diodes — Schottky Diode

Schottky-Barrier Diodes

Application	Part Number	V_{BR} (V) (min)	V_F (mV) (max) IF = 1 mA	V_F @ I_F (V @ mA) (max)	C_t (pF) (typ)	R_D (Ω) (typ)	Volt. Sens. (Y) (mV/mW)			Rv (KΩ) (typ)
							900 MHz	2.45 GHz	5.8 GHz	
General Purpose Detector	HMPS/HSMS-282x	15	340	0.7 @ 30	1.0	12.0	–	–	–	–
Clipping/Clamping	HBAT-540x	30	–	800 @ 100	3.0	2.4	–	–	–	–
High Current Clipping/ Clamping	HSMS-270x	15	–	550 @ 100	6.7	0.65	–	–	–	–
Lowest flicker noise	HSMS-281x	20	400	1.0 @ 35	1.2	15.0	–	–	–	–
High V_{BR}	HSMS-280x	70	400	1.0 @ 35	2.0	35	–	–	–	–
Zero bias detector	HSMS-285x	–	250	0.15 @ 0.1	0.3	–	40	30	22	8
High frequency up to 14 GHz	HSMS-286x	4	350	0.25 @ 0.1	0.3	–	50	35	25	5
Mixer	HSMS-8x0x	4	350	0.25 @ 0.1	0.26	11.0	–	35	25	5

Beam Lead Schottky Diodes

Part Number	V_{BR} (V)	V_F (mV)	C_t (pF)	R_D (Ω)	Configuration	Package
HSCH-5310	4	500	0.1	20.0	Medium Barrier	Beam-Lead
HSCH-5312	4	500	0.15	16.0	Medium Barrier	Beam-Lead
HSCH-5314	4	500	0.15	16.0	Medium Barrier	Beam-Lead
HSCH-5330	4	375	0.1	20.0	Low Barrier	Beam-Lead
HSCH-5331	4	375	0.1	20.0	Batch Match	Beam-Lead
HSCH-5332	4	375	0.15	16.0	Series Pair	Beam-Lead
HSCH-5340	4	375	0.1	20.0	Low Barrier	Beam-Lead
HSCH-5531	4	375	0.1	20.0	Low Barrier	Dual Beam Lead

mmW MMICs

Millimeter Wave MMICs Selection Guide

Component	Part Number	Freq. Range (GHz)	Bias condition (V @ mA)	NF (dB)	Gain (dB)	P1dB (dBm)	OIP3 (dBm)	Package (mm)
GaAs MMIC Low Noise Amplifier	AMMC-5024	30Khz - 40	4V @ 160	3.7	17.5	17.3	22.5	Chip
	AMMC-5026	2 - 35	7V @ 150	3.6	10.0	+24	31	Chip
	AMMC-6220	6 - 20	3V @ 55	1.8	23.0	9	19	Chip
	AMMC-6222	7-21	4V @ 120	2.4	25.0	16	29	Chip
	AMMC-6232	18 - 32	4V @ 135	2.8	27.0	18	29	Chip
	AMMC-6241	26 - 43	3V @ 60	2.7	20.0	10	20	Chip
	AMMP-6220	6 - 20	3V @ 55	1.9	23.0	10	21	SM 5x5
	AMMP-6222	7 - 21	4V @ 120	2.3	24	15.5	29	SM 5x5
	AMMP-6232	18 - 32	4V @ 138	3.0	23	18	29	SM 5x5
	AMMP-6233	18 - 32	3V @ 65	2.6	23	8	19	SM 5x5
	VMMK-1218	0.5 - 18	3/20	0.7	10.7	12	12	SM 1x0.5
	VMMK-1225	0.5 - 26	2/20	0.9	11	8	23	SM 1x0.5
GaAs MMIC Broadband Medium Power Amplifiers	AMMC-5040	20 - 45	4.5V @ 300	8	24	22	23	Chip
	AMMC-5618	6 - 20	5V @ 107	4.4	14.5	+19.5	26	Chip
	AMMC-5620	6 - 20	5V @ 95	4.2	19	+15	23.5	Chip
	AMMC-6333	18 - 33	5V@230mA	5	20	23	30	Chip
	AMMC-6345	20 - 45	5V @ 480	9.0	20.0	24	32	Chip
	AMMC-6408	6 - 18	5V @ 650	4.3	19.0	29	38	Chip
	AMMC-6425	18 - 28	5V @ 900	9.0	20.0	28	38	Chip
	AMMC-6431	25 - 33	5V@650mA	8.5	19	28.5	37	Chip
	AMMC-6442	37 - 40	5V@700mA	7.5	23	30	36.5	Chip
	AMMP-5618	6 - 20	5V @ 107	4.4	14.5	+19.5	30	SM 5x5
	AMMP-5620	6 - 20	5V @ 95	5.1	17.5	15	22.5	SM 5x5
	AMMP-6333	18 - 33	5V@230mA	5.5	20	23	30	SMT 5X5
	AMMP-6408	6 - 18	5V @ 650	4.5	18.0	28	38	SM 5x5
	AMMP-6442	37 - 40	5V@700mA	8	23	30	36	SMT 5X5

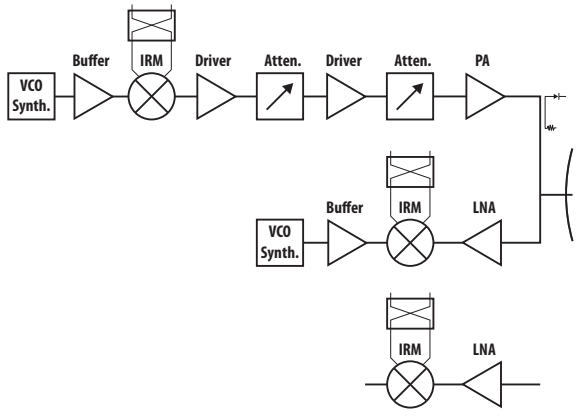
Component	Part Number	Freq. Range (GHz)	Insertion Loss (dBm)	Isolation dB	Input P1dB (dBm)	Control Input (Vdc)	Package
GaAs MMIC SPDT Switch	AMMC-2008	DC - 50	2.3	25	14	0 / -5	Chip

Component	Part Number	RF Freq. (GHz)	IF Freq. (GHz)	Conversion Gain (dB)	LO/RF Iso (dB)	IIP3 (dBm)	Image Reject	Package (mm)
GaAs MMIC Mixers	AMMC-3040	18 - 36	DC - 3	-9.5	31	23	–	Chip
	AMMC-6530	5 - 30	DC - 5	-10	22	18	15	Chip
	AMMP-6522	7 - 20	DC - 3.5	13		-4	15	SM 5x5
	AMMP-6530	5 - 30	DC - 5	-8	22	18	15	SM 5x5
	AMMP-6545	18-45	DC - 3.5	-11	30	11	–	SM 5x5

Component	Part Number	Input Freq. (GHz)	Output Freq. (GHz)	IP1dB (dBm)	Pout (dBm)	Fo (dBc)	Package (mm)
GaAs MMIC Doublers	AMMC-6120	4 - 12	8 - 24	2.0	15	25	Chip
	AMMC-6140	10 - 20	20 - 40	5.0	-1	30	Chip
	AMMP-6120	4 - 12	8 - 24	2.0	15	25	SM 5x5

Microwave Radio Link Application Circuit

Microwave Link Packaged Suggested Solution 7-8 GHz

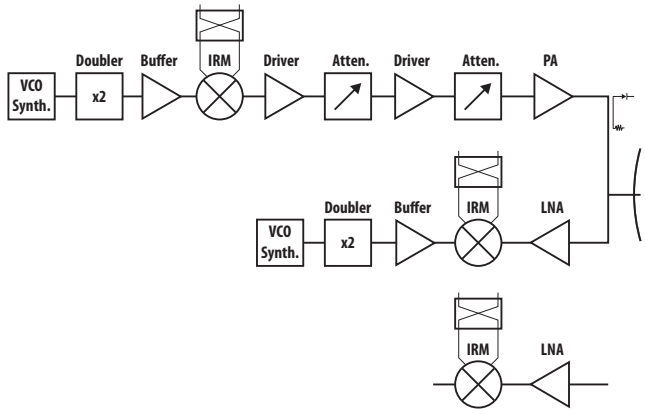


Microwave Link Packaged Suggested Solution 7-8 GHz

Component	Part Number	Freq. Range (GHz)	Bias condition (V @ mA)	NF (dB)	Gain (dB)	P1dB (dBm)	OIP3 (dBm)	Package (mm)
	AMMP-5618	6-20	5V @ 107	4.4	14.5	+19		5x5
	AMMP-5620	6-20	5V @ 95	5.1	17.5	+15		5x5
	AMMP-6220	6-20	3V @ 55	2.5	22	+10.0		5x5
	AMMP-6222	7-21	4V @120	2.3	24	+15.5		5x5

Microwave Radio Link Application Circuit

Microwave Link Packaged Suggested Solution 10-18 GHz



Microwave Link Packaged Suggested Solution 10-11 GHz

Component	Part Number	Freq. Range (GHz)	Bias condition (V @ mA)	NF (dB)	Gain (dB)	P1dB (dBm)	OIP3 (dBm)	Package (mm)
	AMMP-5618	6-20	5V @ 107	4.4	14.5	+19		5x5
	AMMP-5620	6-20	5V @ 95	5.1	17.5	+15		5x5
	AMMP-6220	6-20	3V @ 55	2.5	22	+10.0		5x5
	AMMP-6222	7-21	4V @120	2.3	24	+15.5		5x5

Microwave Link Packaged Suggested Solution 13-15 GHz

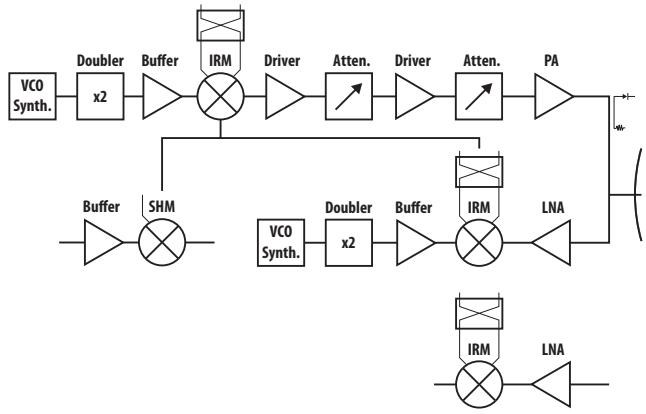
Component	Part Number	Freq. Range (GHz)	Bias condition (V @ mA)	NF (dB)	Gain (dB)	P1dB (dBm)	OIP3 (dBm)	Package (mm)
	AMMP-5618	6-20	5V @ 107	4.4	14.5	+19		5x5
	AMMP-5620	6-20	5V @ 95	5.1	17.5	+15		5x5
	AMMP-6220	6-20	3V @ 55	2.5	22	+10.0		5x5
	AMMP-6222	7-21	4V @120	2.3	24	+15.5		5x5

Microwave Link Packaged Suggested Solution 18 GHz

Component	Part Number	Freq. Range (GHz)	Bias condition (V @ mA)	NF (dB)	Gain (dB)	P1dB (dBm)	OIP3 (dBm)	Package (mm)
	AMMP-5618	6-20	5V @ 107	4.4	14.5	+19		5x5
	AMMP-5620	6-20	5V @ 95	5.1	17.5	+15		5x5
	AMMP-6220	6-20	3V @ 55	2.5	22	+10.0		5x5
	AMMP-6222	7-21	4V @120	2.3	24	+15.5		5x5
	AMMP-6232	18-32	4V @135	3.0	23	+18.0		5x5
	AMMP-6233	18-32	3V @ 65	2.6	23	+8.0		5x5

Microwave Radio Link Application Circuit

Microwave Link Packaged Suggested Solution 23-26 GHz



Microwave Link Packaged Suggested Solution 23 GHz

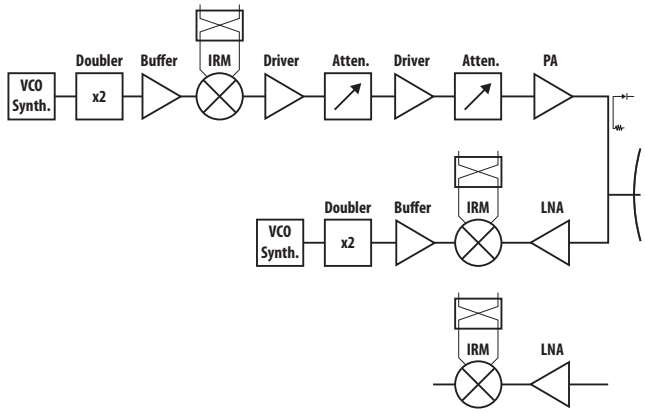
Component	Part Number	Freq. Range (GHz)	Bias condition (V @ mA)	NF (dB)	Gain (dB)	P1dB (dBm)	OIP3 (dBm)	Package (mm)
	AMMP-5618	6-20	5V @ 107	4.4	14.5	+19		5x5
	AMMP-5620	6-20	5V @ 95	5.1	17.5	+15		5x5
	AMMP-6220	6-20	3V @ 55	2.5	22	+10.0		5x5
	AMMP-6222	7-21	4V @120	2.3	24	+15.5		5x5
	AMMP-6232	18-32	4V @135	3.0	23	+18.0		5x5
	AMMP-6233	18-32	3V @ 65	2.6	23	+8.0		5x5
	AMMP-6333	18-33	5V@230mA	5.5	20	23	30	5X5

Microwave Link Packaged Suggested Solution 26 GHz

Component	Part Number	Freq. Range (GHz)	Bias condition (V @ mA)	NF (dB)	Gain (dB)	P1dB (dBm)	OIP3 (dBm)	Package (mm)
	AMMP-5618	6-20	5V @ 107	4.4	14.5	+19		5x5
	AMMP-5620	6-20	5V @ 95	5.1	17.5	+15		5x5
	AMMP-6220	6-20	3V @ 55	2.5	22	+10.0		5x5
	AMMP-6222	7-21	4V @120	2.3	24	+15.5		5x5
	AMMP-6232	18-32	4V @135	3.0	23	+18.0		5x5
	AMMP-6233	18-32	3V @ 65	2.6	23	+8.0		5x5
	AMMP-6333	18-33	5V@230mA	5.5	20	23	30	5X5

Microwave Radio Link Application Circuit

Microwave Link Packaged Suggested Solution 28-32 GHz



Microwave Link Packaged Suggested Solution 28 GHz

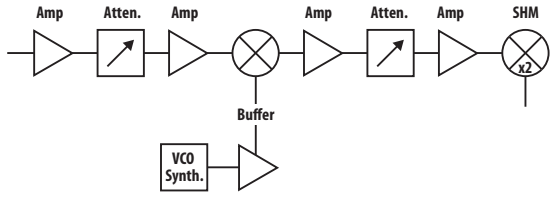
Component	Part Number	Freq. Range (GHz)	Bias condition (V @ mA)	NF (dB)	Gain (dB)	P1dB (dBm)	OIP3 (dBm)	Package (mm)
	AMMP-5618	6-20	5V @ 107	4.4	14.5	+19		5x5
	AMMP-5620	6-20	5V @ 95	5.1	17.5	+15		5x5
	AMMP-6220	6-20	3V @ 55	2.5	22	+10.0		5x5
	AMMP-6222	7-21	4V @120	2.3	24	+15.5		5x5
	AMMP-6232	18-32	4V @135	3.0	23	+18.0		5x5
	AMMP-6425	18-28	5V @ 650	-–	22	+28.0		5X5
	AMMP-6233	18-32	3V @ 65	2.6	23	+8.0		5x5
	AMMP-6333	18-33	5V@230mA	5.5	20	23	30	5X5

Microwave Link Packaged Suggested Solution 32 GHz

Component	Part Number	Freq. Range (GHz)	Bias condition (V @ mA)	NF (dB)	Gain (dB)	P1dB (dBm)	OIP3 (dBm)	Package (mm)
	AMMP-5618	6-20	5V @ 107	4.4	14.5	+19		5x5
	AMMP-5620	6-20	5V @ 95	5.1	17.5	+15		5x5
	AMMP-6220	6-20	3V @ 55	2.5	22	+10.0		5x5
	AMMP-6222	7-21	4V @120	2.3	24	+15.5		5x5
	AMMP-6232	18-32	4V @135	3.0	23	+18.0		5x5
	AMMP-6233	18-32	3V @ 65	2.6	23	+8.0		5x5
	AMMP-6333	18-33	5V@230mA	5.5	20	23	30	5X5

Microwave Radio Link Application Circuit

IF 1st and 2nd Stage Radio Link Suggested Solution



Part Number	Freq. Range (GHz)	Test Freq. (GHz)	Vd (V)	Id (mA)	Gain (dB)	NF (dB)	P1dB (dBm)	OIP3 (dBm)	Package (mm)
ABA-53563	DC - 3.5	2	5	46	21.5	3.5	12.7	22.9	SOT-363 (SC70)
ABA-54563	DC - 3	2	5	79	23	4.4	16.1	27.8	SOT-363 (SC70)
ADA-4789	DC - 2.5	0.9	3.8	60	16.5	4.2	17.1	32.6	SOT-89
ATF-54143	0.45 - 6	2	3	60	16.6	0.5	20.4	36	SOT-363 (SC70)
ATF-541M4	0.45 - 10	2	3	60	17.5	0.5	21.4	36	MiniPak Package
AVT-50663	DC-6000	2	5	36	15.3	4	12.5	25	SOT-363 (SC70)
AVT-52663	DC-6000	2	5	45	15.3	4	12.7	27	SOT-363 (SC70)
AVT-53663	DC-6000	2	5	48	19.5	3.2	15.1	26.5	SOT-363 (SC70)
MGA-30489	0.25 - 3.0	1.9	5	97	13.3	3	–	39	SOT-89
MGA-30689	0.04 - 2.6	1.95	5	104	14.6	3.3	–	40	SOT-89
MGA-30889	0.04 - 2.6	0.9	5	65	15.5	–	–	38	SMT 4.5x4.1x1.5
MGA-565P8	0.1 - 3	2	5	67	21.8	–	–	–	LPCC2x2
MGA-62563	0.1 - 3	0.5	3	60	22	0.9	17.8	32.9	SOT-363 (SC70)
VMMK-2403	1.5 - 4.0	3	3	38	15	1.8	16.5	29	1x0.5x0.25
VMMK-2503	1.0 - 1.2	6	5	65	14	3.3	17	27	1x0.5x0.25

Part Number	Freq. Range (GHz)	IIP3 (dBm)	IP1dB (dBm)	Dynamic Range (dB)	IL (dB)	VSWR (dB)	Package (mm)
ALM-38140	50 - 1000	50	28.8	38	2.8	1.4	3.8x3.8x1.0 MCOB
	1000 - 2000	48.9	35.6	36	3.2	1.4	

Part Number	Freq. Range (GHz)	Test Freq. (GHz)	IIP3 (dBm)	Attenuation (dB)	Insertion Loss (dB)	Return Loss (dB)	Package (mm)
HSMP-3816	0.3 - 4	1	45	38	-3	-22	SOT - 25
HSMP-3866	0.3 - 4	1	30	36	-2.5	-18	SOT - 25

Your Imagination. Our Innovation

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Consumer and Computing peripherals for Optical/Laser mice, printers, white goods, DVD players, netbooks, Tablet PCs and laptops with over 100 patents and products that include:

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