

SUNSTAR商斯达实业集团是集研发、生产、工程、销售、代理经销、技术咨询、信息服务等为一体的高科技企业,是专业高科技电子产品生产厂家,是具有10多年历史的专业电子元器件供应商,是中国最早和最大的仓储式连锁规模经营大型综合电子零部件代理分销商之一,是一家专业代理和分销世界各大品牌IC芯片和电子元器件的连锁经营综合性国际公司。在香港、北京、深圳、上海、西安、成都等全国主要电子市场设有直属分公司和产品展示展销窗口门市部专卖店及代理分销商,已在全国范围内建成强大统一的供货和代理分销网络。我们专业代理经销、开发生产电子元器件、集成电路、传感器、微波光电元器件、工控机/DOC/DOM电子盘、专用电路、单片机开发、MCU/DSP/ARM/FPGA软件硬件、二极管、三极管、模块等,是您可靠的一站式现货配套供应商、方案提供商、部件功能模块开发配套商。专业以现代信息产业(计算机、通讯及传感器)三大支柱之一的传感器为主营业务,专业经营各类传感器的代理、销售生产、网络信息、科技图书资料及配套产品设计、工程开发。我们的专业网站——中国传感器科技信息网(全球传感器数据库) www.SENSOR-IC.COM 服务于全球高科技生产商及贸易商,为企业科技产品开发提供技术交流平台。欢迎各厂商互通有无、交换信息、交换链接、发布寻求代理信息。欢迎国外高科技传感器、变送器、执行器、自动控制产品厂商介绍产品到中国,共同开拓市场。本网站是关于各种传感器-变送器-仪器仪表及工业自动化大型专业网站,深入到工业控制、系统工程计 测量、自动化、安防报警、消费电子等众多领域,把最新的传感器-变送器-仪器仪表买卖信息,最新技术供求,最新采购商,行业动态,发展方向,最新的技术应用和市场资讯及时的传递给广大科技开发、科学研究、产品设计人员。本网站已成功为石油、化工、电力、医药、生物、航空、航天、国防、能源、冶金、电子、工业、农业、交通、汽车、矿山、煤炭、纺织、信息、通信、IT、安防、环保、印刷、科研、气象、仪器仪表等领域从事科学研究、产品设计、开发、生产制造的科技人员、管理人员、和采购人员提供满意服务。我们公司专业开发生产、代理、经销、销售各种传感器、变送器、敏感元器件、开关、执行器、仪器仪表、自动化控制系统:专门从事设计、生产、销售各种传感器、变送器、各种测控仪表、热工仪表、现场控制器、计算机控制系统、数据采集系统、各类环境监控系统、专用控制系统应用软件以及嵌入式系统开发及应用等工作。如热敏电阻、压敏电阻、温度传感器、湿度变送器、湿度传感器、气体变送器、气体传感器、压力传感器、压力变送、称重传感器、物(液)位传感器、物(液)位变送器、流量传感器、流量变送器、电流(压)传感器、溶氧传感器、霍尔传感器、图像传感器、超声波传感器、位移传感器、速度传感器、加速度传感器、扭距传感器、红外传感器、紫外传感器、火焰传感器、激光传感器、振动传感器、轴角传感器、光电传感器、接近传感器、干簧管传感器、继电器传感器、微型电泵、磁敏(阻)传感器、压力开关、接近开关、光电开关、色标传感器、光纤传感器、齿轮测速传感器、时间继电器、计数器、计米器、温控仪、固态继电器、调压模块、电磁铁、电压表、电流表等特殊传感器。同时承接传感器应用电路、产品设计和自动化工程项目。

欢迎索取免费详细资料、设计指南和光盘;产品凡多,未能尽录,欢迎来电查询。

更多产品请看本公司产品专用销售网站:

商斯达中国传感器科技信息网: <http://www.sensor-ic.com/>

商斯达工控安防网: <http://www.pc-ps.net/>

商斯达电子元器件网: <http://www.sunstare.com/>

商斯达微波光电产品网: [HTTP://www.rfoe.net/](http://www.rfoe.net/)

商斯达消费电子产品网: <http://www.icasic.com/>

商斯达军工产品网: <http://www.junpinic.com/>

商斯达实业科技产品网: <http://www.sunstars.cn/> 传感器销售热线:

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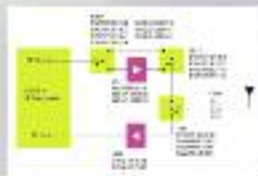
M/A-COM Technology Solutions / June 2010 Product Selection Guide



Product Selection Guide

This Product Selection Guide contains information about our standard products. It is intended to assist in the selection of products to ensure availability, ease of use, and optimal performance.

These products represent 60 years of innovation in design and manufacturing. Detailed specifications for our standard parts can be found quickly on our Website at macomtech.com by typing the part number into the Search by Part Number box. We provide product samples, test boards and applications support.



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About M/A-COM Technology Solutions



Partner of Choice

A leader in the RF and microwave industry for nearly 60 years, M/A-COM Technology Solutions (M/A-COM Tech) has earned a global reputation as the partner of choice in applications for RF, microwave and millimeter wave technologies. Not only do we offer one of the industry's broadest range of solutions available today, but with our ongoing commitment to R&D, we continue to drive tomorrow's innovations.

Our technology and expertise extend across a broad range of solutions for the wireless communications, broadband, and aerospace and defense markets. M/A-COM Tech products are utilized around the world in some of the most challenging applications, including: CATV and broadcast, point-to-point radios and infrastructure, aerospace and defense, automotive, test and measurement, WLAN, WiMAX, RFID, and others.

RF and Microwave Capabilities

M/A-COM Tech is one of the only vertically-integrated, non-captive RF and microwave suppliers in the industry. We're uniquely able to produce and process semiconductor materials, design and manufacture complex devices, and combine these devices into multifunction components.

We are a leader in the industry in offering dual use technologies that allow us to participate successfully in both commercial and aerospace and defense markets. We have unique technologies and capabilities to offer innovative design solutions including:

- GaAs, AlGaAs, InGaAs, InP, Si LDMOS, and SiGe IC products
- Unique MMIC processes: HMIC™ and GMIC™
- In-house design, fabrication, assembly, and screening capabilities
- Multiple facilities for improved flexibility and local content manufacturing
- Wide spectrum coverage from RF to millimeter wave frequencies
- One of the broadest selection of standard and custom products in the industry

Commercial, Industrial and Military Products

This guide features our standard commercial products. We also provide custom products to meet your specific requirements. If you cannot find a product that meets your requirements in this guide, please contact us and we will work together to develop or recommend an appropriate solution.

For applications that involve more difficult requirements and critical schedules, we offer a dedicated product management team. Our staff of senior product managers is available to support all product and critical management needs and to offer the experience and attention to detail that ensures success.

Our Quality Policy

The goal of M/A-COM Technology Solutions is to continually deliver effective, high quality products and services that meet our customers' and internal operations' needs in terms of delivery, performance, safety and value.

Process controls shall be implemented such that the tasks are performed properly the first time, so that products and services meet established, agreed-to requirements.

It is the personal responsibility of every employee to ensure quality, customer satisfaction, continual improvement, maintenance of our quality management system and compliance with customer and regulatory requirements.

Operational Excellence

M/A-COM Technology Solutions operations are certified to ISO 9001, AS 9100, and QS-9000. Everyone is involved in the continuous improvement effort from suppliers to customers. Best practices are identified and implemented throughout the company, with a continuing challenge to identify opportunities for innovation and improvement.

How to Purchase

Most of the standard products listed in this selection guide are available directly from the distribution partners found on our web site at www.macomtech.com (Click on the How to Purchase our Products tab.) In addition, your local M/A-COM Tech sales office or nearest representative can assist you with ordering or service.

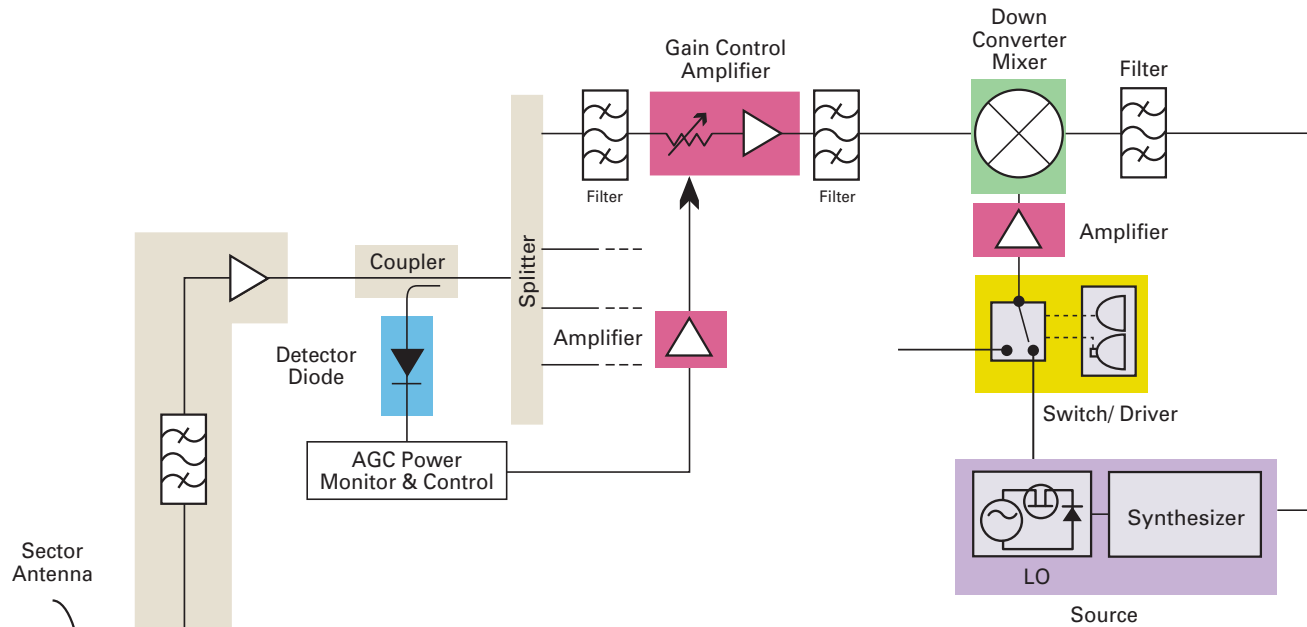
M/A-COM Technology Solutions produces custom products and modifications to standard products. Please contact us with your specifications if you cannot find a standard product that meets your needs. Most of our standard products can be up-screened to applications or we can design custom parts to your specific requirements.

See the back cover of this catalog for contact information to request any of these items.

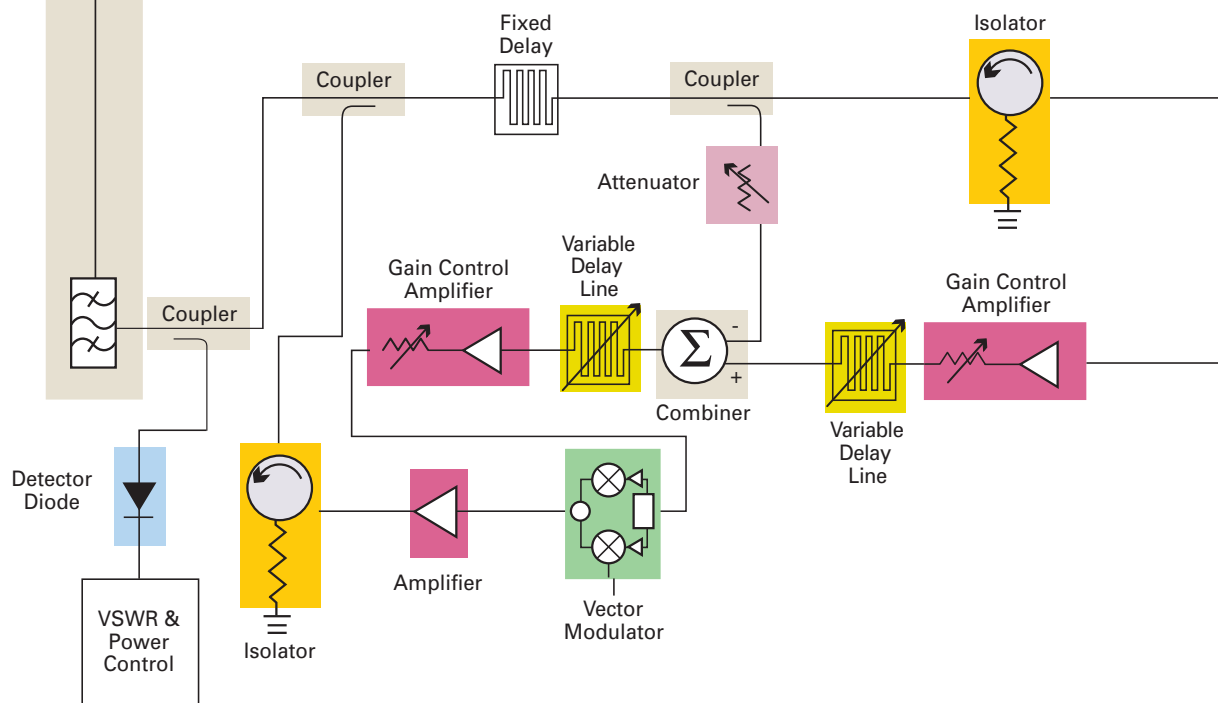
**Or visit us at
www.macomtech.com
for more information.**

Block Diagrams : Base Station Transceiver

Receiver RF Front End

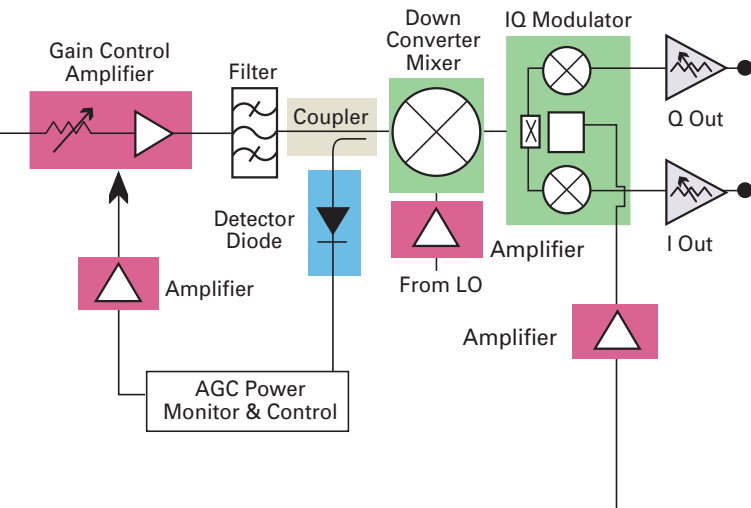


Transmitter RF Front End

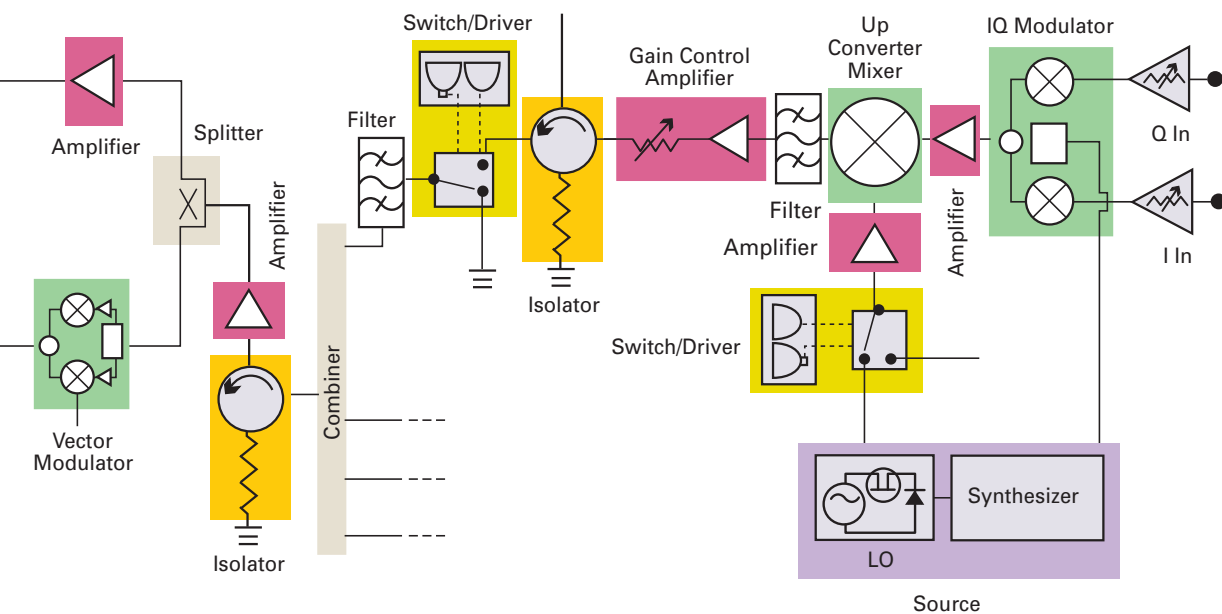


Block Diagrams : Base Station Transceiver

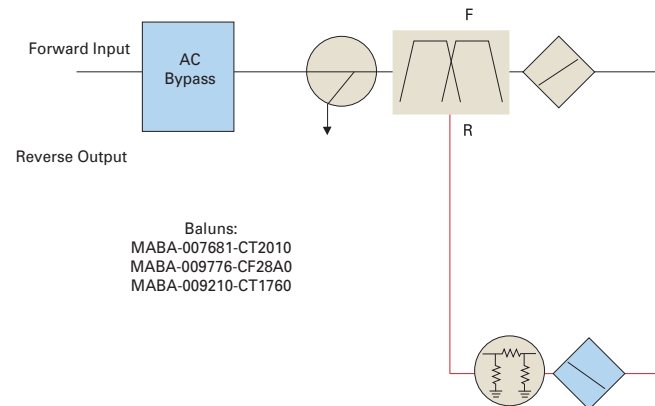
Receiver IF



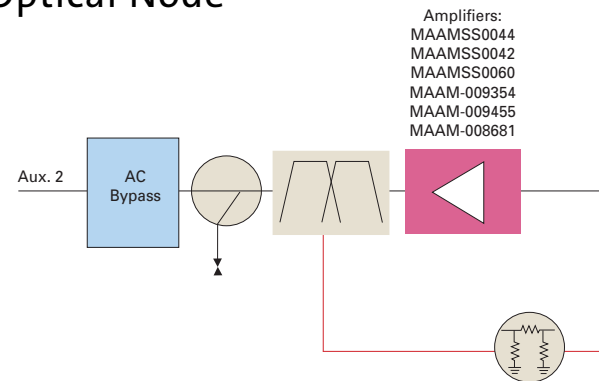
Transmitter IF



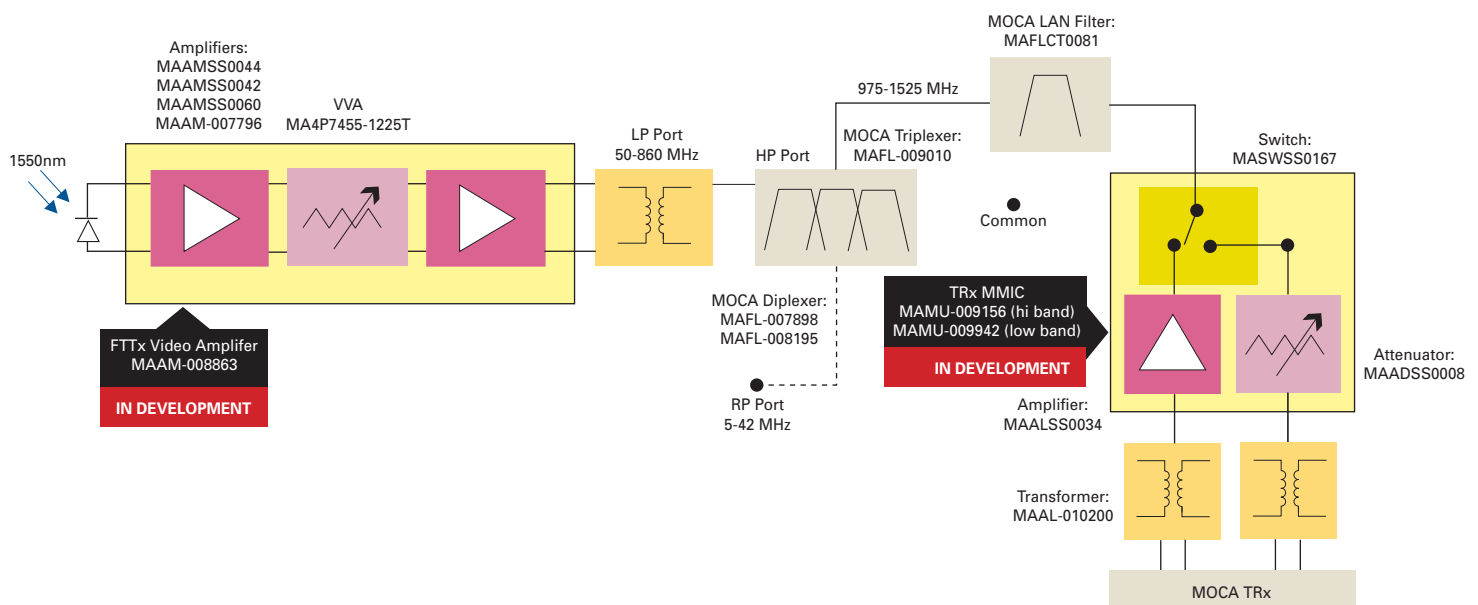
Block Diagrams : Parts for CATV/Broadband



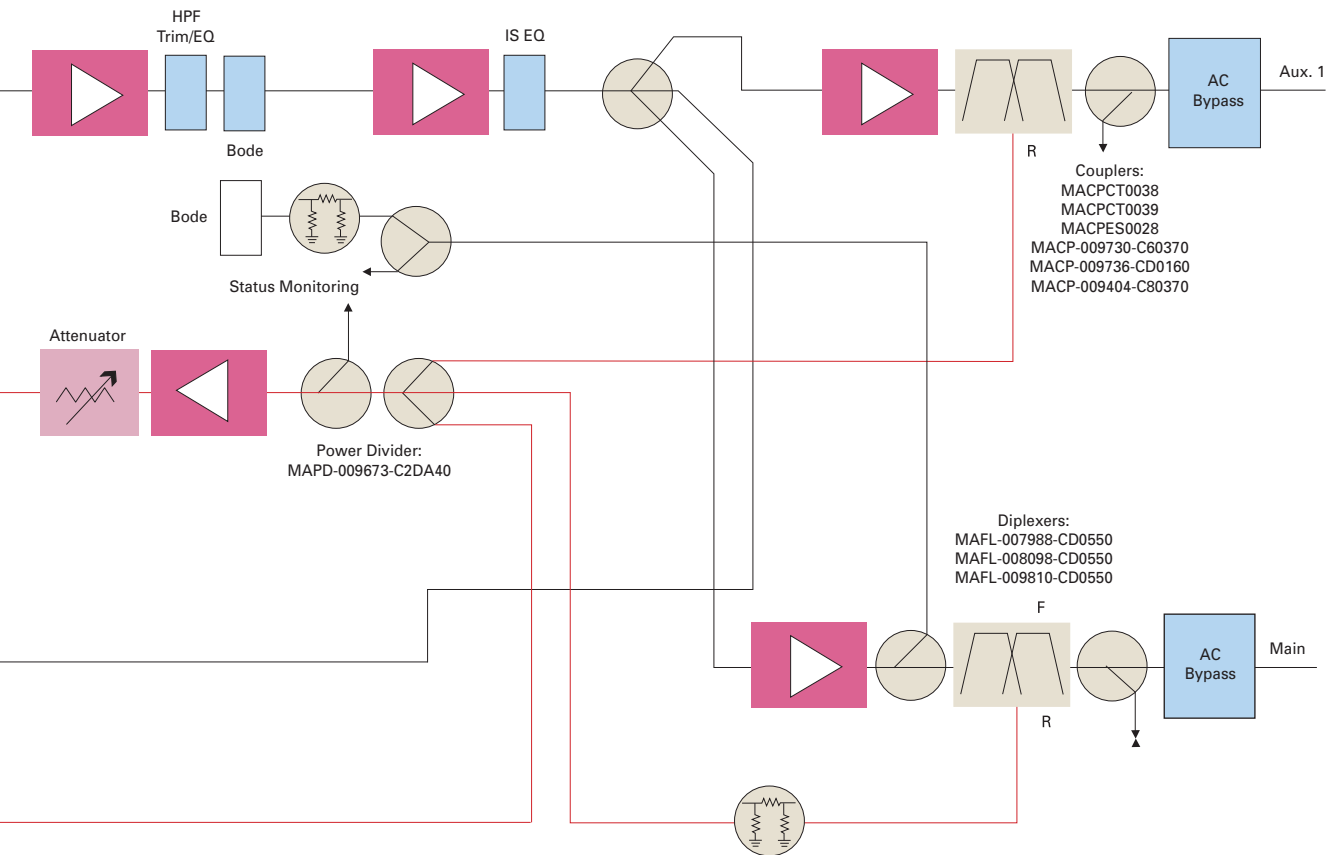
Amplifier/Optical Node



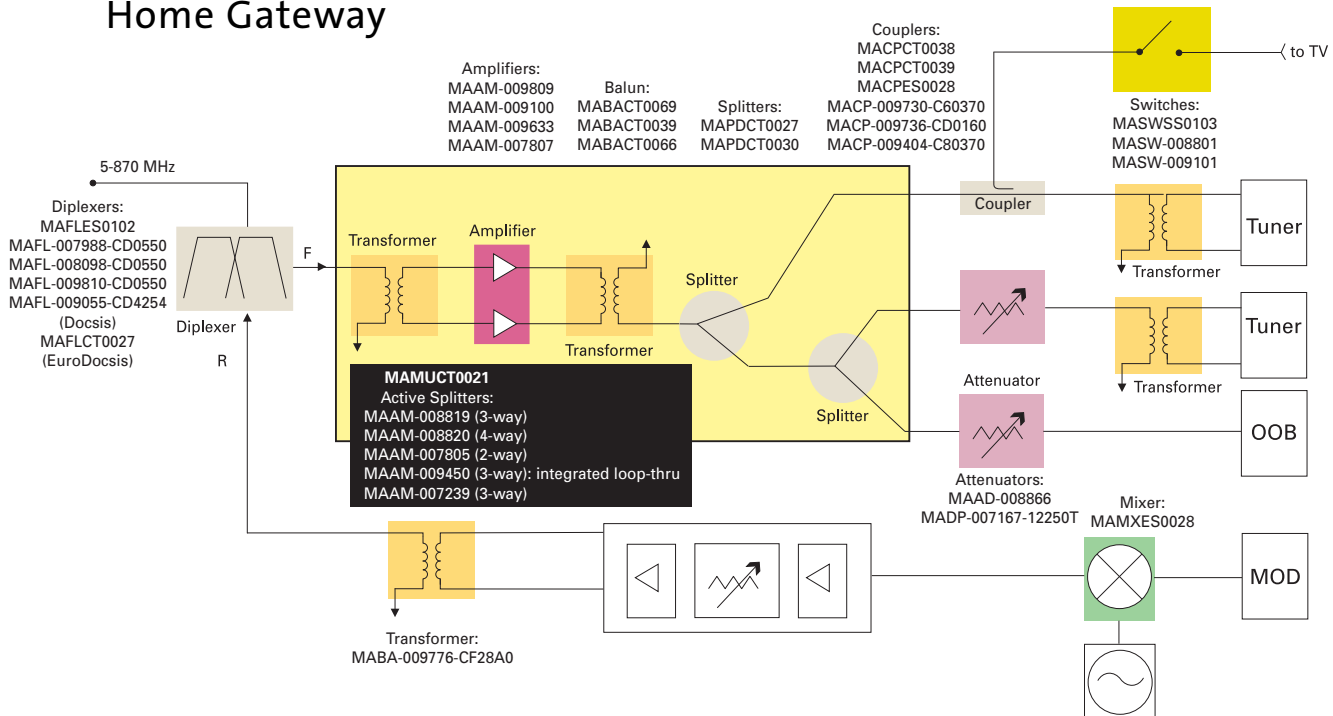
FTTx Video Amplifier with MoCA



Block Diagrams : Parts for CATV/Broadband



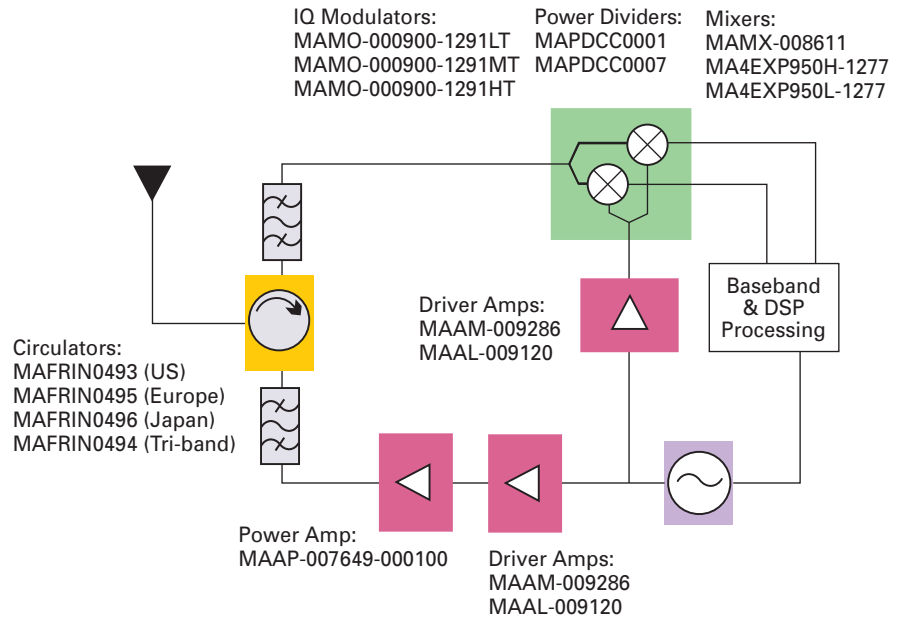
Home Gateway



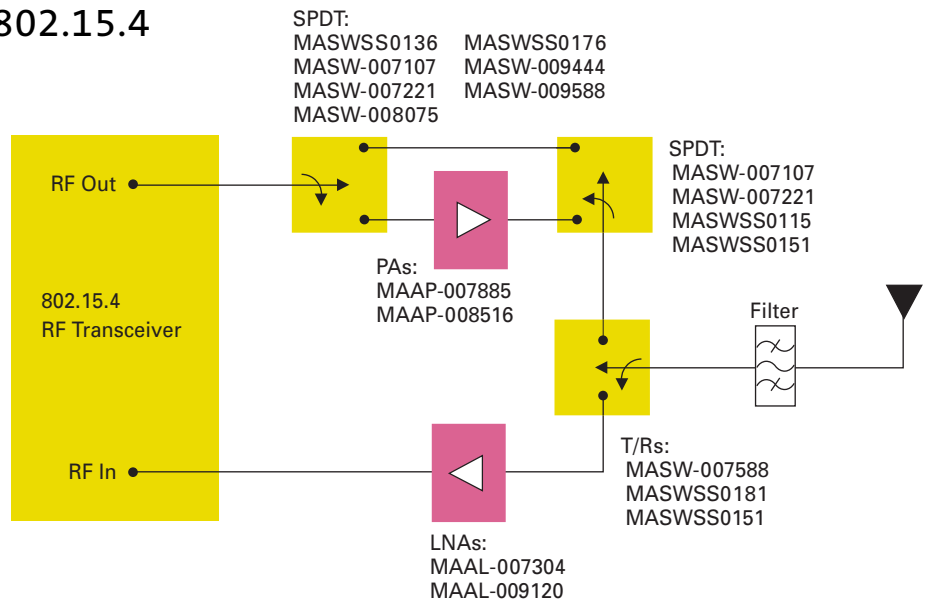
Block Diagrams : RFID and ZigBee



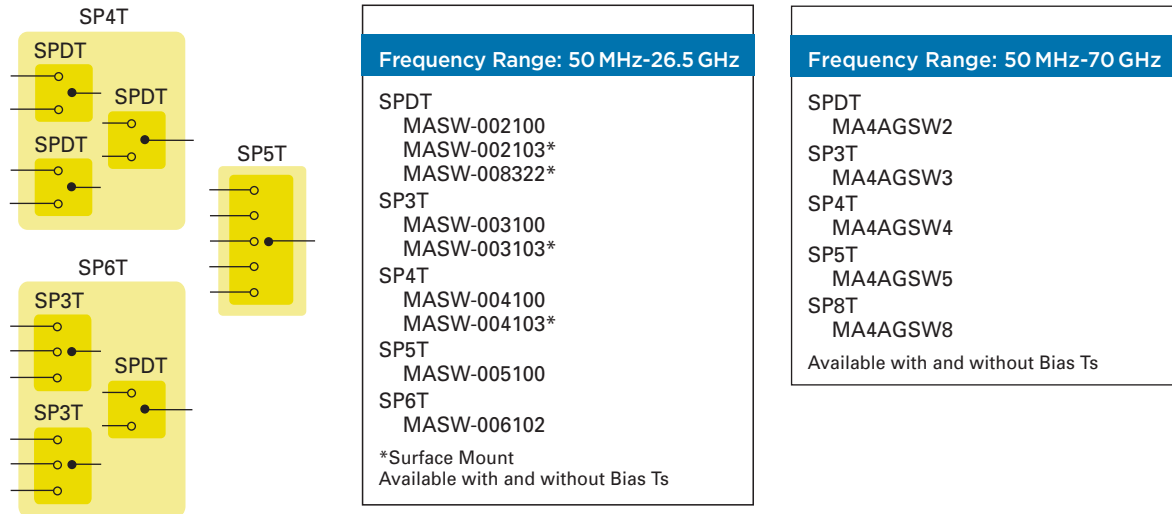
RFID Reader EPCglobal UHF Architecture



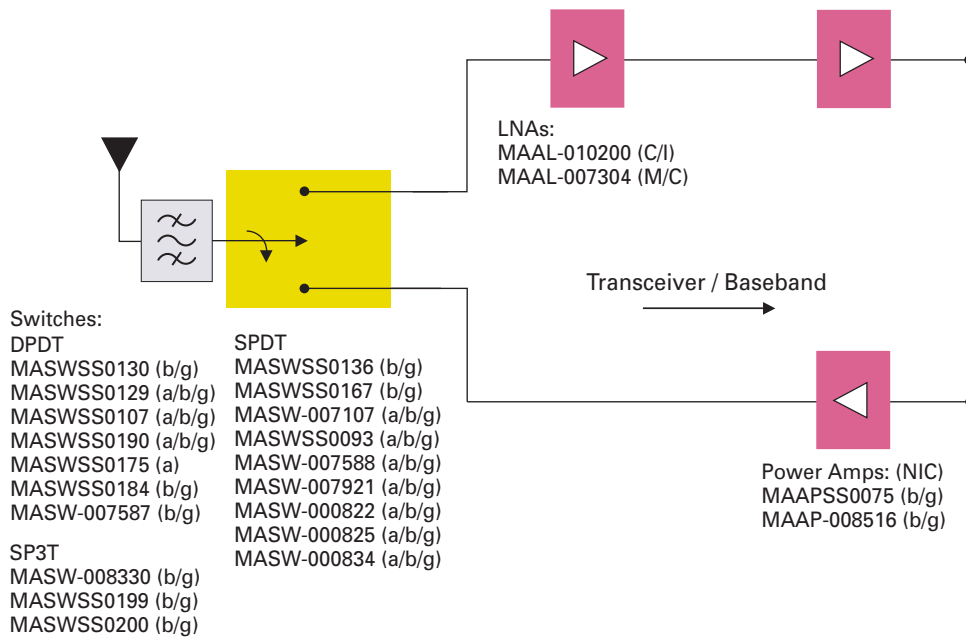
ZigBee/MESH/802.15.4



Test & Measurement Line-up

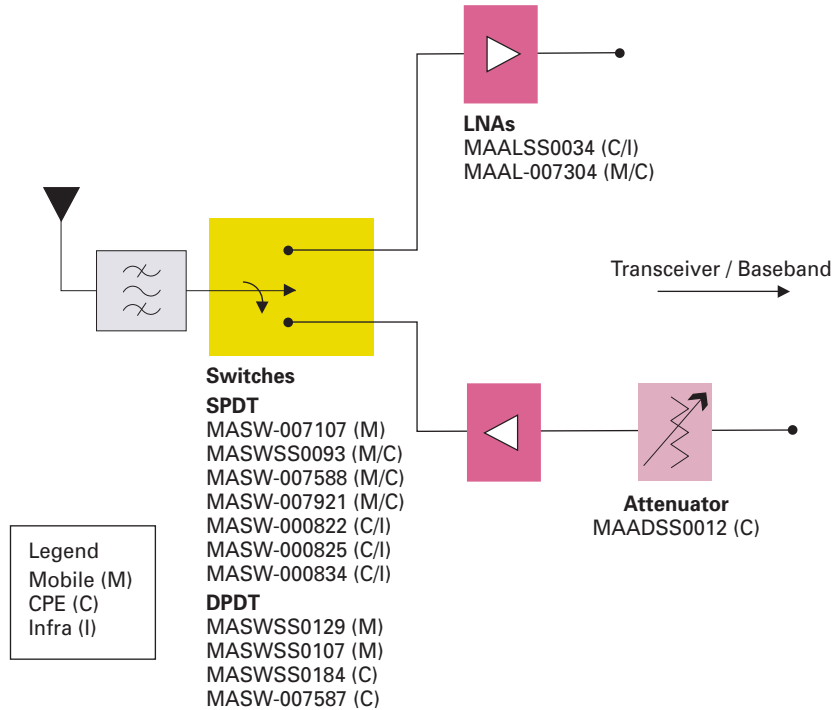


WLAN/802.11a/b/g RF Solutions

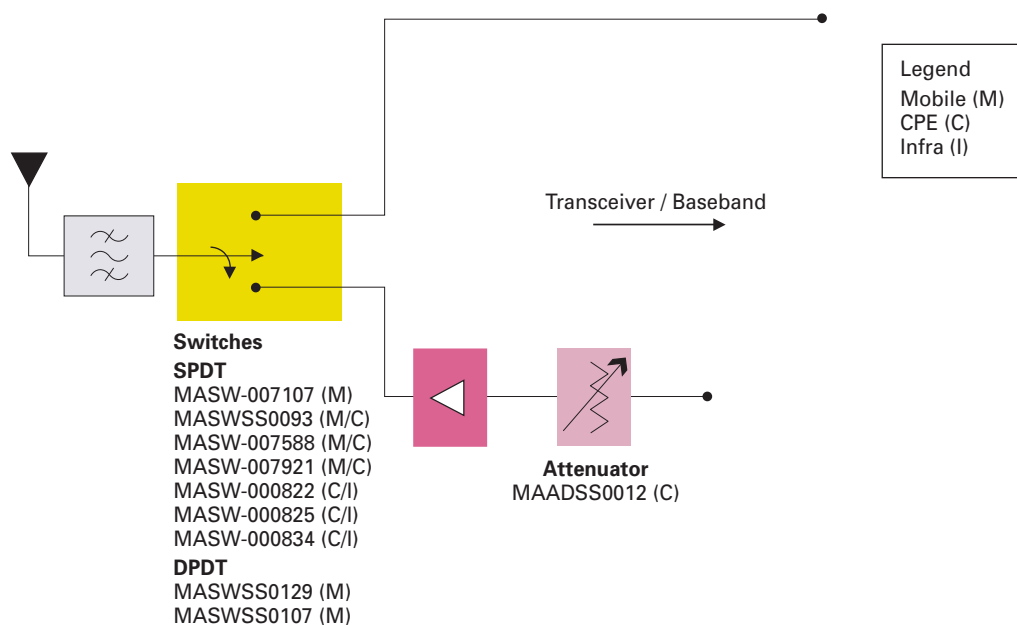


Block Diagrams : WiMAX

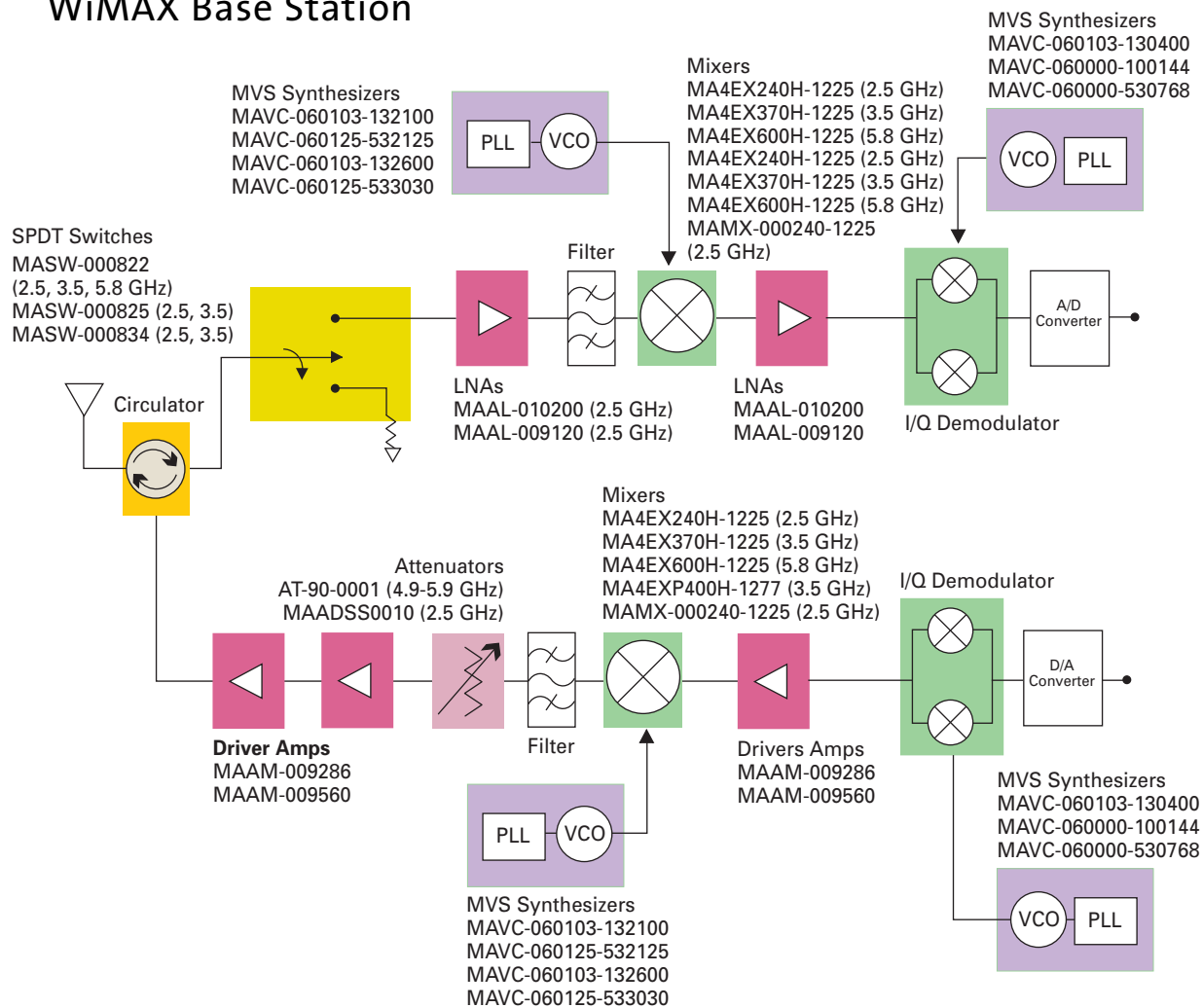
2.3–2.7 GHz and 3.3–3.8 GHz WiMAX Solutions



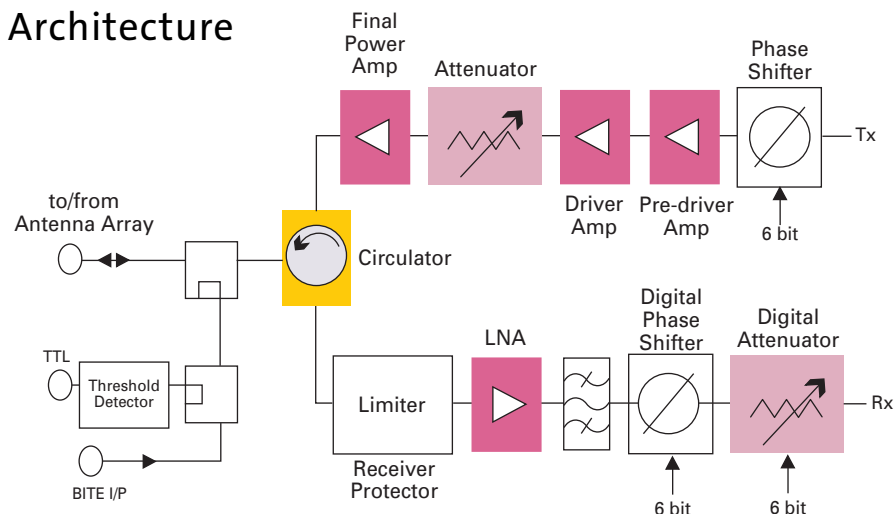
4.9–5.9 GHz WiMAX Solutions



WiMAX Base Station



Typical Radar Architecture





M/A-COM Technology Solutions amplifiers are used extensively in commercial and military electronics applications. We produce low noise amplifiers (LNA), power amplifiers (PA), driver amplifiers and wideband amplifiers ranging from 50 MHz to 77 GHz. Our products are your ideal choice for voice and data applications for the consumer and military markets.

- Cordless and mobile phones
- Infrastructure cellular base stations for
 - GSM
 - CDMA
 - PHS
 - UMTS
- Satellite radios
- Mobile GPS radios
- VSAT
- CATV and broadband
- WLAN cards and access points
- Aerospace and defense products
- Bluetooth
- RFID



Broadband Amplifiers

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output PldB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Die Products								
200 - 3000	MAAM02350	17	3.7	14	24	6	65	Die
Packaged Products								
50 - 2000	MAAM-007865-OP1R00	20	5	18.5	29.5	5	42	3 mm PQFN-12
2 - 2400	A33-1	9	4	6	19	15	19	TO-8, SMT, SMA
2 - 2400	A35-1	9	4.2	9.5	23	15	26	TO-8, SMT, SMA
100 - 2600	A36-2	15	7	14	30	15	63	TO-8, SMT, SMA
20 - 2700	MAAM-007501-SA2002	11.5	2.5	27	40	9	165	TO-8, SMT, SMA
200 - 3000	MAAM02350-A2	18	4	14	24	6	65	CR-3
100 - 3200	A43	11.5	7	8.5	21	15	45	TO-8, SMT, SMA
50 - 3300	MAAM-007866-OP1R00	27	5	22.7	36.5	5	175	3 mm PQFN-12

CATV Amplifiers

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output PldB	CTB (dBm)	CSO (dBm)	Channel Loading (dBmV/Ch)	Package
Amplifiers								
35 - 350	PAW1027 ♦	38.5	3.7	31	—	—	—	SOT115J
35 - 500	PAW1027-1 ♦	38	4.2	31	—	—	—	SOT115J
50 - 870	MAAMSS0040	12	2.8	23	-72.5	-75	135 at 25 dBmV O/P	SOIC-16
50 - 1000	MAAM-010144	22	5.5	27	-65	-70	77 at 39 dBmV O/P	TSSOP-16
40 - 1000	MAAM-009354	20	3	—	-66	-66	132 at 44/79 at 48dBmV O/P	SOT115F
50 - 1000	MAAM-009809 (with bypass)	18	2	15	-50	-50	132 at 15 dBmV O/P	3 mm PQFN-12
50 - 1000	MAAM-009100	14.8	3	18	63	63	132 at 30 dBmV O/P	SOT-89
50 - 1000	MAAM-009633	17	1.9	23	-75	-60	132 at 30 dBmV O/P	SOT-89
50 - 1000	MAAM-009455	22	3.5	24	-75	-80	77 at 39 dBmV O/P	4 mm PQFN-20
50 - 1000	MAAM-007796	21	3.8	20	-70	-70	132 at 20 dBmV O/P	4 mm PQFN-20
50 - 1000	MAAM-007807	9	3.8	17	-75	-65	132 at 15 dBmV O/P	SOT-89
50 - 1000	MAAMSS0041	14.8	2.7	23	-80	-70	132 at 23 dBmV O/P	SOT-89
50 - 1000	MAAMSS0042	15	3	21	-70	-70	132 at 30 dBmV O/P	SOT-89
50 - 1000	MAAMSS0044	12.5	3.7	24	75	80	79 at 34 dBmV O/P	4 mm PQFN-20
50 - 1000	MAAMSS0060	17	1.8	23	-75	-60	132 at 30 dBmV O/P	SOT-89
50 - 1000	MAAMSS0067	12.2	3.3	24	-78	-78	135 at 13 dBmV I/P	4 mm PQFN-20
50 - 1005	MAAM-007724	12.2	3.3	24	-78	-78	135 at 13 dBmV I/P	4 mm PQFN-20
50 - 2000	MAAM-007865-OP1R00	20	5	18.5	—	—	—	3 mm PQFN-12
Active Splitter Modules								
50 - 860	MAMUCT0021 (3 splits)	8.5	3.4	24	-78	-78	+13 dBmV/channel	SMTBoard
50 - 1100	MAAM-007805 (2 splits)	8.5	4	25	-75	-60	+15 dBmV/channel	3 mm PQFN-12
50 - 1100	MAAM-008818 (2 splits)	3.6	4	21	-63	-60	+15 dBmV/channel	2 mm PDFN-8
50 - 1100	MAAM-008821 (5 splits)	3	2.6	19	-70	-68	+15 dBmV/channel	2 mm PDFN-8
50 - 1100	MAAM-008822(3 splits)	4.5	4	—	-67	-65	+15 dBmV/channel	2 mm PDFN-8
50 - 1100	MAAM-009811 (2 splits)	2.5	4	22	-60	-60	+15 dBmV/channel	2 mm PDFN-8
50 - 1100	MAAM-009450 (3 splits)	2.5	4.5	22	-65	-60	+15 dBmV/channel	3 mm PQFN-20
50 - 1100	MAAM-007239 (3 splits)	4.6	4.5	30	-83	-70	+15 dBmV/channel	3 mm PQFN-16
50 - 1100	MAAM-008819 (3 splits)	2.5	3.8	24	-67	-65	+15dBmV/channel	2 mm PDFN-8
50 - 1100	MAAM-008820 (4 splits)	3	3.1	21	-70	-68	+15dBmV/channel	3 mm PQFN-12
950 - 2150	MAAM-008970 (2 splits)	4.5	4	25	-60	-60	+15dBmV/channel	3 mm PQFN-12

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

Blue listings indicate standard stock items widely available from our franchised distribution partners.

Detailed specifications for our standard parts can be found quickly on our web site at www.macomtech.com by typing the part number into the search box.

All specifications are subject to change.

Driver Amplifiers

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products								
250 - 2500	MAAM-009286	15.5	3.5	27	42	5	160	SOT-89
250 - 2500	MAAM-009560	15.5	3.5	28.5	42	5	230	SOT-89

Low Noise Amplifiers

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Die Products								
1200 - 1750	MAAM12000	26	1.25	14	24	5	80	Die
Packaged Products								
10 - 100	AM-162-PIN	12.5	1.5	15	30	15	11	TO-8-1
10 - 100	AMS-162-PIN	12.5	1.5	15	30	15	11	SF-1
5 - 200	A71	18	2.1	-2.5	10	15	9	TO-8, SMT, SMA
10 - 200	A80-1	27.3	2	16	28	15	30	TO-8, SMT, SMA
10 - 250	A231	26	1.7	10	22	5	16	TO-8, SMT, SMA
10 - 250	A70	8	1.6	8	24	15	10	TO-8, SMT, SMA
10 - 250	A70-1	8	1.8	14	28	15	15	TO-8, SMT, SMA
10 - 250	A70-2	8	2.2	19	38	15	25	TO-8, SMT, SMA
5 - 500	A1	16	2.4	-1	11	15	9	TO-8, SMT, SMA
10 - 500	A531	31.7	2	2.5	14	5	17	TO-8, SMT, SMA
5 - 500	A75	21	2.1	9	21	15	24	TO-8, SMT, SMA
10 - 500	A75-3	20.5	1.7	3	16	15	14	TO-8, SMT, SMA
20 - 500	A80	29	2.3	14.3	27	15	45	TO-8, SMT, SMA
400 - 500	MAAL-008624	21	0.9		28	5	60	SOIC-8
400 - 500	MAALSS0025 ♦	21	0.9	16.5	28	5	60	SOIC-8
800 - 960	PA1162 ♦	27	1.8	35.5	50	12	780	Flange Mount Carrier
800 - 1000	AM50-0003 ♦	15	1.2	16.5	30	5	60	SOIC-8
800 - 1000	AM55-0016 ♦	16	1.6	—	40	2.7	—	MSOP-8 Lead
800 - 1000	MAAL-008091	15	1.2	16.5	30	5	60	SOIC-8
100 - 1200	A1212	14	1.8	19	29	5	70	TO-8, SMT, SMA
5 - 1200	SMA21-1	15.5	2.4	-1	11	15	10	TO-8, SMT, SMA
1550 - 1600	AM50-0002 ♦	27	1.15	1	13	5	20	SOIC-8
1550 - 1600	MAALSS0042	27	1.15	1	13	5	20	SOIC-8
1500 - 1600	MAALSS0044	21	1.55	6	19	5	8	SOIC-8
1500 - 1600	MAAM12021 ♦	21	1.55	6	19	5	8	SOIC-8
1200 - 1750	MAAM12000-A1	26	1.35	14	24	5	80	CR-3, CR-10
100 - 2000	A32	13	2.1	22	32	15	92	TO-8, SMT, SMA
1800 - 2000	PA2001 ♦	21	2	30.3	46.5	12	345	Flange Mount Carrier
1400 - 2000	AM50-0004 ♦	14	1.4	16	29	5	45	SOIC-8
1400 - 2000	AM50-0006 ♦	18	1.6	1	12	3	6.5	SOT-26

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

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Low Noise Amplifiers (continued)

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products								
1400 - 2000	MAALSS0048	18	1.6	1	13	3	6.5	SOT-26
1700 - 2000	MAAL-007673	20	1.65	7	19	5	8	SOIC-8
1700 - 2000	MAAM12031 ◆	20	1.65	7	19	5	8	SOIC-8
1400 - 2000	MAAMSS0045	14	1.4	16	29	5	45	SOIC-8
500 - 3000	MAAL-007304	25.5	.7	7	19	3	11.5	SOT-26
70 - 3000	MAAL-010200	11	1.4	18	36	3	77	SOT-89
70 - 3000	MAAL-009120	11	1.4	18	35	3	80	SC-70
1000 - 4000	A4011	15.5	2	18.3	29	5	65	TO-8, SMT, SMA
2000 - 6000	A6011	14.8	1.5	18	30	5	58	TO-8, SMT, SMA

Power Amplifiers

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products								
5 - 100	A101	17	3	23	36	12	105	TO-8, SMT, SMA
35 - 350	PAW1027 ◆	38.5	3.7	31	43	24	300	SOT115J
10 - 500	PA511	12.7	4.6	24.8	40	15	118	TO-8, SMT, SMA
10 - 500	PA512	18	5.2	27.5	40	15	200	TO-8, SMT, SMA
35 - 500	PAW1027-1	38	4.2	31	43	24	300	SOT115J
800 - 960	PA1162 ◆	27	1.8	35.5	50	12	780	Flange Mount Carrier
10 - 1000	SMRA69	25	4.5	23	34	15	130	TO-8B, SMT, SMA
800 - 1000	MAAP-007649	19	—	34	49	7.5	540	4 mm PQFN-16
1435 - 1525	AM42-0054	26	—	—	—	—	—	R380
1710 - 1910	AM40-0023	11	0.9	-13	—	—	—	CR-5
1880 - 1930	MAAP-000082	36	—	26.5	23	3	280	3 mm PQFN-12
1880 - 1930	MAAPSS0071	26	—	26	36	2.4	400	3 mm PQFN-12
1880 - 1930	MAAPSS0076	25	—	25.5	36.5	2.4	320	3 mm PQFN-12
1800 - 2000	PA1132 ◆	21	2.5	33.5	48	12	495	Flange Mount Carrier
1800 - 2000	PA2003 ◆	21	2.5	33.5	49	12	495	Flange Mount Carrier
1800 - 2000	AM55-0004	24	—	24	—	—	—	SSOP-28
200 - 2000	PA2010	10	5	25.5	33	15	179	TO-8, SMT, SMA
200 - 2000	PA38	10	4	23	34	15	150	TO-8, SMT, SMA
1800 - 2000	PA2001 ◆	21	2	30.3	46.5	12	345	Flange Mount Carrier
2200 - 2400	AM42-0055	29	—	—	—	—	—	R380
2400 - 2500	MAAPSS0066	27	—	25	35	2.4	400	3 mm PQFN-12
2400 - 2500	MAAPSS0075	29.5	—	26.5	52	3.3	185	3 mm PQFN-12
2400 - 2500	MAAP-008516	30	—	23	—	3.3	80	2.5 x 2 mm PQFN-14
200 - 2600	PA38-2	8.5	4.5	23.5	33	15	150	TO-8, SMT, SMA
20 - 2700	MAAM-007501-SA2002	11.5	2.5	27	40	9	165	TO-8, SMT, SMA
1000 - 4000	PA48	16	5.5	24	34	15	225	TO-8B, SMT, SMA
14000 - 14500	AM42-0002	22	—	29.5	39	9	800	CR-15
14000 - 14500	AM42-0007	22	—	32	41	9	1000	CR-15

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General Amplifiers

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products								
5 - 100	A101	17	3	23	36	12	105	TO-8, SMT, SMA
10 - 100	AM-162-PIN	12.5	1.5	15	30	15	11	TO-8-1, CONN
10 - 100	AMS-162-PIN	12.5	1.5	15	30	15	11	SF-1
15 - 100	AM05-0005	15	5	23	37	—	—	LGA-1
15 - 100	AM05-0006	10.6	5	23	40	—	—	LGA-1
5 - 200	A71	18	2.1	-2.5	10	15	9	TO-8, SMT, SMA
10 - 200	A80-1	27.3	2	16	28	15	30	TO-8, SMT, SMA
5 - 250	A74-1	31	4.5	8.5	21	15	40	TO-8, SMT, SMA
5 - 250	A75-2	21	4.2	8	19	15	24	TO-8, SMT, SMA
5 - 250	EA54	27	3.8	5	16	5	30	TO-5
10 - 250	A83-1	35.5	2.5	-1.5	9	15	31	TO-8, SMT, SMA
10 - 250	A181	16.5	3.8	22	35	15	95	TO-8, SMT, SMA
10 - 250	A231	26	1.7	10	22	5	16	TO-8, SMT, SMA
10 - 250	A70	8	1.6	8	24	15	10	TO-8, SMT, SMA
10 - 250	A70-1	8	1.8	14	28	15	15	TO-8, SMT, SMA
10 - 250	A70-2	8	2.2	19	38	15	25	TO-8, SMT, SMA
20 - 250	A70-3	8	2.8	21	40	15	37	TO-8, SMT, SMA
20 - 250	A81	25.5	3	17	28	15	35	TO-8, SMT, SMA
20 - 250	A81-1	25	2.5	13.5	27	15	25	TO-8, SMT, SMA
20 - 250	A82	25	2.8	20	31	15	50	TO-8, SMT, SMA
20 - 250	A82-1	19	2.8	15	26	15	50	TO-8, SMT, SMA
30 - 250	AM-119-PIN	8	2.5	21	35	15	50	TO-8-1, CONN
5 - 300	A78	14	3.5	19.5	35	15	65	TO-8, SMT, SMA
5 - 300	A79	14	4	22	38	15	88	TO-8, SMT, SMA
10 - 300	A87-2	16	2.9	11	24	5	15	TO-8, SMT, SMA
35 - 350	PAW1027 ◆	38.5	3.7	31	43	24	300	SOT115J
5 - 400	A56	26	5.5	13.5	27	15	69	TO-8, SMT, SMA
5 - 400	EA1	14	4.3	-4.5	13	15	10	TO-5
5 - 400	EA2	13.5	5.7	9	21	15	27	TO-5
10 - 400	A411	15.8	3	10	24	5	16	TO-8, SMT, SMA
10 - 400	A87	14	3.8	17.5	33	15	33	TO-8, SMT, SMA
10 - 400	A87-1	16	3.4	17	31	15	30	TO-8, SMT, SMA
10 - 400	MAAM-008199-000A51	15	2.7	-3.5	10	15	7	TO-8, SMT, SMA
5 - 500	A5	14.8	4.5	8.5	22	15	25	TO-8, SMT, SMA
5 - 500	A514	28	4	19	32	15	96	TO-8, SMT, SMA
5 - 500	A515	27.5	3.5	22	33	15	127	TO-8, SMT, SMA
5 - 500	A54	15.5	4	9	21	15	34	TO-8, SMT, SMA
5 - 500	A5-5	15.5	4	9	21	15	24	TO-8, SMT, SMA
5 - 500	A58	11.5	4	19	34	15	65	TO-8, SMT, SMA
5 - 500	A59	11.5	4.3	22	36	15	88	TO-8, SMT, SMA
5 - 500	A72	15	3.3	12.5	26	15	30	TO-8, SMT, SMA
5 - 500	A73	32	3.5	1.5	15	15	20	TO-8, SMT, SMA
5 - 500	A74	30	3	8.5	20	15	40	TO-8, SMT, SMA
5 - 500	A74-2	26	3.8	-1	10	5	13	TO-8, SMT, SMA
5 - 500	A76	28	3	14.7	28	15	62	TO-8, SMT, SMA
5 - 500	A76-1	27.5	3	12.7	26	5	47	TO-8, SMT, SMA
5 - 500	A77	16.5	4.5	16.5	30	15	50	TO-8, SMT, SMA
5 - 500	A88	18.7	6.5	20.5	30	15	79	TO-8, SMT, SMA

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General Amplifiers (continued)

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output PldB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products								
5 - 500	AM-123-PIN	10	5.5	18	30	15	62	FP-9, CONN
5 - 500	AM-131-PIN	10	5	19	35	15	65	TO-8-1
5 - 500	AM-143-PIN	15.8	2.5	6	20	15	13	TO-8-1, CONN
5 - 500	AM-147-PIN	17	3.4	20	32	15	52	TO-8-1, CONN
5 - 500	AM-151-PIN	12	4.3	22	36	15	88	TO-8-1, CONN
5 - 500	EA53-2	19	3.6	11	24	15	33	TO-5
5 - 500	EA54-2	29.5	4.5	9.5	20	15	55	TO-5
5 - 500	A1	16	2.4	-1	11	15	9	TO-8, SMT, SMA
5 - 500	A75	21	2.1	9	21	15	24	TO-8, SMT, SMA
5 - 500	RA89	26.5	3.7	21.5	35	15	130	TO-8B, SMT, SMA
5 - 500	MAAM-009503-AM147A	17	3.5	21	35	15	52	TO-8-1
10 - 500	A180	16.5	3.4	18	33	15	63	TO-8, SMT, SMA
10 - 500	A511	17	3.4	20	32	15	52	TO-8, SMT, SMA
10 - 500	A513	20	5.5	18	30	12	120	TO-8, SMT, SMA
10 - 500	A53	15	3	3.5	16	15	12	TO-8, SMT, SMA
10 - 500	A55	14.7	5	11	24	15	30	TO-8, SMT, SMA
10 - 500	A57	14.7	4.8	14	28	15	44	TO-8, SMT, SMA
10 - 500	AM-146-PIN	21	4.5	22	35	15	130	FP-9, CONN
10 - 500	MAAM-008200-000A83	30	3	-1	10	5	13	TO-8, SMT, SMA
10 - 500	A531	31.7	2	2.5	14	5	17	TO-8, SMT, SMA
10 - 500	A75-3	20.5	1.7	3	16	15	14	TO-8, SMT, SMA
10 - 500	PA511	12.7	4.6	24.8	40	15	118	TO-8, SMT, SMA
10 - 500	PA512	18	5.2	27.5	40	15	200	TO-8, SMT, SMA
10 - 500	RA89-1	30	3.2	21.5	36	15	130	TO-8B, SMT, SMA
20 - 500	A81-2	24.5	3	15	28	15	29	TO-8, SMT, SMA
20 - 500	A81-3	17	4	8	20	15	29	TO-8, SMT, SMA
20 - 500	A80	29	2.3	14.3	27	15	45	TO-8, SMT, SMA
20 - 500	SMA80	29	2.3	14.3	27	15	45	TO-8, SMT, SMA
35 - 500	PAW1027-1	38	4.2	31	43	24	300	SOT115J
5 - 600	A77-1	16	5	16.5	30	15	50	TO-8, SMT, SMA
6 - 600	A5-6	16	4.5	8.5	21	15	24	TO-8, SMT, SMA
10 - 600	A67-1	15	3.7	17	30	15	36	TO-8, SMT, SMA
10 - 600	CA67-1	15	3.7	17	30	15	36	TO-8, SMT, SMA
100 - 600	AM-160-PIN	28.2	2.5	19	30	15	70	FP-9
100 - 600	AM-191-PIN	23.5	3	22	32	15	77	FP-2
5 - 700	A611	15	3.2	12.5	24	5	31	TO-8, SMT, SMA
10 - 700	A59-1	10.5	6	22	36	15	88	TO-8, SMT, SMA
10 - 800	A67	14	4	16	30	15	32	TO-8, SMT, SMA
100 - 800	A89	22	4.5	17.5	30	15	42	TO-8, SMT, SMA
800 - 960	PA1162 ◆	27	1.8	35.5	50	12	780	Flange Mount Carrier
5 - 1000	A11	14.7	3.1	-2	10	15	9	TO-8, SMT, SMA
5 - 1000	A11-2	16	2.5	-1	10	15	9	TO-8, SMT, SMA
5 - 1000	A63	16	3	4	15	15	14	TO-8, SMT, SMA
5 - 1000	AM-176-PIN	13.2	4	13	27	15	38	TO-8-1
5 - 1000	AM-182-PIN	28.2	3.5	10	20	15	44	TO-8-1
10 - 1000	A1021	26	3.8	14.5	26	5	60	TO-8, SMT, SMA
10 - 1000	A1031	28.5	2.7	10	22	5	36	TO-8, SMT, SMA
10 - 1000	A12	16	2.8	8	22	15	22	TO-8, SMT, SMA

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General Amplifiers (continued)

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products								
110 - 1000	A17	12	6	15.3	27	15	44	TO-8, SMT, SMA
10 - 1000	A18-1	14.7	3.8	16	30	15	44	TO-8, SMT, SMA
0 - 1000	A19-1	11.5	5.5	22.5	35	15	90	TO-8, SMT, SMA
10 - 1000	A66-1	27.5	2.9	15	28	15	66	TO-8, SMT, SMA
10 - 1000	A66-3	26	3	3	13	5	16	TO-8, SMT, SMA
10 - 1000	AM-145-PIN	10.7	3	18	32	15	50	TO-8-1, CONN
10 - 1000	AM-177-PIN	12	6.5	22	35	15	105	TO-8-1
10 - 1000	AM-183-PIN	28.5	4	14	23	15	72	TO-8-1, CONN
10 - 1000	RA66	37	3.5	15.5	30	15	81	TO-8B, SMT, SMA
10 - 1000	RA69	25	4.5	23	34	15	130	TO-8B, SMT, SMA
5 - 1200	A21-1	15.5	2.4	-1	11	15	10	TO-8, SMT, SMA
10 - 1200	A1211	14	2.8	6	20	5	15.5	TO-8, SMT, SMA
10 - 1200	A64	26	3.4	8	20	15	35	TO-8, SMT, SMA
10 - 1200	A66	23.5	4	15	28	15	64	TO-8, SMT, SMA
10 - 1200	MAAM-008198-00A162	13	3.5	6	18	5	15	TO-8, SMT, SMA
100 - 1200	A1212	14	1.8	19	29	5	70	TO-8, SMT, SMA
2 - 1500	A25-1	13.5	3	9	22	15	25	TO-8, SMT, SMA
5 - 1500	A24	20	4.2	8	21	15	34	TO-8, SMT, SMA
5 - 1500	A25	10	6	9	21	15	24	TO-8, SMT, SMA
10 - 1500	A26	20.5	5	16	27	15	64	TO-8, SMT, SMA
10 - 1500	A27	8.5	7.5	15.5	28	15	50	TO-8, SMT, SMA
10 - 1500	A28	11	6	15	29	15	45	TO-8, SMT, SMA
10 - 1500	A28-2	14	3.5	10.5	24	5	27	TO-8, SMT, SMA
10 - 1500	A29-1	9	5.5	22	32	15	90	TO-8, SMT, SMA
300 - 1800	AM-153-PIN	12.4	2.5	7.5	17	15	13	TO-8-1
300 - 1800	AM-155-PIN	12.3	3.5	20	30	15	50	TO-8-1, CONN
10 - 2000	A31-1	11.5	3.5	-2	9	15	9	TO-8, SMT, SMA
10 - 2000	A33	9.5	4.5	3	15	15	14	TO-8, SMT, SMA
10 - 2000	A35	10	5	9	21	15	24	TO-8, SMT, SMA
10 - 2000	A37	10	6.8	15	28	15	47	TO-8, SMT, SMA
10 - 2000	A38	9.5	6.5	19	30	15	65	TO-8, SMT, SMA
10 - 2000	A39	7.5	8.5	22	34	15	90	TO-8, SMT, SMA
10 - 2000	AM-180-PIN	9.7	6	14.5	2.8	15	45	TO-8-1, CONN
10 - 2000	AM-184-PIN	20.0	5	11	21	15	52	TO-8-1, CONN
50 - 2000	MAAM-007865-0PIR00	20	5	18.5	29.5	5	42	3 mm PQFN-12
100 - 2000	A32-1	11.5	2.5	15.5	25	5	44	TO-8, SMT, SMA
100 - 2000	A34	16	5.5	7	18	15	35	TO-8, SMT, SMA
100 - 2000	A36	16.5	5.5	12	23	15	63	TO-8, SMT, SMA
100 - 2000	A32	13	2.1	22	32	15	92	TO-8, SMT, SMA
100 - 2000	RA36	24	5.5	13	22	15	76	TO-8B, SMT, SMA
200 - 2000	PA2010	10	5	25.5	33	15	179	TO-8, SMT, SMA
200 - 2000	PA38	10	4	23	34	15	150	TO-8, SMT, SMA
1800 - 2000	PA1132 ♦	21	2.5	33.5	48	12	495	Flange Mount Carrier

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General Amplifiers (continued)

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products								
1800 - 2000	PA2003 ♦	21	2.5	33.5	49	12	495	Flange Mount Carrier
1800 - 2000	PA2001 ♦	21	2	30.3	46.5	12	345	Flange Mount Carrier
100 - 2300	A36-1	16.2	6	12	23	15	63	TO-8, SMT, SMA
2 - 2400	A33-1	9	4	6	19	15	19	TO-8, SMT, SMA
2 - 2400	A35-1	9	4.2	9.5	23	15	26	TO-8, SMT, SMA
0.01 - 2500	A3010	9.5	4.5	19	35	12	160	TO-8, SMA
100 - 2600	A36-2	15	7	14	30	15	63	TO-8, SMT, SMA
200 - 2600	PA38-2	8.5	4.5	23.5	33	15	150	TO-8, SMT, SMA
20 - 2700	MAAM-007501-SA2002	11.5	2.5	27	40	9	165	TO-8, SMT, SMA
50 - 3300	MAAM-007866-OP1R00	27	5	22.7	36.5	5	175	3 mm PQFN-12
1000 - 4000	A4012	18	3.5	15.5	26	5	65	TO-8, SMT, SMA
1000 - 4000	A45	17.5	4	19.5	29	15	120	TO-8, SMT, SMA
1000 - 4000	A45-1	17.5	4	13	26	5	65	TO-8, SMT, SMA
1000 - 4000	A4011	15.5	2	18.3	29	5	65	TO-8, SMT, SMA
1000 - 4000	PA48	16	5.5	24	34	15	225	TO-8B, SMT, SMA
1000 - 4000	RA46	25.5	4.5	19	30	12	175	TO-8B, SMT, SMA
2000 - 6000	A61	7.5	3.2	12.5	25	5	35	TO-8, SMT, SMA
2000 - 6000	A6011	14.8	1.5	18	30	5	58	TO-8, SMT, SMA
2000 - 6000	RA62	16	4	13	28	15	65	TO-8B, SMT, SMA
2000 - 6000	RA63-1	22	5.5	16	32	5	120	TO-8B, SMT, SMA

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M/A-COM Technology Solutions attenuators are used in various applications for automotive and wireless markets. We offer serial and parallel logic controlled digital attenuators and voltage variable analog attenuators (VVAs) that range from DC to 6 GHz.

- Cellular infrastructure
- Handset gain control
- Radar systems
- Satellite radios
- Test equipment



Voltage Variable Attenuators

Frequency (MHz)	Part Number	I.L. (dB)	Attenuator Range (dB)	Input IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products							
0 - 2000	AT-250 ◆	3.2	12	36	-4	0.020	SOIC-8
0 - 2000	MAAV-007941	3.2	12	36	-4	0.020	SOIC-8
0 - 2000	AT-259 ◆	3.2	12	36	-4	0.020	SOT-143
0 - 2000	MAAVSS0005	3.2	12	36	-4	0.020	SOT-143
0 - 2000	AT-635 ◆	7.2	35	36	-4	0.020	SOIC-14
0 - 2000	MAAVSS0004	7.2	35	36	-4	0.020	SOIC-14
0 - 2500	AT-255 ◆	3.6	25	36	-3	0.025	SOT-25
0 - 2000	MAAVSS0006	3.6	25	36	-3	0.025	SOT-25
5 - 2000	G1*	2.5	25	—	+15	15	TO-8, SMT, SMA
5 - 2000	G2	2.6	23	—	+5	15	TO-8, SMT, SMA
5 - 3000	MA4P274-1225T ◆	1	30	43	—	—	SOT-25
5 - 3000	MA4P7455-1225T	1	30	43	—	—	SOT-25
5 - 3000	MA4P290-1225T ◆	2.8	25	50	—	—	SOT-25
5 - 3000	MADP-007167-12250T	2.8	25	50	—	—	SOT-25
50 - 1000	MAAV-007088-000100	2.8	42	34	—	—	SOW-16
100 - 2000	G30**	2.5	35	—	+15	10	TO-8, SMT, SMA
500 - 2000	AT-109 ◆	2.5	35	25	+5	0.050	SOIC-8
500 - 2000	AT-110 ◆	2.8	30	28	+5	0.300	SOIC-8
500 - 2000	AT-110-2 ◆	2.8	39	28	+5	0.300	SOIC-8
500 - 2000	MAAVSS0008	2.8	39	28	+5	0.300	SOIC-8
500 - 2000	AT-113 ◆	2.7	40	28	+3	0.050	SOIC-8
500 - 2000	MAAV-008022	2.7	40	28	+3	0.050	SOIC-8
500 - 3000	AT-108 ◆	2.5	40	28	+5	0.050	SOIC-8
500 - 3000	MAAVSS0007	2.5	40	32	+5	0.050	SOIC-8
500 - 4000	G40	2.5	25	—	+15	12	TO-8, SMT, SMA
600 - 1200	MA4VAT904-1061T	1	24	49	—	—	SOIC-8
600 - 1200	MA4VAT907-1061T	1	24	49	—	—	SOIC-8
600 - 2000	MA4VAT900-1277T	1	24	40	—	—	3 mm PQFN
800 - 1000	MAAV-007089-000100	4.2	35	35	—	30	SOW-16
800 - 1000	MAAV-007092-000100	3.6	38	40	—	30	CSP-8
824 - 960	AT65-0009 ◆	1.7	25	40	—	—	SOT-25
1200 - 2500	MA4VAT2000-1277T	1.2	25	21	—	—	3 mm PQFN
1500 - 2500	MA4VAT2004-1061T	1.4	24	49	—	—	SOIC-8
1500 - 2500	MA4VAT2007-1061T	1.4	24	52	—	—	SOIC-8
1700 - 2000	MAAV-007090-000100	3.5	35	31	—	—	SOW-16
1700 - 2200	MAAV-007091-000100	2.9	33	31	—	30	CSP-8
1800 - 2500	AT-119 ◆	2.4	42	32	+2.25	0.050	SOT-25
1800 - 2500	MAAVSS0001	2.4	42	32	+2.25	0.050	SOT-25

*LG1 Linearizer is compatible with the G1 Attenuator. Yields linear attenuation (dB) for linear control voltage. Available in TO-8, SMT, SMA

**LG30 Linearizer is compatible with the G30 Attenuator. Yields linear attenuation (dB) for linear control voltage. Available in TO-8, SMT, SMA

Note: Part numbers are RoHS compliant ◆ indicates non-RoHS compliant

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Digital Attenuators

Frequency (MHz)	Part Number	I.L. (dB)	Step Size (dB)	Attenuator Range (dB)	Input IP3 (dBm)	Package
Die Products						
0 - 2000	MADA2030G ◆	1.9	0.5	15.5	45	Die
Packaged Products						
0 - 2000	AT-210 ◆	1.5	1	15	50	SOIC-16
0 - 2000	MAATSS0015	1.5	1	15	50	SOIC-16
0 - 2000	AT-220 ◆	1.6	2	30	50	SOIC-16
0 - 2000	MAADSS0009	1.6	2	30	50	SOIC-16
0 - 2000	AT-230 ◆	1.6	4	28	50	SOIC-14
0 - 2000	AT-232	2.5	2	30	50	CR-6
0 - 2000	AT-260 ◆	1.9	1	31	50	SSOP-20
0 - 2000	MAATSS0020	1.9	1	31	50	SSOP-20
0 - 2000	AT-266 ◆	0.3	10	10	50	SOT-25
0 - 2000	MAATSS0018	0.3	10	10	50	SOT-25
0 - 2000	AT-267 ◆	0.3	15	15	50	SOT-25
0 - 2000	MAADSS0008	0.3	15	15	50	SOT-25
0 - 2000	AT-280 ◆	1.5	0.5	15.5	45	SOIC-16
0 - 2000	MAATSS0021	1.5	0.5	15.5	45	SOIC-16
0 - 2000	AT-357 ◆	6.5	1	31	47	C-46
0 - 2000	AT15-0001	7.3	1	31	40	Ceramic
0 - 3000	AT-213	2.5	1	15	50	CR-11
20 - 2000	AT-358 ◆	2.7	10	10	35	TO-8-2
400 - 2500	MAATSS0001 ◆	1.9	0.5	15.5	46	QSOP-16 (SSOP-16)
400 - 2500	MAATSS00017	1.9	0.5	15.5	46	QSOP-16 (SSOP-16)
400 - 2500	MAATSS0002 ◆	1.8	1	31	43	QSOP-16 (SSOP-16)
400 - 2500	MAADSS0010	1.8	1	31	43	QSOP-16 (SSOP-16)
500 - 2000	AT-264 ◆	2.2	2	30	47	TSSOP-16
500 - 2000	MAATSS0016	2.2	2	30	47	TSSOP-16
500 - 2500	MAATSS0022	1.75	0.5	15.5	46	MSOP-10
500 - 4000	MAATSS0019	1.6	1	15	47	TSSOP-16
500 - 4000	MAADSS0013	1.0	—	15	42	3 mm PQFN-16
500 - 4000	MAADSS0014	1.3	—	30	42	3 mm PQFN-16
500 - 4000	MAADSS0016	1.4	—	31	42	3 mm PQFN-16
2000 - 6000	MAADSS0012	0.75	—	21	42	2 mm PDFN-8
2000 - 6000	MAADSS0018	2.0	—	15.5	42	3 mm PQFN-16
2000 - 6000	MAADSS0019	1.3	—	15	42	3 mm PQFN-16
Attenuators with Drivers						
0 - 2000	AT-106	4.6	1	50	46	CR-13
0 - 2000	AT-107	4	0.5	31.5	48	CR-13
0 - 2000	AT-233	2.8	2	30	50	CR-12
0 - 2000	AT-263	3	1	31	48	CR-12
0 - 2000	AT-273	1.9	16	32	48	CR-11
0 - 2000	AT-283	2.9	0.5	15.5	47	CR-12
0 - 2000	AT20-0106	4.6	1	50	46	CR-13
0 - 2000	AT20-0107	3.8	0.5	31.5	48	CR-13
0 - 2000	AT20-0263	3	1	31	48	CR-12
0 - 2000	AT20-0273	1.9	16	32	48	CR-11
0 - 2000	MAAD-007086-000100	4.7	1	50	48	SOW-24
0 - 2000	MAATCC0005	4.2	0.5	31.5	48	SOW-24
0 - 2000	MAATCC0007	3.2	1	31	48	SOW-16

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Digital Attenuators (continued)

Frequency (MHz)	Part Number	I.L. (dB)	Step Size (dB)	Attenuator Range (dB)	Input IP3 (dBm)	Package
Attenuators with Drivers						
0 - 2000	MAAD-007084-000100	3	0.5	15.5	48	SOW-16
0 - 2400	MAAD-007082-000100	6	1	50	48	CSP-1
0 - 2400	MAAD-007080-000100	6	1	50	48	CSP-1
0 - 2500	MAATCC0012	2.7	2	30	48	CSP-1
0 - 2500	MAAD-007079-000100	2.7	2	30	48	CSP-1
0 - 3000	MAAD-007085-000100	2.8	1	15	50	SOW-16
0 - 3000	MAATCC0006	3.1	2	30	50	SO-16
0 - 3000	MAATCC0008	1.7	1	15	50	SO-16
0 - 3000	MAATCC0010	4	1	31	48	CSP-1
0 - 3000	MAATCC0012	3.1	2	30	50	SO-16
0 - 3000	MAAD-007078-000100	3.8	1	31	48	CSP-1
0 - 3500	MAAD-007081-000100	3.2	0.5	15.5	48	CSP-1
0 - 3500	MAATCC0014	3.2	0.5	15.5	48	CSP-1
0 - 4000	MAATCC0009	5.1	0.5	31.5	48	CSP-1
0 - 4000	MAADCC0006	2.5	1	15	48	CSP-1
0 - 4000	MAATCC0011	5.1	0.5	31.5	48	CSP-1
0 - 4000	MAAD-007077-000100	2.5	1	15	48	CSP-1
0 - 6000	MAAD-007083-000100	5.8	1	31	48	CSP-1

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RF and Microwave Diodes: PIN, Schottky, and Varactor Devices

M/A-COM Technology Solutions produces one of the widest variety of PIN, Schottky, and varactor diodes in the industry for microwave circuit applications from 1 MHz to 80 GHz. Diodes are manufactured in die form, plastic, ceramic, and metal packaging.

- Broadband and high power switch circuits: silicon and GaAs PIN switch diodes
- Analog attenuator circuits: silicon PIN attenuator diodes
- High power limiter circuits: silicon PIN limiter diodes
- Detector and mixer circuits: GaAs and silicon Schottky diodes
- Multiplier circuits: GaAs and silicon Schottky diodes
- Filter and VCO circuits: GaAs and silicon varactor diodes

Limiter Diodes

- Die series for chip and wire high frequency microwave applications
- Ceramic packaged series for waveguide, coaxial and surface mount applications

Multiplier Diodes

- Flip chip series for higher frequency millimeter wave applications
- Plastic packaged series for microwave frequency surface mount applications
- Ceramic packaged series for high power waveguide and coaxial applications

Mixer and Detector Diodes

- Surmount™ chipscale style diodes for surface mount high performance applications
- GaAs flip chip and GaAs beam lead series for surface mount millimeter frequency applications
- Plastic series for cost effective, surface mount applications
- Ceramic series for microwave frequency surface mount applications

Switch and Attenuator PIN Diodes

- CERMACHIP® series for microwave frequency applications
- Plastic series for cost effective, surface mount applications.
- * AlGaAs series for low loss, high isolation millimeter frequency applications
- GaAs and silicon flip chip series for surface mount millimeter applications
- Surmount chipscale style diodes for surface mount high performance applications
- HIPAX series for high average power surface mount UHF applications
- Kilovolt series for high peak voltage HF and VHF applications
- HIPAX non-magnetic series for high average power MRI HF and VHF applications

Tuning Diodes

- GaAs constant gamma series for higher frequency and high Q applications
- Plastic packaged silicon varactor diodes for surface mount applications, including VCOs, tunable filters, and phase shifters



Limiter

Part Number	Junction Capacitance (pf)	Max. Peak Power (W) at 1_S P.W. 0.1% Duty	Carrier Lifetime (ns)	Voltage Rating (V)	Input P1dB (dBm)	Packages
Die and Packaged Products						
MA4L011 Series	0.13 - 0.24	80	10	15-35	7	Die, Ceramic
MA4L021 Series	0.14 - 0.24	90	10	20-35	8	Die, Ceramic
MA4L022 Series	0.13 - 0.23	90	10	20-35	8	Die, Ceramic
MA4L031 Series	0.14 - 0.21	125	15	30-50	10	Die, Ceramic
MA4L032 Series	0.13 - 0.2	125	15	30-50	11	Die, Ceramic
MA4L062 Series	0.07 - 0.15	200	40	50-75	15	Die, Ceramic
MA4L101 Series	0.15 Max	250	90	100 Min	20	Die, Ceramic
MA4L401 Series	0.3 Max	1000	800	250 Min	30	Die, Ceramic

Multiplier

Standard Part Number Series	Junction Capacitance at Vr=6V (pf)	Min. Breakdown Voltage (Vb)	Carrier Lifetime (ns)	Typical Transition Time (ns)	Package
Discrete Die Products					
MA43543-134	0.2 - 0.55	20	25	60	Die
MA44631A-134	0.3 - 0.5	30	8	70	Die
MA44641A-134	0.4 - 0.6	40	12	90	Die
MA44631C-134	0.7 - 0.9	30	8	70	Die
Ceramic Packaged Products					
MA43543 Series	0.2 - 0.55	20	25	60	
MA43592 Series	0.2 - 0.3	25	27	90	
MA43004 Series	0.45 - 0.85	30	50	150	
MA43000 Series	3.0 - 4.5	85	500	600	
Standard Part Number Series	RoHS Compliant Part Number	Total Capacitance at Vr=6V (pf)	Min. Breakdown Voltage (Vb)	Carrier Lifetime (ns)	Typical Transition Time (ns)
Plastic Packaged Products					
MA44769 Series ♦	MA144769, MAVR-044769 Series	0.8 - 1.2	30	50	150
MA44768 Series ♦	MAVR-044768 Series	1.6 - 2.4	30	225	250
MA44767 Series ♦	MAVR-044767 Series	3 - 4.5	30	500	600

Mixing and Detector

Part Number	Junction Capacitance (pf)	Tss (dBm)	Frequency (MHz)	Package
Flip Chip & Beam Lead Products — GaAs				
MA4E1317	0.045	-55	0 - 60000	Flip Chip
MADS-001317-1320AG	0.045	-55	0 - 60000	Flip Chip with Solder Bumps
MA4E1318	0.045	-55	0 - 60000	Flip Chip
MA4E1319-1	0.045	-55	0 - 60000	Flip Chip
MA4E1319-2	0.045	-55	0 - 60000	Flip Chip
MA4E2160	0.045	-56	1 - 80000	Flip Chip
MA4E2037	0.045	-55	0 - 60000	Beam Lead
MA4E2039	0.045	-55	0 - 60000	Beam Lead
MA4E2040	0.045	-55	0 - 60000	Beam Lead

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Mixing and Detector

Part Number	Junction Capacitance (pf)	Tss (dBm)	Frequency (MHz)	Package
Die and Surface Mount Products — Silicon				
MA4E931Z2-1261A	0.11	-55	0 - 18000	Die
MA4E2054L-1261	0.15	-55	0 - 18000	Die
MA4E2062 Series	0.4	—	0 - 20000	Die
MADS-002545-1307MG	0.11	-53	1 - 18000	Surmount
MA4E2501L-1290	0.12	-53	0 - 26000	Surmount
MA4E2502 Series	0.12	-53	0 - 26000	Surmount
MA4E2513L-1289	0.12	-53	0 - 26000	Surmount
MA4E2514 Series	0.12	-53	0 - 26000	Surmount
MA4E2532 Series	0.11	-53	0 - 26000	Surmount
MA4E2544L-1282	0.15	-53	0 - 26000	Surmount
MA4E2508 Series	0.10	-53	0 - 26000	Surmount

Standard Part Number Series	RoHS Compliant Part Number	Junction Capacitance (pf)	Total Max. Capacitance (pf)	Tss (dBm)	Frequency (MHz)
Plastic Packaged Products					
MA4E2200 Series ♦	MA4E2200X1*, MADS-002200 Series	0.11	0.25	-55	0 - 4000
MA4E2054 Series ♦	MA4E2054X1*, MADS-002054 Series	0.15	0.3	-50	0 - 4000
	MADS-003000 Series	0.4	0.5	-50	0 - 3000
	MA4E2062, MADS-002062 Series	0.4	0.5	-50	0 - 3000
	MA4E2072, MADS-002072 Series	0.5	0.63	-50	0 - 3000
MA4E1338 Series ♦	MA4E1338X1*, MADS-001338 Series	0.7	1	-47	0 - 3000
MA4E1340 Series ♦	MA4E1340X1*, MADS-001340 Series	0.9	2	-45	0 - 3000
MA4E1339 Series ♦	MA4E1339X1*, MADS-001339 Series	1.0	1.2	-45	0 - 3000

*Note: The "X" in the above RoHS compliant part numbers varies depending upon the specific part configuration.

Part Number	Junction Capacitance (pf)	Total Max. Capacitance (pf)	Tss (dBm)	Frequency (MHz)
Ceramic Packaged Products				
MA40045-137	0.10	0.30	—	0 - 6000
MA40115-276	0.12	0.32	—	0 - 16000
MA40126-186	0.12	0.32	—	0 - 16000
MA40143-213	0.12	0.32	-50	0 - 10000
MA40147-213	0.12	0.32	-50	0 - 10000
MA40201-119	0.12	0.32	-55	0 - 10000
MA40205-119	0.12	0.32	-55	0 - 10000
MA40215-120	0.12	0.32	-55	0 - 10000
MA40261	0.12	0.32	-55	0 - 10000
MA40264	0.12	0.32	-55	0 - 10000
MA4E914-276	0.14	0.35	—	0 - 18000
MA4E920-276	0.14	0.35	—	0 - 18000
MA4E185-276	0.2	0.4	—	0 - 12000
MA4E190-276	0.2	0.4	—	0 - 12000
MA4E197-186	0.2	0.4	—	0 - 12000
MA4E926-276	0.2	0.4	—	0 - 18000
MA4E929A-119	0.25	0.45	-55	0 - 18000
MA4E929B-119	0.25	0.45	-55	0 - 18000

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Switch and Attenuator

Part Number	Total Capacitance (pF)	Dynamic Resistance (ohms)	Frequency (MHz)	Package
Discrete Diode Products — GaAs				
MA4GP905	0.025	3	100 - 30000	Beam Lead
MA4GP907	0.025	4.2	100 - 30000	Flip Chip
Discrete Diode Products — AlGaAs				
MA4AGP907	0.025	3	100 - 30000	Flip Chip
MA4AGSBP907	0.025	3	100 - 30000	Flip Chip with Solder Bumps
MA4AGFCP910	0.018	5.2	100 - 40000	Flip Chip
MA4AGBLP912	0.02	4	100 - 40000	Beam Lead
Discrete Diode Products — Silicon				
MA4SPS422	0.18	3.1	1 - 6000	Surmount
MA4SPS421	0.09	6	1 - 10000	Surmount
MA4SPS502	0.14	2.4	10 - 18000	Surmount
MADP-000208-13180W	0.81	0.4	30 - 2000	Surmount
MADP-030015-1314	0.79	0.49	50 - 2000	Surmount
MADP-042505-130600	0.6	0.6	50 - 2000	Surmount
MADP-030025-1314	0.5	0.65	50 - 2000	Surmount
MADP-042408-1305	0.36	0.67	50 - 4000	Surmount
MADP-017015-1314	0.32	0.72	50 - 4000	Surmount
MADP-042405-130600	0.27	0.8	50 - 4000	Surmount
MA4SPS302	0.4	1	50 - 4000	Surmount
MADP-042305-130600	0.14	1.3	50 - 6000	Surmount
MADP-017025-1314	0.23	1	50 - 8000	Surmount
MADP-042508-1305	0.18	0.97	50 - 10000	Surmount
MADP-042308-1305	0.09	1.57	50 - 15000	Surmount
MA4SPS552	0.06	2.5	50 - 15000	Surmount
MADP-042905-130600	0.06	3.1	50 - 16000	Surmount
MADP-042908-1305	0.04	3.63	50 - 18000	Surmount
MA4SPS402	0.04	4.5	50 - 18000	Surmount
MADP-064908-131000	0.05	5	50 - 18000	Surmount
MA4FCP305	0.05	2.1	100 - 18000	Flip Chip
MA4FCP300	0.025	2.6	100 - 30000	Flip Chip
MA4FCP200	0.02	2.8	100 - 40000	Flip Chip
MA4PBL027	0.030	2.8	100 - 18000	Beam Lead
Ceramic Packaged Products — GaAs				
MA4GP030 Series	0.06	2	100 - 18000	Ceramic, Die
MA4GP022 Series	0.15	1.0	100 - 10000	Ceramic, Die
Ceramic Packaged Products — Silicon				
MA4P203 Series	0.15	1.5	30 - 18000	Ceramic, Die
MA4P303 Series	0.15	1.5	20 - 18000	Ceramic, Die
MA4P202 Series	0.25	2.5	50 - 18000	Ceramic, Die
MA4P604 Series	0.3	1	0.5 - 8000	Ceramic, Die
MA4P606 Series	0.6	0.7	0.5 - 1000	Ceramic, Die
MA4P607 Series	1.3	0.4	0.5 - 500	Ceramic, Die
MA4PK2000 Series	2.7	0.2	0.1 - 500	Ceramic, Die
MA4PK3000 Series	3.2	0.15	0.1 - 500	Ceramic, Die
MA4P504 Series	0.20	0.6	1 - 10000	Ceramic, Die, MELF
MA4P404 Series	0.20	0.8	5 - 10000	Ceramic, Die, MELF
MA4P505 Series	0.35	0.45	1 - 6000	Ceramic, Die, MELF

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Switch and Attenuator (continued)

Part Number	Total Capacitance (pF)	Dynamic Resistance (ohms)	Frequency (MHz)	Package
HIPAX/MELF Products				
MA4P1450-1091T	1.4	0.35	1 - 300	MELF
MA4P1250-1072T	0.7	0.5	5 - 500	MELF
MA4P7100 Series	0.7	0.5	1 - 1000	MELF, HIPAX
MA4PH235-1072T	0.8	0.5	50 - 500	MELF
MA4P4000 Series	1.8	0.5	0.1 - 500	MELF, HIPAX
MA4PH237-1072T	1.2	0.6	10 - 300	MELF
MA4P7000 Series	0.4	0.8	1 - 1000	MELF, HIPAX
MA4P4300 Series	1.6	1	0.1 - 500	MELF, HIPAX
MA4PH236-1072T	0.2	3	50 - 1000	MELF
MA4PH238-1072T	0.2	6	10 - 1000	MELF
MA4PH239-1072T	0.5	25	10 - 1000	MELF
MA4P7464F-1072T	0.4	0.5	1 - 500	MELF Non-Magnetic Pkg
MA4P7461F-1072T	0.6	0.5	1 - 500	MELF Non-Magnetic Pkg
MA4P7441F-1091T	1.8	0.5	0.5 - 500	MELF Non-Magnetic Pkg
MA4P7446F-1091T	1.8	0.5	0.5 - 500	MELF Non-Magnetic Pkg
MA4P7470F-1072T	0.4	0.8	0.5 - 1000	MELF Non-Magnetic Pkg
MA4P7452F-1072T	0.4	0.9	0.5 - 1000	MELF Non-Magnetic Pkg

Standard Part Number Series	RoHS Compliant Part Number	Total Capacitance (pf)	Dynamic Resistance (ohms)	Frequency (MHz)
Plastic Packaged Products				
	MADP-008120-12790T	0.13	2.5	5 - 6000
MA4P274 Series ♦	MA4P7455, MADP-007455 Series	0.15	3	5 - 2500
MA4P277 Series ♦	MA4P7437, MADP-007437 Series	0.15	6	5 - 4000
MA4P278 Series ♦	MA4P7438, MADP-007438 Series	0.15	10	1 - 4000
MA4P789 Series ♦	MA4P7433, MADP-007433 Series	0.2	1.5	25 - 4000
MA4P290 Series ♦	MADP-007167 Series	0.2	16	1 - 4000
MA4P275 Series ♦	MA4P7436, MADP-007436 Series	0.8	0.5	25 - 2500
MA4P282 Series ♦	MA4P7447, MADP-007155 Series	1.0	0.6	15 - 2500

Tuning

Part Number	Total Capacitance at Vr = 4.0V (pF)	Min. Reverse Breakdown Voltage (Vb)	Gamma	Q (Min.) at 50 MHz	Package
Discrete Die Products — GaAs					
MA46H146	0.06	25	1	5000	Flip Chip
MA46H120	0.35	15	1	3000	Flip Chip
MA46585-1209	0.5	18	1	3000	Beam Lead
MA46580-1209	0.5	18	1.25	3000	Beam Lead
Ceramic Packaged Products — GaAs					
MA46600 Series	0.30	30	0.5	8000	
MA46602 Series	0.5	30	0.5	7000	
MA46504 Series	0.6	30	0.5	6000	
MA46603 Series	0.60	30	0.5	6500	
MA46505 Series	1	30	0.5	5700	
MA46H070 Series	0.6	20	0.75	4500	
MA46H071 Series	1	20	0.75	4500	

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

Blue listings indicate standard stock items widely available from our franchised distribution partners.

Detailed specifications for our standard parts can be found quickly on our web site at www.macomtech.com by typing the part number into the search box.

28 All specifications are subject to change.

Tuning (continued)

Part Number	Total Capacitance at Vr = 4.0V (pF)	Min. Reverse Breakdown Voltage (Vb)	Gamma	Q (Min.) at 50 MHz	Package
Ceramic Packaged Products — GaAs					
MA46H072 Series	3	20	0.75	3000	
MA46H073 Series	5	20	0.75	2200	
MA46450 Series	0.5	22	1.0	4000	
MA46451 Series	0.70	22	1.0	4000	
MA46457 Series	2.20	22	1.0	3000	
MA46461 Series	4.7	22	1.0	1500	
MA46470 Series	0.5	22	1.25	4000	
MA46H200 Series	0.6	22	1.25	3000	
MA46471 Series	0.7	22	1.25	4000	
MA46472 Series	1	22	1.25	3000	
MA46H201 Series	1	22	1.25	3000	
MA46473 Series	1.2	22	1.25	3000	
MA46474 Series	1.5	22	1.25	3000	
MA46475 Series	1.8	22	1.25	3000	
MA46476 Series	2	22	1.25	3000	
MA46477 Series	2.2	22	1.25	3000	
MA46H202 Series	3	22	1.25	2000	
MA46479 Series	3.30	22	1.25	2000	
MA46480 Series	3.8	22	1.25	2000	
MA46H203 Series	5	22	1.25	1500	
MA46483 Series	6.8	22	1.25	1500	
MA46485 Series	10	22	1.25	1500	
MA46H204 Series	10	22	1.25	1500	
MA46410 Series	0.5	18	1.5	3000	
MA46H500 Series	0.6	18	1.5	2500	
MA46413 Series	1	18	1.5	2500	
MA46H501 Series	1	18	1.5	2500	
MA46416 Series	1.8	18	1.5	2500	
MA46418 Series	2.7	18	1.5	1800	
MA46420 Series	3.8	18	1.5	1800	
MA46H503 Series	5	18	1.5	1200	
MA46425 Series	10	18	1.5	1200	
Standard Part Number	RoHS Compliant Series	Total Capacitance at 0.5V (pF)	Min. Breakdown Voltage (Vb)	Q (Min.) Gamma	Q (Min.) at 50 MHz
Plastic Packaged Products — Silicon					
MA4ST1350 Series ♦	MAVR-001350 Series	11	12	1	1100
MA4ST350 Series ♦	MAVR-000350 Series	11.8	12	1	400
MA4ST1340 Series ♦	MAVR-001340 Series	18	12	1	1050
MA4ST340 Series ♦	MAVR-000340 Series	18.5	12	1	350
MA4ST1330 Series ♦	MAVR-001330 Series	25	12	1	900
MA4ST330 Series ♦	MAVR-000330 Series	26	12	1	350
MA4ST1320 Series ♦	MAVR-001320 Series	55	12	1	550
MA4ST320 Series ♦	MAVR-000320 Series	58	12	1	300

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

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Detailed specifications for our standard parts can be found quickly on our web site at www.macomtech.com by typing the part number into the search box.

All specifications are subject to change.

Tuning (continued)

Standard Part Number	RoHS Compliant Series	Total Capacitance at 2.0V (pF)	Min. Breakdown Voltage (Vb)	Gamma	Q (Min.) at 50 MHz
Plastic Packaged Products					
MA4ST250 Series ♦	MAVR-000250 Series	2.7	12	1	450
MA4ST1240 Series ♦	MA4ST1241, MAVR-001240 Series	3.4	12	1	1200
MA4ST240 Series ♦	MAVR-000240 Series	3.5	12	1	450
MA4ST1230 Series ♦	MA4ST1231, MAVR-001230 Series	4.7	12	1	850
MA4ST230 Series ♦	MAVR-000230 Series	5.0	12	1	400
Standard Part Number	RoHS Compliant Series	Total Capacitance at 2.5V (pF)	Min. Breakdown Voltage (Vb)	Gamma	Q (Min.) at 50 MHz
Plastic Packaged Products					
MA4ST083 Series ♦	MAVR-000083 Series	5	12	1.3	450
MA4ST082 Series ♦	MAVR-000082 Series	7.3	12	1.3	350
MA4ST081 Series ♦	MAVR-000081 Series	10.1	12	1.3	300
MA4ST080 Series ♦	MAVR-000080 Series	24.8	12	1.3	150
MA4ST079 Series ♦	MAVR-000079 Series	54.1	12	1.3	80
Standard Part Number	RoHS Compliant Series	Total Capacitance at 4.0V (pF)	Min. Breakdown Voltage (Vb)	Gamma	Q (Min.) at 50 MHz
Plastic Packaged Products					
MA45436 Series ♦	MAVR-045436 Series	4.7	30	0.5	1800
MA45438 Series ♦	MAVR-045438 Series	6.8	30	0.5	1600
MA45439 Series ♦	MAVR-045439 Series	8.2	30	0.5	1500
MA45440 Series ♦	MAVR-045440 Series	10	30	0.5	1300
MA4ST401 Series ♦	MAVR-000401 Series	10	22	1	250
MA45441 Series ♦	MAVR-045441 Series	12	30	0.5	1200
MA4ST402 Series ♦	MAVR-000402 Series	12	22	1	250
MA4ST403 Series ♦	MAVR-000403 Series	15	22	1	250
MA4ST404 Series ♦	MAVR-000404 Series	18	22	1	175
MA4ST405 Series ♦	MAVR-000405 Series	22	22	1	175
MA45445 Series ♦	MAVR-045445 Series	27	30	0.5	900
MA4ST406 Series ♦	MAVR-000406 Series	27	22	1	150
MA45446 Series ♦	MAVR-045446 Series	33	30	0.5	750
MA4ST407 Series ♦	MAVR-000407 Series	33	22	1	150
MA4ST408 Series ♦	MAVR-000408 Series	39	22	1	150
MA4ST409 Series ♦	MAVR-000407 Series	47	22	1	150
Standard Part Number	RoHS Compliant Series	Total Capacitance at 4.7V (pF)	Min. Breakdown Voltage (Vb)	Gamma	Q (Min.) at 50 MHz
Plastic Packaged Products					
MA4ST2200 Series ♦	MAVR-002200 Series	0.5	12	1.5	1750
MA4ST2300 Series ♦	MAVR-002300 Series	1.9	12	1.5	1850
MA4ST2400 Series ♦	MAVR-002400 Series	3.3	12	1.5	1450
MA4ST2500 Series ♦	MAVR-002500 Series	4.6	12	1.5	1150
MA4ST2600 Series ♦	MAVR-002600 Series	6.3	12	1.5	1000

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

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Detailed specifications for our standard parts can be found quickly on our web site at www.macomtech.com by typing the part number into the search box.

All specifications are subject to change.



M/A-COM Technology Solutions drivers are used extensively in wireless infrastructure base stations as well as military and defense applications. Drivers are typically used to translate TTL control voltages for attenuators and switches.

- Cordless and mobile phones
- Cellular base stations/wireless infrastructure
- Satellite radio
- GPS and DAB
- 2.4 GHz and 5.0 GHz WLAN
- VSAT
- CATV and broadband
- Bluetooth
- Fixed Wireless Access (FWA)
- Instrumentation
- Commercial and military radar
- Radar systems
- Test equipment



Drivers

Vcc (V)	Part Number	Type	Rise Time/Fall Time (ns)	Vee (-V)	Package
Die Products					
5	MADR-009190-000DIE ♦	Quad	500	-5	Die
Packaged Products					
5	MADR-007097-000100	Single	35	-7	SO-8
5	MADRCC0004	Quad	500	-5	SO-16
5	MADR-007098-000100	PIN	—	—	SOW-16
5	MADRCC0005	Single	500	-5	SO-8
5	MADRCC0006	Single	500	-5	SO-8
5	MADRCC0007	Quad	500	-5	SO-16
5	MADR-009443-000100	Quad	500	-5	QFN-20, Tin Plating
5	MADR-007131-000100	Dual Pin Driver	—	—	CSP-9
5	MADR-007690-DR0002 ♦	Quad	500	-5	QFN-20, Tin-Lead Plating
5	MADR-008851-000100	PIN	420	—	LGA-23
5	MADR-008888-000100	PIN	300	—	LGA-23
15	LG30 ♦	PIN	2000	-15	TO-8, SMT, SMA
15	LG1 ♦	PIN	30000	-15	TO-8, SMT, SMA

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All specifications are subject to change.

Frequency Doublers



M/A-COM Technology Solutions frequency doublers are a specialized class of broadband mixers. They are used in a variety of communications applications.

- Surface mount, connectorized and drop-in packaging available for standard components
- Multi-octave input frequency coverage in the range of 5 MHz-12 GHz high performance applications



Frequency Doublers

Input Frequency (MHz)	Part Number	VSWR (ratio)	Input Power (dBm)	Conversion Loss (dB)	Package
Packaged Products					
5 - 2400	FD25 ◆	1.5:1	10	11.5	TO-8
5 - 2400	FD25C ◆	1.5:1	10	11.5	SMA
5 - 2400	FD25E ◆	1.5:1	10	11.5	FP
5 - 2400	FD25H ◆	1.5:1	23	12	TO-8
5 - 2400	FD25HC ◆	1.5:1	23	12	SMA
5 - 2400	SFD25 ◆	1.5:1	10	11.5	SMT
5 - 2400	SFD25H ◆	1.5:1	23	12	SMT
5 - 2400	FMS-109 ◆	1.5:1	10	11	SMT
10 - 750	FM-105 ◆	2.0:1	13	14.5	Relay Header
10 - 2400	CSFD25 ◆	2.0:1	10	11.5	SMT
10 - 2400	CSFD25H ◆	2.0:1	23	12	SMT
50 - 3300	CSFD26 ◆	2.0:1	10	12.5	SMT
50 - 3300	FD26 ◆	2.0:1	10	13	TO-8
50 - 3300	FD26C ◆	2.0:1	10	13	SMA
50 - 3300	FD26E ◆	2.0:1	10	13	FP
50 - 3300	SFD26 ◆	2.0:1	10	13	SMT
75 - 1500	FM-104 ◆	2.5:1	13	12	FP
200 - 3000	FM-106 ◆	2.0:1	13	13	FP
2000 - 9000	FD93 ◆	1.5:1	12	12	Hermetic Module
2000 - 9000	FD93C ◆	1.5:1	12	12	SMA
2000 - 9000	FD93H ◆	1.5:1	19	12	Hermetic Module
2000 - 9000	FD93HC ◆	1.5:1	19	12	SMA
3000 - 12000	FDZ5013 ◆	2.0:1	13	12	Hermetic Module
3000 - 12000	FDZ5013C ◆	2.0:1	13	12	SM

Note: Part numbers are RoHS compliant ◆ indicates non-RoHS compliant

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All specifications are subject to change.



M/A-COM Technology Solutions offers a complete line of RF and Microwave limiters, limiting amplifiers and LNA/limiters up to 18 GHz. Our limiters and limiting amplifiers use the latest thin-film hybrid manufacturing techniques to obtain the highest levels of performance, repeatability, reliability and cost-effectiveness. These products use the latest technology available in the industry for silicon and GaAs MMICs, silicon bipolar, and GaAs FET devices.



Limiting Amplifiers

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Max. Limiting (dBm)	VSWR In/Out	Voltage (Volts)	Current (mA)	Package
Packaged Products									
10 - 500	SMLA88	16.5	6	17	20.5	1.7	15	89	TO-8, SMT, SMA
10 - 1000	LA17	11.5	5.8	10	15	1.7	15	55	TO-8, SMT, SMA
50 - 500	AL7	13	5	-1.5	0.5	1.5	15	54	TO-8, SMT, SMA
50 - 500	LA7	12.5	7	12	15.5	1.5	15	54	TO-8, SMT, SMA
1000 - 4000	LA45	11.5	8	14	15.5	1.7	15	110	TO-8, SMT, SMA
1000 - 4000	LA45-1	14	7.5	17	18.5	1.8	15	110	TO-8, SMT, SMA

Package Limiters

Frequency (MHz)	Part Number	I.L. (dB)	Avg. Power (W)	Peak Power (W)	Leakage (mw)	Recovery Time (ns)	Package
Packaged Products							
1000 - 2000	2690-1001 ♦	0.7	1	100	75	100	Coax
1000 - 2000	2690-1003 ♦	0.9	3	1000	100	1000	Coax
2000 - 8000	2690-1005 ♦	1.1	1	100	50	100	Coax
2000 - 8000	2690-1007 ♦	1.3	3	1000	100	1000	Coax
2000 - 18000	2690-1013 ♦	2	1	100	50	100	Coax
2000 - 18000	2690-1014 ♦	2.2	2	500	75	250	Coax
2000 - 18000	2690-1015 ♦	2.3	3	1000	100	1000	Coax
8000 - 18000	2690-1009 ♦	1.8	1	100	50	100	Coax
8000 - 18000	2690-1011 ♦	2.3	3	1000	100	1000	Coax

Signal Limiters

Frequency (MHz)	Part Number	I.L. (dB)	Limiting Level (dB)	Input VSWR	Output VSWR	Voltage (Volts)	Current (mA)	Package
Packaged Products								
5 - 3000	L1	3	4	1.7	1.9	+15	7	TO-8, SMT, SMA
50 - 4000	L42	4	4.5	1.7	2	+15	7	TO-8, SMT, SMA

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

Blue listings indicate standard stock items widely available from our franchised distribution partners.

Detailed specifications for our standard parts can be found quickly on our web site at www.macomtech.com by typing the part number into the search box.

All specifications are subject to change.

Modulators and Mixers



M/A-COM Technology Solutions modulators and mixers are widely used in aerospace and defense, wireless and broadband communications applications. We offer a variety of connectorized, flat pack, drop-in and surface mount packages with a broad range of operating frequency ranges and performance specifications for these markets.

Modulators

- I/Q mod/demod versions available
- Products available in subsets of the 9 - 960 MHz frequency range
- Surface mount packaging for maximum performance

Mixers

- Double and triple balanced designs
- Variety of technologies
 - Hybrid assemblies using Schottky quad diodes
 - GaAs pHEMT
 - Si HMIC
- Products available in subsets of the frequency range
 - RF/LO: 50 KHz - 24 GHz
 - IF: DC - 8 GHz



Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

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All specifications are subject to change.

SUNSTAR射频通信 <http://www.rfoe.net/> TEL:0755-83397033 FAX:0755-83376182 E-MAIL:szss20@163.com

IQ Modulators

Frequency RF/LO (MHz)	Frequency IQ (MHz)	Part Number	LO Carrier Suppression (dBc)	SSB Rejection (dBc)	Package
Packaged Products					
850 - 960	0 - 0	MAMO-000900-1291HT	34	36	6 mm PQFN
850 - 960	0 - 0	MAMO-000900-1291LT	42	38	6 mm PQFN
850 - 960	0 - 0	MAMO-000900-1291MT	40	42	6 mm PQFN
921 - 960	0.001 - 0.27	MAMO-007252-IN2960 ◆	27/34	55	SM-28

Demodulators

Frequency Fmin (MHz)	Fmax (MHz)	Part Number	Conversion Loss (dB)	Amplitude Unbalance (dB)	Phase Unbalance (deg)	Harmonic 3X I/Q (dBc)	Package
Packaged Products							
70	90	MAAD-007251 ◆					6 mm PFQFN
850	960	MAMO-000900-1291HT	12	.05	1	68	6 mm PQFN
850	960	MAMO-000900-1291LT	12.2	.06	1	58	6 mm PQFN
850	960	MAMO-000900-1291MT	12	0.05	0.5		6 mm PFQFN

Vector Modulators

Part Number	I.L. (dB)	Phase Shift (Degrees)	Amplitude Flatness (dB)	Dev. from Linear Phase (deg)	Return Loss (-dB)	Output IP3 (dBm)	Package
Packaged Products							
MAIA-007100-000100	11.5	360	0.1	0.2	17	41	CSP-6
MAIA-007099-000100	—	360	0.05	0.75	18	—	CSP-6
MAIA-007150-000100	15	360	0.25	0.5	17	—	CSP-5

Up/Down Converters

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Input IP3 (dBm)	Carrier Suppression (dBc)	Idd (mA)	Package
Packaged Products							
1500	SA65-0003 ◆	8	1.5	25	—	45	QSOP-16

Mixers begin on page 40

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Mixers

Frequency (RF/LO) (MHz)	Frequency (IF) (MHz)	Part Number	LO Drive (dBm)	Conversion Loss (dB)	Isol. (LO/RF) (dB)	Input PldB (dBm)	Package
Packaged Products							
DC - 960	820 - 915	MAMXES0072	7	7	40	5	SM-89
0.05 - 200	0 - 200	M6D-50 ◆	7	7	50	0	RH
0.05 - 200	0 - 200	SM6D ◆	7	7	45	—	SMT
0.2 - 200	0 - 200	MAC-50 ◆	7	6	25	1	TO-52
0.2 - 200	0.2 - 200	MDS-222 ◆	7	7.5	35	2	SF-1
0.4 - 500	0 - 500	M6V, SM6V ◆	7	6.5	47	0	TO-5, SMT
0.5 - 500	0 - 500	ELCM-1	7	6.2	27	1	SM-89
0.5 - 500	0 - 500	ELCM-1H	17	7.2	35	14	SM-87
0.5 - 500	0 - 500	EMRS-1	7	6.2	27	1	SM-1
0.5 - 500	0 - 500	M9BC ◆	17	7	52	8	RH
0.5 - 500	0 - 500	MAMXES0022	7	6.5	30	1	SM-134
0.5 - 500	0 - 500	MD-124 ◆	7	7	25	2	FP-2
1 - 400	0 - 400	M9E ◆	27	7	40	20	RH
1 - 500	0 - 500	MD-161 ◆	13	8	25	10	FP-2
1 - 1000	0 - 1000	ESMD-C1	7	7.5	45	1	SM-2
1 - 1000	1 - 1000	MAMXES0028 ◆	7	7.5	30	1	SM-134
1 - 1500	1 - 1000	MD-160 ◆	13	9	25	—	RH-3
1 - 3400	1 - 2000	CSM4T	10	8	35	7	SMT
1 - 3400	1 - 2000	CSM4T17	17	8	35	14	SMT
1 - 3400	1 - 2000	M4T ◆, SM4T	10	8	35	6	FP, SMT
1 - 3400	1 - 2000	M4TH, SM4TH ◆	23	8	35	17	FP, SMT
1 - 3400	1 - 2000	M8T, M8TC ◆	10	7	38	7	TO-8, SMA
1 - 3400	1 - 2000	M8TH, M8THC ◆	23	7.5	36	17	TO-8, SMA
1 - 3400	1 - 2000	SM4T17	17	8	35	13	SMT
1 - 3500	1 - 3500	MD-189 ◆	23	8	35	20	FP-2
1 - 3500	1 - 3500	MDC-169 ◆	10	10	35	7	C-7
1 - 3500	1 - 3500	MD-169 ◆	10	10	35	7	FP-2
1 - 3500	5 - 1500	MDS-169v	10	8	35	7	SF-1
1 - 3500	1 - 3500	MDS-189 ◆	23	8	35	20	SF-1
1 - 4000	5 - 1500	MD-179 ◆	7	10.5	35	5	FP-2
1 - 4000	5 - 1500	MDC-179 ◆	7	10.5	35	5	C-7
2 - 500	0 - 500	ELCM-1MH	13	6	30	9	SM-89
2 - 2200	2 - 2200	MAMX-009646-230BML	17-23	6	47	23	SM-194
5 - 500	0 - 500	M6E-50v	7	7.5	43	—	RH
5 - 500	0 - 500	MAC-51 ◆	7	7	25	2	TO-5-2
5 - 500	0 - 500	MD-108 ◆	7	9	35	2.5	RH-3
5 - 750	0 - 500	SM6EH ◆	20	6	45	13	SMT
5 - 750	0 - 500	M6EHv	20	6	47	13	RH
5 - 1000	0 - 1000	ELCM-2	7	7	25	1	SM-89
5 - 1000	0 - 1000	MAMXES0115	7	7	25	1	SM-89
5 - 1000	0 - 1000	MD-113 ◆	7	8	25	0	FP
5 - 1000	0 - 1000	EMRS-2	7	7	25	1	SM-1
5 - 1500	0 - 1000	ELCM-5	7	7.5	30	1	SM-87
5 - 1500	0 - 1000	EMRS-5MH	13	9	30	7.5	SM-1
5 - 1500	0 - 1000	MD-158 ◆	7	9	20	1	FP
5 - 1900	5 - 1000	ELCM-11X	7	7.4	27	1	SM-87
5 - 1900	5 - 1000	MAMXES0041 ◆	7	7.4	30	1	SM-134
5 - 2500	5 - 1500	MAMX-007238-CM25MH	13	6.5	36	30	SM-87
10 - 500	10 - 500	MDS-223 ◆	7	7	40	2.5	SF-1

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All specifications are subject to change.

Mixers (continued)

Frequency (RF/LO) (MHz)	Frequency (IF) (MHz)	Part Number	LO Drive (dBm)	Conversion Loss (dB)	Isol. (LO/RF) (dB)	Input P1dB (dBm)	Package
Packaged Products							
10 - 1000	0 - 600	M2E, SM2E, M2EC ♦	20	8	33	—	TO-8, SMT, SMA
10 - 1200	0 - 1000	M6R ♦	7	8	40	0	TO-5
10 - 1500	0 - 800	M2A, M2AC ♦	7	7.5	40	0	TO-8, SMA
10 - 1500	0 - 1000	M4A, SM4A ♦	7	7.5	35	0	FP, SMT
10 - 1500	0 - 1000	M4B, SM4B ♦	13	7.5	35	7	FP, SMT
10 - 1500	0 - 600	M9H, M9HC ♦	20	8	29	15	TO-8, SMA
10 - 1500	10 - 1500	MD-148 ♦	10	6	40	5	FP
10 - 1500	10 - 1500	MD-149 ♦	7	7.5	40	0	FP
10 - 1500	10 - 1500	MDS-148 ♦	10	6	40	5	SMT
10 - 1500	10 - 1500	MDS-149 ♦	7	7.5	40	0	SMT
10 - 1600	0 - 800	M2B, M2BC ♦	13	7.5	43	7	TO-8, SMA
10 - 2000	10 - 800	ESMD-C15	10	6.5	30	5	SM-2
10 - 2400	1 - 1000	M2T, M2TC ♦	13	8	40	11	TO-8, SMA
50 - 4800	50 - 3000	CSM5Tv	10	7.2	35	7	SMT
50 - 4800	50 - 3000	CSM5T17 ♦	17	7.8	33	14	SMT
50 - 4800	50 - 3000	CSM5THv	23	7	35	17	SMT
50 - 5000	50 - 3000	M5Tv	10	8	32	7	FP
50 - 5000	50 - 3000	SM5T ♦	10	7.5	32	7	SMT
50 - 5000	50 - 3000	SM5T17 ♦	17	7.5	32	13	SMT
50 - 5000	50 - 3000	SM5TH ♦	23	7.7	32	17	SMT
80 - 2500	0 - 1000	ESMD-C50H	17	7.3	28.9	14	SM-2
80 - 2500	0 - 1000	MAMXES0117	17	7.3	29	14	SM-2
80 - 2500	0 - 1000	ESMD-C50L	10	7.7	30	5	SM-2
80 - 2500	0 - 1000	ESMD-C50M	13	7.4	29.1	8	SM-2
234 - 245	10 - 20	MAMX-007242-ES0103	17-21	6	36	22	SM-2
300 - 5000	0.1 - 3000	MD-154 ♦	10	10	11	7	FP
350 - 2000	0 - 400	EMRS-11F	7	6.8	25	1	SM-1
500 - 9000	10 - 2000	MDC-164 ♦	13	6.5	17	8	SMA
500 - 19000	30 - 5000	M87, M87C ♦	13	9	24	8	Minpac, SMA
600 - 3000	0 - 1000	MD-156 ♦	7	9	20	0	FP
700 - 1000	10 - 150	MD22-0002-MUC	5	—	22	8	SM-41
700 - 1000	0 - 400	MA4EX900L-1226T ♦	5	6.5	26	1	MSOP-8
700 - 1200	0 - 400	MA4EX950H-1225T ♦	15	6.6	27.5	8.3	SOT-25
700 - 1200	0 - 400	MA4EX950L-1225T ♦	5	6.5	28	1.5	SOT-25
700 - 1200	0 - 400	MA4EX950M-1225T ♦	10	7	26	4.3	SOT-25
700 - 1400	0 - 400	MAMX-000900-1061LT	7	7	37	14	SOIC-8
700 - 1400	0 - 400	EMD40-900L	17	9	28	2.5	SOIC-8
700 - 2000	0 - 300	MD-614 ♦	7	8	25	0	FP
800 - 1000	1 - 150	CSM11-13 ♦	13	7.5	35	9	SMT
800 - 1000	0 - 100	MD54-0004 ♦	13	7.5	38	21	SOIC-8
800 - 1000	0 - 100	MAMXSS0011	13	7.5	38	21	SOIC-8
800 - 1000	0 - 200	MD54-0005 ♦	5	8	35	15	SOT-25
800 - 1000	0 - 200	MAMXSS0012	5	8	35	15	SOT-25
800 - 1000	170	MD57-0001 ♦	-5	9.3	28	14	SOT-26
800 - 1000	170	MAMX-008611	-5	9.3	28	14	SOT-26
800 - 2400	0 - 1500	M4G, SM4G ♦	7	7.5	32	0	FP, SMT
800 - 3500	0 - 1500	M2G, M2GC ♦	7	8	28	0	TO-8, SMA

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Mixers and Modulators



Mixers (continued)

Frequency (RF/LO) (MHz)	Frequency (IF) (MHz)	Part Number	LO Drive (dBm)	Conversion Loss (dB)	Isol. (LO/RF) (dB)	Input P1dB (dBm)	Package
Packaged Products							
810 - 1000	10 - 100	EFM-900	13	8.5	22	22	SM-108
850 - 1050	0 - 200	MA4EXP950H-1277T ◆	15	8.3	55	12.7	MLP 3 mm
850 - 1050	0 - 400	MA4EXP950L-1277T ◆	5	8.5	62	4.3	MLP 3 mm
850 - 1050	0 - 400	MA4EXP950M-1277T ◆	10	8.2	62	8.1	MLP 3 mm
880 - 915	150 - 170	EMRS-6HX1	17	5.5	30	13	SM-1
880 - 915	150 - 170	MAMX-008786-ES0120	17	5.5	30	17	SM-1
925 - 1880	45 - 95	MAMX-008782-ES0118	7	9.5	35	7	SM-1
1000 - 6000	10 - 2000	MDC-163 ◆	0	7	10	-2	SMA
1000 - 7000	10 - 2000	MDC-162 ◆	13	6	15	8	SMA
1000 - 18000	0 - 500	DM1-18A ◆	7	6	22	3	SMA
1000 - 18000	30 - 5000	M83, M83C ◆	13	7.5	25	6	Minpac, SMA
1000 - 18000	1000 - 8000	M88, M88C ◆	13	8	28	7	Minpac, SMA
1000 - 18000	1000 - 8000	M89, M89C ◆	10	8	28	4	Minpac, SMA
1300 - 1900	0 - 500	MA4EX180H-1225T ◆	15	6.5	27	8.5	SOT-25
1300 - 1900	0 - 500	MA4EX180M-1225T ◆	10	5.5	17	5	SOT-25
1400 - 2100	0 - 500	MD54-0006 ◆	5	8	28	12	SOT-25
1400 - 2100	0 - 500	MAMXSS0013	5	8	28	12	SOT-25
1500 - 2200	160 - 390	CSM2N-17	17	7.3	43	14	SMT
1700 - 2000	0 - 200	MD54-0003 ◆	13	8.5	27	21	SOIC-8
1700 - 2000	0 - 200	MAMXSS0010	13	8	28	21	SOIC-8
1700 - 2200	100 - 400	MD57-0002 ◆	0	8.5	18	15	SOT-26
1700 - 2200	0 - 400	MA4EXP190H-1277T ◆	15	8.4	48	11.3	MLP 3 mm
1700 - 2300	0 - 500	MA4EX190H-1225T ◆	15	6.6	30	10.5	SOT-25
1700 - 2300	0 - 500	MA4EX190L-1225T ◆	5	6.1	25	2	SOT-25
1700 - 2500	0 - 500	MA4EX240H-1225T ◆	15	5.4	17	8.5	SOT-25
1700 - 2500	0 - 400	MA4EX240L-1225T ◆	5	7	17.5	1	SOT-25
1700 - 2500	0 - 500	MA4EX240M-1225T ◆	10	5.5	17	5.3	SOT-25
1700 - 2500	0 - 500	MAMX-000240-1225MT	10	5.5	17	5.3	SOT-25
1800 - 2000	10 - 150	CSM12-13 ◆	13	6.7	30	8	SMT
1800 - 10000	0 - 1000	MY84, MY84C ◆	9	6.5	39	4	Versapac, SMA
1850 - 1980	100 - 500	EFM-1900 ◆	13	7.5	19	24	SM-106
1900 - 2200	160 - 390	CSM2-17	17	8	40	14	SMT
2000 - 10000	0 - 2000	MC4110 ◆	10	6.2	22	3	Open Carrier
2000 - 18000	30 - 5000	MY82, MY82C ◆	13	7.5	20	6	Versapac, SMA
2000 - 18000	0 - 1000	MY85, MY85C ◆	7	8	35	1	Versapac, SMA
2000 - 18000	1000 - 8000	MY88, MY88C ◆	13	8	28	7	Versapac, SMA
2000 - 18000	1000 - 8000	MY89, MY89C ◆	10	8	28	4	Versapac, SMA
2000 - 18000	30 - 4000	MY93, MY93C ◆	10	8	29	4	Versapac, SMA
2000 - 18000	2000 - 18000	M50A, M50AC ◆	10	8	26	5	Minpac, SMA
2000 - 18000	0 - 1000	M85, M85C ◆	7	8	35	1	Minpac, SMA
2000 - 18000	2000 - 8000	M88H, M88HC ◆	21	8	28	17	Minpac, SMA
2000 - 18000	30 - 4000	M93, M93C ◆	10	8	29	4	Minpac, SMA
2000 - 18000	1000 - 8000	MZ8810, MZ8810C ◆	10	7.5	25	6	Versapac, SMA
2000 - 18000	1000 - 8000	MZ8813, MZ8813C ◆	13	7	25	8	Versapac, SMA
2000 - 18000	30 - 5000	MZ9310, MZ9310C ◆	10	7.5	23	6	Versapac, SMA
2000 - 18000	30 - 5000	MZ9313, MZ9313C ◆	13	7	24	8	Versapac, SMA
2000 - 24000	100 - 5000	MZ5210, MZ5210C ◆	10	9	20	4	Versapac, SMA
2000 - 24000	100 - 5000	MZ5210, MZ5210C ◆	10	9	20	4	Versapac, SMA

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Mixers and Modulators



Mixers (continued)

Frequency (RF/LO) (MHz)	Frequency (IF) (MHz)	Part Number	LO Drive (dBm)	Conversion Loss (dB)	Isol. (LO/RF) (dB)	Input P1dB (dBm)	Package
Packaged Products							
2000 - 24000	1000 - 15000	M51, M51C ◆	10	8	25	5	Minpac, SMA
2000 - 24000	100 - 5000	M52, M52C ◆	10	8	22	5	Minpac, SMA
2000 - 24000	1000 - 15000	MY51, MY51C ◆	10	8	25	5	Versapac, SMA
2000 - 24000	100 - 5000	MY52, MY52C ◆	10	8	22	5	Versapac, SMA
2000 - 26000	100 - 6000	M53, M53C ◆	10	8	22	5	Minpac, SMA
2000 - 26000	1000 - 15000	M50, M50C ◆	10	8	26	5	Minpac, SMA
2000 - 26000	1000 - 15000	MY50, MY50C ◆	10	8	26	5	Versapac, SMA
2000 - 26000	1000 - 12000	MY50A, MY50AC ◆	10	8	26	5	Versapac, SMA
2100 - 2700	0 - 300	MD54-0007 ◆	13	8	25	18	SOT-25
2110 - 2170	100 - 500	EFM-2100 ◆	13	8.5	16	22	SM-106
2110 - 2170	134 - 246	MAMXES0050 ◆	7	10	22	1	SM-87
2300 - 2800	0 - 200	MA4EXP240L-1277T ◆	5	8.3	51	4.8	MLP 3 mm sq.
2300 - 2800	0 - 500	MAMX-090240-1225MT	15	9	54	9.4	SOT-25
2400 - 6000	0 - 2000	M8H-7, M8HC-7 ◆	7	6	40	0	TO-8, SMA
2500 - 5500	0 - 1500	M63, M63C ◆	9	5.5	40	2	Minpac, SMA
2500 - 6500	0 - 1500	M63H, M63HC ◆	20	6	37	14	Minpac, SMA
2500 - 6500	0 - 1500	MY63H, MY63HC ◆	20	7.5	26	14	Versapac, SMA
3000 - 4000	0 - 1050	MA4EX370H-1225T ◆	15	6.8	27.5	8	SOT-25
3000 - 4000	0 - 1050	MA4EX370L-1225T ◆	5	8.5	14	2	SOT-25
3000 - 4000	0 - 1050	MA4EX370M-1225T ◆	10	6.3	27	5	SOT-26
3500 - 4500	0 - 1000	MA4EXP400H-1277T ◆	15	7.7	44	13	MLP 3 mm sq.
3500 - 18000	0 - 3000	M86, M86C ◆	7	7	34	3	Minpac, SMA
3700 - 4200	0 - 2000	M8H-3, M8HC-3 ◆	7	5	40	0	TO-8, SMA
4000 - 18000	0 - 3000	M80, M80C ◆	7	6.5	34	3	Minipac, SMA
4000 - 20000	0 - 4000	MC4520 ◆	20	7	30	11	Open Carrier
4200 - 6000	0 - 2000	MA4EX600H-1225T ◆	15	5.8	28	6.9	SOT-25
4200 - 6000	0 - 2000	MA4EX600L-1225T ◆	5	6.4	26	0.3	SOT-25
4200 - 6000	0 - 2000	MA4EX600M-1225T ◆	10	6.5	27	2.7	SOT-25
4500 - 9500	0 - 2000	M76, M76C ◆	10	6	35	3	Minpac, SMA
4500 - 9500	0 - 2000	M76H, M76HC ◆	20	7	35	15	Minpac, SMA
4500 - 9500	0 - 2000	MY76, MY76C ◆	10	6	35	3	Versapac, SMA
4500 - 9500	0 - 2000	MY76H, MY76HC ◆	20	7	35	15	Versapac, SMA
4700 - 6000	0 - 1050	MA4EX580L-1225T ◆	5	8.5	23	1.5	SOT-25
5000 - 18000	0 - 3000	M79, M79C ◆	10	7	32	4	Minpac, SMA
5000 - 18000	0 - 3000	M79H, M79HC ◆	20	7.5	33	15	Minpac, SMA
5600 - 6000	2300 - 2700	MA4EX585L-1225T ◆	5	8.3	28	1.1	SOT-25
6000 - 14000	0 - 2000	M14A ◆	7	6.5	32	2	SMA
6000 - 18000	0 - 3000	MZ7407, MZ7407C ◆	7	6.5	34	3	Versapac, SMA
6000 - 18000	0 - 3000	MZ7410, MZ7410C ◆	10	6.5	34	4	Versapac, SMA
6000 - 18000	0 - 3000	MZ7420, MZ7420C ◆	20	7.5	33	15	Versapac, SMA
7000 - 18000	0 - 3000	M74, M74C ◆	10	6.5	35	4	Minpac, SMA
8000 - 12500	0 - 2500	M77, M77C ◆	10	5.5	35	4	Minpac, SMA
8000 - 12500	0 - 2500	MY77, MY77C ◆	10	5.5	35	4	Versapac, SMA
9000 - 15000	0 - 2500	M67, M67C ◆	10	6.5	35	4	Minpac, SMA

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Transformers

M/A-COM Technology Solutions offers many standard transformers used for a variety of wireless, wireline and aerospace and defense (A&D) communications applications.

- Available in a variety of surface mount, flat pack and connectorized packages
- Standard impedance ratios up to 4:1
- Balanced/unbalanced versions available
- 50W and 75W nominal impedance devices available

MNS Microwave Chip Capacitors

- Suitable for DC blocking and RF bias networks in a variety of control and filter circuits
- Capacitance-temperature coefficient provides < 200 ppm/C
- Insertion loss < 0.1 dB at 15 GHz
- Ideal for chip and wire/ribbon microwave high performance circuits

Inductors

We offer a line of high Q toroidal inductors useful for any application requiring RF or electromagnetic suppression.

- Standard devices are in the 53 to 273 nH inductance range
- Q of 90 minimum
- Surface mount wire wound toroid construction

Splitters/Combiners

Splitters and combiners are used in a wide range of A&D, wireless and wireline communications applications. We offer a variety of connectorized and surface mount packages for these markets.

- 50 ohm and 75 ohm devices
- Products available in subsets of 400 KHz to 26 GHz frequency range
- 2, 3, 4, 5, 6 and 8 channel versions available

Circulators/Isolators

M/A-COM Tech's circulators and isolators are used in a variety of wireless and defense applications.

- Single and dual junction devices
- Surface mount and drop-in packaging available for standard components

Couplers

Couplers are used extensively in a wide range of A&D, wireless and wireline communications applications. We offer a variety of connectorized and surface mount packages with a broad range of coupling values for these markets.

Hybrid Couplers

- Magic Tee (1800) and Quadrature (900) configurations
- Products available in subsets of the 2-3000 MHz frequency range
- Available as TO-cans, flatpacks, surface mount and connectorized

Directional Couplers

- Coupling values of 6-30 dB
- Products available in subsets of the 2 MHz to 18 GHz frequency range
- 75W products available for CATV, DTV and DBS applications

Filters/Diplexers

M/A-COM Tech offers a variety of highpass, lowpass and diplex filter components and assemblies used in common wireless communications standards and CATV, DBS and DTV applications.

- 50 ohms and 75 ohms diplexers
- Low cost surface mount packaging
- Multi-chip and MMIC products
- Higher functionality assemblies available



Transformers

Frequency (MHz)	Part Number	Impedance (Ohms)	Impedance Ratio	I.L. (dB)	RF Power (W)	Package
Packaged Products						
0.05 - 3.072	MABA-009807-CF4010	75	4:1	1	0.25	SM-1
0.05 - 200	ETC1-1T-2TR	50	1:1	0.1	0.25	SM-22
0.3 - 500	MABA-009180-500MHz	50	1:1	0.5	0.25	SM-22
0.07 - 200	ETC2-1T	50	2:1	2	0.25	SM-22
0.15 - 110	ETC4-1-4	50	4:1	1	0.25	SM-22
0.15 - 110	MABA-008570-ETC414	50	4:1	1	0.25	SM-22
0.3 - 200	ETC1-1T	50	1:1	1.5	0.25	SM-22
0.3 - 200	MABACT0062	75	1:1	0.8	0.25	SM-22
0.3 - 200	MABA-009947-CF3160	75	1:5	0.7	0.25	SM-22
0.3 - 200	MABACT0071	75	1:1	0.5	0.25	SM-164
0.3 - 200	MABAES0060	50	1:1	1.5	0.25	SM-22
0.3 - 200	MABA-008482-CF1A40	75	1.78:1	1	1	SM-156
0.4 - 500	MABA-009487-60HWCA	50	1:1	0.4	0.25	SM-195
0.5 - 1000	TP-103 ♦	—	4:1	0.6	3	FP
0.5 - 1000	TP-105 ♦	—	1.4:1	0.5	1.5	FP
0.5 - 1500	TP-101 ♦	—	1.6:1	0.5	3	FP
0.75 - 400	TP-104 ♦	—	2:1	0.55	0.4	F
1 - 350	ETC4-1 ♦	50	4:1	3	0.25	SM-22
1 - 350	MABA-007237-ETC410	50	4:1	1	0.25	SM-22
1 - 350	MABA-007493-CF4160	75	4:1	1.6	0.25	SM-22
1 - 350	MABAES0040 ♦	50	2:1	2.6	0.25	SM-138
1 - 500	TP-102 ♦	—	4:1	0.75	1	FP
1 - 600	MABA-010079-420T60	50	4:1	1.0	0.25	SM-195
1 - 650	MABACT0064	75	4:1	3	0.25	SM-138
1 - 650	MABA-009298-CT48A0	50	4:1	2.23	0.25	SM-138
1 - 1600	MABA-010247-2R1250	50	2:1	1.0	0.25	SM-197
2 - 200	TP-75 ♦	—	1.5:1	0.25	10	SM
2 - 500	MABA-010143-FLUX18	50	8:1	0.5	0.25	SM-22
2 - 500	MABA-008937-TC11T5	50	1:1	1	0.25	SM-22
2 - 500	MABA-009484-C0068	50	3:1	0.6	0.25	SM-22
2 - 800	ETC4-1-2 ♦	50	4:1	3	0.25	SM-22
2 - 800	MABAES0061	50	4:1	3	0.25	SM-22
2 - 800	MABAES0010 ♦	50	4:1	2.2	0.25	SM-119
2 - 800	MABAES0015 ♦	50	4:1	3.5	0.25	SM-5
2 - 1000	ETK4-2T	50	4:1	3	0.25	SM-22
2 - 1000	MABA-007569-ETK42T	50	4:1	3	0.25	SM-22
2 - 1000	MABA-009711-ETK2MM	50	4:1	1	0.25	SM-164B
2 - 1000	MABA-008752-TC1P57	50	1.5:1	0.5	0.25	SM-22
2 - 1000	ETC1.5-7	50	1.5:1	1	0.25	SM-22
3 - 400	MABA-009126-ET1ISM	50	1:1	1	0.5	SM-1
3 - 800	MABA-009488-61HWCA	50	4:1	0.6	0.25	SM-195
4.5 - 1000	MABACT0059	75	1:1	0.8	0.25	SM-22B
4.5 - 2000	MABA-010179-3WTTC1	50	1:1	0.8	3.0	SM-22
4.5 - 3000	MABA-010125-TC1113	50	1:1	0.3	0.25	SM-22
4.5 - 3000	MABA-007327-CT1490	75	1:1	1.6	0.25	SM-155
4.5 - 3000	ETC1-1-13	50	1:1	2	0.25	SM-22
4.5 - 3000	MABA-007159-000000	50	1:1	2	0.25	SM-22

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Transformers (continued)

Frequency (MHz)	Part Number	Impedance (Ohms)	Impedance Ratio	I.L. (dB)	RF Power (W)	Package
Packaged Products						
4.5 - 3000	MABA-007327-CT1A40	75	1:1	2.5	0.25	SM-164
4.5 - 3000	MABA-008757-CT1160	50	1:1	4.2	0.25	SM-22B
5 - 50	MABA-007532-CF18A0	75	1:1	0.3	1	SM-138
5 - 65	MABA-007902-CF38A0	75	2.56:1	0.8	0.25	SM-138
5 - 65	MABA-007902-CF3840	75	2.56:1	0.8	0.25	SM-138
5 - 90	MABA-008282-CFGA40	75	16:1	1.9	0.25	SM-164
5 - 90	MABA-010181-CF9A40	75	1:9	1.3	0.63	—
5 - 100	MABA-009573-CF1A40	75	1.77:1	0.3	0.25	SM-164
5 - 100	MABA-009776-CF28A0	75	2:1	0.4	0.5	SM-164
5 - 100	MABACT0043	50	1:1	0.7	0.25	SM-138
5 - 100	MABA-008124-CF1FA0	75	1:1	0.7	0.25	SM-250-5
5 - 120	MABA-008182-CF1160	75	1:1	0.5	0.25	SM-22A
5 - 120	MABA-009005-CF1A40	75	1:1	0.3	0.25	SM-164A
5 - 120	MABA-008965-CF1160	75	1:1	0.3	0.25	SM-22A
5 - 120	MABA-009109-CF1A40	75	1:1	0.3	0.25	SM-164A
5 - 200	MABACT0048	75	2:1	0.4	0.25	SM-164
5 - 200	MABA-007819-CF48A0	—	4:1	0.9	0.05	SM-138-A
5 - 200	MABACT0056	75	1:1	0.9	0.25	SM-136
5 - 220	MABA-007488-CT9550	75	9:1	0.8	0.25	SM-55
5 - 350	MABACT0067	—	4:1	0.9	0.25	SM-164
5 - 350	MABA-007766-CF28A0	75	1.5:1	1.4	0.25	SM-138
5 - 350	MABAES0025	—	1.5:1	1.4	0.25	SM-138
5 - 400	ETC36-1T-2	50	36:1	12	0.25	SM-22
5 - 800	ETC3-1-1	50	3:1	2	0.25	SM-22
5 - 1000	MABACT0063	75	1.5:1	1	0.25	SM-22
5 - 1000	MABACT0066	75	4:1	1.5	0.25	SM-138
5 - 1000	MABACT0040	75	1:1	1.1	0.25	SM-164
5 - 1000	MABA-009092-CT1A40	75	1.33:1	1	0.25	SM-22A
5 - 1200	MABA-010129-CT4A40	75	1:4	0.8	0.63	—
5 - 1200	MABA-009232-CT4A4B	50	4:1	1.3	0.25	SM-187
5 - 1200	MABA-009231-CT1A4B	50	1:1	1.28	0.25	SM-187
5 - 1200	MABA-007748-CT1160	75	1:1	1.62	0.25	SM-22
5 - 1200	MABA-007681-CT2010	75	2:1	0.6	0.25	SM-118
5 - 1200	MABA-009492-C2W180	75	2:1	2.7	0.5	SM-164
5 - 1200	MABA-009691-CT1881	75	1:1	0.2	0.25	SM-136
5 - 3000	MABA-007871-CT1A40	50	1:1	2.5	0.25	SM-164
5 - 3000	MABACT0039	75	1:1	2	0.25	SM-138
5 - 3000	MABA-007489-CT18A0	75	1:1	0.8	0.25	SM-138
10 - 1500	TPX-75-4 ♦	—	1.5:1	0.25	2	SMA
10 - 2300	MABA-010273-ES1330	75	1.33:1	1.0	0.25	SM22
20 - 1000	MABAES0034 ♦	50	4:1	2.2	0.25	SM-22
30 - 2500	MABA-010012-ES4302	50	4:1	1.0	0.25	SM-22
50 - 870	MABA-008184-CT1760	75	1:1	0.5	0.25	SM-118A
50 - 1002	MABA-010245-CT1160	75	1:1	0.1	0.25	SM-22
50 - 1200	MABA-009057-CT19EO	75	1:1	1.23	0.25	SM-158
50 - 1200	MABA-009210-CT1760	75	1:1	0.63	0.25	SM-118A

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

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Transformers (continued)

Frequency (MHz)	Part Number	Impedance (Ohms)	Impedance Ratio	I.L. (dB)	RF Power (W)	Package
Packaged Products						
50 - 1200	MABACT0069	75	1:1	0.8	0.25	SM-158
50 - 2150	MABA-00731-CT1980	75	1:1	1.2	0.25	SM-152
50 - 2150	MABA-007731-CT1980	75	1:1	1.2	1	SM-152
350 - 1125	TP-108 ◆	—	2.5:1	1	3	FP
500 - 2500	ETC1.6-4-2-3	50	4:1	3	0.25	SM-22
500 - 3000	MABA-007236-C16423	50	4:1	3	0.25	SM-22
500 - 3000	MABACT0065	50	4:1	3	0.25	SM-22
760 - 960	ETC1-1-6	50	1:1	2	0.25	SM-22
1710 - 1910	ETC1-1-10	50	1:1	2	0.5	SM-22
1800 - 4100	MABA-010352-CT1A40	50	1:1	3.0	0.25	SM-197

Designer's Kit

MABA-000001-50KIT1 (electrical specifications of each model)

Frequency (MHz)	Part Number	Ω ratio	Insertion Loss			Configuration
			3 dB MHz	2 dB MHz	1 dB MHz	
3 - 500	MABA-009180-500MHZ	1:1	0.40-500	0.50-300	1-100	D
760 - 960	ETC1-1-6TR	1:1	-	760-960	-	C
1710 - 1910	ETC1-1-10TR	1:1	-	1710-1910	-	B
5 - 1200	MABA-009602-ES2922	1:1	-	600-1200	5-600	C
4.5 - 3000	MABA-007159-000000	1:1	2000-2800	1000-2000	4.5-1000	A
4.5 - 3000	MABA-010125-TC1113	1:1	2000-3000	1000-2000	4.5-1000	A
1 - 350	MABA-009250-CT0068	1:2	-	-	3-300	D
2 - 500	MABA-009484-ETC31T	1:3	-	-	2-500	D
2 - 1000	MABA-009711-ETK2MM	1:4	700-1000	500-700	3-500	E
6 - 1000	MABA-008639-TC41T7	1:4	600-1000	6-600	-	E
500 - 2500	MABA-007236-C16423	1:4	500-3000	-	750-1200	E
2 - 500	MABA-010143-FLUX18	1:8	-	2-500	-	D
0 - 75	ETC9-1T-5TR	1:9	-	10-75	-	D
5 - 40	ETC16-1T-2TR	1:16	-	-	5-40	D

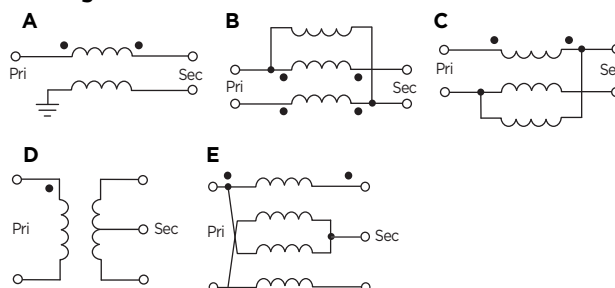
Transformers ranging from 1 to 3000 MHz

- Very wide bandwidth
- Termination finish, both gold over nickel-plated and tin-plated
- Various surface mount parts
- RoHS compliant

Each kit contains: 15 models x 10 of each = 150 total



Configurations



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Capacitors

Capacitance (pf)	Part Number	Pad Types	Standoff Voltage (V)	Package
Die Products				
50	MA4M1050	Round Bonding Pad	100	Die
100	MA4M1100	Round Bonding Pad	100	Die
200	MA4M2100	Round Bonding Pad	100	Die
10	MA4M3010	Square Bonding Pad	200	Die
30	MA4M3030	Square Bonding Pad	200	Die
50	MA4M3050	Square Bonding Pad	200	Die
100	MA4M3100	Square Bonding Pad	50	Die
150	MA4M3150	Square Bonding Pad	50	Die

Inductors

Self Resonant Frequency (MHz)	Part Number	Inductance (nH)	Qmin	Package
Packaged Products				
30 - 90	MALX-010136-80NHIN	80	80	SM-199
30 - 512	MABA-010371-051837	30	—	SM-200
480	EIN8 ◆	273	90	SM-52
570	EIN9 ◆	246	90	SM-52
580	EIN11 ◆	165	90	SM-52
635	EIN12 ◆	193	90	SM-52
700	EIN10 ◆	180	90	SM-52
800	EIN14 ◆	146	90	SM-52
840	EIN15 ◆	123	90	SM-52
970	EIN13 ◆	97	90	SM-52
1440	EIN16 ◆	53	90	SM-52

Power Splitters/Combiners

Frequency (MHz)	Part Number	Impedance (Ohms)	Channels	Isolation (dB)	Phase Balance (degrees)	Amplitude Balance (dB)	Package
Packaged Products							
0.2 - 300	DS-310 ◆	50	4	25	4	0.2	FP-5
0.4 - 400	DS-113 ◆	50	2	25	1	0.15	FP-2
0.4 - 400	DSS-113 ◆	50	2	25	1.5	0.15	SF-1
1 - 100	M3H-50 ◆	50	3	55	0.5	0.1	TO-5
1 - 100	MTH-50 ◆	50	2	30	1	0.1	TO-5-1
1 - 300	DS-117 ◆	50	3	20	4	0.25	FP
1 - 2700	MAPD-008957-CT0012	50	2	20	2	1.5	SM-156
5 - 1000	MAPD-009918-C209C0	75	2	30	0.9	0.3	SM-156
5 - 1000	MAPD-010038-C209C0	75	2	30	0.9	0.3	SM-156
5 - 1000	MAPD-009675-C2DA40	75	2	32	1.5	0.4	SM-150
5 - 1200	MAPD-009492-C2W180	75	2/180°	—	4	2.4	SM-164
2 - 200	THV-50 ◆	50	2	35	0.5	0.1	Conn
2 - 1000	GS-4-7TR ◆	50	4	23	10	0.5	SM-46
2 - 1000	MAPD-007246-ES4700	50	4	23	10	0.5	SM-46

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Power Splitters/Combiners (continued)

Frequency (MHz)	Part Number	Impedance (Ohms)	Channels	Isolation (dB)	Phase Balance (degrees)	Amplitude Balance (dB)	Package
Packaged Products							
2 - 2000	DS-4-4 ◆	50	4	30	2	0.5	Conn
2 - 2000	H-8-4 ◆	50	2	35	1	0.05	Conn
3 - 700	DS-328 ◆	50	3	20	4	0.4	TO-8-2
5 - 100	MAPDCT0010 ◆	75	2	32	2.5	0.25	SM-150
5 - 120	ESSM-2-9-75 ◆	75	2	21	2	0.5	SM-53
5 - 200	MAPD-008109-C30040	75	3	28	—	—	SM-4
5 - 500	ESSM-2-16	50	2	30	1	0.3	SM-1
5 - 500	DS-309 ◆	50	8	30	2	0.15	C-18
5 - 500	DS-318 ◆	50	2	18	2	0.2	RH-1
5 - 500	ESML-2-1 ◆	50	2	30	5	0.6	SM-24
5 - 500	MAPD-007249-ESML21	50	2	30	3	0.3	SM-24
5 - 900	ESSM-2-6 ◆	50	2	28	3	0.3	SM-1
5 - 900	MAPD-008072-ESSM26	50	2	28	3	0.3	SM-1
5 - 1000	DS-327 ◆	50	2	20	3	0.2	FP-2
5 - 1000	DSS-327 ◆	50	2	16	3	0.3	SF-1
5 - 1000	ELPD-20-1 ◆	75	2	22	4	0.5	SM-93
5 - 1000	ESSMJ-2-12-75 ◆	75	2	30	—	0.3	SM-44
5 - 1000	ESSM-2-2-75 ◆	75	2	18	6	0.6	SM-55
5 - 1000	H-81-4 ◆	50	2	25	2	0.1	Conn
5 - 1000	MACPES0007 ◆	75	2	21	—	—	Surface Mount
5 - 1000	MAPDCT0002 ◆	75	2	32	1.5	0.4	SM-150
5 - 1000	MAPDCT0005 ◆	75	3	22	4	0.3	SM-4
5 - 1000	MAPDCT0027	75	2	20	1	0.32	SM-55A
5 - 1000	MAPD-008108-C202C0	75	2	30	—	—	SM-44
5 - 1000	MAPDCT0028	75	4	21	1	0.3	SM-46
5 - 1000	MAPDCT0029	75	2	21	1	0.28	SM-55
5 - 1000	MAPDCT0030	75	2	20	1.5	0.4	SM-150
5 - 1000	MAPDCT0013	75	2	18	1.5	0.15	SM-156
5 - 1000	ESSM-2-8-75	—	2	10	—	—	SM-55
5 - 1000	MAPD-007778-C402E0	—	4	21	—	—	SM-46
5 - 1000	MAPDCT0033	75	2	22	0.8	0.1	SM-139
5 - 1200	MAPDCT0032	75	4	24	3	0.3	SM-4
5 - 1200	MAPDCT0024	75	2	—	2.1	0.27	SM-169
5 - 2400	MAPDCT0026	75	2	18	4	1.3	SM-156
5 - 2400	MAPDCT0012 ◆	75	2	18	2	0.2	SM-156
10 - 500	DS-109 ◆	50	2	35	1	0.15	FP-2
10 - 500	DS-112 ◆	50	4	25	5	0.2	FP-5
10 - 500	DS-312 ◆	50	4	25	2	0.2	C-14
5 - 1000	MAPD-009278-ST1000	50	2	20	4	0.6	SM-156
5 - 1000	MAPD-008812-0003HW	50	3	28	1.5	0.1	SM-4
5 - 1000	MAPD-009673-C2DA40	75	2	20	1.5	0.4	SM-150
5 - 1200	MAPD-009492-C2W180	75	2	—	11	3.4	SM-164
10 - 500	DS-319 ◆	50	2	25	1	0.2	TO-8-2
10 - 500	DSS-333 ◆	50	2	25	2	0.15	SF-1
10 - 1000	T-1000 ◆	50	2	45	1	0.1	Conn
10 - 1000	ESML-2-4 ◆	50	2	15	5	0.7	SM-24
10 - 2000	DS-409-4 ◆	50	4	30	2	0.1	Conn

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Power Splitters/Combiners (continued)

Frequency (MHz)	Part Number	Impedance (Ohms)	Channels	Isolation (dB)	Phase Balance (degrees)	Amplitude Balance (dB)	Package
Packaged Products							
10 - 2000	DSS-313 ◆	50	2	22	5	0.3	SF-1
10 - 2000	DS-313 ◆	50	2	23	4	0.3	FP-2
10 - 2000	PD10-0042-S	50	2	23	6	0.4	FP-2
20 - 400	TU-50 ◆	50	2	40	1	0.1	Conn
20 - 2000	DS-808-4 ◆	50	8	30	2	0.1	Conn
25 - 1000	DS-323 ◆	50	3	24	4	0.4	FP-3
25 - 1000	DS-324 ◆	50	4	20	6	0.25	FP-5
40 - 400	MTV-50 ◆	50	2	30	2	0.2	TO-5-1
40 - 820	MAPDCT0004 ◆	75	2	40	0.5	0.5	SM-55
40 - 1000	MAPD-007874-C20960	75	2	25	3	0.35	SM-138
50 - 70	MAPD-010320-5070HR	50	2	32	0.3	.5	SM-89
50 - 300	M3V-50 ◆	50	3	40	1	0.1	TO-5
50 - 120	MAPD-008185-C20720	75	2	21	—	—	SM-114
112 - 168	MAPD-009850-HW1268	50	2	23	1	1	SM-89
220-470	MAPD-009851-HW2247	50	2	23	1	1	SM-89
750 - 1500	DS-331 ◆	50	2	10	6	0.2	TO-8
800 - 900	QH01-0016-G ◆	50	2	17	1.5	0.3	SOT-26
800 - 900	MAHYCC0001	50	2	17	1.5	0.3	SOT-26
800 - 980	MAPD-000900-12920T	50	2	27	1	0.2	SOT-26
800-2200	MAPD-010201-8022CG	50	2	19	1	1.5	SM-156
820 - 980	ELPD-290 ◆	50	2	20	7	1.2	SM-8
824 - 896	MAPDCC0016	50	5	26	5	0.2	SOIC-16
824 - 960	MAPDCC0001	50	2	23	0.5	0.05	SOIC-8
824 - 960	MAPDCC0011	50	2	15	3	0.1	SOT-26
824 - 960	MAPDCC0005	50	3	18	2	0.6	SOIC-8
824 - 960	MAPDCC0007	50	4	23	2	0.3	SOW-16
824 - 960	MAPDCC0009	50	4	24	3	0.3	SOIC-8
824 - 960	MAPDCC0017	50	6	25	6	0.2	SOW-16
824 - 960	MAPDCC0019	50	6	25	4	0.5	SOIC-16
824 - 960	MAPDCC0021	50	8	30	5	0.4	SSOP-20
850 - 950	MAHYB900-1292T ◆	50	3	18	2	0.4	SOT-26
1000 - 2000	DS-332 ◆	50	2	10	6	0.2	TO-8
1000 - 18000	2089 Series ◆	50	2	20	4	0.2	Conn
1000 - 18000	2090-6204-00 ◆	50	2	23	5	0.3	Conn
1000 - 18000	2090 Series ◆	50	2	20	5	0.3	Conn
1510 - 1660	MAPDCC0003	50	2	20	1	0.05	SOIC-8
1700 - 1900	MAPDCC0004	50	2	20	2	0.1	SOIC-8
1700 - 2000	MAPD-007530-000/00	50	2	20	1.5	0.2	SOT-26
1700 - 2000	MAPDCC0008	50	4	18	4	0.1	SOW-16
1700 - 2000	MAPDCC0014	50	4	23	5	0.8	SOIC-16
1700 - 2000	MAPDCC0018	50	6	22	8	0.5	SOW-16
1700 - 2000	MAPDCC0020	50	6	25	4	0.5	SOIC-16
1850 - 1990	MAPDCC0002	50	2	21	1	0.05	SOIC-8
1850 - 1990	MAPDCC0006	50	3	18	7	0.3	SOIC-8
1850 - 1990	MAPDCC0015	50	5	28	6	0.2	SOIC-16
2000 - 18000	2090-6205-00 ◆	50	2	23	5	0.3	Conn
2200 - 2500	MAPDCC0010	50	2	22	2	0.1	SOT-25
3650 - 4050	MAHYB390-1303T ◆	50	3	20	3	1.4	2mm MLP
8000 - 18000	2090-6210-00 ◆	50	2	18	5	0.3	Conn

Radar Circulators and Isolators

Frequency (MHz)	Part Number	Insertion Loss (dB)	Isolation (dB)	Return Loss (dB)	Fwd/Rvs Power (W)	Package	Case Size (inches)
960 - 1200	MAFR-000409-000001	0.50	18	18.0	1000 / 1000	Drop-in	1.0 x 1.0
960 - 1200	MAFR-000428-000001	0.50	18	18.0	1200 / 1200	Drop-in	1.0 x 1.0
960 - 1200	MAFR-000455-000001	0.50	16	16.0	1000 / 1000	Drop-in	1.0 x 1.0
1030 - 1090	MAFR-000493-000001	0.30	18	18.0	1200 / 1200	Drop-in	1.0 x 1.0
1200 - 1400	MAFR-000406-000001	0.30	20	20.0	1000 / 1000	Drop-in	0.98 x 1.1
1450 - 1500	MAFR-000399-000001	0.30	20	20.0	1000 / 1000	Drop-in	1.0 x 1.0
2700 - 2900	MAFR-000405-000001	0.35	20	20.0	1000 / 1000	Drop-in	0.67 x 0.95
2700 - 2900	MAFR-000407-000001	0.30	20	20.0	1000 / 1000	Drop-in	0.98 x 1.1
2700 - 3100	MAFR-000403-000001	0.35	20	20.0	1300 / 1300	Drop-in	0.75 x 0.75
2700 - 3100	MAFR-000430-000001	0.30	20	20.0	1300 / 75	Drop-in	0.75 x 1.0
3100 - 3500	MAFR-000436-000001	0.30	23	20.8	1500 / 1500	Drop-in	0.75 x 0.75
3100 - 3500	MAFR-000437-000001	0.30	20	20.0	150 / 60	Drop-in	0.75 x 1.0
3100 - 3500	MAFR-000438-000001	0.30	23	20.8	2500 / 250	Drop-in	0.75 x 0.75
3100 - 3500	MAFR-000514-000001	0.30	23	21.0	1500 / 1500	Drop-in	0.75 x 0.75

RFID Circulators

Frequency (MHz)	Part Number	Insertion Loss (dB)	Isolation (dB)	Return Loss (dB)	Fwd/Rvs Power (W)	Package	Case Size (inches)
860 - 872	MAFRIN0495	0.25	23	23.0	100 / 100	SMT	1.14 x 1.14
860 - 960	MAFRIN0494	0.40	18	18.0	100 / 100	SMT	—
902 - 928	MAFRIN0497	0.30	22	21.0	100 / 100	SMT	1.0 x 1.0
950 - 956	MAFRIN0496	0.25	23	23.0	100 / 100	SMT	—
860 - 960	MAFRIN0332	0.40	20	22.0	200 / 200	Robust Lead	1.05 x 1.05
902 - 928	MAFRIN0493	0.35	22	20.0	100 / 100	Robust Lead	1.0 x 1.0

LTE Circulators

Frequency (MHz)	Part Number	Insertion Loss (dB)	Isolation (dB)	Return Loss (dB)	IMD (dBc)	Fwd/Rvs Power (W)	Package	Case Size (inches)
860 - 870	MAFR-000528-000001	0.30	23	23.0	74	500 / 500	Drop-in	1.0 x 1.0
860 - 870	MAFR-000534-000001	0.30	23	23.0	74	500 / 500	Drop-in	1.0 x 1.0
1475 - 1501	MAFR-000486-000001	0.20	22	21.0	70	200 / 200	Drop-in	0.75 x 0.75
1475 - 1511	MAFR-000529-000001	0.25	23	23.0	74	500 / 500	Drop-in	1.0 x 1.0
1475 - 1511	MAFR-000535-000001	0.25	23	23.0	74	500 / 500	Drop-in	1.0 x 1.0
2010 - 2025	MAFR-000422-000001	0.25	22	22.0	55	500 / 500	Drop-in	0.50 x 0.50
2090 - 2190	MAFR-000276-000002	0.20	22	20.8	—	1000 / 500	Drop-in	1.2 x 1.1
2250 - 2450	MAFR-000480-000001	0.25	20	20.0	65	500 / 500	Drop-in	0.75 x 0.75
2300 - 2400	MAFR-000488-000001	0.30	20	20.0	75	500 / 500	Drop-in	0.75 x 0.75
2620 - 2690	MAFR-000487-000001	0.20	22	21.0	70	200 / 200	Drop-in	0.75 x 0.75
2010 - 2025	MAFR-000515-000001	0.25	20	20.0	65	1000 / 500	Robust Lead	0.8 x 0.8
2110 - 2170	MAFR-000563-000001	0.25	20	20.0	70	500 / 500	Robust Lead	0.75 x 0.75
2300 - 2400	MAFR-000502-000001	0.30	20	20.0	70	500 / 500	Robust Lead	0.8 x 0.8
2300 - 2400	MAFR-000545-000001	0.30	20	20.0	70	500 / 500	Robust Lead	0.75 x 0.75
2620 - 2690	MAFR-000484-000001	0.20	20	20.0	70	200 / 200	Robust Lead	0.80 x 0.80

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LTE Isolators

Frequency (MHz)	Part Number	Insertion Loss (dB)	Isolation (dB)	Return Loss (dB)	IMD (dBc)	Fwd/Rvs Power (W)	Package	Case Size (inches)
700 - 760	MAFR-000505-000001	0.25	20	20.0	75	200 / 75	Drop-in	1.0 x 1.25
728 - 756	MAFR-000492-000001	0.25	20	20.0	65	200 / 70	Drop-in	1.0 x 1.25
728 - 768	MAFR-000358-000001	0.35	23	23.0	60	1000 / 85	Drop-in	1.02 x 1.25
728 - 768	MAFR-000525-000001	0.25	20	20.0	70	500 / 60	Drop-in	1.0 x 1.25
728 - 768	MAFR-000526-000001	0.25	20	20.0	70	500 / 60	Drop-in	1.0 x 1.25
776 - 836	MAFR-000520-000001	0.25	20	19.0	74	1000 / 85	Drop-in	1.0 x 1.26
791 - 821	MAFR-000556-000001	0.30	20	20.0	75	1000 / 70	Drop-in	1.0 x 1.25
791 - 821	MAFR-000556-000001	0.30	20	20.0	75	1000 / 70	Drop-in	1.0 x 1.25
1461 - 1516	MAFR-000398-000001	0.25	23	23.1	—	1000 / 85	Drop-in	1.02 x 1.25
1475 - 1511	MAFR-000482-000001	0.25	23	23.1	74	1000 / 85	Drop-in	1.02 x 1.25
2090 - 2190	MAFR-000341-000001	0.25	23	20.0	70	1000 / 150	Drop-in	0.75 x 1.0
2095 - 2185	MAFR-000314-000001	0.25	23	23.0	74	630 / 80	Drop-in	0.98 x 1.07
2110 - 2170	MAFR-000521-000001	0.15	25	20.0	70	1000 / 100	Drop-in	1.0 x 1.25
2605 - 2705	MAFR-000359-000001	0.25	23	23.0	—	1000 / 500	Drop-in	1.0 x 1.25
2605 - 2705	MAFR-000417-000001	0.30	22	20.0	70	300 / 75	Drop-in	0.5 x .55

WiMAX Circulators

Frequency (MHz)	Part Number	Insertion Loss (dB)	Isolation (dB)	Return Loss (dB)	IMD (dBc)	Fwd/Rvs Power (W)	Package	Case Size (inches)
2270 - 2430	MAFR-000384-000001	0.40	20	20.0	68	1000 / 1000	Drop-in	0.75 x 0.75
2280 - 2400	MAFR-000168-4S4CIT	0.25	20	20.8	-	1000 / 1000	Drop-in	0.625 x 0.70
2280 - 2400	MAFR-000169-4S4CIT	0.25	20	20.8	-	1000 / 1000	Drop-in	0.625 x 0.70
2300 - 2500	MAFR-000229-000001	0.25	20	20.8	58	1000 / 1000	SMT	0.625 x 0.70
2300 - 2500	MAFR-000230-000001	0.25	20	20.0	60	1000 / 1000	Drop-in	0.75 x 0.75
2470 - 2730	MAFR-000050-5S4CIT	0.35	20	20.8	58	1000 / 1000	SMT	0.625 x 0.70
2500 - 2700	MAFR-000226-000001	0.25	20	20.0	58	1000 / 1000	Drop-in	0.75 x 0.75
3300 - 3400	MAFR-000200-5S4CIT	0.25	20	20.8	-	200 / 200	Drop-in	0.625 x 0.70
3300 - 3400	MAFR-000219-000001	0.25	20	20.8	-	200 / 200	SMT	0.625 x 0.70
3300 - 3400	MAFR-000231-000001	0.25	20	20.0	60	200 / 200	Drop-in	0.75 x 0.75
3400 - 3600	MAFR-000127-WD3SIT	0.50	46	20.8	-	500 / 500	Drop-in	1.5 x 0.75
3400 - 3600	MAFR-000159-5S4CIT	0.25	20	20.8	-	1000 / 1000	SMT	0.619 x 0.694
3400 - 3600	MAFR-000220-000001	0.25	20	20.8	-	200 / 200	SMT	0.625 x 0.70
3400 - 3600	MAFR-000496-000001	0.25	23	20.0	55	1000 / 1000	Drop-in	0.75 x 0.75
3400 - 3600	MAFR-000497-000001	0.25	23	20.0	55	1000 / 1000	Drop-in	0.75 x 0.75
3400 - 3600	MAFRIN0520	0.25	20	20.0	60	1000 / 200	Drop-in	0.75 x 0.75

WiMAX Isolators

Frequency (MHz)	Part Number	Insertion Loss (dB)	Isolation (dB)	Return Loss (dB)	IMD (dBc)	Fwd/Rvs Power (W)	Package	Case Size (inches)
2300 - 2500	MAFR-000247-000001	0.25	20	20.0	58	1000 / 60	Drop-in	0.75 x 1.0
2500 - 2700	MAFR-000161-5S3SIT	0.25	20	20.0	60	1000 / 60	Drop-in	0.75 x 1.0
3300 - 3400	MAFR-000232-000001	0.25	20	20.0	60	1000 / 60	Drop-in	0.75 x 1.0
3400 - 3600	MAFR-000171-5S3SIT	0.25	20	20.0	60	1000 / 60	Drop-in	0.75 x 1.0

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TDSCDMA Isolators

Frequency (MHz)	Part Number	Insertion Loss (dB)	Isolation (dB)	Return Loss (dB)	IMD (dBc)	Fwd/Rvs Power (W)	Package	Case Size (inches)
1840 - 2055	MAFR-000560-000001	0.35	20	20.8	70	200 / 200	Robust Lead	0.8 x 0.8
1840 - 2055	MAFR-000566-000001	0.25	20	20.0	70	200 / 200	Robust Lead	0.75 x 0.75
1880 - 1920	MAFR-000553-000001	0.30	21	21.0	65	1000 / 500	Robust Lead	0.61 x 0.61
2010 - 2025	MAFR-000554-000001	0.30	20	20.0	63	1000 / 500	Robust Lead	0.61 x 0.61

Standard Circulators

Frequency (MHz)	Part Number	Insertion Loss (dB)	Isolation (dB)	Return Loss (dB)	IMD (dBc)	Fwd/Rvs Power (W)	Package	Case Size (inches)
790 - 960	MAFR-000490-000001	0.40	17	17.0	60	200 / 200	Drop-in	1.25 x 1.25
790 - 960	MAFR-000507-000001	0.40	17	17.0	60	200 / 200	Drop-in	1.25 x 1.25
850 - 900	MAFRIN0466	0.30	20	20.0	76	500 / 100	Robust Lead	1.05 x 1.05
860 - 900	MAFR-000513-000001	0.25	22	23.0	75	1500 / -	Drop-in	1.0 x 1.0
869 - 894	FR11-0001 ✓	0.35	20	20.0	—	250 / 250	Drop-in	1.2 x 1.0
869 - 894	MAFR-000083-ASICIT	0.35	20	20.0	—	500 / 500	Drop-in	1.0 x 1.0
869 - 894	MAFR-000225-000001	0.30	22	20.8	—	500 / 500	Drop-in	1.0 x 1.0
869 - 894	MAFR-000471-000001	0.30	22	20.8	—	250 / 250	Drop-in	1.0 x 1.0
869 - 894	MAFR-000555-000001	0.35	20	20.0	70	1000 / 500	Robust Lead	0.8 x 0.8
869 - 894	MAFRIN0536	0.25	20	21.0	—	1000 / 500	Drop-in	1.0 x 1.0
920 - 960	MAFR-000472-000001	0.30	20	20.0	70	200 / 200	Drop-in	1.05 x 1.05
925 - 960	FR11-0002 ✓	0.35	20	20.0	—	250 / 250	Drop-in	1.2 x 1.0
925 - 960	MAFR-000084-GSICIT	0.35	20	20.0	—	500 / 500	Drop-in	1.0 x 1.0
925 - 960	MAFR-000562-000001	0.25	20	20.0	74	1000 / 500	Robust Lead	1.0 x 1.0
925 - 960	MAFR-000569-000001	0.25	20	20.0	74	1000 / 500	Robust Lead	1.0 x 1.0
925 - 960	MAFRIN0512	0.25	20	21.0	—	1000 / 500	Drop-in	1.0 x 1.0
950 - 956	MAFRIN0453	0.25	23	23.0	—	100 / 100	SMT	1.14 x 1.14
1080 - 1100	7N256-S019	0.35	22	20.8	—	100 / 100	SMT	1.0 x 1.0
1290 - 1310	MAFR-000510-000001	0.25	20	20.0	—	1200 / 1200	Drop-in	1.0 x 1.0
1525 - 1661	MAFR-000155-3S4CIT	0.25	20	20.8	—	1000 / 1000	Drop-in	0.625 x 0.70
1525 - 1661	MAFR-000156-3S4CIT	0.25	20	20.8	—	1000 / 1000	Drop-in	0.625 x 0.70
1785 - 1805	MAFR-000460-000001	0.20	25	20.8	70	500 / 500	Drop-in	0.75 x 0.75
1805 - 1880	FR11-0003 ✓	0.35	20	20.0	—	250 / 250	Drop-in	1.2 x 1.0
1805 - 1880	MAFR-000072-DSICIR	0.35	20	20.0	—	200 / 200	Robust Lead	1.05 x 1.05
1805 - 1880	MAFR-000085-DSICIT	0.35	20	20.0	—	500 / 500	Drop-in	1.0 x 1.0
1805 - 1880	MAFR-000111-DSICIT	0.35	22	21.0	—	100 / 100	SMT	1.14 x 1.14
1805 - 1880	MAFR-000340-000001	0.25	20	21.0	75	1000 / 100	Drop-in	1.2 x 1.25
1805 - 1880	MAFR-000425-000001	0.30	20	20.0	75	500 / 500	Drop-in	1.0 x 1.0
1805 - 1880	MAFR-000473-000001	0.30	20	20.0	70	200 / 200	Drop-in	1.05 x 1.05
1805 - 1880	MAFRIN0532	0.25	20	21.0	75	1000 / 500	Drop-in	1.0 x 1.0
1880 - 1920	MAFR-000485-000001	0.25	21	21.0	76	500 / 500	Robust Lead	1.05 x 1.05
1920 - 1995	MAFR-000173-PS3C2T	0.25	20	22.0	70	1000 / 100	Drop-in	0.75 x 1.0
1930 - 1990	FR11-0004 ✓	0.35	20	20.0	—	250 / 250	Drop-in	1.2 x 1.0
1930 - 1990	MAFR-000086-PSICIT	0.35	20	20.0	—	500 / 500	Drop-in	1.0 x 1.0
1930 - 1990	MAFR-000400-000001	0.30	22	20.8	—	250 / 250	Drop-in	1.0 x 1.0
1930 - 1990	MAFRIN0540	0.25	20	21.0	—	1000 / 500	Drop-in	1.0 x 1.0

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Standard Circulators (continued)

Frequency (MHz)	Part Number	Insertion Loss (dB)	Isolation (dB)	Return Loss (dB)	IMD (dBc)	Fwd/Rvs Power (W)	Package	Case Size (inches)
2010 - 2025	MAFR-000164-4S3CIT	0.20	25	25.0	—	1000 / 500	Drop-in	0.75 x 0.75
2010 - 2025	MAFR-000291-000001	0.25	25	25.0	—	1000 / 500	Drop-in	0.75 x 0.75
2010 - 2025	MAFR-000326-000001	0.30	25	21.0	—	100 / 100	SMT	0.78 x .77
2070 - 2210	MAFRIN0210	0.30	22	24.0	76	500 / 500	Robust Lead	1.05 x 1.05
2110 - 2170	FR11-0009 ✓	0.35	20	20.0	—	250 / 250	Drop-in	1.2 x 1.0
2110 - 2170	MAFR-000087-US1CIT	0.35	20	20.0	—	500 / 500	Drop-in	1.0 x 1.0
2110 - 2170	MAFR-000397-000001	0.20	22	21.0	70	200 / 200	Drop-in	0.75 x 0.75
2110 - 2170	MAFR-000433-000001	0.25	22	21.0	70	200 / 200	Drop-in	0.75 x 0.75
2110 - 2170	MAFR-000483-000001	0.20	20	20.0	70	200 / 200	Drop-in	0.80 x 0.80
2110 - 2170	MAFRIN0478	0.25	24	23.1	—	1000 / 80	Drop-in	0.75 x 1.0
2300 - 2400	MAFR-000128-WD3SIT	0.50	46	20.8	—	500 / 500	Drop-in	1.5 x 0.75
2496 - 2690	MAFR-000121-5D4SIT	0.50	46	20.8	—	1000 / 500	Drop-in	1.5 x 0.75
2514 - 2615	MAFR-000572-000001	0.25	21	21.0	—	1000 / 500	Robust Lead	0.75 x 0.75
2620 - 2690	MAFR-000544-000001	0.25	22	22.0	70	600 / 600	Robust Lead	1.05 x 1.05
2620 - 2690	MAFR-000552-000001	0.25	22	22.0	70	600 / 600	SMT	1.05 x 1.05

Standard Isolators

Frequency (MHz)	Part Number	Insertion Loss (dB)	Isolation (dB)	Return Loss (dB)	IMD (dBc)	Fwd/Rvs Power (W)	Package	Case Size (inches)
777 - 787	MAFR-000491-000001	0.25	20	20.0	—	200 / 10	Robust Lead	1.05 x 0.98
790 - 822	MAFR-000509-000001	0.25	23	23.0	70	500 / 60	Drop-in	1.0 x 1.0
854 - 909	MAFR-000149-AS2SIT	0.20	23	23.1	70	500 / 60	Drop-in	1.375 x 1.456
859 - 904	MAFR-000213-000001	0.35	20	20.0	70	100 / 75	Drop-in	1.0 x 1.25
860 - 870	MAFR-000481-000001	0.35	25	23.1	74	1000 / 85	Drop-in	1.3 x 1.575
860 - 960	MAFRIN0370	0.40	18	18.0	—	100 / 75	SMT	1.14 x 1.14
869 - 894	7N264-S063	0.30	22	20.8	—	40 / 20	Robust Lead	1.05 x 1.05
869 - 894	FR12-0001 ✓	0.35	20	20.0	—	250 / 20	Drop-in	1.2 x 1.0
869 - 894	MAFR-000053-AS1SIR	0.35	20	20.0	—	200 / 10	Robust Lead	1.05 x 1.05
869 - 894	MAFR-000268-000001	0.50	50	21.0	60	500 / 500	Drop-in	2.0 x 1.25
869 - 894	MAFR-000293-000001	0.50	45	20.0	36	50 / 50	SMT	1.93 x 1.10
869 - 894	MAFRIN0167	0.25	20	20.0	80	200 / 100	Drop-in	1.0 x 1.25
869 - 894	MAFRIN0476	0.25	20	20.0	80	100 / 80	Drop-in	1.0 x 1.25
869 - 894	MAFRIN0537	0.25	20	21.0	—	1000 / 100	Drop-in	1.0 x 1.25
910 - 975	MAFR-000150-GS2SIT	0.20	23	23.1	70	500 / 60	Drop-in	1.375 x 1.456
920 - 960	MAFR-000227-000001	0.38	53	25.0	74	500 / 500	Drop-in	2.0 x 1.25
920 - 965	MAFR-000255-000001	0.50	45	26.0	51	126 / 112	Drop-in	2.44 x 1.29
925 - 960	FR12-0002 ✓	0.35	20	20.0	—	250 / 20	Drop-in	1.2 x 1.0
925 - 960	MAFR-000054-GS1SIR	0.35	20	20.0	—	200 / 10	Robust Lead	1.05 x 1.05
925 - 960	MAFR-000080-GD1SIT	0.50	38	20.0	—	60 / 60	Drop-in	1.93 x 1.1
925 - 960	MAFR-000181-GS1SIT	0.50	55	19.1	—	75 / 75	SMT	1.93 x 1.102
925 - 960	MAFR-000373-000001	0.20	23	21.0	75	450 / 135	Drop-in	1.85 x 1.57
925 - 960	MAFR-000461-000001	0.35	34	24.0	60	500 / 80	Drop-in	1.3 x 1.57
925 - 960	MAFRIN0513	0.25	20	21.0	—	1000 / 100	Drop-in	1.0 x 1.25

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Standard Isolators (continued)

Frequency (MHz)	Part Number	Insertion Loss (dB)	Isolation (dB)	Return Loss (dB)	IMD (dBc)	Fwd/Rvs Power (W)	Package	Case Size (inches)
1805 - 1880	FR12-0003 ✓	0.35	20	20.0	—	250 / 20	Drop-in	1.2 x 1.0
1805 - 1880	MAFR-000055-DSISIR	0.35	20	20.0	—	200 / 10	Robust Lead	1.0 x 1.0
1805 - 1880	MAFR-000081-DDISIT	0.50	38	20.0	—	50 / 50	Drop-in	1.93 x 1.1
1805 - 1880	MAFR-000182-DSISIT	0.50	55	19.0	40	200 / 50	SMT	2.083 x 1.102
1805 - 1880	MAFR-000182-DSISIT	0.50	55	19.0	40	200 / 50	SMT	2.083 x 1.102
1805 - 1880	MAFR-000233-000001	0.50	50	23.0	60	500 / 500	Drop-in	2.0 x 1.25
1805 - 1880	MAFR-000366-000001	0.30	30	20.0	58	1000 / 150	Drop-in	1.25 x 1.5
1805 - 1880	MAFR-000494-000001	0.30	22	22.0	70	500 / 100	Drop-in	0.75 x 1.0
1805 - 1880	MAFR-000546-000001	0.60	40	20.0	65	70 / 70	SMT	1.93 x 1.102
1805 - 1880	MAFRIN0164	0.30	20	21.0	70	200 / 75	Drop-in	1.0 x 1.25
1805 - 1880	MAFRIN0418	0.50	38	20.0	36	80 / 80	Drop-in	1.5 x 1.0
1805 - 1880	MAFRIN0533	0.25	20	21.0	—	1000 / 500	Drop-in	1.0 x 1.25
1930 - 1990	FR12-0004 ✓	0.35	20	20.0	—	250 / 20	Drop-in	1.2 x 1.0
1930 - 1990	MAFR-000269-000001	0.50	50	21.0	60	500 / 500	Drop-in	2.0 x 1.25
1930 - 1990	MAFR-000294-000001	0.50	45	20.0	36	50 / 50	SMT	1.93 x 1.10
1930 - 1990	MAFR-000382-000001	0.15	25	20.0	70	1000 / 100	Drop-in	1.0 x 1.25
1930 - 1990	MAFRIN0296	0.25	23	23.0	70	100 / 80	Robust Lead	1.05 x 1.05
1930 - 1990	MAFRIN0428	0.35	20	20.0	—	20 / 10	Robust Lead	0.75 x 0.75
1930 - 1990	MAFRIN0460	0.30	21	19.0	—	65 / 20	Drop-in	0.75 x 0.75
1930 - 1990	MAFRIN0541	0.25	20	21.0	—	1000 / 100	Drop-in	1.0 x 1.25
2095 - 2185	MAFR-000541-000001	0.25	23	23.0	74	63.1 / 10	Robust Lead	0.80 x 0.80
2110 - 2170	FR12-0009 ✓	0.35	20	20.0	—	250 / 20	Drop-in	1.2 x 1.0
2110 - 2170	MAFR-000163-US3SIT	0.15	24	20.0	—	1000 / 60	Drop-in	0.75 x 1.0
2110 - 2170	MAFR-000495-000001	0.25	21	21.0	70	1000 / 150	Drop-in	1.0 x 1.25
2110 - 2170	MAFR-000519-000001	0.20	20	19.0	75	650 / 70	Drop-in	1.0 x 1.0
2110 - 2170	MAFRIN0166	0.30	20	21.0	70	100 / 75	Drop-in	1.0 x 1.25
2110 - 2170	MAFRIN0297	0.25	23	23.0	70	100 / 80	Robust Lead	1.05 x 1.05

Couplers

Frequency (MHz)	Part Number	Impedance (Ohms)	Coupling (dB)	I.L. (dB)	Max. Power (W)	Isol. (dB)	Package
Packaged Products							
0.2 - 35	HH-108 ◆	50	3.5	0.1	25	40	SMA
0.5 - 400	CH-137 ◆	50	20	0.5	3	30	RH
0.5 - 400	CHS-137 ◆	50	20	0.5	3	30	SMT
1 - 1000	CH-132 ◆	50	20	0.7	5	20	SMA/BNC
2 - 32	CD-920-4 ◆	50	20	0.2	50	40	BNC
2 - 32	CH-130-4 ◆	50	30	0.1	500	30	SMA/BNC
2 - 200	HH-106 ◆	50	—	1	1	30	FP
2 - 200	HH-107 ◆	50	—	1	1	30	SMA/BNC
2 - 2000	H-9 ◆	50	4	0.4	25	55	SMA/N
5 - 120	MACPCT0017 ◆	75	17.3	—	—	45	Surface Mount
5 - 120	MACP-008249-CH09B0	75	17	-0.4	0.25	-45	SM-155
5 - 200	HH-109 ◆	50	—	1.4	0.5	30	FP
5 - 200	HHS-109 ◆	50	—	1.4	0.5	30	SMT

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Couplers (continued)

Frequency (MHz)	Part Number	Impedance (Ohms)	Coupling (dB)	I.L. (dB)	Max. Power (W)	Isol. (dB)	Package
Packaged Products							
5 - 862	MACP-009821-CG0650	75	16	25	0.25	33	SM-101
5 - 870	MACP-008248-CH0670	75	17	0.9	1	—	SM-103-A
5 - 870	ELDC-10 ◆	75	10	1	0.25	21	SM-55
5 - 870	MACPCT0038	75	17	0.6	0.25	32	SM-103
5 - 870	MACPES0004 ◆	75	10	1.3	0.25	28	SM-132
5 - 1000	ELDC-17 ◆	75	17	0.6	0.25	12	SM-55
5 - 1000	ELDC-14 ◆	75	14.3	1	0.25	34	SM-55
5 - 1000	ELDC-16 ◆	75	16	0.9	0.25	28	SM-55
5 - 1000	ELDC-12 ◆	75	11.8	1.2	0.25	12	SM-55
5 - 1000	CH-140 ◆	50	19.75	0.3	3	20	FP
5 - 1000	ELDC-20 ◆	75	20	0.6	0.25	29	SM-55
5 - 1000	ELDC-7 ◆	75	7	2.5	0.25	22	SM-55
5 - 1000	ELDC-8 ◆	75	8	1.5	0.25	21	SM-55
5 - 1000	ELDC-8X1 ◆	75	8	2.1	0.25	13.5	SM-55
5 - 1000	EMD-10-1	50	10	1.2	0.25	15	SM-22
5 - 1000	EMDC-10-1-75 ◆	75	10	1.5	0.25	12	SM-22
5 - 1000	EMDC-13-1-75 ◆	75	13	1.5	0.25	13	SM-22
5 - 1000	MACP-007486-CH0010	75	17	0.7	0.25	—	SM-1
5 - 1000	MACP-007490-CA0010	75	10.5	1.4	0.25	—	SM-1
5 - 1000	MACPCT0020	75	—	—	0.25	—	SM-155
5 - 1000	MACP-008125-CK07F0	75	20	0.4	0.25	40	SM-127
5 - 1000	MACP-008764-CH0370	75	17	0.5	0.25	—	SM-55
5 - 1000	MACP-008311-CE0370	75	14	0.8	0.25	—	SM-55
5 - 1000	MACP-009404-C80370	75	8	2.1	0.25	—	SM-55
5 - 1000	MACP-009736-CD0160	75	13	1.4	0.25	—	SM-22
5 - 1000	EMDC-13-2	75	13	1.4	0.25	13	SM-22
5 - 1000	EMDC-17-1-75 ◆	75	17	0.9	0.25	24	SM-22
5 - 1000	EMDC-17-5-75 ◆	75	17	0.8	0.25	29	SM-127
5 - 1000	EMDC-17-8-75 ◆	75	17	0.8	0.25	29	SM-127
5 - 1000	H-1-4 ◆	50	4	1.2	7	45	SMA/BNC
5 - 1000	MACPCT0039	75	10	1.6	0.25	23	SM-138
5 - 1000	MACPES0050 ◆	75	20	0.8	0.25	37	SM-55
5 - 1000	MACP-009943-CH07F0	75	17	0.8	0.25	22	SM-55A
5 - 1200	MACP-009730-C60370	75	6	3.3	0.25	16	SM-55
5 - 1200	MACP-010249-C108A0	75	18	0.6	0.25	0.25	24_
5 - 1200	MACP-007727-C107B0	75	18.7	1.4	0.25	26.25	SM-123
5 - 1200	MACPCT0030	75	16.8	1.2	0.25	27	SM-55
5 - 1200	MACPES0017	75	17.1	0.8	0.25	—	SM-103
5 - 1200	MACP-007741-CG09E0	75	17	0.8	0.25	—	SM-22
5 - 1200	MACP-009467-105T12	50	10	0.5	0.25	15	SM-22
6 - 600	EMDC-16-1	50	16	0.6	0.25	21	SM-22
7 - 14	JH-113 ◆	50	—	0.5	4	20	FP
7 - 14	JHS-113 ◆	50	—	0.5	4	20	SMT
10 - 500	CH-134 ◆	50	10.8	1.6	1	20	FP
10 - 500	CH-138 ◆	50	10.8	1.6	1	17	TO-8
10 - 500	CHS-134 ◆	50	10.8	1.6	1	20	SMT
10 - 500	HH-110 ◆	50	—	1.4	1	20	FP
10 - 500	HH-127 ◆	50	—	1.4	1	20	TO-8

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54 All specifications are subject to change.

Couplers (continued)

Frequency (MHz)	Part Number	Impedance (Ohms)	Coupling (dB)	I.L. (dB)	Max. Power (W)	Isol. (dB)	Package
Packaged Products							
10 - 500	HHS-110 ◆	50	—	1.4	1	20	SMT
15 - 1000	MACPCT0040	50	9.9	1.3	0.25	25	SM-22B
20 - 40	JH-114 ◆	50	3	0.5	5	20	FP
20 - 40	JH-133 ◆	50	3	0.5	5	20	TO-8
20 - 40	JHS-114 ◆	50	—	0.5	5	20	SMT
20 - 140	JH-10-4 ◆	50	1	0.6	4	20	SMA
20 - 200	JH-131 ◆	50	—	1	0.25	20	SMA
20 - 300	HH-105 ◆	50	—	1	0.5	28	TO-5
20 - 2000	HH-128 ◆	50	—	3	0.5	15	FP
30 - 1000	DCG-10-4 ◆	50	11	1.5	5	30	SMA
30 - 3000	H-183-4 ◆	50	4.5	0.7	5	35	SMA
40 - 80	JH-115 ◆	50	3	0.5	5	20	FP
40 - 80	JHS-115 ◆	50	3	0.5	1	20	SMT
40 - 1000	EMDC-16-2-75 ◆	75	16	0.6	0.25	23	SM-55
40 - 1000	MACPES0028 ◆	75	7	1.9	0.25	22	SM-137
80 - 160	JH-119 ◆	50	3	0.75	4	20	FP
80 - 160	JHS-119 ◆	50	3	0.75	4	20	SMT
100 - 200	JH-121 ◆	50	—	0.75	4	20	FP
100 - 200	JHS-121 ◆	50	—	0.75	4	20	SMT
136 - 174	MACP-010121-B8180X	50	20	0.2	7	35	SM-55B
175 - 350	JH-136 ◆	50	—	0.5	4	20	FP
175 - 350	JHS-136 ◆	50	—	0.5	4	20	SMT
200 - 400	JHS-142 ◆	50	0	0.5	5	18	SMT
250 - 500	JH-139 ◆	50	—	0.5	4	15	FP
250 - 500	JHS-139 ◆	50	—	0.5	4	15	SMT
350 - 450	EMDC-20-1	50	20	0.3	0.25	15	SM-22
350 - 450	MACP-007984-MDC201	50	20	0.3	0.25	15	SM-22
500 - 1000	2020-6600-06 ◆	50	6	0.15	50	31	Conn
500 - 1000	2020-6601-10 ◆	50	10	0.15	50	35	Conn
500 - 1000	2020-6602-20 ◆	50	20	0.15	50	45	Conn
500 - 1000	2020-6603-30 ◆	50	30	0.15	50	55	Conn
500 - 1000	JH-140 ◆	50	—	0.3	25	18	FP
500 - 18000	2025Series ◆	50	6-20	0.3-0.7	50	15-22	Conn
500 - 18000	2026-6010-10 ◆	50	10	0.9	50	15	Conn
500 - 18000	2026-6012-20 ◆	50	20	0.9	50	15	Conn
500 - 18000	203XSeries ◆	50	3	0.2	—	25	Conn
824 - 960	MACPCC0002	50	17	0.3	2	32	SOIC-8
1000 - 2000	2020-6604-06 ◆	50	6	0.2	50	31	Conn
1000 - 2000	2020-6605-10 ◆	50	10	0.2	50	35	Conn
1000 - 2000	2020-6606-20 ◆	50	20	0.2	50	45	Conn
1000 - 2000	2020-6607-30 ◆	50	30	0.2	50	55	Conn
1000 - 2000	JH-141 ◆	50	—	0.3	25	18	FP
1000 - 12400	2026-6001-10 ◆	50	10	0.35	50	18	Conn
1000 - 12400	2026-6003-20 ◆	50	20	0.35	50	17	Conn
1000 - 18000	2026-6007-10 ◆	50	10	0.3	50	15	Conn
1000 - 18000	2026-6009-20 ◆	50	20	0.3	50	17	Conn
1700 - 2000	MACPCC0001	50	17	0.3	2	34	SOIC-8
2000 - 4000	2020-6608-06 ◆	50	6	0.2	50	28	Conn

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Couplers (continued)

Frequency (MHz)	Part Number	Impedance (Ohms)	Coupling (dB)	I.L. (dB)	Max. Power (W)	Isol. (dB)	Package
Packaged Products							
2000 - 4000	2020-6609-10 ◆	50	10	0.2	50	32	Conn
2000 - 4000	2020-6610-20 ◆	50	20	0.2	50	42	Conn
2000 - 4000	2020-6611-30 ◆	50	30	0.2	50	52	Conn
2000 - 18000	2026-6004-10 ◆	50	10	30	50	15	Conn
2000 - 18000	2026-6006-20 ◆	50	20	30	50	18	Conn
2600 - 5200	2020-6612-06 ◆	50	6	0.25	50	26	Conn
2600 - 5200	2020-6613-10 ◆	50	10	0.25	50	30	Conn
2600 - 5200	2020-6614-20 ◆	50	20	0.25	50	40	Conn
2600 - 5200	2020-6615-30 ◆	50	30	0.25	50	50	Conn
4000 - 8000	2020-6616-06 ◆	50	6	0.25	50	28	Conn
4000 - 8000	2020-6617-10 ◆	50	10	0.25	50	30	Conn
4000 - 8000	2020-6618-20 ◆	50	20	0.25	50	40	Conn
4000 - 8000	2020-6619-30 ◆	50	30	0.25	50	50	Conn
7000 - 12400	2020-6620-06 ◆	50	6	0.4	50	21	Conn
7000 - 12400	2020-6621-10 ◆	50	10	0.4	50	30	Conn
7000 - 12400	2020-6622-20 ◆	50	20	0.3	50	38	Conn
7000 - 12400	2020-6623-30 ◆	50	30	0.3	50	47	Conn
7000 - 18000	2020-6624-06 ◆	50	6	0.6	50	21	Conn
7000 - 18000	2020-6625-10 ◆	50	10	0.4	50	30	Conn
7000 - 18000	2020-6626-20 ◆	50	20	0.5	50	35	Conn
7000 - 18000	2020-6627-30 ◆	50	30	0.5	50	45	Conn
12400 - 18000	2020-6628-06 ◆	50	6	0.6	50	21	Conn
12400 - 18000	2020-6629-10 ◆	50	10	0.4	50	30	Conn
12400 - 18000	2020-6630-20 ◆	50	20	0.5	50	35	Conn
12400 - 18000	2020-6631-30 ◆	50	30	0.5	50	42	Conn

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CATV Diplexers

Frequency (MHz)	Part Number	Crossover Isol. (dB)	LP/HP Isol. (dB)	LP/HP RL (dB)	Common RL (dB)	Flatness (dB)	LP Ins Loss (dB)	HP Ins Loss (dB)	Package
Packaged Products									
5 - 30 / 46 - 870	MAFLCT0066	20	47/20/46	18/20	20	—	0.7	0.75	SM-160
5 - 30 / 46 - 1000	MAFL-007492-CD0A00	—	47/20/46	18/18	18	—	0.7	0.75	SMT
5 - 40 / 52 - 870	MAFLCT0031	—	55/55	22/20	22/20	—	0.5	0.5	SMT-142
5 - 40 / 52 - 870	MAFLES0122	41	50	22/22	22	0.85	1	1	Vertical plug-in
5 - 42 / 54 - 870	MAFLES0102	—	45/45	18/18	18	—	0.5	0.5	SMT
5 - 42 / 54 - 1000	MAFL-007654-CD0A10	—	55/50	16	16	—	0.5	0.5	SM-161
5 - 42 / 54 - 1000	MAFL-009055-CD4254	—	55/50	16	16	—	0.5	0.5	SM-162
5 - 42 / 54 - 1000	MAFL-009810-CD0550	33	55/50	21/22	22	0.5	0.5	0.5	SM-85
5 - 42 / 54 - 1100	MAFL-008098-CD0550	—	50	21	21	0.5	0.5	0.5	SM-85
5 - 65 / 94 - 860	MAFLCT0083	—	59/60/59	16	16	—	0.92	0.92	SM-161
5 - 65 / 88 - 1000	MAFLCT0027	—	50/50	20	20	—	0.5	0.5	SMT
5 - 65 / 88 - 1000	MAFL-007988-CD0A10	—	55/50	16	16	—	0.5	0.5	SM-161
5 - 1000	MAFLCT0027 ◆	75	—	0.5	50	—	—	—	SMT
50 - 870 / 975 - 1525	MAFL-007898-CD0ACO	—	40	15/14	15/14	—	1.8	1.2	SMT

MoCA Filters

Frequency (MHz)	Part Number	LP/HP Isol (dB)	Common RL (dB)	LP Ins Loss ((dB))	HP Ins Loss (dB)	Package
Packaged Products						
5 - 42/54 - 1002/1125 - 1525	MAFL-009010-CT0B90	45/48	12	1.8	2.0	—
5 - 1002 / 1125 - 1550	MAFL-008290-CD0ACO	40/40	13/13	1.4	1.7	SM-172
5 - 1550	MAFL-009272-CD0ACO	40/40	12	1.5	1.7	SM-172
50 - 870 / 975 - 1525	MAFL-007898-CD0ACO	40/42	15/14	1.8	1.2	SM-172
50 - 870 / 950 - 1550	MAFL-008195-CD0ACO	39/37	14/12	1.5	2.0	SM-172
50 - 870	MAFL-008070-CLOADO	50/50	13	1.5	30	SM-173
50 - 870 / 975 - 1025	MAFL-008571-CD0AFO	37/37	12	2.0	6	SM-175
870 - 925	MAFLCT0081	45/45	18	1.2	-	SM-171
975 - 1025	MAFL-008867-CB0B40	14/14	15	2.0	-	SM-180
1125 - 1175	MAFL-008868-CB0B50	14/14	15	2.0	-	SM-180
1300 - 1350	MAFL-008869-CB0B60	14/14	15	2.0	-	SM-180
1475 - 1525	MAFL-008870-CB0B70	14/14	15	2.0	-	SM-180

Filters/Diplexers

Frequency (MHz)	Part Number	Impedance (Ohms)	Passband (MHz)	I.L. (dB)	Rejection (dB)	Rejection BW (dB)	Package
Packaged Products							
825 - 1990	MA4DP918-1277 ◆	50	280	0.9	28	270	3mm sq MLP
843 - 925	CDMA 900 ◆	50	27	0.5	105	0	Conn

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M/A-COM Technology Solutions IC-based switches are used extensively in commercial and military electronics applications. The switches range from DC to 20 GHz and are designed specifically for voice and data applications.

- Cordless and mobile phones
- Cellular base stations
- Satellite radio
- GPS & DAB
- 2.4 GHz and 5.0 GHz WLAN
- VSAT
- CATV and broadband
- Bluetooth
- RFID
- Fixed Wireless Access (FWA)
- Instrumentation
- Commercial and military radar
- Aerospace and defense products

M/A-COM Technology Solutions diode-based HMIC silicon series-shunt PIN diode switches provide outstanding frequency performance from 50 MHz to 20 GHz. Our AlGaAs series-shunt PIN diode switches provide remarkable frequency performance from 50 MHz to 50 GHz.

- HMIC™ and AlGaAs switches are suitable for microwave and millimeter wave control circuits for military, instrumentation, and optoelectronic applications.
- HMIC switches: 0.9 dB loss and 42 dB isolation at 20 GHz
- AlGaAs switches: 0.7 dB loss and 35 dB isolation at 50 GHz



General

Frequency (MHz)	Part Number	Type	I.L. (dB)	Isol. (dB)	Input IP3 (dBm)	Package
Die Products						
0 - 2000	MASW2040	DPDT	0.4	20	46	Die
0 - 6000	MASW6030G	DPDT	0.6	40	45	Die
0 - 6000	MASW6020G	SPST	0.9	64	46	Die
50 - 20000	MA4SW110	SPST	0.7	42	50	Die
50 - 20000	MASW-001100-1190	SPST	0.7	42	50	Die
50 - 50000	MA4AGSW1	SPST	0.3	46	40	Die
10000 - 50000	MA4AGSW1A	SPST	1.2	30	40	Die
0 - 3000	MASW2000	SPDT	0.6	35	53	Die
0 - 4000	MASW4030G	SPDT	0.8	50	46	Die
0 - 6000	MASW6010G	SPDT	0.5	45	46	Die
0 - 20000	MASW20000	SPDT	1.7	50	43	Die
50 - 20000	MA4SW210	SPDT	0.7	42	50	Die
50 - 20000	MASW-002100-1191	SPDT	0.7	42	50	Die
50 - 26500	MASW-002102	SPDT	1.2	40	43	Die
50 - 50000	MA4AGSW2	SPDT	0.7	33	40	Die
2000 - 18000	MA4SW210B-1	SPDT	1.25	40	47	Die
2400 - 5800	MASW-008206-000DIE	SPDT	0.7	30	54	Die
50 - 20000	MA4SW310	SP3T	0.9	42	50	Die
50 - 20000	MASW-003100-1192	SP3T	0.9	42	50	Die
50 - 26500	MASW-003102	SP3T	1.3	40	43	Die
50 - 50000	MA4AGSW3	SP3T	0.8	31	40	Die
500 - 2500	MASWSS0100 ♦	SP3T	0.5	20	69	Die
1000 - 4000	MASW-009276-000DIE	SP3T	0.51	24	55	Die
2000 - 18000	MA4SW310B-1	SP3T	1.25	40	47	Die
2400 - 2500	MASW-008902-000DIE	SP3T	0.6	31.5	55	Die
77000	MA4GC6774	SP3T	1.4	24	40	Die
0 - 4000	MASW4060G	SP4T	1.3	50	46	Die
50 - 20000	MA4SW410	SP4T	0.9	34	50	Die
50 - 26500	MASW-004100-1193	SP4T	0.9	34	43	Die
50 - 26500	MASW-004102	SP4T	1.4	35	43	Die
50 - 50000	MA4AGSW4	SP4T	1	32	40	Die
2000 - 18000	MA4SW410B-1	SP4T	1.4	35	47	Die
50 - 20000	MA4SW510	SP5T	0.9	38	50	Die
50 - 26500	MASW-005100-1194	SP5T	0.9	38	43	Die
50 - 26500	MASW-005102	SP5T	1.8	35	43	Die
50 - 50000	MA4AGSW5	SP5T	1.9	30	40	Die
2000 - 18000	MA4SW510B-1	SP5T	1.8	35	47	Die
50 - 26500	MASW-006102	SP6T	1.2	40	43	Die
500 - 2500	MASWSS0091	SP6T	0.5	38	70	Die
2000 - 18000	MA4SW610B-1	SP6T	1.9	39	47	Die
50 - 40000	MA4AGSW8-1	SP8T	2	32	40	Die
50 - 40000	MA4AGSW8-2	SP8T	2	35	35	Die
1800 - 4000	MA4BN1840-1	Bias Network	0.15	35	—	Die
0 - 4000	MASWSS0184	DPDT	0.7	30	57.5	3 mm PQFN 12
0 - 4000	MASW-007587	DPDT	0.7	38	59	3 mm PQFN 12
0 - 6000	MASWSS0094 ♦	DPDT	0.8	43	45	3 mm PQFN 12
0 - 6000	MASWSS0107	DPDT	0.95	22	52	3 mm PQFN 12
0 - 6000	MASWSS0129	DPDT	0.75	30	49	3 mm PQFN 12
500 - 3000	MASWSS0040 ♦	DPDT	0.8	19	55	3 mm PQFN 12

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General (continued)

Frequency (MHz)	Part Number	Type	I.L. (dB)	Isol. (dB)	Input IP3 (dBm)	Package
Packaged Products						
500 - 3000	MASW-009460	DPDT	0.7	19	52	3 mm PQFN 12
500 - 3000	MASWSS0130	DPDT	0.6	25	55	3 mm PQFN 12
2000 - 6000	MASWSS0190	DPDT	0.75	43	50	2 mm UTDFN 8
4500 - 6000	MASWSS0039 ◆	DPDT	0.8	30	52	3 mm PQFN 12
4500 - 6000	MASWSS0175	DPDT	0.8	30	52	3 mm PQFN 12
0 - 2500	SW-259 ◆	SPST	1	70	46	SOIC-8
0 - 2500	MASWSS0162	SPST	1	70	46	SOIC-8
0 - 3000	SW-214	SPST	1.3	25	46	FP-13
0 - 3000	SW-311	SPST	1.3	27	46	CR-9
0 - 3000	SW05-0311	SPST	1.3	25	46	CR-9
0 - 4000	MASW-007070-000100	SPST	0.85	25	48	CSP-1
2 - 3000	MASW-001150-1356	SPST	0.6	33	—	Surface Mount
5 - 3000	SW-215 ◆	SPST	2.9	27	46	DI-1
5 - 3000	SW-216 ◆	SPST	2.9	27	46	DI-1
5 - 4000	SW-231 ◆	SPST	2.8	22	46	FP-16
10 - 1000	SW-121 ◆	SPST	1	40	30	DI-1
300 - 4000	MASWSS0148	SPST	55	1.6	49	3 mm PQFN 12
500 - 2000	SW-393 ◆	SPST	1.6	42	39	SOIC-8
0 - 2000	SW-224	SPDT	0.8	30	46	TO-5-3
0 - 2000	SW-225	SPDT	0.8	30	46	FP-13
0 - 2000	SW-395 ◆	SPDT	0.5	20	45	SOT-26
0 - 2000	MASWSS0179	SPDT	0.5	20	45	SOT-26
0 - 2500	SW-239 ◆	SPDT	0.6	70	46	SOIC-8
0 - 2500	MASWSS0201	SPDT	1.1	46	45	3 mm PQFN 12
0 - 2500	MASWSS0157	SPDT	0.6	70	46	SOIC-8
0 - 2500	SW-277 ◆	SPDT	0.5	40	61	SOIC-8
0 - 2500	MASWSS0161	SPDT	0.5	40	61	SOIC-8
0 - 2500	SW-338 ◆	SPDT	0.5	33	46	SOIC-8
0 - 2500	MASWSS0180	SPDT	0.5	33	46	SOIC-8
0 - 3000	MASWSS0192	SPDT	0.18	30	53	SC-70 (SOT-363)
0 - 3000	MASWSS0115	SPDT	0.3	22	46	SC-70 (SOT-363)
0 - 3000	MASW-008075	SPDT	0.4	25	48	SC-70 (SOT-363)
0 - 3000	MASWSS0005 ◆	SPDT	0.3	21	45	SOT-26
0 - 3000	MASWSS0136	SPDT	27	0.4	51.5	SC-70 (SOT-363)
0 - 3000	MASWSS0176	SPDT	0.3	21	45	SOT-26
0 - 3000	MASWSS0006 ◆	SPDT	0.4	20	60	SOT-26
0 - 3000	MASWSS0181	SPDT	0.4	20	60	SOT-26
0 - 3000	MASWSS0029 ◆	SPDT	0.4	24.5	60	SOT-26
0 - 3000	SW-110	SPDT	1.1	18	46	CR-9
0 - 3000	SW-276	SPDT	0.4	70	61	CR-2
0 - 3000	SW-312	SPDT	1.2	30	48	CR-9
0 - 3000	SW-313	SPDT	1.2	35	46	CR-9
0 - 3000	SW-425 ◆	SPDT	0.4	20	53	SOT-26
0 - 3000	MASWSS0143	SPDT	0.4	20	53	SOT-26
0 - 3000	SW-437 ◆	SPDT	0.3	21	55	SC-70 (SOT-363)
0 - 3000	MASWSS0166	SPDT	0.3	21	55	SC-70 (SOT-363)
0 - 3000	SW-438 ◆	SPDT	0.7	25	55	SC-70 (SOT-363)
0 - 3000	MASWSS0151	SPDT	0.7	25	55	SC-70 (SOT-363)
0 - 3000	SW-439 ◆	SPDT	0.8	50	85	MSOP-10

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General (continued)

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Packaged Products						
0 - 3000	MASWSS0169	SPDT	0.8	50	85	MSOP-10
0 - 3000	SW-442 ◆	SPDT	28	0.8	50	SOT-26
0 - 3000	MASW-007935	SPDT	28	0.8	50	SOT-26
0 - 3000	SW-456 ◆	SPDT	0.3	22	52	SC-70 (SOT-363)
0 - 3000	MASW-007221	SPDT	0.3	22	52	SC-70 (SOT-363)
0 - 3000	MASW-008899	SPDT	0.4	27	48	SC-70 (SOT-363)
0 - 3000	SW10-0312	SPDT	1.2	27	46	CR-9
0 - 3000	SW10-0313	SPDT	1.2	35	46	CR-9
0 - 3000	MASWSS0117 ◆	SPDT	0.3	25	56	SC-70 (SOT-363)
0 - 3000	MASWSS0204	SPDT	0.3	25	56	SC-70 (SOT-363)
0 - 6000	MASWSS0202	SPDT	0.55	25	50	3 mm PQFN 12
0 - 6000	MASW-009444	SPDT	0.3	23	47	1 mm PQFN 6
0 - 4000	SW-226	SPDT	1.5	25	46	CR-2
0 - 4000	SW-227	SPDT	1.4	35	46	CR-2
0 - 4000	SW-228	SPDT	1	22	46	CR-2
0 - 4000	MASW-007071-000100	SPDT	1.8	30	46	CSP-1
0 - 5000	MASW-008853	SPDT	0.45	15	56	SC-70 (SOT-363)
0 - 6000	MASW-000822-12770T	SPDT	0.35	26	65	3 mm PQFN
0 - 6000	MASWSS0070 ◆	SPDT	0.55	24	52	3 mm PQFN 12
0 - 6000	MASWSS0200	SPDT	0.55	24	52	3 mm PQFN 12
0 - 6000	MASW-007107	SPDT	0.75	20	50	2 mm PQFN 8
0 - 6000	MASWSS0093	SPDT	0.85	28	53	3 mm PQFN 12
0 - 6000	MASW-007588	SPDT	0.85	30	53	3 mm PQFN 12
0 - 7000	MASW-007921	SPDT	0.6	25	59	2 mm PQFN 8
5 - 2000	SW-233 ◆	SPDT	1.5	40	46	FP-16
5 - 2000	SW-236 ◆	SPDT	1.5	40	46	FP-16
5 - 3000	SW-205 ◆	SPDT	2.6	35	46	DI-1
5 - 3000	SW-206 ◆	SPDT	2.6	35	46	DI-1
5 - 3000	SW-207 ◆	SPDT	2.3	18	46	DI-1
10 - 3000	SW-137	SPDT	1.6	32	46	DI-1
10 - 6000	MASW-000825-12770T	SPDT	0.29	28.6	64	3 mm PQFN 16
10 - 6000	MASW-000834-13560T	SPDT	0.3	41.8	65	4 mm PQFN 16
20 - 1500	SW-162 ◆	SPDT	1.5	40	25	DI-1
20 - 2000	SW-112 ◆	SPDT	2.2	50	30	DI-1
50 - 3000	SW-485 ◆	SPDT	0.25	23	46	SC-70 (SOT-363)
500 - 3000	MASWSS0167	SPDT	25	0.3	48	1.2x1.5 mm PQFN 6
500 - 2000	SW-394 ◆	SPDT	1.5	35	47	SOIC-8
500 - 3000	MASWSS0024 ◆	SPDT	0.7	50	43	MSOP-8-EP
500 - 3000	MASWSS0178	SPDT	0.7	50	43	MSOP-8-EP
500 - 3000	SW-475 ◆	SPDT	0.6	54	43	4 mm PQFN 16
500 - 3000	MASWSS0121	SPDT	0.6	54	43	4 mm PQFN 16
800 - 2000	SW-335 ◆	SPDT	0.8	50	50	SOIC-8
2010 - 2025	MASW-000823-12770T	SPDT	0.35	31	65	3 mm PQFN
0 - 2500	MASWSS0060 ◆	SP3T	0.55	21	62	3 mm PQFN 12
0 - 2500	MASWSS0065 ◆	SP3T	0.5	20	59	3 mm PQFN 12
0 - 2500	MASWSS0199	SP3T	0.5	20	59	3 mm PQFN 12
0 - 2500	SW-489 ◆	SP3T	0.5	18.5	66	3 mm PQFN 12
0 - 3000	MASWSS0144	SP3T	24	0.6	55	3 mm PQFN 12
0 - 3000	MASWSS0028 ◆	SP3T	0.3	24	50	2 mm PQFN 8
0 - 3000	MASW-008330	SP3T	0.3	24	50	2 mm PQFN 8

Note: Part numbers are RoHS compliant ◆ indicates non-RoHS compliant

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Detailed specifications for our standard parts can be found quickly on our web site at www.macomtech.com by typing the part number into the search box.

All specifications are subject to change.

General (continued)

Frequency (MHz)	Part Number	Type	I.L. (dB)	Isol. (dB)	Input IP3 (dBm)	Package
Packaged Products						
0 - 3500	MASW-008955	SP3T	0.55	22	54	2 mm PDFN 8
0 - 4000	MASW-009359	SP3T	0.55	27	65	2 mm STQFN 12
5 - 2000	SW-241 ◆	SP3T	2.5	35	46	DI-5
20 - 1500	SW-163 ◆	SP3T	2	35	25	DI-2
500 - 3000	MASWSS0191	SP3T	0.5	30	58	2 mm STDFN
0 - 2000	SW-415	SP4T	1.8	37	46	FP-25
0 - 2000	SW-419 ◆	SP4T	1	39	46	SO-24
0 - 3000	MASW-007813	SP4T	0.8	27	58	3 mm PQFN 16
0 - 3000	MASWSS0118 ◆	SP4T	0.65	23	57	4 mm PQFN 16
0 - 3000	MASW-008566	SP4T	0.65	23	57	4 mm PQFN 16
0 - 3000	SW-314	SP4T	1.8	30	46	CR-14
0 - 3000	SW15-0314	SP4T	1.8	25	46	CR-14
0 - 4000	SW-243 ◆	SP4T	0.7	35	46	CR-4
0 - 4000	MASWCC0010	SP4T	2.3	38	40	CSP-2
5 - 2000	SW-255 ◆	SP4T	2.1	35	68	DI-5
5 - 2000	SW-261 ◆	SP4T	2.1	35	46	FP-17
10 - 1000	SW-124 ◆	SP4T	1.4	40	30	DI-2
10 - 2000	SW-114 ◆	SP4T	2.8	35	30	DI-2
20 - 1500	SW-164 ◆	SP4T	2	35	25	DI-2
20 - 2000	SW-369 ◆	SP4T	2.8	40	44	FP-26
0 - 2000	SW-284	SP6T	2.8	28	46	FP-27
0 - 4000	MASWCC0006	SP6T	2.1	25	40	CSP-2
500 - 2500	MASW-000105	SP6T	0.5	41	60	4 mm PQFN 20
0 - 3000	SW-283	Transfer	2.1	20	50	CR-4
75 Ohm or CATV						
5 - 1000	MASW-008177 ◆	SPST	0.65	53	52	3 mm PQFN 12
5 - 1000	MASW-009155	SPST	1	55	47	3 mm PQFN 12
5 - 1000	MASWSS0103 ◆	SPDT	1	63	52	4 mm PQFN 20
5 - 1000	MASW-008153	SPDT	1	63	52	4 mm PQFN 20
5 - 1000	MASW-009101	SPDT	1.2	55	47	3 mm PQFN 16
5 - 3000	MASW-008801	SPDT	1	52	47	3 mm PQFN 16

Switches with Drivers

Frequency (MHz)	Part Number	Type	I.L. (dB)	Isol. (dB)	Switching Speed (ns)	Input IP3 (dBm)	Package
Packaged Products							
10 - 3000	MASW-007076-000100	SPST	2.2	35	50	46	SOW-24
10 - 500	S10 ◆	SPST	2	55	5	25	TO-8
10 - 500	S11 ◆	SPST	2	55	2	25	TO-8
0 - 3000	SW-313	SPDT	1.2	35	18	46	CR-9
0 - 3000	MASW-007075-000100	SPDT	2.2	33	50	46	SOW-24
0 - 3000	MASW-007074-000100	SP3T	2.3	30	50	46	SOW-24
0 - 3000	SW-314	SP4T	1.8	30	25	46	CR-14
0 - 3000	MASW-007073-000100	SP4T	2.3	25	50	46	SOW-24
0 - 3000	MASWCC0009	SP4T	2.5	25	50	46	QSOP-24

Note: Part numbers are RoHS compliant ◆ indicates non-RoHS compliant

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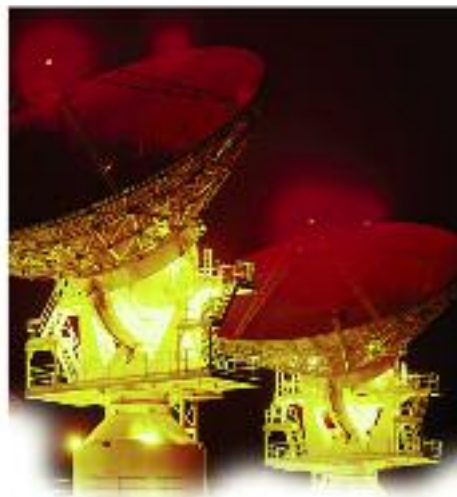
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- Avionics
 - Broadcast
 - Communications
 - Industrial, scientific and medical
 - Radar
-
- Discrete devices
 - Pallets
 - Modules



Communications, Broadcast and Industrial, Scientific and Medical

Frequency (MHz)	Part Number	Description	Operating Voltage (V)	Output Power (W)	Min. Gain (dB)	Efficiency (%)	Pulse Condition
2 - 30	MRF448	Bipolar	50	250	12	45	CW
2 - 30	MRF429	Bipolar	50	150	13	45	CW
2 - 30	MRF422	Bipolar	28	150	10	40	CW
2 - 30	MRF421	Bipolar	12.5	100	10	40	CW
2 - 30	MRF454	Bipolar	12.5	80	12	50	CW
2 - 30	MRF455	Bipolar	12.5	60	13	55	CW
2 - 30	MRF426	Bipolar	28	25	22	35	CW
2 - 80	MRF157	MOSFET	50	600	15	40	CW
2 - 100	MRF154	MOSFET	50	600	15	40	CW
2 - 128	MAPF250128-150000	MOSFET	100	150	19	40	CW
2 - 150	MRF140	MOSFET	28	150	14	35	CW
2 - 150	MRF150	MOSFET	50	150	17	45	CW
2 - 175	MRF141G	MOSFET	28	300	12	45	CW
2 - 175	MRF141	MOSFET	28	150	16	40	CW
2 - 175	MRF173	MOSFET	28	80	11	55	CW
2 - 175	MRF173CQ	MOSFET	28	80	11	55	CW
2 - 175	MRF151G	MOSFET	50	300	14	50	CW
2 - 175	MRF151	MOSFET	50	150	18	40	CW
2 - 175	MRF148A	MOSFET	50	30	18	40	CW
2 - 200	MRF174	MOSFET	28	125	9	50	CW
2 - 400	MRF313	Bipolar	38	1	15	40	CW
2 - 400	MRF175LU	MOSFET	28	100	8	50	CW
2 - 400	MRF177	MOSFET	28	100	10	55	CW
2 - 400	MRF136Y	MOSFET	28	30	12	50	CW
2 - 400	MRF137	MOSFET	28	30	13	50	CW
2 - 400	MRF136	MOSFET	28	15	13	50	CW
2 - 400	MRF134	MOSFET	28	5	11	50	CW
2 - 500	MRF176GV	MOSFET	50	200	15	50	CW
2 - 500	MRF175GV	MOSFET	28	200	14	65	CW
2 - 500	MRF175GU	MOSFET	28	150	12	50	CW
2 - 500	MRF275L	MOSFET	28	100	7.5	50	CW
2 - 500	MRF158	MOSFET	28	2	16	50	CW
30 - 88	FH2114	MOSFET	24	75	13	65	CW
30 - 175	DU28200M	MOSFET	28	200	13	55	CW
30 - 175	DU28120T	MOSFET	28	120	13	60	CW
30 - 175	DU28120V	MOSFET	28	120	13	60	CW
30 - 175	DU2880T	MOSFET	28	80	13	60	CW
30 - 175	DU2880U	MOSFET	28	80	13	60	CW
30 - 175	DU2880V	MOSFET	28	80	13	60	CW
30 - 175	DU2860U	MOSFET	28	60	13	60	CW
30 - 175	DU2860T	MOSFET	28	60	13	60	CW
30 - 175	DU1260T	MOSFET	12	60	8	60	CW
30 - 175	DU2840S	MOSFET	28	40	13	60	CW
30 - 175	DU1230S	MOSFET	12	30	10	60	CW
30 - 175	DU2820S	MOSFET	28	20	13	60	CW
30 - 175	DU1215S	MOSFET	12	15	9.5	60	CW

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

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64 All specifications are subject to change.

Communications, Broadcast and Industrial, Scientific and Medical (continued)

Frequency (MHz)	Part Number	Description	Operating Voltage (V)	Output Power (W)	Min. Gain (dB)	Efficiency (%)	Pulse Condition
30 - 175	DU2810S	MOSFET	28	10	13	55	CW
30 - 175	DU2805S	MOSFET	28	5	11	55	CW
30 - 200	MRF317	Bipolar	28	100	9	55	CW
30 - 200	MRF316	Bipolar	28	80	10	55	CW
30 - 200	MRF314	Bipolar	28	30	10	50	CW
30 - 200	MRF171A	MOSFET	28	45	15	55	CW
30 - 500	MRF392	Bipolar	28	125	8	50	CW
30 - 500	MRF393	Bipolar	28	100	7.5	50	CW
30 - 500	MRF166W	MOSFET	28	40	14	50	CW
30 - 500	MRF166C	MOSFET	28	20	13.5	50	CW
30 - 500	MRF160	MOSFET	28	4	15	50	CW
100 - 500	MRF327	Bipolar	28	80	7.3	50	CW
100 - 500	UF2805B	MOSFET	28	5	10	50	CW
100 - 500	UF28100H	MOSFET	28	100	10	50	CW
100 - 500	UF28100M	MOSFET	28	100	10	50	CW
100 - 500	UF28100V	MOSFET	28	100	10	50	CW
100 - 500	UF2810P	MOSFET	28	10	10	50	CW
100 - 500	UF28150J	MOSFET	128	150	8	55	CW
100 - 500	UF2815B	MOSFET	28	15	10	50	CW
100 - 500	UF2820P	MOSFET	28	20	10	50	CW
100 - 500	UF2840G	MOSFET	28	40	10	50	CW
100 - 500	UF2840P	MOSFET	28	40	10	50	CW
100 - 500	MRF275G	MOSFET	28	150	10	50	CW
200 - 500	MRF321	Bipolar	28	10	12	50	CW
200 - 500	MRF323	Bipolar	28	20	10	50	CW
225 - 400	2N6439	Bipolar	28	60	7.8	55	CW
500 - 1000	LF2802A	MOSFET	28	2	10	40	CW
500 - 1000	LF2805A	MOSFET	28	5	10	50	CW
500 - 1000	LF2810A	MOSFET	28	10	10	50	CW
1600 - 1640	MRF16030	Bipolar, INMARSAT	28	30	7.5	40	CW
1600 - 1640	MRF16006	Bipolar, INMARSAT	28	6	7.4	40	CW

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

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Avionics: TACAN, TCAS, IFF, Mode S, DME, JTIDS

Frequency (MHz)	Part Number	Description	Operating Voltage (V)	Output Power (W)	Min. Gain (dB)	Efficiency (%)	Pulse Condition
978	MAPL-000978-0075LF	LDMOS	28	75	18.3	50	400 μ s, 1%
978	MAPL-000978-0075LN	LDMOS	28	75	18.3	50	400 μ s, 1%
960 - 1215	MAPL-000912-100LF0	LDMOS	32	100	14.9	47	1 mS, 5%
1030 - 1090	MAPL-001090-100BF0	LDMOS	32	100	15	52	32 μ s, 2%
1030 - 1090	MAPL-001090-200BF0	LDMOS	32	200	14.6	51	32 μ s, 2%
960 - 1215	MAPR-000912-700S00	Bipolar	50	700	9.5	45	10 μ s, 10%
960 - 1215	MAPR-000912-500S00*	Bipolar	50	500	9	45	10 μ s, 10%*
960 - 1215	MAPRST0912-350**	Bipolar	50	350	9.4	45	10 μ s, 10%**
960 - 1215	MRF1150MA	Bipolar	50	150	7.8	35	10 μ s, 1%
960 - 1215	MRF1150MB	Bipolar	50	150	7.8	35	10 μ s, 1%
960 - 1215	MRF1090MA	Bipolar	50	90	8.4	35	10 μ s, 1%
960 - 1215	MRF1090MB	Bipolar	50	90	8.4	35	10 μ s, 1%
960 - 1215	MAPRST0912-50	Bipolar	50	50	6.8	40	10 μ s, 10%
960 - 1215	MRF10120	Bipolar	36	120	7.6	40	7 μ s at 54% for 3.4 mS
960 - 1215	MRF10031	Bipolar	36	30	9	40	10 μ s at 50% for 3.5mS
960 - 1215	MRF10005	Bipolar	28	5	8.5	45	CW
960 - 1215	MRF1004MB	Bipolar	35	4	10	40	10 μ s, 1%
960 - 1215	MRF1000MB	Bipolar	18	0.2	10	-	CW
1025 - 1150	MAPR-001011-850S00	Bipolar	50	850	7.8	42	10 μ s, 1%
1025 - 1150	MRF10502	Bipolar	50	500	8.5	40	32 μ s, 2%
1025 - 1150	MRF10350	Bipolar	50	350	8.5	40	MODE S, 128 μ s, burst on, 0.5 off, 6.4 mS
1025 - 1150	MAPR-001090-350S00	Bipolar	50	350	9	45	10 μ s, 10%
1025 - 1150	MRF10150	Bipolar	50	150	9.5	40	10 μ s, 10%
1030	MAPRST1030-1KS	Bipolar	50	1000	8	45	10 μ s, 1%
1030 - 1090	PH1090-700B***	Bipolar	50	700	7.5	50	32 μ s, 2%***
1030 - 1090	PH1090-550S	Bipolar	50	550	7.4	55	10 μ s, 1%
1030 - 1090	PH1090-350L	Bipolar	45	350	8	55	250 μ s, 10%
1030 - 1090	PH1090-175L	Bipolar	45	175	8.3	55	250 μ s, 10%
1030 - 1090	MAPR-001090-165S00	Bipolar	50	165	9.6	50	10 μ s, 10%
1030 - 1090	PH1090-75L	Bipolar	45	75	9	45	250 μ s, 10%
1030 - 1090	PH1090-15L	Bipolar	45	15	9	40	250 μ s, 10%

* For JTIDS requirements, de-rate to 180 W, 36 V to 38 V.

** For JTIDS, requirements, de-rate to 30 W, 36 V to 38 V.

*** For Mode-S ELM, de-rate to 450 W, 45 V

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

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Broadband Modules and Pallets

Frequency (MHz)	Part Number	Description	Operating Voltage (V)	Output Power (W)	Min. Gain (dB)	Efficiency (%)	Pulse Condition
30 - 88	MAPM-003088-010C12 ◆	VHF Power Module	30-88	10	25	—	CW
30 - 88	MAPM-003088-020C12 ◆	VHF Power Module	30-88	20	25	—	CW
30 - 400	MAPM-030400-010C00 ◆	Broadband Module	30-400	10	25	—	CW
30 - 400	MAPM-030400-060C00 ◆	Broadband Module	30-400	60	9	35	CW
30 - 400	MAPP-030400-100C2X ◆	Broadband Module	30-400	2 x 100	10	—	CW
20 - 512	MAPM-020512-010C00 ◆	Communications Module	30	10	20	—	CW
20 - 512	MAPM-020512-040C00 ◆	Communications Module	30	40	10	37	CW
20 - 512	MAPM-020512-060C00 ◆	Communications Module	30	60	10	—	CW
20 - 512	MAPM-020512-010C12 ◆	Broadband Power Module	12	10	25	30	CW
20 - 512	MAPM-020512-100C28 ◆	Broadband Power Module	32	100	12	30	CW
30 - 400	PHA4000-1 ◆	Broadband VHF/UHF Module	27	13	28	25	CW
30 - 400	PHA4000-2 ◆	Broadband VHF/UHF Module	27	64	7	35	CW
2700 - 2900	PHA2729-240M ◆	Pulsed Power Pallet	36	240	7.4	39	100 μ s, 10%
2700 - 2900	MAPP-002729-300M00 ◆	Pulsed Power Pallet	38	300	8.3	40	100 μ s, 10%
2700 - 3100	MAPP-002731-250M00 ◆	Pulsed Power Pallet	36	250	7.5	40	200 μ s, 10%
2700 - 3100	PHA2731-140L ◆	Pulsed Power Pallet	36	140	7.0	35	300 μ s, 10%
2900 - 3300	MAPPST2933-190M ◆	Pulsed Power Pallet	36	190	7	35	200 μ s, Pulse, 10%
3100 - 3400	MAPP-003134-150L00 ◆	Pulsed Power Pallet	36	150	8	36	300 μ s, 10%
3100 - 3400	MAPP-003134-180M00 ◆	Pulsed Power Pallet	36	180	7.5	35	150 μ s, Pulse, 10%
3100 - 3400	MAPP-003134-150L00 ◆	Pulsed Power Pallet	36	150	8.3	35	300 μ s, Pulse, 10%
3100 - 3500	PHA3135-130M ◆	Pulsed Power Pallet	36	115-145	7.4	35	100 μ s, 10%
3100 - 3500	MAPP-003134-130M2S ◆	Pulsed Power 2-Stage Amp	36	130	16	32	100 μ s, 10%

Radar: L- and S-Band

Frequency (MHz)	Part Number	Description	Operating Voltage (V)	Output Power (W)	Min. Gain (dB)	Efficiency (%)	Pulse Condition
1200 - 1400	MAPL-001214-100MFO	LDMOS	32	100	14	50	150 μ s, 10% duty
1200 - 1400	MAPL-001214-180LFO	LDMOS	32	180	13	47	1 mS, 20% duty
1100 - 1300	PH1113-100	Bipolar	32	100	8.0	52	3 μ s, 30% duty
1200 - 1400	MAPR-001214-400M00	Bipolar	44	400	9	47	150 μ s, 10% duty
1200 - 1400	PH1214-300M	Bipolar	40	300	7.5	45	150 μ s, 10% duty
1200 - 1400	PH1214-220M	Bipolar	40	220	7.4	50	150 μ s, 10% duty
1200 - 1400	PH1214-110M	Bipolar	40	110	7.4	50	150 μ s, 10% duty
1200 - 1400	PH1214-80M	Bipolar	40	80	7.5	50	150 μ s, 10% duty
1200 - 1400	MAPRST0002	Bipolar	40	50	9.5	50	150 μ s, 10% duty
1200 - 1400	PH1214-40M	Bipolar	40	40	8.5	50	150 μ s, 10% duty
1200 - 1400	MAPRST1214-150UF	Bipolar	36	150	7.4	45	6 ms, 25% duty
1200 - 1400	MAPRST1214-30UF	Bipolar	36	30	7.5	45	6 ms, 25% duty
1200 - 1400	MAPRST1214-6UF	Bipolar	36	6	8.8	40	6 ms, 25% duty
1200 - 1400	PH1214-100EL	Bipolar	28	100	6.0	52	2 ms, 20% duty
1200 - 1400	PH1214-55EL	Bipolar	28	55	6.6	50	1ms, 10% duty
1200 - 1400	PH1214-30EL	Bipolar	28	30	7.8	50	1 ms, 10% duty

Note: Part numbers are RoHS compliant ◆ indicates non-RoHS compliant

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Radar: L- and S-Band (continued)

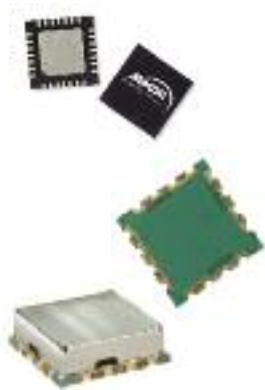
Frequency (MHz)	Part Number	Description	Operating Voltage (V)	Output Power (W)	Min. Gain (dB)	Efficiency (%)	Pulse Condition
1200 - 1400	PH1214-25L	Bipolar	28	25	9.5	50	300 μ s, 10% duty
1200 - 1400	PH1214-25M	Bipolar	28	25	9.5	50	150 μ s, 10% duty
1200 - 1400	PH1214-25S	Bipolar	28	25	9.5	50	1 μ s, 10% duty
1200 - 1400	PH1214-20EL	Bipolar	28	20	9.5	50	2 ms, 10% duty
1200 - 1400	PH1214-12M	Bipolar	28	12	9.0	45	150 μ s, 10% duty
1200 - 1400	PH1214-8M	Bipolar	28	8	7.0	45	100 μ s, 10% duty
1200 - 1400	PH1214-6M	Bipolar	28	6	7.0	45	100 μ s, 10% duty
1200 - 1400	PH1214-4M	Bipolar	28	4	7.0	45	100 μ s, 10% duty
1200 - 1400	PH1214-2M	Bipolar	28	2	7.0	40	100 μ s, 10% duty
1200 - 1400	PH1214-3L	Bipolar	16.5	3	5.7	40	2ms, 20% duty
1200 - 1400	PH1214-0.85L	Bipolar	11.5	0.85	9.3	30	2ms, 20% duty
2200 - 2600	PH2226-110M	Bipolar	36	110	8.0	45	100 μ s, 10% duty
2200 - 2600	PH2226-50M	Bipolar	36	50	8.0	45	100 μ s, 10% duty
2700 - 2900	MAPR-002729-170M00	Bipolar	36	170	8.5	40	100 μ s, 10% duty
2700 - 2900	PH2729-150M	Bipolar	38	150	8.3	38	100 μ s, 10% duty
2700 - 2900	PH2729-130M	Bipolar	36	130	7.0	40	100 μ s, 10% duty
2700 - 2900	PH2729-110M	Bipolar	36	110	6.8	35	100 μ s, 10% duty
2700 - 2900	PH2729-65M	Bipolar	236	65	8.5	40	100 μ s, 10% duty
2700 - 2900	PH2729-25M	Bipolar	236	25	9.2	45	100 μ s, 10% duty
2700 - 2900	PH2729-8.5M	Bipolar	36	8.5	8.1	35	100 μ s, 10% duty
2700 - 2900	PH2729-5M	Bipolar	36	5	9.2	45	100 μ s, 10% duty
2700 - 3100	PH2931-135S	Bipolar	42	135	7.5	40	20 μ s, 1% duty
2700 - 3100	PH2731-75L	Bipolar	36	75	7.0	38	300 μ s, 10% duty
2700 - 3100	PH2731-20M	Bipolar	36	20	8.2	45	100 μ s, 10% duty
2700 - 3100	PH2731-5M	Bipolar	36	5	7.0	30	100 μ s, 10% duty
3100 - 3400	PH3134-75S	Bipolar	36	75	7.5	35	1 μ s, 10% duty
3100 - 3400	PH3134-65M	Bipolar	36	65	7.5	35	100 μ s, 10% duty
3100 - 3400	PH3134-55L	Bipolar	36	55	7.5	35	300 μ s, 10% duty
3100 - 3400	PH3134-30S	Bipolar	36	30	7.5	35	1 μ s, 10% duty
3100 - 3400	PH3134-25M	Bipolar	36	25	7.5	35	100 μ s, 10% duty
3100 - 3400	PH3134-20L	Bipolar	36	20	7.5	35	300 μ s, 10% duty
3100 - 3400	PH3134-11S	Bipolar	36	11	8.0	35	1 μ s, 10% duty
3100 - 3400	PH3134-10M	Bipolar	36	10	8.0	35	100 μ s, 10% duty
3100 - 3400	PH3134-9L	Bipolar	36	9	8.0	35	300 μ s, 10% duty
3100 - 3500	PH3135-90S	Bipolar	36	90	7.5	35	2 μ s, 10% duty
3100 - 3500	PH3135-65M	Bipolar	36	65	7.5	35	100 μ s, 10% duty
3100 - 3500	PH3135-30M	Bipolar	36	30	7.0	35	100 μ s, 10% duty
3100 - 3500	PH3135-25S	Bipolar	3136	25	7.5	35	2 μ s, 10% duty
3100 - 3500	PH3135-20M	Bipolar	36	20	7.5	35	100 μ s, 10% duty
3100 - 3500	PH3135-5M	Bipolar	33	5	8.5	30	100 μ s, 10% duty
3100 - 3500	PH3135-5S	Bipolar	33	5	8.5	30	2 μ s, 10% duty

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

Blue listings indicate standard stock items widely available from our franchised distribution partners.

Detailed specifications for our standard parts can be found quickly on our web site at www.macomtech.com by typing the part number into the search box.

Voltage Controlled Oscillators (VCO)



M/A-COM Technology Solutions high frequency Voltage Controlled Oscillators (VCOs) are intended for the stringent phase noise requirements of high data rate point-to-point radio applications. These InGaP HBT based VCOs do not require any external matching components. They are easily integrated into a phase lock loop using the divide-by-two output.

- Low power consumption
- Bandwidths greater than 10%
- RoHs compliant package with lead-free finish
- Compatible with a 260°C reflow temperature
- Low lead inductance package and excellent thermal path

We also offer a variety of VCOs for other wireless communications, CATV and broadband, private and land mobile radio, and long range radio modems

Voltage Controlled Oscillators (VCOs)

Frequency (GHz)	Part Number	DC Current (mA)	Pout at Fo (dBm)	Pout at Fo/2 (dBm)	Phase Noise at 100 kHz Offset (Vt=5V)(dBc/Hz)	Tuning Voltage (Volts)	Package
Packaged Products							
5.7 - 6.4	MAOC-009259	185	12	2	-117	1-13	5 mm PQFN 32
6.1 - 7.0	MAOC-009260	185	12	4.5	-117	1-13	5 mm PQFN 32
7.1 - 7.9	MAOC-009261	175	12	2	-116	1-13	5 mm PQFN 32
7.4 - 8.2	MAOC-009262	175	11	1	-115	1-13	5 mm PQFN 32
7.8 - 8.7	MAOC-009263	175	11	3.5	-115	1-13	5 mm PQFN 32
8.8 - 9.8	MAOC-009264	190	10.5	1.5	-114	1-13	5 mm PQFN 32
9.4 - 10.8	MAOC-009265	175	6	2.5	-110	1-13	5 mm PQFN 32
10.2 - 11.3	MAOC-009266	185	9	5	-114	1-13	5 mm PQFN 32
11.2 - 12.6	MAOC-009267	165	3.5	3	-110	1-13	5 mm PQFN 32
12.7 - 14.2	MAOC-009268	175	7	1.5	-108	1-13	5 mm PQFN 32
11.4 - 12.8	MAOC-009269	165	3	2	-110	1-13	5 mm PQFN 32
12.2 - 13.8	MAOC-009270	155	6.5	2.5	-105	1-13	5 mm PQFN 32

VCOs

Frequency (MHz)	Part Number	Power Output Max (dBm)	Tune Voltage Min-Max (V)	Phase Noise (dBc/Hz) SSB @ Offset Freq (Max)		Tuning Sensitivity Typ (MHz/V)	Power Supply Current Max (mA)
				10 kHz	100 kHz		
42.5 - 47.5	MAVC-010000-000046	6	0.5 - 4.5	-118	-138	2.8	25
77.5 - 82.5	MAVC-010000-000080	6	0.5 - 4.5	-115	-135	2.5	25
80 - 81	MAVC-010000-000081	2	0.6 - 2.4	—	-130	3.25	—
119 - 125	MAVC-010000-000122	10	0.5 - 4.5	-87	-110	18	—
137 - 143	MAVC-010000-000140	2	0.5 - 4.5	—	-127	5	15
179 - 256	MAVC-010000-000217	3	0.5 - 4.5	-100	-121	26	15
380 - 450	MAVC-010000-000415	2	0.2 - 4.8	-105	—	23	14
405 - 440	MAVC-010000-000425	3	0.5 - 4.5	-105	-127	10	2
450 - 533	MAVC-010000-000492	2	0.2 - 4.8	-102	—	22	14
485 - 520	MAVC-010000-000505	3	0.5 - 4.5	-115	-135	12	15
470 - 554	MAVC-010000-000512	3	1.0 - 10.0	-108	-128	10	25
532 - 595	MAVC-010000-000564	3	0.2 - 4.8	-100	—	23	14
550 - 580	MAVC-010000-000565	3	0.5 - 4.5	-110	-130	10	20
583.6 - 628.6	MAVC-010000-000606	3	0.5 - 4.5	-113	—	—	20
554 - 704	MAVC-010000-000629	3	1.0 - 10.0	-105	-125	16.5	25
704 - 806	MAVC-010000-000755	3	1.0 - 10.0	-107	-127	11.3	25
751 - 786	MAVC-010000-000768	5	1.0 - 4.0	—	-122	20	20
793 - 828	MAVC-010000-000810	5	1.0 - 4.0	—	-129	25	20
777.8 - 880	MAVC-010000-000829	0	0.5 - 4.5	-103	—	35	7
886 - 906	MAVC-010000-000896	3	0.5 - 4.5	-113	-133	10	20
880 - 960	MAVC-010000-000920	0	0.5 - 4.5	-104	—	30	7
925 - 960	MAVC-010000-000942	3	0.5 - 4.5	-110	-150	20	11
1015 - 1051	MAVC-010000-001033	3	0.5 - 2.5	-100	-120	20	10
1070 - 1115	MAVC-010000-001093	3	0.4 - 4.5	-100	-122	17	15
1270 - 1315	MAVC-010000-001293	3	0.5 - 11.0	-110	-130	20	—
1265 - 1325	MAVC-010000-001295	3	0.5 - 4.5	-105	-125	19	—
1260 - 1350	MAVC-010000-001305	8	1.0 - 12.0	-103	-125	11	40
1300 - 1350	MAVC-010000-001325	5	0.5 - 4.5	-99	-121	21	—
1000 - 1650	MAVC-010000-001326	7.5	0.5 - 8.0	—	—	110	20
1350 - 1450	MAVC-010000-001400	3	0.5 - 11.0	-104	-124	20	—
1450 - 1580	MAVC-010000-001515	3	0.5 - 11.0	-105	-125	17	30
1440 - 1620	MAVC-010000-001530	3	0.5 - 4.5	—	-115	—	20
1544 - 1585	MAVC-010000-001564	8	1.0 - 12.0	-80	-105	6	40
1610 - 1640	MAVC-010000-001625	3	0.5 - 11.0	-100	-107	20	50
1600 - 1700	MAVC-010000-001650	2	0.5 - 4.5	—	-118	40	15
1600 - 1780	MAVC-010000-001690	3	0.5 - 4.5	-95	-115	60	30
1640 - 1740	MAVC-010000-001691	3	0.5 - 11.0	-105	—	17	50
1700 - 1800	MAVC-010000-001750	3	0.5 - 4.5	—	-115	40	15
1725 - 1880	MAVC-010000-001802	3	0.5 - 11.0	-96	-118	20	—
1805 - 1880	MAVC-010000-001842	5	0.5 - 4.5	—	-120	30	30
1780 - 1950	MAVC-010000-001865	3	0.5 - 11.0	-100	-120	20	—
1850 - 1910	MAVC-010000-001880	3	0.5 - 4.5	-93	-114	44	15
1844 - 2042	MAVC-010000-001943	8	1.0 - 10.0	-90	-110	30	40
1930 - 1900	MAVC-010000-001960	3	0.5 - 4.5	—	-115	31	15
1875 - 2055	MAVC-010000-001965	3	0.5 - 11.0	-96	-118	20	—

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

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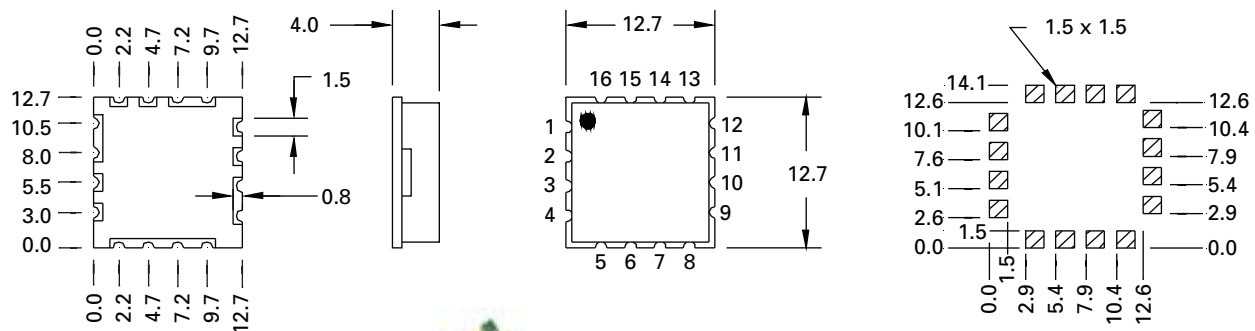
All specifications are subject to change.

SUNSTAR射频通信 <http://www.rfoe.net/> TEL:0755-83397033 FAX:0755-83376182 E-MAIL:szss20@163.com

VCOs

Frequency (MHz)	Part Number	Power Output Max (dBm)	Tune Voltage Min-Max (V)	Phase Noise (dBc/Hz) SSB @ Offset Freq (Max)		Tuning Sensitivity Typ (MHz/V)	Power Supply Current Max (mA)
1970 - 2130	MAVC-010000-002040	3	0.5 - 11.0	-100	-118	20	—
2023 - 2073	MAVC-010000-002048	—	0.5 - 5.0	-107	-128	21	45
2000 - 2150	MAVC-010000-002075	8	1.0 - 10.0	-93	-113	25	30
2000 - 2200	MAVC-010000-002100	3	0.5 - 4.5	-95	—	—	30
2112 - 2112	MAVC-010000-002112	6	0.5 - 4.5	-107	-127	20	45
2110 - 2170	MAVC-010000-002140	4	1.0 - 4.0	-95	-117	30	20
2146 - 2246	MAVC-010000-002196	9	90.0 - 5.0	-95	-115	30	30
2100 - 2400	MAVC-010000-002250	9	0.5 - 12.0	-90	-110	42.5	45
2200 - 2400	MAVC-010000-002300	7	1.0 - 18.0	-98	-118	15	47
2304 - 2304	MAVC-010000-002304	6	0.5 - 4.5	-102	-122	20	45
2295 - 2325	MAVC-010000-002310	8	1.0 - 4.0	-95	-120	14	40
2275 - 2425	MAVC-010000-002350	3	0.5 - 11.0	-96	—	20	—
2200 - 2700	MAVC-010000-002450	7.5	1.0 - 18.0	-94	-115	30	50
2496 - 2690	MAVC-010000-002593	5	1.0 - 18.0	-98	-120	16	47
2650 - 2750	MAVC-010000-002700	5	1.0 - 19.0	-96	-116	17.5	35
2650 - 2800	MAVC-010000-002725	8	1.0 - 10.0	-92	-112	27	—
2748 - 2986	MAVC-010000-002850	8	1.0 - 12.0	-88	-110	30	40
2800 - 3100	MAVC-010000-002950	8.5	0.5 - 12.0	-90	-110	38	40
3110 - 3305	MAVC-010000-003208	8	1.0 - 10.0	-88	-110	30	40
3400 - 3600	MAVC-010000-003500	7	1.0 - 18.0	-96	-116	16	47
3660 - 3960	MAVC-010000-003810	5	1.0 - 19.0	-93	-113	38	35
3960 - 4160	MAVC-010000-004060	5	1.0 - 19.0	-93	-113	32.5	35

LSM1 Package Style



- Plating: Au, 0.05 μ m - 0.15 μ m over Ni barrier of 2.5 μ m - 5.0 μ m
- Internal solder: Sn95.5/Ag4.0/Cu0.5, lead free
- Substrate: FR4
- Cover: mild steel
- Tolerance: $\pm$ 0.2 mm unless otherwise noted

Request custom VCOs through 3.6 GHz. Complete and submit the form found at:
macomtech.com/customvcos

Package Selection Guide

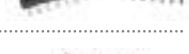
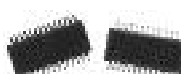
Plastic Leadless Packages

Package Type	Approx Outline Dimensions	
1 mm 6LD X1-DFN	1 x 1 x 0.45	
1.2 x 1.5 6LD PDFN (0.5 mm Pitch)	1.2 x 1.5 x 0.75	
1.5 x 1.2 6LD PDFN (0.4 mm Pitch)	1.5 x 1.2 x 0.75	
2 mm 8LD STDFN	2 x 2 x 0.55	
2 mm 12LD STQFN (0.5 mm Pitch)	2 x 2 x 0.55	
2 mm 12LD STQFN (0.4 mm Pitch)	2 x 2 x 0.55	
2 x 2.5 mm 14LD STQFN	2 x 2.5 x 0.55	
3 mm 12LD/16LD PQFN	3 x 3 x 0.9	
3 mm 12LD/16LD PQFN (LP)	3 x 3 x 0.75	
4 mm 16LD/20LD/24LD PQFN	4 x 4 x 0.9	
4 mm 16LD/20LD PQFN (LP)	4 x 4 x 0.75	
5 mm 20LD/28LD/32LD PQFN	5 x 5 x 0.9	
6 mm 28LD/40LD/48LD PQFN	6 x 6 x 0.9	
4 x 6 mm 32LD PQFN	4 x 6 x 0.9	
4 x 7 mm 36LD PQFN	4 x 7 x 0.9	

Plastic Leaded Packages

SC-79	0.8 x 1.6 x 0.6	
SOD-323	1.3 x 2.5 x 1.1	
SOT-23	2.9 x 2.4 x 1	
SOT-25	2.9 x 2.8 x 1.3	
SOT-26	2.9 x 2.8 x 1.3	
SOT-89	4.5 x 4 x 1.5	
SOT-143	2.9 x 2.4 x 1	
SC70 3LD (SOT-323)	2 x 2.1 x 1	
SC70 6LD (SOT-363)	2 x 2.1 x 1	

Plastic Leaded Packages (continued)

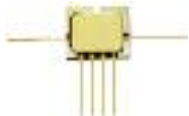
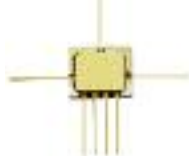
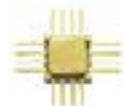
SOIC-8/SOIC-8EP	4.9 x 6 x 1.6	
SOIC-14	8.7 x 6 x 1.6	
SOIC-16	9.9 x 6 x 1.6	
SOW-16	10.3 x 10.3 x 2.5	
SOW-24	15.4 x 10.3 x 2.5	
TSSOP-16	5 x 6.4 x 1.1	
SSOP-20	7.2 x 7.8 x 1.9	
MSOP-8	3 x 4.9 x 1	
MSOP-8EP	3 x 4.9 x 1	
MSOP-10/MSOP-10EP	3 x 4.9 x 1	
QSOP-16	4.9 x 6 x 1.6	
QSOP-24	8.7 x 6 x 1.6	
QSOP-28	9.9 x 6 x 1.6	

Plastic Ball Grid Arrays Packages (PBGA)*

8 mm 64 I/O PBGA	8 x 8 x 1.7	
15 mm 90 I/O PBGA	15 x 15 x 3	

*other package outlines available

Ceramic/Chip Diode Packages		
Package Type	Approx Outline Dimensions (mm)	
30 Ceramic	3.2 dia. x 5.7	
134 Die	0.4 x 0.4 x 0.2	
186 Ceramic	11.2 x 2.5 x 1.1	
401 Axial Lead	2.3 dia. x 55	
1027 Ceramic	8 dia. x 6.9	
1056 Ceramic	1.9 x 1.9 x 1	
1072 Ceramic	2.4 x 2.4 x 3.4	
1073 Ceramic	12.3 dia. x 10	
1038 Ceramic	8 dia. x 17	
1080 Ceramic	8 dia. x 22.2	
1082 Ceramic	8 dia. x 19.8	
1088 Ceramic	2.4 x 1.3 x 1	
1246 Surmount	1.2 x 0.5 x 0.2	

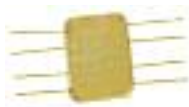
Metal/Ceramic Packages		
Package Type	Approx Outline Dimensions (mm)	
CR2-6LD	18.3 x 11.3 x 1.3	
CR2	18.3 x 17.1 x 1.3	
CR3	16.2 x 4.6 x 1.6	
CR4	12.4 x 12.4 x 1.6	
CR5	8.9 x 8.0 x 1.6	
CR6	11.4 x 8.9 x 1.6	
CR12	11.4 x 11.4 x 2.0	
CR13	16.5 x 11.4 x 2.0	
CR15	17.8 x 11.4 x 2	
CR16	9.8 x 8.3 x 1.5	
1000017733	23.5 x 13.8 x 2.8	

All dimensions include leads.

Metal/Ceramic Packages

Package Type	Approx Outline Dimensions (mm)	
MOD2 (3/4 size)	20.3 x 15 x 6.6	
MOD3 (3/4 size)	20.3 x 15 x 4.8	
SMA-AMP (3/4 size)	23.4 x 27.9 x 13.3	
SMA-MXR (3/4 size)	22.9 x 22.9 x 14	
SMT-01	11.4 x 11.4 x 4.3	
SMT-02	10 x 13 x 4	
SMT-88	13.4 x 13.4 x 4.3	
SMT-88F	11.4 x 11.4 x 4.3	
TO-8-01	12.7 dia. x 11	
TO-8-02	12.7 dia. x 9.7	
TO-8-03	15.2 dia. x 9.7	

Metal/Ceramic Packages

Package Type	Approx Outline Dimensions (mm)	
CSM	12.5 x 9.4 x 4.8	
FP	13 x 9.8 x 3.6	
MOD1	14.2 x 13.2 x 4.8	

Passive Packages

Package Type	Approx Outline Dimensions (mm)	
SM-2	12.5x 9.4 x 6.4	
SM-4	12.4 x 9.4 x 5.8	
SM-22	3.8 x 3.8 x 3.8	
SM-55	7.1 x 6.4 x 3.6	
SM-85 (3/4 size)	30 x 30 x 9	
SM-89	8 x 6.4 x 0.15	
SM-138	4.2 x 5.3 x 3.9	
SM-152	4.2 x 5.3 x 4.3	

Transistor Packages	
Package Type	Approx Outline Dimensions (mm)
P-237 Ceramic	20 x 15 x 4
P-238 Ceramic	34 x 19.6 x 4
P-239 Ceramic	21 x 1 x 4
355E-01, Style 1 Ceramic	23 x 21 x 5
368-03, Style 2 Ceramic	38 x 50 x 9
PH1214-M Series Ceramic	23 x 10 x 4.5
P-8TF	20.8 x 6.4 x 3.5

Transistor Packages (continued)	
Package Type	Approx Outline Dimensions (mm)
P-51H	22.9 x 10.2 x 5.5
P-94C	22.9 x 10.2 x 5.5
P-94D	22.9 x 10.2 x 4.2
P-94I	22.9 x 10.2 x 4.2
P-154C	25.4 x 15.2 x 5.1
Pallet (1/4 size)	50.8 x 35.8 x 7
Pallet (1/4 size)	50.8 x 35.8 x 7

All dimensions exclude leads.

50-Ohm System Terminated										
dBm	V	P ₀	dBm	V	P ₀	dBm	mV	P ₀	dBm	QV
53	100	200W								
50	70.7	100W	0	0.225	1 mW	-49	0.8		-97	3.2
49	64	80W	-1	0.2	0.8 mW	-50	0.71	.01 QW	-98	2.9
48	58	64W	-2	0.18	0.64 mW	-51	0.64		-99	2.51
47	50	50W	-3	0.16	0.5 mW	-52	0.57		-100	2.25
46	44.5	40W	-4	0.141	0.4 mW	-53	0.5		-101	2
45	40	32W	-5	0.125	0.32 mW	-54	0.45		-102	1.8
44	32.5	25W	-6	0.115	0.25 mW	-55	0.4		-103	1.6
43	32	20W	-7	0.1	0.2 mW	-56	0.351		-104	1.41
42	28	16W	-8	0.09	0.16 mW	-57	0.32		-105	1.27
41	26.2	12.5W	-9	0.08	0.125 mW	-58	0.286		-106	1.18
40	22.5	10W	-10	0.071	0.1 mW	-59	0.251			
39	20	8W	-11	0.064		-60	0.225	0.001 QW	dBm	nV
38	18	6.4W	-12	0.058		-61	0.2		-107	1000
37	16	5W	-13	0.05		-62	0.18		-108	900
36	14.1	4W	-14	0.045		-63	0.16		-109	800
35	12.5	3.2W	-15	0.04		-64	0.141		-110	710
34	11.5	2.5W	-16	0.0355					-111	640
33	10	2W				dBm	QV		-112	580
32	9	1.6W	dBm	mV		-65	128		-113	500
31	8	1.25W	-17	31.5		-66	115		-114	450
30	7.1	1W	-18	28.5		-67	100		-115	400
29	6.4	800 mW	-19	25.1		-68	90		-116	355
28	5.8	640 mW	-20	22.5	.01 mW	-69	80		-117	825
27	5	500 mW	-21	20		-70	71	0.1 nW	-118	285
26	4.45	400 mW	-22	17.9		-71	65		-119	251
25	4	320 mW	-23	15.9		-72	58		-120	225
24	3.55	250 mW	-24	14.1		-73	50		-121	200
23	3.2	200 mW	-25	12.8		-74	45		-122	180
22	2.8	160 mW	-26	11.5		-75	40		-123	160
21	2.52	125 mW	-27	10		-76	35		-124	141
20	2.25	100 mW	-28	8.9		-77	32		-125	128
19	2	80 mW	-29	8		-78	29		-126	117
18	1.8	64 mW	-30	7.1	.001 mW	-79	25		-127	100
17	1.6	50 mW	-31	6.25		-80	22.5	0.01 nW	-128	90
16	1.41	40 mW	-32	5.8		-81	20		-129	80
15	1.25	32 mW	-33	5		-82	18		-130	71
14	1.15	25 mW	-34	4.5		-83	16		-131	61
13	1	20 mW	-35	4		-84	11.1		-132	58
12	0.9	16 mW	-36	3.5		-85	12.9		-133	50
11	0.8	12.5 mW	-37	3.2		-86	11.5		-134	45
10	0.71	10 mW	-38	2.85		-87	10		-135	40
9	0.64	8 mW	-39	2.5		-88	9		-136	35
8	0.58	6.4 mW	-40	2.25	1 QW	-89	8		-137	33
7	0.5	5 mW	-41	2		-90	7.1	0.001 nW	-138	29
6	0.445	4 mW	-42	1.8		-91	6.1		-139	25
5	0.4	3.2 mW	-43	1.6		-92	5.75		-140	23
4	0.355	2.5 mW	-44	1.4		-93	5			0.01 fW
3	0.32	2 mW	-45	1.25		-94	4.5			
2	0.28	1.6 mW	-46	1.18		-95	4			
1	0.252	1.25 mW	-47	1		-96	3.51			
			-48	0.9						

Frequency Band Designations

Previous Frequency Designations	P	L	S	C	X	Ku	K	Ka	
Current Frequency Designations	C	D	E	F	G	H	I	J	K
0.5 1.0 2.0 3.0 4.0 6.0 8.0 10.0 12.4 18.0 20.0 26.5 40.0 Frequency (GHz)									

Wavelength and Frequency

For all forms of wave, the velocity, wavelength, and frequency are related such that

$$\lambda F \sqrt{\epsilon_r \mu_r} = c$$

λ = wavelength in meters (m)

F = frequency in hertz (Hz)

ϵ_r = relative dielectric constant of propagation medium

c = velocity of light (300,000,000 m/s)

μ_r = relative permeability of propagation medium

The dielectric (ϵ) is a property of the medium in which the wave propagates. The value of ϵ is defined as 1.000 for a perfect vacuum, and very nearly 1.0 for dry air (typically 1.006). In most practical applications, the value of ϵ in dry air is taken to be 1.000. For mediums other than air or vacuum, however, the velocity of propagation is slower, and the value of ϵ relative to a vacuum is higher. Teflon®, for example, can be made with dielectric constant values (ϵ) from about 2 to 11.

Frequency vs. Wavelength

Frequency	Wavelength
1 MHz	300 meters (m)
10 MHz	30 m
100 MHz	3 m
300 MHz	1 m—100 centimeters (cm)
1 GHz	30 cm
10 GHz	3 cm
100 GHz	3 millimeters (mm)
300 GHz	1 mm—10 ⁻³ m
3 x 10 ¹⁴	1 micron—10 ⁻⁶ m

Worldwide Wireless Telecommunications Standards

Standard	Designation	Transmit Frequency Range (MHz)		Generation
		Handset	Base Station	
AMPS		824 - 849	869 - 894	Analog
TDMA	Cellular	824 - 849	869 - 894	2G
	PCS	1850 - 1910	1930 - 1990	2G
GSM	400	450.4 - 457.6	460.4 - 467.6	2G
	400	478.8 - 486	488.8 - 496	2G
	850	824 - 849	869 - 894	2G
	900	880 - 915	925 - 960	2G
	1800	1710 - 1785	1805 - 1880	2G
	1900	1850 - 1910	1930 - 1990	2G
CDMAone	Cellular	824 - 849	869 - 894	2G
	PCS	1850 - 1910	1930 - 1990	2G
GPRS/EDGE	400	450.4 - 457.6	460.4 - 467.6	2.5G
	400	478.8 - 486	488.8 - 496	2.5G
	850	824 - 849	869 - 894	2.5G
	900	880 - 915	925 - 960	2.5G
	1800	1710 - 1785	1805 - 1880	2.5G
	1900	1850 - 1910	1930 - 1990	2.5G
CDMA2000 1x	450	452.5 - 457.475	462.5 - 467.475	3G
EV-DO/EV-DV	800	824 - 849	869 - 894	3G
	1700	1750 - 1780	1840 - 1870	3G
	1900	1850 - 1910	1930 - 1990	3G
	2100	1920 - 1980	2110 - 2170	3G
W-CDMA (UMTS)		1920 - 1980	2110 - 2170	3G
TD-SCDMA1		2010 - 2025	2010 - 2025	3G

¹ Several additional frequency ranges have been set aside for use at the operator's or granting authority's discretion

Cordless Telephone/Wireless Data

Standard	Frequency (MHz)
CT2 Cordless	864 - 868
CT2+ Cordless	944 - 948
DECT Cordless	1880 - 1900
Bluetooth	2402 - 2495
IEEE 802.11a	5150 - 5350
IEEE 802.11b	2401 - 2483
IEEE 802.11g	2401 - 2483
ISM (US)	902 - 928
ISM (US)	2400 - 2500
ISM (US)	5725 - 5875

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17-23	38	A1211	18	A66-1	18	AM42-0002	15
2020-6600-06 ♦	55	A1212	14	A66-3	18	AM42-0007	15
2020-6601-10 ♦	55	A1212	18	A67	17	AM42-0054	15
2020-6602-20 ♦	55	A17	18	A67-1	17	AM42-0055	15
2020-6603-30 ♦	55	A18-1	18	A70	14	AM50-0002 ♦	14
2020-6604-06 ♦	55	A180	17	A70	16	AM50-0003 ♦	14
2020-6605-10 ♦	55	A181	16	A70-1	14	AM50-0004 ♦	14
2020-6606-20 ♦	55	A19-1	18	A70-1	16	AM50-0006 ♦	14
2020-6607-30 ♦	55	A21-1	18	A70-2	14	AM55-0004	15
2020-6608-06 ♦	55	A231	14	A70-2	16	AM55-0016 ♦	14
2020-6609-10 ♦	56	A231	16	A70-3	16	AMS-162-PIN	14
2020-6610-20 ♦	56	A24	18	A71	14	AMS-162-PIN	16
2020-6611-30 ♦	56	A25	18	A71	16	AT-106	22
2020-6612-06 ♦	56	A25-1	18	A72	16	AT-107	22
2020-6613-10 ♦	56	A26	18	A73	16	AT-108 ♦	21
2020-6614-20 ♦	56	A27	18	A74	16	AT-109 ♦	21
2020-6615-30 ♦	56	A28	18	A74-1	16	AT-110 ♦	21
2020-6616-06 ♦	56	A28-2	18	A74-2	16	AT-110-2 ♦	21
2020-6617-10 ♦	56	A29-1	18	A75	14	AT-113 ♦	21
2020-6618-20 ♦	56	A3010	19	A75	17	AT-119 ♦	21
2020-6619-30 ♦	56	A31-1	18	A75-2	16	AT-210 ♦	22
2020-6620-06 ♦	56	A32	14	A75-3	14	AT-213	22
2020-6621-10 ♦	56	A32	18	A75-3	17	AT-220 ♦	22
2020-6622-20 ♦	56	A32-1	18	A76	16	AT-230 ♦	22
2020-6623-30 ♦	56	A33	18	A76-1	16	AT-232	22
2020-6624-06 ♦	56	A33-1	13	A77	16	AT-233	22
2020-6625-10 ♦	56	A33-1	19	A77-1	17	AT-250 ♦	21
2020-6626-20 ♦	56	A34	18	A78	16	AT-255 ♦	21
2020-6627-30 ♦	56	A35	18	A79	16	AT-259 ♦	21
2020-6628-06 ♦	56	A35-1	13	A80	14	AT-260 ♦	22
2020-6629-10 ♦	56	A35-1	19	A80	17	AT-263	22
2020-6630-20 ♦	56	A36	18	A80-1	14	AT-264 ♦	22
2020-6631-30 ♦	56	A36-1	19	A80-1	16	AT-266 ♦	22
2025Series ♦	55	A36-2	13	A81	16	AT-267 ♦	22
2026-6001-10 ♦	55	A36-2	19	A81-1	16	AT-273	22
2026-6003-20 ♦	55	A37	18	A81-2	17	AT-280 ♦	22
2026-6004-10 ♦	56	A38	18	A81-3	17	AT-283	22
2026-6006-20 ♦	56	A39	18	A82	16	AT-357 ♦	22
2026-6007-10 ♦	55	A4011	15	A82-1	16	AT-358 ♦	22
2026-6009-20 ♦	55	A4011	19	A83-1	16	AT-635 ♦	21
2026-6010-10 ♦	55	A4012	19	A87	16	AT15-0001	22
2026-6012-20 ♦	55	A411	16	A87-1	16	AT20-0106	22
203XSeries ♦	55	A43	13	A87-2	16	AT20-0107	22
2089 Series ♦	48	A45	19	A88	16	AT20-0263	22
2090 Series ♦	48	A45-1	19	A89	17	AT20-0273	22
2090-6204-00 ♦	48	A5	16	AL7	35	AT65-0009 ♦	21
2090-6205-00 ♦	48	A5-5	16	AM-119-PIN	16	CA67-1	17
2090-6210-00 ♦	48	A5-6	17	AM-123-PIN	17	CD-920-4 ♦	53
2690-1001 ♦	35	A511	17	AM-131-PIN	17	CDMA 900 ♦	57
2690-1003 ♦	35	A513	17	AM-143-PIN	17	CH-130-4 ♦	53
2690-1005 ♦	35	A514	16	AM-145-PIN	18	CH-132 ♦	53
2690-1007 ♦	35	A515	16	AM-146-PIN	17	CH-134 ♦	54
2690-1009 ♦	35	A53	17	AM-147-PIN	17	CH-137 ♦	53
2690-1011 ♦	35	A531	14	AM-151-PIN	17	CH-138 ♦	54
2690-1013 ♦	35	A531	17	AM-153-PIN	18	CH-140	54
2690-1014 ♦	35	A54	16	AM-155-PIN	18	CHS-134 ♦	54
2690-1015 ♦	35	A55	17	AM-160-PIN	17	CHS-137 ♦	53
2N6439	65	A56	16	AM-162-PIN	14	CSFD25 ♦	33
7N256-S019	51	A57	17	AM-162-PIN	16	CSFD25H ♦	33
7N264-S063	52	A58	16	AM-176-PIN	17	CSFD26 ♦	33
A1	14	A59	16	AM-177-PIN	18	CSM11-13 ♦	39
A1	17	A59-1	17	AM-180-PIN	18	CSM12-13 ♦	40
A101	15	A6011	15	AM-182-PIN	17	CSM2-17	40
A101	16	A6011	19	AM-183-PIN	18	CSM2N-17	40
A1021	17	A61	19	AM-184-PIN	18	CSM4T	38
A1031	17	A611	17	AM-191-PIN	17	CSM4T17	38
A11	17	A63	17	AM05-0005	16	CSM5T17 ♦	39
A11-2	17	A64	18	AM05-0006	16	CSM5THv	39
A12	17	A66	18	AM40-0023	15	CSM5Tv	39

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

Blue listings indicate standard stock items widely available from our franchised distribution partners.

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Part Number DCG-10-4 to MA45446 Series

Part Number	Page No.	Part Number	Page No.	Part Number	Page No.	Part Number	Page No.
DCG-10-4 ◆	55	ELDC-7 ◆	54	FR11-0003 ✓	51	M4G, SM4G ◆	39
DM1-18A ◆	40	ELDC-8 ◆	54	FR11-0004 ✓	51	M4T ◆, SM4T ◆	38
DS-109 ◆	47	ELDC-8X1 ◆	54	FR11-0009 ✓	52	M4TH, SM4TH ◆	38
DS-112 ◆	47	ELPD-20-1 ◆	47	FR12-0001 ✓	52	M50, M50C ◆	41
DS-113 ◆	46	ELPD-290 ◆	48	FR12-0002 ✓	52	M50A, M50AC ◆	40
DS-117 ◆	46	EMD-10-1	54	FR12-0003 ✓	53	M51, M51C ◆	41
DS-309 ◆	47	EMD40-900L	39	FR12-0004 ✓	53	M52, M52C ◆	41
DS-310 ◆	46	EMDC-10-1-75 ◆	54	FR12-0009 ✓	53	M53, M53C ◆	41
DS-312 ◆	47	EMDC-13-1-75 ◆	54	G1* ◆	21	M5TV	39
DS-313 ◆	48	EMDC-13-2	54	G2	21	M63, M63C ◆	41
DS-318 ◆	47	EMDC-16-1	54	G30	21	M63H, M63HC ◆	41
DS-319 ◆	47	EMDC-16-2-75 ◆	55	G40	21	M67, M67C ◆	41
DS-323 ◆	48	EMDC-17-1-75 ◆	54	GS-4-TTR ◆	46	M6D-50 ◆	38
DS-324 ◆	48	EMDC-17-5-75 ◆	54	H-1-4 ◆	54	M6E-50V	38
DS-327 ◆	47	EMDC-17-8-75 ◆	54	H-183-4 ◆	55	M6EHV	38
DS-328 ◆	47	EMDC-20-1	55	H-8-4 ◆	47	M6R ◆	39
DS-331 ◆	48	EMRS-1	38	H-81-4 ◆	47	M6V, SM6V ◆	38
DS-332 ◆	48	EMRS-11F	39	H-9 ◆	53	M74, M74C ◆	41
DS-4-4 ◆	47	EMRS-2	38	HH-105 ◆	55	M76, M76C ◆	41
DS-409-4 ◆	47	EMRS-5MH	38	HH-106 ◆	53	M76H, M76HC ◆	41
DS-808-4 ◆	48	EMRS-6HX1	40	HH-107 ◆	53	M77, M77C ◆	41
DSS-113 ◆	46	ESMD-C1	38	HH-108 ◆	53	M79, M79C ◆	41
DSS-313 ◆	48	ESMD-C15	39	HH-109 ◆	53	M79H, M79HC ◆	41
DSS-327 ◆	47	ESMD-C50H	39	HH-110 ◆	54	M80, M80C ◆	41
DSS-333 ◆	47	ESMD-C50L	39	HH-127 ◆	54	M83, M83C ◆	40
DU1215S	64	ESMD-C50M	39	HH-128 ◆	55	M85, M85C ◆	40
DU1230S	64	ESML-2-1 ◆	47	HHS-109 ◆	53	M86, M86C ◆	41
DU1260T	64	ESML-2-4 ◆	47	HHS-110 ◆	55	M87, M87C ◆	39
DU2805S	65	ESSM-2-16	47	JH-10-4 ◆	55	M88, M88C ◆	40
DU2810S	65	ESSM-2-2-75 ◆	47	JH-113 ◆	54	M88H, M88HC ◆	40
DU28120T	64	ESSM-2-6 ◆	47	JH-114 ◆	55	M89, M89C ◆	40
DU28120V	64	ESSM-2-8-75	47	JH-115 ◆	55	M8H-3, M8HC-3 ◆	41
DU28200M	64	ESSM-2-9-75 ◆	47	JH-119 ◆	55	M8H-7, M8HC-7 ◆	41
DU2820S	64	ESSMJ-2-12-75 ◆	47	JH-121 ◆	55	M8T, M8TC ◆	38
DU2840S	64	ETC1-1-10	45	JH-131 ◆	55	M8TH, M8THC ◆	38
DU2860T	64	ETC1-1-13	43	JH-133 ◆	55	M93, M93C ◆	40
DU2860U	64	ETC1-1-6	45	JH-136 ◆	55	M9BC ◆	38
DU2880T	64	ETC1-1T	43	JH-139 ◆	55	M9E ◆	38
DU2880U	64	ETC1-1T-2TR	43	JH-140 ◆	55	M9H, M9HC ◆	39
DU2880V	64	ETC1.5-7	43	JH-141 ◆	55	MA144769	
EA1	16	ETC1.6-4-2-3	45	JHS-113 ◆	54	MAVR-044769 Series	25
EA2	16	ETC2-1T	43	JHS-114 ◆	55	MA40045-137	26
EA53-2	17	ETC3-1-1	44	JHS-115 ◆	55	MA40115-276	26
EA54	16	ETC36-1T-2	44	JHS-119 ◆	55	MA40126-186	26
EA54-2	17	ETC4-1 ◆	43	JHS-121 ◆	55	MA40143-213	26
EFM-1900 ◆	40	ETC4-1-2 ◆	43	JHS-136 ◆	55	MA40147-213	26
EFM-2100 ◆	41	ETC4-1-4	43	JHS-139 ◆	55	MA40201-119	26
EFM-900	40	ETK4-2T	43	JHS-142 ◆	55	MA40205-119	26
EIN10 ◆	46	FD25 ◆	33	L1 ◆	35	MA40215-120	26
EIN11 ◆	46	FD25C ◆	33	L42	35	MA40261	26
EIN12 ◆	46	FD25E ◆	33	LA17	35	MA40264	26
EIN13 ◆	46	FD25H ◆	33	LA45	35	MA43000 Series	25
EIN14 ◆	46	FD25HC ◆	33	LA45-1	35	MA43004 Series	25
EIN15 ◆	46	FD26 ◆	33	LA7	35	MA43543 Series	25
EIN16 ◆	46	FD26C ◆	33	LF2802A	65	MA43543-134	25
EIN8 ◆	46	FD26E ◆	33	LF2805A	65	MA43592 Series	25
EIN9 ◆	46	FD93 ◆	33	LF2810A	65	MA44631A-134	25
ELCM-1	38	FD93C ◆	33	LG1 ◆	31	MA44631C-134	25
ELCM-11X	38	FD93H ◆	33	LG30 ◆	31	MA44641A-134	25
ELCM-1H	38	FD93HC ◆	33	M14A ◆	41	MA44767 Series ◆	25
ELCM-1MH	38	FDZ5013 ◆	33	M2A, M2AC ◆	39	MA44768 Series ◆	25
ELCM-2	38	FDZ5013C ◆	33	M2B, M2BC ◆	39	MA44769 Series ◆	25
ELCM-5	38	FH2114	64	M2E, SM2E, M2EC ◆	39	MA45436 Series ◆	30
ELDC-10 ◆	54	FM-104 ◆	33	M2G, M2GC ◆	39	MA45438 Series ◆	30
ELDC-12 ◆	54	FM-105 ◆	33	M2T, M2TC ◆	39	MA45439 Series ◆	30
ELDC-14 ◆	54	FM-106 ◆	33	M3H-50 ◆	46	MA45440 Series ◆	30
ELDC-16 ◆	54	FMS-109 ◆	33	M3V-50 ◆	48	MA45441 Series ◆	30
ELDC-17 ◆	54	FR11-0001 ✓	51	M4A, SM4A ◆	39	MA45445 Series ◆	30
ELDC-20 ◆	54	FR11-0002 ✓	51	M4B, SM4B ◆	39	MA45446 Series ◆	30

Note: Part numbers are RoHS compliant ◆ indicates non-RoHS compliant ✓ indicates RoHS5

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MA46413 Series.....	29	MA4E190-276	26	MA4L101 Series.....	25	MA4ST082 Series ♦	30
MA46416 Series.....	29	MA4E197-186	26	MA4L401 Series	25	MA4ST083 Series ♦	30
MA46418 Series.....	29	MA4E2037	25	MA4M1050	46	MA4ST1230 Series ♦	30
MA46420 Series.....	29	MA4E2039	25	MA4M1100	46	MA4ST1231,	
MA46425 Series.....	29	MA4E2040	25	MA4M2100	46	MAVR-001230 Series	30
MA46450 Series.....	29	MA4E2054 Series ♦	26	MA4M3010	46	MA4ST1240 Series ♦	30
MA46451 Series.....	29	MA4E2054L-1261	26	MA4M3030	46	MA4ST1241,	
MA46457 Series.....	29	MA4E2054X1,		MA4M3050	46	MAVR-001240 Series	30
MA46461 Series.....	29	MADS-002054 Series	26	MA4M3100	46	MA4ST1320 Series ♦	29
MA46470 Series.....	29	MA4E2062 Series	26	MA4M3150	46	MA4ST1330 Series ♦	29
MA46471 Series.....	29	MA4E2062,		MA4P1250-1072T	28	MA4ST1340 Series ♦	29
MA46472 Series.....	29	MA4E2072,		MA4P1450-1091T	28	MA4ST1350 Series ♦	29
MA46473 Series.....	29	MADS-002072 Series.....	26	MA4P202 Series	27	MA4ST2200 Series ♦	30
MA46474 Series.....	29	MA4E2160	25	MA4P203 Series	27	MA4ST230 Series ♦	30
MA46475 Series.....	29	MA4E2200 Series ♦	26	MA4P274 Series ♦	28	MA4ST2300 Series ♦	30
MA46476 Series.....	29	MA4E2200X1,		MA4P274-1225T ♦	21	MA4ST240 Series ♦	30
MA46477 Series.....	29	MADS-002200 Series	26	MA4P275 Series ♦	28	MA4ST2400 Series ♦	30
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MA46480 Series.....	29	MA4E2502 Series	26	MA4P278 Series ♦	28	MA4ST2500 Series ♦	30
MA46483 Series.....	29	MA4E2508 Series	26	MA4P282 Series ♦	28	MA4ST2600 Series ♦	30
MA46485 Series.....	29	MA4E2513L-1289	26	MA4P290 Series ♦	28	MA4ST320 Series ♦	29
MA46504 Series.....	28	MA4E2514 Series	26	MA4P290-1225T ♦	21	MA4ST330 Series ♦	29
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MA46603 Series.....	28	MA4E929A-119	26	MA4P505 Series	27	MA4ST404 Series ♦	30
MA46H070 Series	28	MA4E929B-119	26	MA4P604 Series	27	MA4ST405 Series ♦	30
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MA46H072 Series.....	29	MA4EX180H-1225T ♦	40	MA4P607 Series	27	MA4ST407 Series ♦	30
MA46H073 Series.....	29	MA4EX180M-1225T ♦	40	MA4P7000 Series	28	MA4ST408 Series ♦	30
MA46H120	28	MA4EX190H-1225T ♦	40	MA4P7100 Series	28	MA4ST409 Series ♦	30
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MA46H200 Series.....	29	MA4EX240H-1225T ♦	40	MADP-007433 Series	28	MA4SW210	59
MA46H201 Series	29	MA4EX240L-1225T ♦	40	MA4P7436,		MA4SW210B-1	59
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MA4AGBLP912	27	MA4EX600H-1225T ♦	41	MA4P7446F-1091T	28	MA4SW610B-1	59
MA4AGFCP910	27	MA4EX600L-1225T ♦	41	MA4P7447,		MA4VAT2000-1277T	21
MA4AGP907	27	MA4EX600M-1225T ♦	41	MADP-007155 Series	28	MA4VAT2004-1061T	21
MA4AGSBP907	27	MA4EX900L-1226T ♦	39	MA4P7452F-1072T	28	MA4VAT2007-1061T	21
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MA4AGSW1A	59	MA4EX950L-1225T ♦	39	MA4P7455,		MA4VAT904-1061T	21
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MA4AGSW3	59	MA4EXP190H-1277T ♦	40	MA4P7461F-1072T	28	MAAD-007077-000100	23
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MA4AGSW5	59	MA4EXP400H-1277T ♦	41	MA4P7470F-1072T	28	MAAD-007079-000100	23
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Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

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MAAMSS0045	15	MABA-008752-TC1P57	43	MABAES0061	43	MAFL-009272-CD0ACO	57
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