



Space & High-Reliability

PRODUCT SELECTION
GUIDE

MACOM[®]

Partners from RF to Light

macom.com

MACOM continues to build upon our legacy of providing high-reliability products to the Aerospace and Defense industry by adding to our product portfolio and capabilities with high-reliability products for the military, defense, satellite and aerospace industries.

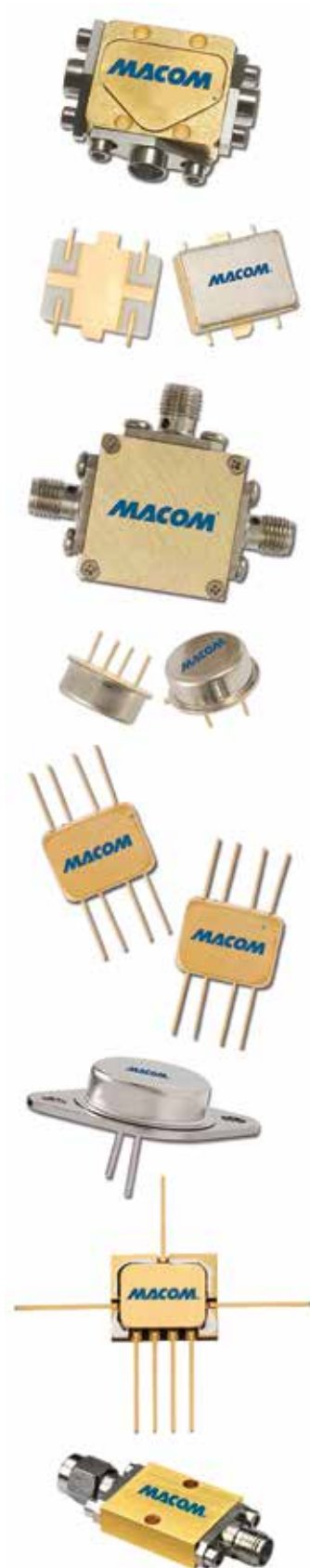
MACOM also offers customer-specific design capabilities. Environmental screening is available on most products. Additionally, we have expertise in replacement designs for obsolete or discontinued products. Our applications engineering support team is responsive, flexible, innovative and ready to help you with your next project.

Additional product information can be found on our website at macom.com. Contact our worldwide sales offices, authorized representatives and industry-leading distributors to request samples, test boards and application support. All contacts are listed on our website at: macom.com/contact

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The products listed herein are subject to US Export Controls set forth by the Arms Export Control Act and the Export Administration Act.

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SPACE & HIGH-RELIABILITY

A Spectrum of Aerospace and Defense Solutions

Discrete Components, MMICs and Diodes

MACOM continues to build upon our legacy of providing high-reliability semiconductor products to the Aerospace and Defense industry by adding to our product portfolio and capabilities.

MACOM's standard line of RF and microwave components provides solutions to meet the requirements commonly found on airborne applications, high MTBF ground-based equipment and space applications.

From our US Trusted Foundry in Lowell, Massachusetts, we continue to improve our ability to provide the highest quality aerospace and defense products.

When program screening requirements call for more than MACOM's standard catalog screening, custom screening programs can be created by adding screening options or by generating a program specific sequence.

MACOM's Space & High-Reliability Evolution

Watkins Johnson Company/Stellex Microwave Systems/Tyco Electronics/Anzac/RHG/Phoenix Microwave/Metelics/Micrometrics/Hi-Rel Components & MACOM

1960s

> Pioneered production of TWT's for Pioneer, Voyager and DSCS satellites

1970s

> First solid state flight qualified production amplifiers and mixers

1980s/1990s/through today

> Participated in more than 85 programs (USA & International)

> Provided hundreds of space qualified solid state space component models

High-Reliability Catalog Screened Products

- > 40+ year history of proven Hi-Rel manufacturing processes supporting both thin film & solder circuit assemblies
- > Same proven manufacturing processes as used in equivalent component designs for custom military and space programs
- > Long established cost effective standardized screening programs for catalog products available in a variety of hermetically sealed metal package styles
- > Available for screening: hybrid amplifiers, hybrid mixers, switches, diodes, MMIC bare die and packaged products
- > MACOM has an extensive "in-house" environmental screening capability
- > US Screening Lab to perform specific environmental test requirements
- > Working to expand our partner network
- > Custom environmental screening plans available for hermetically-sealed, packaged products (MIL-PRF-19500, MIL-PRF-38534, MIL-DTL- 28837B, MIL-STD-202, etc.)
- > Screening available for our die catalog products to MIL-PRF-38534 Element Evaluation
- > Plastic Encapsulated Module (PEM) qualification to PEM-INST-001 Level 1, 2 and 3

Please contact your local sales representative to discuss any environmental screening options.



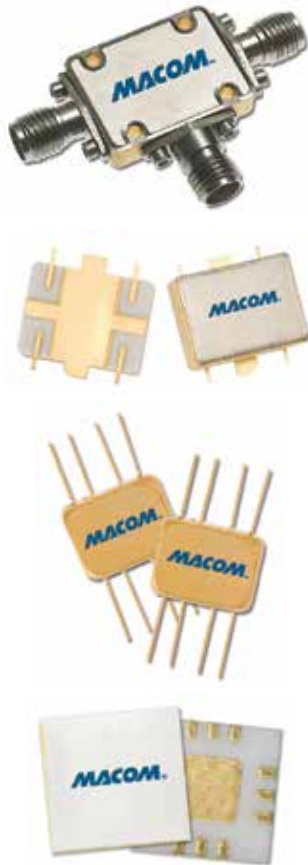
SPACE & HIGH-RELIABILITY

Product Screening Programs

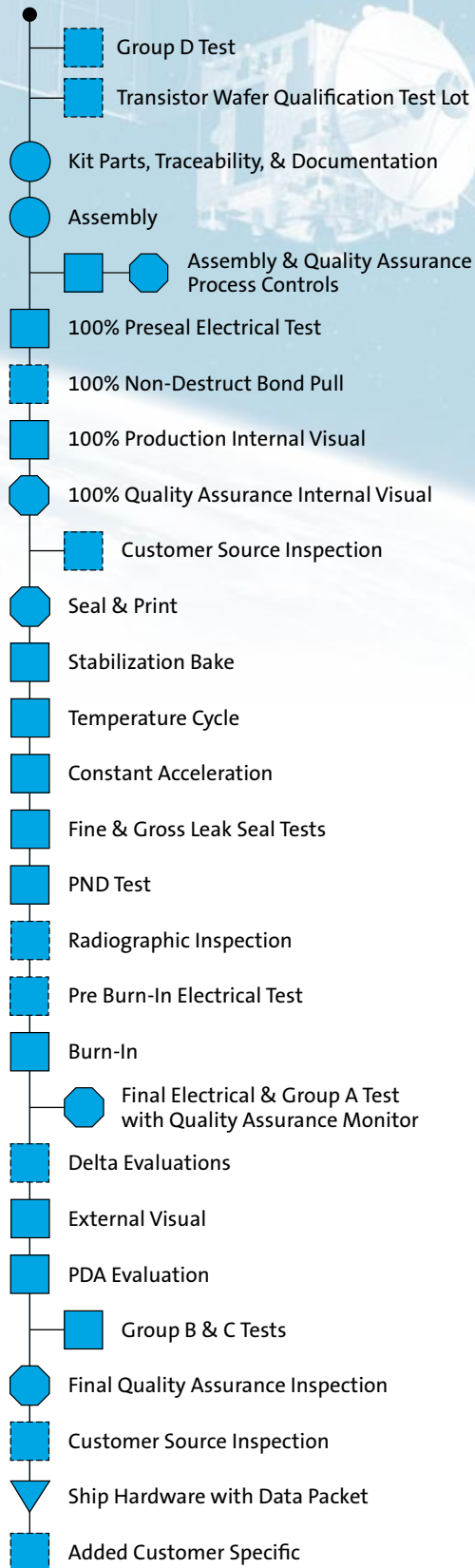
- > Standard Catalog Environmental Screening Plans
- > Customer Specific Environmental Screening Plans

Standard Requirements Supported

- > ESA/ESCC Specifications
- > MIL-PRF-38534 Performance/General Specification for Hybrid Microcircuits
- > MIL-PRF-38535 Performance/General Specification for Integrated Circuits
- > MIL-PRF-19500 General Specification for Semiconductor Devices
- > MIL-DTL-28837 General Specification for Radio Frequency Mixer Stages
- > MIL-STD-883 Test Methods
- > MIL-STD-750 Test Methods
- > MIL-STD-202 Test Methods
- > MIL-DTL-23971 Power Dividers/Couplers Specification
- > PEM-INST-001 NASA Plastic Qualification
- > Customer Source Control Drawings



Manufacturing & Screening Flow Chart Customer Specific High-Reliability Programs



Gain Block Hybrid Amplifiers					
Part Number	Max Frequency (MHz)	Min Frequency (MHz)	Gain (dB)	OIP3 (dBm)	Package
A75-2	250	5	21	19	TO-8
EA54	250	5	27	16	TO-5
A181	250	10	16.5	35	TO-8
CA181	250	10	16.5	35	Connectorized-SMA
SMA181	250	10	16.5	35	SMT
A79	300	5	14	38	TO-8
CA79	300	5	14	38	Connectorized-SMA
SMA79	300	5	14	38	SMT
EA2	400	5	13.5	21	TO-5
A56	400	5	26	27	TO-8
A87	400	10	14	33	TO-8
CA87	400	10	14	33	Connectorized-SMA
SMA87	400	10	14	33	SMT
AMC-151-SMA	500	5	12	36	Connectorized-SMA
A5	500	5	14.8	22	TO-8
A72	500	5	15	26	TO-8
SMA72	500	5	15	26	SMT
A54	500	5	15.5	21	TO-8
A77	500	5	16.5	30	TO-8
CA77	500	5	16.5	30	Connectorized-SMA
SMA77	500	5	16.5	30	SMT
A88	500	5	18.7	30	TO-8
SMA88	500	5	18.7	30	SMT
A74-2	500	5	26	10	TO-8
SMA74-2	500	5	26	10	SMT
RA89	500	5	26.5	35	TO-8
CRA89	500	5	26.5	35	Connectorized-SMA
SMRA89	500	5	26.5	35	SMT
EA54-2	500	5	29.5	20	TO-5
PA511	500	10	12.7	40	TO-8
SMPA511	500	10	12.7	40	SMT
A55	500	10	14.7	24	TO-8
A57	500	10	14.7	28	TO-8
SMA57	500	10	14.7	28	SMT
PA512	500	10	18	40	TO-8
MAAM-007502-CPA512	500	10	18	40	Connectorized-SMA
MAAM-007502-SPA512	500	10	18	40	SMTO-8
SMA513	500	10	20	30	SMT
AMC-146-SMA	500	10	21	35	Connectorized-SMA
RA89-1	500	10	30	36	TO-8
CRA89-1	500	10	30	36	Connectorized-SMA
SMRA89-1	500	10	30	36	SMT
MAAM-008200-000A83	500	10	30	10	TO-8
A77-1	600	5	16	30	TO-8
CA77-1	600	5	16	30	Connectorized-SMA
SMA77-1	600	5	16	30	SMT



Gain Block Hybrid Amplifiers (continued)					
Part Number	Max Frequency (MHz)	Min Frequency (MHz)	Gain (dB)	OIP3 (dBm)	Package
A5-6	600	6	15.5	21	TO-8
SMA5-6	600	6	16	21	SMT
A59-1	700	10	10.5	36	TO-8
SMA59-1	700	10	10.5	36	SMT
A89	800	50	22	30	TO-8
SMA89	800	100	22	30	SMT
AMC-184-SMA	1000	5	20	20	Connectorized-SMA
AMC-145-SMA	1000	10	10.7	32	Connectorized-SMA
A19-1	1000	10	11.5	35	TO-8
CA19-1	1000	10	11.5	35	Connectorized-SMA
SMA19-1	1000	10	11.5	35	SMT
A17	1000	10	12	27	TO-8
CA17	1000	10	12	27	Connectorized-SMA
SMA17	1000	10	12	27	SMT
RA69	1000	10	25	34	TO-8
CRA69	1000	10	25	34	Connectorized-SMA
SMRA69	1000	10	25	34	SMT
A1021	1000	10	26	26	TO-8
CA1021	1000	10	26	26	Connectorized-SMA
SMA1021	1000	10	26	26	SMT
A66-1	1000	10	27.5	28	TO-8
CA66-1	1000	10	27.5	28	Connectorized-SMA
SMA66-1	1000	10	27.5	28	SMT
RA66	1000	10	37	30	TO-8
CRA66	1000	10	37	30	Connectorized-SMA
SMRA66	1000	10	37	30	SMT
AMC-155-SMA	1000	300	12.3	30	Connectorized-SMA
A66	1200	10	23.5	28	TO-8
CA66	1200	10	23.5	28	Connectorized-SMA
SMA66	1200	10	23.5	28	SMT
A64	1200	10	26	20	TO-8
CA64	1200	10	26	20	Connectorized-SMA
SMA64	1200	10	26	20	SMT
A27	1500	5	8.5	28	TO-8
CA24	1500	5	20	21	TO-8
A24	1500	5	20	21	TO-8
SMA24	1500	5	20	21	SMT
A29-1	1500	10	9	32	TO-8
CA29-1	1500	10	9	32	Connectorized-SMA
SMA29-1	1500	10	9	32	SMT
A28	1500	10	11	29	TO-8
CA28	1500	10	11	29	Connectorized-SMA
SMA28	1500	10	11	29	SMT
A26	1500	10	20.5	27	TO-8
CA26	1500	10	20.5	27	Connectorized-SMA
SMA26	1500	10	20.5	27	SMT

Gain Block Hybrid Amplifiers (continued)

Part Number	Max Frequency (MHz)	Min Frequency (MHz)	Gain (dB)	OIP3 (dBm)	Package
A39	2000	10	7.5	34	TO-8
SMA39	2000	10	7.5	34	SMT
A38	2000	10	9.5	30	TO-8
CA38	2000	10	9.5	30	Connectorized-SMA
SMA38	2000	10	9.5	30	SMT
A35	2000	10	10	21	TO-8
CA35	2000	10	10	21	Connectorized-SMA
SMA35	2000	10	10	21	SMT
A37	2000	10	10	28	TO-8
SMA37	2000	10	10	28	SMT
A34	2000	100	16	18	TO-8
SMA34	2000	100	16	18	SMT
A36	2000	100	16.5	23	TO-8
SMA36	2000	100	16.5	23	SMT
RA36	2000	100	24	22	TO-8
CRA36	2000	100	24	22	Connectorized-SMA
SMRA36	2000	100	24	22	SMT
SMPA2010	2000	200	10	33	SMT
A36-1	2300	100	16.2	23	TO-8
CA36-1	2300	100	16.2	23	Connectorized-SMA
SMA36-1	2300	100	16.2	23	SMT
A33-1	2400	2	9	19	TO-8
CA33-1	2400	2	9	19	Connectorized-SMA
SMA33-1	2400	2	9	19	SMT
CA3010	2500	0	9.5	35	Connectorized-SMA
MAAM-007947-CA3602	2600	100	15	30	Connectorized-SMA
A36-2	2600	100	15	30	TO-8
SMA36-2	2600	100	15	30	SMT
PA38-2	2600	200	8.5	33	TO-8
SMPA38-2	2600	200	8.5	33	SMT
A43	3200	100	11.5	21	TO-8
SMA43	3200	100	11.5	21	SMT
RA46	4000	0	25.5	30	TO-8
PA48	4000	1000	16	34	TO-8
CPA48	4000	1000	16	34	Connectorized-SMA
SMPA48	4000	1000	16	34	SMT
SMRA46	4000	1000	25.5	30	SMT
SMRA62	6000	2000	16	28	SMT

Low Noise Hybrid Amplifiers

Part Number	Max Freq (MHz)	Min Freq (MHz)	Gain (dB)	Noise Figure (mA)	OIP3 (dBm)	Package
A101	100	5	17	3	36	TO-8
SMA101	100	5	17	3	36	SMT
AM-162-PIN	100	10	12.5	1.1	32	TO-8
AMC-162-SMA	100	10	12.5	1.5	30	Connectorized-SMA
AMS-162-PIN	100	10	12.5	1.5	30	SF-1
A80-1	200	10	27.3	2	28	TO-8



Low Noise Hybrid Amplifiers (continued)

Part Number	Max Freq (MHz)	Min Freq (MHz)	Gain (dB)	Noise Figure (mA)	OIP3 (dBm)	Package
SMA80-1	200	10	27.3	2	28	SMT
MAAM-007844-OCA801	200	10	27.3	2	28	Connectorized-SMA
A70	250	10	8	1.6	24	TO-8
SMA70	250	10	8	1.6	24	SMT
A70-1	250	10	8	1.8	28	TO-8
SMA70-1	250	10	8	1.8	28	SMT
A70-2	250	10	8	2.2	38	TO-8
CA70-2	250	10	8	2.2	38	Connectorized-SMA
A231	250	10	26	1.7	22	TO-8
CA231	250	10	26	1.7	22	Connectorized-SMA
SMA231	250	10	26	1.7	22	SMT
A83-1	250	10	35.5	2.5	9	TO-8
CA83-1	250	10	35.5	2.5	9	Connectorized-SMA
SMA83-1	250	10	35.5	2.5	9	SMT
A70-3	250	20	8	2.8	40	TO-8
A82-1	250	20	19	2.8	26	TO-8
SMA82-1	250	20	19	2.8	26	SMT
SMA81	250	20	24.5	2.6	28	SMTO-8
A81-1	250	20	25	2.5	27	TO-8
SMA81-1	250	20	25	2.5	27	SMT
A82	250	20	25	2.8	31	TO-8
CA82	250	20	25	2.8	31	Connectorized-SMA
SMA82	250	20	25	2.8	31	SMT
A81	250	20	25.5	3	28	TO-8
A78	300	5	14	3.5	35	TO-8
CA78	300	5	14	3.5	35	Connectorized-SMA
SMA78	300	5	14	3.5	35	SMT
SMA70-2	300	10	8	2.2	38	SMTO-8
A87-2	300	10	16	2.9	24	TO-8
SMA87-2	300	10	16	2.9	24	SMT
SMA70-3	300	15	8	2.8	40	SMTO-8
PAW1027	350	35	38.5	3.7	43	SOT115J
EA1	400	5	14	4.3	13	TO-5
MAAM-008199-000A51	400	10	15	2.7	10	TO-8
A411	400	10	15.8	3	24	TO-8
SMA411	400	10	15.8	3	24	SMT
A87-1	400	10	16	3.4	31	TO-8
CA87-1	400	10	16	3.4	31	Connectorized-SMA
SMA87-1	400	10	16	3.4	31	SMT
AMC-123-SMA	500	5	10	5.5	30	Connectorized-SMA
A58	500	5	11.5	4	34	TO-8
SMA58	500	5	11.5	4	34	SMT
AM-131-PIN	500	5	11.5	4	34	TO-8
A59	500	5	11.5	4.3	36	TO-8
SMA59	500	5	11.5	4.3	36	SMT
AMC-143-SMA	500	5	15.8	2.5	20	Connectorized-SMA
A1	500	5	16	2.4	11	TO-8

Low Noise Hybrid Amplifiers (continued)						
Part Number	Max Freq (MHz)	Min Freq (MHz)	Gain (dB)	Noise Figure (mA)	OIP3 (dBm)	Package
SMA1	500	5	16	2.4	11	SMT
AMC-147-SMA	500	5	17	3.4	33	Connectorized-SMA
EA53-2	500	5	19	3.6	24	TO-5
A75	500	5	21	2.1	21	TO-8
CA75	500	5	21	2.1	21	Connectorized-SMA
SMA75	500	5	21	2.1	21	SMT
A76-1	500	5	27.5	3	26	TO-8
SMA76-1	500	5	27.5	3	26	SMT
A515	500	5	27.5	3.5	33	TO-8
MAAM-007272-OCA515	500	5	27.5	3.5	33	Connectorized-SMA
MAAM-007272-SMA515	500	5	27.5	3.5	33	SMT0-8
A76	500	5	28	3	28	TO-8
CA76	500	5	28	3	28	Connectorized-SMA
SMA76	500	5	28	3	28	SMT
A514	500	5	28	4	32	TO-8
MAAM-007272-OCA514	500	5	28	4	32	Connectorized-SMA
MAAM-007272-SMA514	500	5	28	4	32	SMT0-8
A74	500	5	30	3	20	TO-8
CA74	500	5	30	3	20	Connectorized-SMA
SMA74	500	5	30	3	20	SMT
A73	500	5	32	3.5	15	TO-8
SMA73	500	5	32	3.5	15	SMT
A180	500	10	16.5	3.4	33	TO-8
CA180	500	10	16.5	3.4	33	Connectorized-SMA
SMA180	500	10	16.5	3.4	33	SMT
A511	500	10	17	3.4	33	TO-8
CA511	500	10	17	3.4	33	Connectorized-SMA
A75-3	500	10	20.5	1.7	16	TO-8
SMA75-3	500	10	20.5	1.7	16	SMT
A531	500	10	31.7	2	14	TO-8
CA531	500	10	31.7	2	14	Connectorized-SMA
A81-3	500	20	17	4	20	TO-8
A81-2	500	20	24.5	3	28	TO-8
CA81-2	500	20	24.5	3	28	Connectorized-SMA
SMA81-2	500	20	24.5	3	28	SMT
A80	500	20	29	2.3	27	TO-8
SMA80	550	10	29	2.3	27	SMT0-8
A67-1	600	10	15	3.7	30	TO-8
CA67-1	600	10	15	3.7	30	Connectorized-SMA
SMA67-1	600	10	15	3.7	30	SMT
A611	700	5	15	3.2	24	TO-8
SMA611	700	5	15	3.2	24	SMT
A67	800	10	14	4	30	TO-8
AMC-176-SMA	1000	5	13.2	4	27	Connectorized-SMA



Low Noise Hybrid Amplifiers (continued)						
Part Number	Max Freq (MHz)	Min Freq (MHz)	Gain (dB)	Noise Figure (mA)	OIP3 (dBm)	Package
A11	1000	5	14.7	3.1	10	TO-8
SMA11-2	1000	5	16	2.5	10	SMT
A63	1000	5	16	3	15	TO-8
SMA63	1000	5	16	3	15	SMT
AMC-182-SMA	1000	5	28.2	3.5	20	Connectorized-SMA
A18-1	1000	10	14.7	3.8	30	TO-8
CA18-1	1000	10	14.7	3.8	30	Connectorized-SMA
SMA18-1	1000	10	14.7	3.8	30	SM
A12	1000	10	16	2.8	22	TO-8
A66-3	1000	10	26	3	13	TO-8
CA66-3	1000	10	26	3	13	Connectorized-SMA
SMA66-3	1000	10	26	3	13	SMT
A1031	1000	10	28.5	2.7	22	TO-8
SMA1031	1000	10	28.5	2.7	22	SMT
MAAM-008198-OCA162	1200	10	13	3.5	18	Connectorized-SMA
MAAM-008198-SMA162	1200	10	13	3.5	18	SMT0-8
A1211	1200	10	14	2.8	20	TO-8
CA12	1200	10	14	2.8	20	Connectorized-SMA
SMA1211	1200	10	14	2.8	20	SMT
A1212	1200	100	14	1.8	29	TO-8
CA1212	1200	100	14	1.8	29	Connectorized-SMA
SMA1212	1200	100	14	1.8	29	SMT
A25-1	1500	2	13.5	3	22	TO-8
A28-2	1500	10	14	3.5	24	TO-8
CA28-2	1500	10	14	3.5	24	Connectorized-SMA
SMA28-2	1500	10	14	3.5	24	SMT
A31-1	2000	10	11.5	3.5	9	TO-8
MAAM-007501-OA2002	2700	20	11.5	2.5	40	TO-8
MAAM-007501-CA2002	2700	20	11.5	2.5	40	Connectorized-SMA
MAAM-007501-SA2002	2700	20	11.5	2.5	40	SMT0-8
A32-1	2000	100	11.5	2.5	25	TO-8
CA32-1	2000	100	11.5	2.5	25	Connectorized-SMA
SMA32-1	2000	100	11.5	2.5	25	SMT
A32	2000	100	13	2.1	32	TO-8
CA32	2000	100	13	2.1	32	Connectorized-SMA
SMA32	2000	100	13	2.1	32	SMT
PA38	2000	200	10	4	34	TO-8
CPA38	2000	200	10	4	34	Connectorized-SMA
SMPA38	2000	200	10	4	34	SMT
A4011	4000	1000	15.5	2	29	TO-8
SMA4011	4000	1000	15.5	2	29	SMT
A45-1	4000	1000	17.5	4	26	TO-8
SMA45	4000	1000	17.5	4	29	SMT
SMA45-1	4000	1000	17.5	4	26	SMT

Low Noise Hybrid Amplifiers (continued)						
Part Number	Max Freq (MHz)	Min Freq (MHz)	Gain (dB)	Noise Figure (mA)	OIP3 (dBm)	Package
A45	4000	1000	17.5	4	29	TO-8
CA45	4000	1000	17.5	4	29	Connectorized-SMA
A4012	4000	1000	18	3.5	26	TO-8
SMA4012	4000	1000	18	3.5	26	SMT
SMA6011	6000	1500	14.8	1.5	30	SMT0-8
A61	6000	2000	7.5	3.2	25	TO-8
SMA61	6000	2000	7.5	3.2	25	SMT
A6011	6000	2000	14.8	1.5	30	TO-8
CA6011	6000	2000	14.8	1.5	30	Connectorized-SMA



Hybrid Mixers					
Part Number	Max Freq RF/RO (MHz)	Min Freq RF/RO (MHz)	Max Freq IF (MHz)	Min Freq IF (MHz)	Package
M6D-50	200	0.05	200	0	Relay Header
SM6D	200	0.05	200	0	SMT
MAC-50-PIN	200	0.2	200	0	TO-5
MDS-222-PIN	200	0.2	200	0.2	SF-1
SM6V	500	0.4	500	0	SMT
M9BC	500	0.5	500	0	Relay Header
MD-161-PIN	500	1	500	0	FP-2
M6E-50	500	5	500	0	Relay Header
MAC-51-PIN	500	5	500	0	TO-5
MDS-223-PIN	500	10	500	10	SF-1
M1H	620	180	200	0	SMA
M6EH	750	5	500	0	Relay Header
SM6EH	750	5	500	0	SMT
M2E	1000	10	600	0	TO-8
M2EC	1000	10	600	0	SMA
SM2E	1000	10	600	0	SMT
MD-160-PIN	1500	1	1000	1	RH-3
MDS-158-PIN	1500	5	—	—	SF-1
M9H	1500	10	600	0	TO-8
M9HC	1500	10	600	0	SMA
M2AC	1500	10	800	0	SMA
M4A	1500	10	1000	0	Flatpack-SMT
MD-148-PIN	1500	10	1500	10	FP-2
MDS-148-PIN	1500	10	1500	10	SF-1
MD-149-PIN	1500	10	1500	10	FP-2
MDS-149-PIN	1500	10	1500	10	SF-1
SM4A	1500	10	1000	0	SMT
SM4B	1500	10	1000	0	SMT
M2B	1600	10	800	0	TO-8
M2BC	1600	10	800	0	SMA
M2TC	2400	10	1000	1	SMA
SM4G	2400	800	1500	0	SMT
MD-123-PIN	3000	10	3000	10	FP-2
M4TH	3400	1	2000	1	Flatpack-SMT
M8T	3400	1	2000	1	TO-8
M8TC	3400	1	2000	1	SMA
M8TH	3400	1	2000	1	TO-8
M8THC	3400	1	2000	1	SMA
SM4T	3400	1	2000	1	SMT
SM4T17	3400	1	2000	1	SMT
SM4TH	3400	1	2000	1	SMT
MDS-169-PIN	3500	1	1500	5	SF-1
MD-169-PIN	3500	1	3500	1	FP-2
MD-189-PIN	3500	1	3500	1	FP-2
MDC-169-SMA	3500	1	3500	1	C-7
MDS-189-PIN	3500	1	3500	1	SF-1

Hybrid Mixers (continued)					
Part Number	Max Freq RF/RO (MHz)	Min Freq RF/RO (MHz)	Max Freq IF (MHz)	Min Freq IF (MHz)	Package
M2G	3500	800	1500	0	TO-8
M2GC	3500	800	1500	0	SMA
MD-179-PIN	4000	1	1500	5	FP-2
MDC-179-SMA	4000	1	1500	5	C-7
M8H-3	4200	3700	2000	0	TO-8
SM5T	5000	50	3000	50	SMT
SM5T17	5000	50	3000	50	SMT
SM5TH	5000	50	3000	50	SMT
MZ6310C	5500	250	1500	0	SMA
M63C	5500	2500	1500	0	SMA
M8H-7	6000	2400	2000	0	TO-8
M8HC-7	6000	2400	2000	0	SMA
MDC-162-SMA	7000	1000	2000	10	C-2
MY63	7000	2500	15000	0	Versapac
MY63C	7000	2500	15000	0	SMA
M63H	7500	2500	1500	0	Minpac
M63HC	7500	2500	1500	0	SMA
MY63H	7500	2500	1500	0	Versapac
MY63HC	7500	2500	1500	0	SMA
M76H	8500	4500	2000	0	Minpac
M76HC	8500	4500	2000	0	SMA
MY76H	8500	4500	2000	0	Versapac
MY76HC	8500	4500	2000	0	SMA
M76	9500	4500	2000	0	Minpac
M76C	9500	4500	2000	0	SMA
MY76	9500	4500	2000	0	Versapac
MY76C	9500	4500	2000	0	SMA
MY84	10000	1800	1000	0	Versapac
MY84C	10000	1800	1000	0	SMA
M77C	12500	8000	2500	0	SMA
MY77	12500	8000	2500	0	Versapac
MY77C	12500	8000	2500	0	SMA
M14A	14000	6000	2000	0	SMA
M67C	15000	9000	2500	0	SMA
M83	18000	1000	5000	30	Minpac
M83C	18000	1000	5000	30	SMA
MY88HC	18000	1000	8000	1000	SMA
M89C	18000	1000	8000	1000	SMA
M85	18000	2000	1000	0	Minpac
M85C	18000	2000	1000	0	SMA
MY85	18000	2000	1000	0	Versapac
MY85C	18000	2000	1000	0	SMA
M93C	18000	2000	4000	30	SMA
MY93	18000	2000	4000	30	Versapac
MY93C	18000	2000	4000	30	SMA
MY83H	18000	2000	5000	30	Versapac
MY83HC	18000	2000	5000	30	SMA



Hybrid Mixers (continued)					
Part Number	Max Freq RF/RO (MHz)	Min Freq RF/RO (MHz)	Max Freq IF (MHz)	Min Freq IF (MHz)	Package
MY82	18000	2000	5000	30	Versapac
MY82C	18000	2000	5000	30	SMA
MZ9310	18000	2000	5000	30	Versapac
MZ9310C	18000	2000	5000	30	SMA
MZ9313	18000	2000	5000	30	Versapac
MZ9313C	18000	2000	5000	30	SMA
M88C	18000	2000	8000	1000	SMA
MY88	18000	2000	8000	1000	Versapac
MY88C	18000	2000	8000	1000	SMA
MZ8810C	18000	2000	8000	1000	SMA
MZ8813	18000	2000	8000	1000	Versapac
M88H	18000	2000	8000	2000	Minpac
M88HC	18000	2000	8000	2000	SMA
MY89	18000	2000	8000	2000	Versapac
MY89C	18000	2000	8000	2000	SMA
M50A	18000	2000	18000	2000	Minpac
M50AC	18000	2000	18000	2000	SMA
M86C	18000	3500	3000	0	SMA
M80C	18000	4000	3000	0	SMA
M79C	18000	5000	3000	0	SMA
M79H	18000	5000	3000	0	Minpac
M79HC	18000	5000	3000	0	SMA
MZ7407	18000	6000	3000	0	Versapac
MZ7407C	18000	6000	3000	0	SMA
MZ7410	18000	6000	3000	0	Versapac
MZ7410C	18000	6000	3000	0	SMA
MZ7420	18000	6000	3000	0	Versapac
MZ7420C	18000	6000	3000	0	SMA
M74	18000	7000	3000	0	Minpac
M74C	18000	7000	3000	0	SMA
M87C	19000	500	5000	30	SMA
MY87	19000	500	5000	30	Versapac
MY87C	19000	500	5000	30	SMA
M52C	24000	2000	5000	100	SMA
MY52	24000	2000	5000	100	Versapac
MY52C	24000	2000	5000	100	SMA
M51C	24000	2000	15000	1000	SMA
MY51	24000	2000	15000	1000	Versapac
MY51C	24000	2000	15000	1000	SMA
M53C	26000	2000	6000	100	SMA
MY50A	26000	2000	12000	1000	Versapac
MY50AC	26000	2000	12000	1000	SMA
MZ5010	26000	2000	15000	1	Versapac
MZ5010C	26000	2000	15000	1	SMA
M50C	26000	2000	15000	1000	SMA
MY50	26000	2000	15000	1000	Versapac
MY50C	26000	2000	15000	1000	SMA

Mixers							
Part Number	Max Freq RF/LO (MHz)	Min Freq RF/LO (MHz)	Min Freq IF (MHz)	Max Freq IF (MHz)	Conversion Loss/ Gain (dBm)	LO Drive (dBm)	Package
CGY2180UH	3700	700	0	1700	-7	15	Hermetic, DIE
CGY2181UH	4500	1000	0	2500	-7	—	Hermetic, DIE
CGY2183UH	6000	100	0	3000	11	-5	Hermetic, DIE
CGY2184UH	6000	100	0	3000	18	0	Hermetic, DIE
CGY2182UH	10000	3000	0	3000	-7	—	Hermetic, DIE
CGY2460UH	43500	40500	5000	6000	33	—	DIE
CGY2470UH	96000	92000	5100	6000	-3	—	DIE
CGY2471UH	96000	92000	5200	6000	-10	—	DIE



Varactor Tuning Diodes						
Part Number	Total Capacitance (pF)	Gamma	Quality Factor @ 50 MHz, Min	Breakdown Voltage (V)	Package	
MA46600-134	0.3	0.5	8000	30	ODS-134 DIE	
MA46603-134	0.6	0.5	6500	30	ODS-134 DIE	
MA46H070-1056	0.6	0.75	4500	20	ODS-1056	
MA46H071-1056	1	0.75	4500	20	ODS-1056	
MA46416-134	1.8	1.5	2500	18	ODS-134 DIE	
MA46H072-1056	3	0.75	3000	20	ODS-105	
MA46H073-1056	5	0.75	2200	20	ODS-1056	

Multiplier Step Recovery Diodes						
Part Number	Total Capacitance Max (pF)	Total Capacitance Min (pF)	Reverse Voltage (V)	Lifetime (Typ vs Min) (ns)	Tt (Typ vs Max) (ps)	Package
MMDB45-B11	0.2	0.11	25	8	40	B11
MMDB35-B11	0.2	0.13	16	4	35	B11
MMDB30-B11	0.25	0.15	14	4	30	B11
MMD840-C11	0.4	0.2	15	7	70	DIE
MSD700	0.4	0.2	15	8	60	DIE/Various
MMD837-C11	0.4	0.2	20	5	70	DIE
MSD710	0.4	0.2	20	11	70	DIE/Various
MSD720	0.4	0.2	30	17	100	DIE/Various
MMD840-H27	0.52	0.32	15	7	70	H27
MMD837-H27	0.52	0.32	20	5	70	H27
MMD840-T86	0.58	0.38	15	7	70	T86
MMD837-T86	0.58	0.38	20	5	70	T86
MSD701	0.6	0.4	15	8	60	DIE/Various
MSD711	0.6	0.4	20	11	70	DIE/Various
MSD731	0.6	0.4	40	21	150	DIE/Various
MMD835-C11	0.7	0.3	15	10	70	DIE
MMD0840-A15	0.75	0.6	15	20	75	A15
MMD832-C11	0.8	0.4	20	10	80	DIE
MSD722	0.8	0.6	30	17	100	DIE/Various
MMD0151-A15	0.8	0.7	15	15	100	A15
MMD835-H20	0.92	0.42	15	10	70	H20
MMD835-T86	0.98	0.48	15	10	70	T86
MMD832-H20	0.98	0.58	20	10	60	H20
MMD832-T86	0.98	0.58	20	10	60	T86
MSD703	1	0.8	15	8	60	DIE/Various
MSD723	1	0.8	30	17	100	DIE/Various
MSD733	1	0.8	40	21	150	DIE/Various
MMD830-T86	1.18	0.68	25	30	60	T86
MMD830-H20	1.18	0.68	25	15	80	H20
MSD724	1.4	1	30	17	100	DIE/Various
MMD820-C12	1.7	1	40	30	100	DIE
MMD820-H20	1.88	1.18	40	30	100	H20
MMD820-T86	1.88	1.18	40	30	100	T86
MMD810-T86	2.68	1.68	50	40	250	T86
MSD726	3	2	30	17	100	DIE/Various
MSD736	3	2	40	21	150	DIE/Various
MMD0815-A15	4.15	3.15	50	135	320	A15

PIN Switch and Attenuator Diodes								
Part Number	Max Freq (MHz)	Min Freq (MHz)	CW Power Dissipation (W)	Total Capacitance (pF)	Resistance (Ω)	TI (ns)	Breakdown Voltage Min (V)	Package
MMP7078	100	0.1	—	1	0.5	2500	400	DIE/Various
MA4P504-30	500	1	7.5	0.4	0.6	1000	500	ODS-30
MA4P504-186	500	1	7.5	0.4	0.6	1000	500	ODS-186
MA4P504-255	500	1	7.5	0.4	0.6	1000	500	ODS-255
MA4P505-255	500	1	10.7	0.55	0.5	2000	500	ODS-255
MA4P506-30	500	1	13.6	0.95	0.3	3000	500	ODS-30
MA4P506-31	500	1	13.6	0.95	0.3	3000	500	ODS-31
MADP-000015-000030	500	1	15	0.55	0.4	2000	500	ODS-30
MA4P604-255	500	1	15	0.6	1	3000	1000	ODS-255
MA4P606-30	500	1	15	0.8	0.7	4000	1000	ODS-30
MA4P606-36	500	1	20	0.99	0.7	4000	1000	ODS-36
MA4P607-296	500	1	25	2.35	0.4	5000	1000	ODS-296
MA47047-54	1000	1	0.3	0.3	1.5	1000	200	ODS-54
MA47266-146	1000	1	0.5	1.5	0.6	4000	200	ODS-146
MA4P606-4	1000	1	1	0.7	0.7	4000	1000	ODS-4
MA4P606-131	1000	1	15	0.6	0.7	4000	1000	ODS-131 DIE
MADP-000488-13740W	1500	100	15	0.16	1.6	4000	900	ODS-1374 DIE
MADP-000135-01340W	1500	100	50	0.15	1.2	440	200	ODS-134 DIE
MPN3001	2000	—	—	0.25	1	—	200	A15
MA4P404-30	2000	5	7.5	0.4	0.6	1000	250	ODS-30
MADP-042505-130600	2000	50	1.3	0.6	0.8	210	80	ODS-1306 DIE
MADP-042508-130600	2000	50	1.3	0.6	0.9	310	100	ODS-1306 DIE
MADP-000165-01340W	2000	100	50	0.06	2.5	200	200	ODS-134 DIE
MA4P604-30	2500	1	15	0.5	1	3000	1000	ODS-30
MADP-000506-014400	4000	1	10	0.7	0.3	100	500	ODS-144
MA4P506-131	4000	1	13.6	0.7	0.3	3000	500	ODS-131 DIE
MA4P505-36	4000	1	15	0.55	0.5	2000	500	ODS-36
MA4P303-186	4000	20	0.3	0.35	1.5	200	200	ODS-186
MA4P303-120	4000	20	5	0.35	1.5	200	200	ODS-120
MA4P203-1056	4000	30	0.3	0.35	1.5	100	100	ODS-1056
MA4P203-30	4000	30	5	0.35	1.5	100	100	ODS-30
MA4P202-120	4000	50	0.3	0.25	2.5	60	100	ODS-120
MADP-042405-130600	4000	50	1.3	0.27	0.8	210	80	ODS-1306 DIE
MMP7092	6000	1	—	0.2	0.6	1000	500	DIE/Various
MMP7024	6000	1	—	0.25	0.5	60	70	DIE/Various
MADP-017015-1314	6000	1	5	0.32	0.7	1300	115	ODS-1314 DIE
MPN7420	6000	1	2.5	0.06	1	1000	400	C12
MPN7453A	6000	1	3	0.1	0.7	700	300	C22
MPN7453B	6000	1	3	0.15	0.6	2500	400	C22
MPN7453C	6000	1	3	0.18	0.4	1000	300	C22
MADP-017025-1314	6000	1	5	0.23	1	2300	1335	ODS-1314 DIE
MPN7380	6000	1	10	0.4	0.3	2500	800	C38
MPN7360	6000	1	10	0.8	0.2	2500	600	C37
MPN7370	6000	1	10	2	0.2	5000	700	C39
MA4P505-131	6000	1	10.7	0.35	0.5	2000	500	ODS-131 DIE
MADP-030015-13140P	6000	1	11.5	0.78	0.5	1600	115	ODS-1314 DIE
MADP-030025-1314	6000	1	11.5	0.5	0.7	2800	135	ODS-1314 DIE
MPN7320-H20	6000	5	1	0.2	3	120	150	H20



PIN Switch and Attenuator Diodes (continued)								
Part Number	Max Freq (MHz)	Min Freq (MHz)	CW Power Dissipation (W)	Total Capacitance (pF)	Resistance (Ω)	TI (ns)	Breakdown Voltage Min (V)	Package
MPN7345	6000	5	4	0.3	0.3	500	300	C40
MPN7315-H20	6000	10	1	0.26	1.2	180	150	H20
MPN7312A-H20	6000	20	1	0.26	1.2	150	120	H20
MPN7312B-H20	6000	20	1	0.36	0.8	250	120	H20
MADP-042305-130600	6000	50	1	0.14	1.3	180	80	ODS-1306 DIE
MADP-042308-130600	6000	50	1	0.14	1.3	280	100	ODS-1306 DIE
MPN7306-H20	6000	100	1	0.26	1.2	50	70	H20
MPN7302-H20	6000	500	1	0.26	1.2	8	20	H20
MMP7023	8000	1	—	0.2	0.7	60	70	DIE/Various
MA47222	8000	1	3.8	0.4	1.6	160	150	ODS-144
MA47223	8000	1	7.5	0.4	0.6	1000	500	ODS-144
MA4P504-144	8000	1	7.5	0.4	0.6	1000	500	ODS-144
MA4P604-131	8000	1	15	0.3	1	3000	1000	ODS-131 DIE
MNP0012A-T54P	8000	5	0.25	0.36	0.6	650	350	T54p
MNP0012A-T55P	8000	5	0.25	0.31	0.6	650	350	T55p
MNP0012A-T89P	8000	5	0.25	0.43	0.6	650	350	T89p
MNP0012A	8000	5	1	0.18	0.6	650	350	C22p
MA47416-132	10000	DC	5	0.15	6	2000	200	ODS-132 DIE
MMP7022	10000	1	—	0.15	0.9	60	70	DIE/Various
MNP0014A	10000	1	0.1	0.18	0.8	1400	500	C32p
MNP0014-T55P	10000	1	0.1	0.25	0.8	750	450	T55p
MNP0014-T54P	10000	1	0.1	0.32	0.8	750	450	T54p
MNP0014-T89P	10000	1	0.1	0.37	0.8	750	450	T89p
MNP0014	10000	1	1.5	0.12	1.3	750	500	C22p
MA4P504-132	10000	1	7.5	0.2	0.6	1000	500	ODS-132 DIE
MA47418-134	10000	5	6	0.15	3	1000	200	ODS-134 DIE
MA4P404-132	10000	5	7.5	0.2	0.7	600	250	ODS-132 DIE
MNP0012-T55P	12000	5	0.25	0.21	3.5	350	300	T55p
MNP0012-T54P	12000	5	0.25	0.28	3.5	350	300	T54p
MNP0012-T89P	12000	5	0.25	0.33	3.5	350	300	T89p
MPN7320	12000	5	1	0.02	3	120	150	C01
MNP0012	12000	5	1	0.08	3.5	350	300	C12p
MNP0010-T55P	12000	10	0.25	0.21	2	300	150	T55p
MNP0010-T54P	12000	10	0.25	0.28	2	300	150	T54p
MNP0010-T89P	12000	10	0.25	0.33	2	300	150	T89p
MPN7312B	12000	20	1	0.18	0.8	250	120	C12
MNP0008-T55P	12000	100	0.25	0.21	2	150	100	T55p
MNP0008-T54P	12000	100	0.25	0.28	2	150	100	T54p
MNP0008-T89P	12000	100	0.25	0.33	2	150	100	T89p
MPN7306	12000	100	1	0.08	1.2	50	70	C12
MMP7011	12000	200	—	0.15	0.8	10	25	DIE/Various
MPN7302	12000	500	1	0.08	1.2	8	20	C11
MMP7021	14000	1	—	0.1	1	60	70	DIE/Various
MADP-042905-130600	16000	50	0.8	0.06	3.1	140	80	ODS-1306 DIE
MADP-042908-130600	16000	50	0.8	0.06	3.1	230	100	ODS-1306 DIE
MMP7025	18000	1	—	0.03	1.9	100	100	DIE/Various
MMP7020	18000	1	—	0.05	1.2	60	70	DIE/Various

PIN Switch and Attenuator Diodes (continued)								
Part Number	Max Freq (MHz)	Min Freq (MHz)	CW Power Dissipation (W)	Total Capacitance (pF)	Resistance (Ω)	TI (ns)	Breakdown Voltage Min (V)	Package
MA4P303-134	18000	20	5	0.15	1.5	200	200	ODS-134 DIE
MA4P203-134	18000	30	5	0.15	1.5	100	100	ODS-134 DIE
MADP-000402-12530P	18000	50	1	0.04	4.5	200	70	ODS-1253 DIE
MA4SPS402	18000	50	1	0.04	5	200	100	ODS-1253 DIE
MADP-000402-12530G	18000	50	1	0.04	5	200	1000	ODS-1253 DIE
MADP-064908-131000	18000	50	1	0.05	5	200	100	ODS-1310 DIE
MA4P7493-134	18000	50	2.5	0.05	1.8	80	150	ODS-134 DIE
MA4PBL027	18000	100	0.2	0.03	4	150	90	Beam Lead DIE
MA4P161-134	18000	100	2.3	0.1	1.5	150	100	ODS-134 DIE
MMPN080045	20000	2000	—	—	—	—	200	C50
MA4SPS302	26000	1	0.8	0.4	1.3	460	100	SURMOUNT™ DIE
MA4SPS502	26000	1	35	0.14	2.4	2800	275	ODS-1270
MA4SPS552	26000	50	1	0.06	1.7	2500	200	ODS-1270
MMPN080150	35000	2000	—	—	—	—	200	C51
MA4AGBLP912	40000	100	0.1	0.02	4	5	50	Beam Lead DIE
MA4GP030	40000	100	0.3	0.06	2	25	100	ODS-277
MA4GP022	40000	100	0.3	0.15	1	20	50	ODS-277
MMSPN050-C53	40000	1000	40	—	0.6	4000	200	C53
MMSPN050-C54	40000	1000	40	—	0.6	4000	200	C54

PIN Limiter Diodes							
Part Number	Incident Power, Max (W)	Thermal Resistance	Junction Capacitance (pF)	Resistance (Ω)	Lifetime (ns)	Vb (V)	Package
MADL-04L401-0113W0	—	25	0.3	1.2	800	—	ODS-134 DIE
MADL-000301-0113W0	—	30	0.2	1.5	200	—	ODS-134 DIE
MLP7140	50	100	0.12	2	7	30 - 40	DIE/Various
MLP7100	50	100	0.2	1.5	5	20 - 45	DIE/Various
MLP7130	50	120	0.12	2	5	15 - 30	DIE/Various
MA4L011-134	80	175	0.18	2.1	10	—	ODS-134 DIE
MADL-000011-13880G	80	175	0.18	2.1	10	—	ODS-13880G DIE
MA4L011-186	80	175	0.33	2.1	10	—	ODS-186
MA4L011-30	80	175	0.36	2.1	10	—	ODS-30
MA4L011-31	80	175	0.36	2.1	10	—	ODS-31
MA4L011-1056	80	175	0.38	2.1	10	—	ODS-1056
MA4L011-32	80	175	0.48	2.1	10	—	ODS-32
MA4L022-134	90	175	0.19	2	10	—	ODS-134 DIE
MA4L021-134	90	175	0.2	2.1	10	—	ODS-134 DIE
MADL-011021-14210G	90	175	0.2	2.1	10	—	ODS-1056
MA4L022-120	90	175	0.32	2	10	—	ODS-120
MA4L021-120	90	175	0.33	2.1	10	—	ODS-120
MA4L022-186	90	175	0.34	2	10	—	ODS-186
MA4L022-30	90	175	0.37	2	10	—	ODS-30
MA4L021-31	90	175	0.38	2.1	10	—	ODS-31
MADL-000021-003000	90	175	0.38	2.1	10	—	ODS-30
MA4L022-1056	90	175	0.39	2	10	—	ODS-1056
MA4L021-1056	90	175	0.4	2.1	10	—	ODS-1056
MA4L022-32	90	175	0.49	2	10	—	ODS-32
MLP7102	100	55	0.7	1	10	20 - 45	DIE/Various



PIN Limiter Diodes (continued)							
Part Number	Incident Power, Max (W)	Thermal Resistance	Junction Capacitance (pF)	Resistance (Ω)	Lifetime (ns)	Vb (V)	Package
MLP7141	100	70	0.2	1.5	7	30 - 60	DIE/Various
MLP7131	100	80	0.2	1.5	5	15 - 30	DIE/Various
MLP7101	100	80	0.5	1.2	10	20 - 45	DIE/Various
MA4L032-134	125	150	0.2	2.5	15	—	ODS-134 DIE
MA4L031-134	125	150	0.21	2	20	—	ODS-134 DIE
MADL-000031-13880G	125	150	0.21	2.1	20	—	ODS-1388
MADL-000032-003000	125	150	0.21	2.1	20	—	ODS-3000
MADL-011010-01340W	125	150	0.24	1.5	15	—	ODS-134
MA4L032-186	125	150	0.35	2.5	15	—	ODS-186
MA4L031-186	125	150	0.36	2	20	—	ODS-186
MA4L031-31	125	150	0.39	2	20	—	ODS-31
MA4L032-1056	125	150	0.4	2.5	15	—	ODS-1056
MA4L031-1056	125	150	0.41	2	20	—	ODS-1056
MA4L032-31	125	150	0.38	2.5	15	—	ODS-31
MA4L032-32	125	150	0.5	2.5	15	—	ODS-32
MLP7110	200	80	0.2	1.5	10	45 - 75	DIE/Various
MA4L062-134	200	150	0.15	2.5	10	—	ODS-134 DIE
MADL-000062-13880G	200	150	0.15	2.5	10	—	ODS-13880G DIE
MADL-011011-01340W	200	150	0.17	2.3	10	—	ODS-134
MADL-000062-105600	200	150	0.35	2.5	10	—	ODS-1056
MA4L101-134	250	30	0.15	2	90	—	ODS-134 DIE
MADL-000101-13880G	250	30	0.15	2	90	—	ODS-13880G DIE
MA4L101-186	250	30	0.3	2	90	—	ODS-186
MA4L101-30	250	30	0.33	2	90	—	ODS-30
MLP7111	400	60	0.5	1.2	15	45 - 75	DIE/Various
MADL-000301-01340W	500	30	0.2	1.5	200	—	ODS-134 DIE
MADL-000301-13870G	500	30	0.2	1.5	200	—	ODS-1370
MA4L301-31	500	30	0.38	1.5	200	—	ODS-31
MA4L301-1056	500	30	0.4	1.5	200	—	ODS-1056
MADL-011052-14280W	500	36	0.19	2	222	—	ODS-134 DIE
MLP7112	795	40	0.7	1	20	45 - 75	DIE/Various
MA4L401-134	1000	25	0.3	1.2	800	—	ODS-134 DIE
MADL-000401-13870G	1000	25	0.3	1.2	800	—	ODS-13870G DIE
MA4L401-120	1000	25	0.43	1.2	800	—	ODS-32
MA4L401-30	1000	25	0.48	1.2	800	—	ODS-30
MA4L401-31	1000	25	0.48	1.2	800	—	ODS-31
MA4L401-1056	1000	25	0.5	1.2	800	—	ODS-1056
MLP7120	1000	40	0.2	1.5	50	120 - 180	DIE/Various
MLP7121	2000	20	0.6	1	50	120 - 180	DIE/Various
MLP7122	4000	15	0.8	0.5	100	120 - 180	DIE/Various

Schottky Mixer and Detector Diodes							
Part Number	Max Frequency (MHz)	Min Frequency (MHz)	Total Capacitance (pF)	Dynamic Resistance (Ω)	Vf (V)	Vb (V)	Package
MA4E932A-186	18000	DC	.25	40	—	1.0	ODS-186
MA4E932B-186	18000	DC	.25	40	—	1.0	ODS-186
MA4E929A-119	18000	DC	.25	40	0.41	1.0	ODS-119
MA4E929B-119	18000	DC	.25	40	0.41	1.0	ODS-119

Schottky Mixer and Detector Diodes (continued)							
Part Number	Max Frequency (MHz)	Min Frequency (MHz)	Total Capacitance (pF)	Dynamic Resistance (Ω)	Vf (V)	Vb (V)	Package
MGR703	1000	DC	1	—	0.41	20	DIE/Various
MGR700	1000	DC	1.2	—	0.34	8	DIE/Various
MGR705	1000	DC	1.2	—	0.41	70	DIE/Various
MA40261	3000	DC	0.32	0.32	0.41	70	ODS-186
MA4E2811	3000	DC	1.2	—	0.41	15	ODS-56
MA4E2812-54	3000	DC	1.2	—	0.55	20	ODS-57
MADS-002811-00540T	3000	DC	1.2	—	—	70	ODS-55
1N5711	3000	DC	1.2	2	-1.45	70	ODS-54
MSS20-054-C15	8000	DC	0.2	80	—	0.8	C15P
MSS20-055-C15	8000	DC	0.2	80	—	0.8	C15P
MZB600-32	8000	DC	0.2	3500	0.3	3	CS32
MZB604-11	8000	DC	0.2	5000	0.3	4	CS11
MZB604-B11	8000	DC	0.2	5000	0.3	4	B11
MSS20-054-H27	8000	DC	0.35	80	—	0.8	H27
MSS20-055-H27	8000	DC	0.35	80	—	0.8	H27
MSS20-054-T86	8000	DC	0.41	80	—	0.8	T86p
MSS20-055-T86	8000	DC	0.41	80	—	0.8	T86p
MA40205-119	10000	DC	0.32	—	0.15	3.0	Various
MSS20-050-C15	12000	DC	0.15	80	—	0.8	C15P
MSS20-051-C15	12000	DC	0.15	80	—	0.8	C15P
MSS39-152-B10B	12000	DC	0.18	—	0.38	3.5	B10Bp
MSS39-048-P55	12000	DC	0.3	—	0.4	5	P55p
MSS20-050-H27	12000	DC	0.3	80	—	0.8	H27
MSS20-051-H27	12000	DC	0.3	80	—	0.8	H27
MSS20-054-0805	12000	DC	0.3	80	—	0.8	0805-2
MSS20-046-T86	12000	DC	0.31	80	—	0.8	T86p
MSS20-047-T86	12000	DC	0.31	80	—	0.8	T86p
MSS39-048-P86	12000	DC	0.32	—	0.4	5	P86p
MSS39-148-H20	12000	DC	0.33	—	.38	3.5	H20
MSS20-050-T86	12000	DC	0.36	80	—	0.8	T86p
MSS20-051-T86	12000	DC	0.36	80	—	0.8	T86p
MA40215-120	16000	DC	0.32	—	0.39	5	ODS-1200
MADS-011030-14280W	16000	DC	0.33	6.5	100	3.5	DIE
MSS39-045-C15	18000	DC	0.1	—	0.4	5	C15p
MSS30-442-B42	18000	DC	0.1	22	0.29	2	B42
MSS30-442-H40	18000	DC	0.1	22	0.29	2	H40
MSS40-141-B10B	18000	DC	0.1	22	0.42	3	B10B
MSS30-442-B41	18000	DC	0.1	22	0.4	4	B41
MSS20-046-C15	18000	DC	0.1	80	—	0.8	C15P
MSS20-047-C15	18000	DC	0.1	80	—	0.8	C15P
MSS30-142-B10B	18000	DC	0.1	22	0.29	2	B10B
MSS30-242-B20	18000	DC	0.1	22	0.29	2	B20
MSS39-148-B10B	18000	DC	0.12	—	0.38	3.5	B10Bp
MSS40-045-C15	18000	DC	0.12	15	0.42	3	C15
MSS30-046-C15	18000	DC	0.12	18	0.29	2	C15
MSS30-PCB46-B48	18000	DC	0.12	20	0.3	2	B48
MSS40-PCB46-B48	18000	DC	0.12	20	0.47	3	B48



Schottky Mixer and Detector Diodes (continued)							
Part Number	Max Frequency (MHz)	Min Frequency (MHz)	Total Capacitance (pF)	Dynamic Resistance (Ω)	Vf (V)	Vb (V)	Package
MSS40-244-B20	18000	DC	0.12	22	0.44	3	B20
MSS40-CR46-B49	18000	DC	0.125	22	0.47	3	B49
MSS30-B46-B45	18000	DC	0.125	25	0.3	2	B45
MSS50-B46-B45	18000	DC	0.13	20	0.5	4	B45
MSS30 PCR46-B47	18000	DC	0.13	22	0.29	2	B47
MSS40-PCR46-B47	18000	DC	0.13	22	0.47	3	B47
MSS40-B46-B45	18000	DC	0.13	25	0.47	3	B45
MSS30-148-B10B	18000	DC	0.15	15	0.27	2	B10B
MSS30-248-B20	18000	DC	0.15	15	0.27	2	B20
MSS30-448-B41	18000	DC	0.15	15	0.4	2	B41
MSS30-448-B42	18000	DC	0.15	15	0.3	2	B42
MSS40-048-C15	18000	DC	0.15	15	0.42	3	C15
MSS40-148-B10B	18000	DC	0.15	17	0.4	3	B10B
MSS40-248-B20	18000	DC	0.15	17	0.44	3	B20
MSS40-448-B42	18000	DC	0.15	17	0.4	3	B42
MSS30-050-C15	18000	DC	0.18	15	0.27	2	C15
MSS39-144-H27	18000	DC	0.24	—	0.38	3.5	H27
MSS39-146-H27	18000	DC	0.25	—	0.38	3.5	H27
MSS30-154-B10B	18000	DC	0.25	12	0.25	2	B10B
MSS30-454-B40	18000	DC	0.25	12	0.3	2	B40
MSS50-448-B40	18000	DC	0.25	14	0.5	4	B40
MSS30-B53-B45	18000	DC	0.25	15	0.3	2	B45
MSS30-CR53-B49	18000	DC	0.25	15	0.3	2	B49
MSS30 PCR53-B47	18000	DC	0.25	15	0.29	2	B47
MSS40-B53-B45	18000	DC	0.25	15	0.43	3	B45
MSS50-B53-B45	18000	DC	0.25	15	0.5	4	B45
MSS50-CR53-B49	18000	DC	0.25	15	0.5	4	B49
MSS50-PCR53-B48	18000	DC	0.25	15	0.5	4	B47
MSS20-046-H27	18000	DC	0.25	80	—	0.8	H27
MSS20-047-H27	18000	DC	0.25	80	—	0.8	H27
MSS39-045-P86	18000	DC	0.27	—	0.4	5	P86p
MSS40-045-P55	18000	DC	0.28	15	0.42	3	P55
MSS50-046-P55	18000	DC	0.28	20	—	4	P55
MSS40-045-P86	18000	DC	0.3	15	0.42	3	P86
MSS30-346-B21	18000	DC	0.3	16	0.27	2	B21
MSS40-455-B40	18000	DC	0.3	17	0.38	3	B40
MSS30-046-P55	18000	DC	0.3	18	0.29	2	P55
MSS40-141-H20	18000	DC	0.3	18	0.42	3	H20
MSS30-142-H20	18000	DC	0.31	22	0.29	2	H20
MSS30-242-H30	18000	DC	0.31	22	0.29	2	H30
MSS40-455-H40	18000	DC	0.32	14	0.38	3	H40
MSS40-048-P86	18000	DC	0.33	15	0.4	3	P86
MSS30-046-P86	18000	DC	0.33	18	0.3	2	P86
MSS30-CR46-H40	18000	DC	0.33	22	0.3	2	H40
MSS50-146-H20	18000	DC	0.34	18	0.5	4	H20
MSS30-050-P55	18000	DC	0.35	15	0.27	2	P55
MSS30-448-H40	18000	DC	0.35	15	0.3	2	H40

Schottky Mixer and Detector Diodes (continued)							
Part Number	Max Frequency (MHz)	Min Frequency (MHz)	Total Capacitance (pF)	Dynamic Resistance (Ω)	Vf (V)	Vb (V)	Package
MSS40-CR46-H40	18000	DC	0.35	15	—	3	H40
MSS50-B46-H40	18000	DC	0.35	20	—	4	H40
MSS30-B46-H40	18000	DC	0.35	25	0.3	2	H40
MSS39-152-H20	18000	DC	0.36	—	0.38	3.5	H20
MSS50-448-E45	18000	DC	0.36	10	0.5	4	E45
MSS30-148-H20	18000	DC	0.36	15	0.27	2	H20
MSS30-248-H30	18000	DC	0.36	15	0.27	2	H30
MSS40-448-H40	18000	DC	0.36	15	0.4	3	H40
MSS50-B53-E45	18000	DC	0.36	15	0.5	4	E45
MSS40-155-0402	18000	DC	0.38	14	0.38	3	0402
MSS30-050-P86	18000	DC	0.38	15	0.27	2	P86
MSS30-154-H20	18000	DC	0.46	12	0.25	2	H20
MSS30-254-H30	18000	DC	0.46	12	0.25	2	H30
MSS30-454-H40	18000	DC	0.46	12	0.3	2	H40
MSS30-B53-H40	18000	DC	0.46	15	0.3	2	H40
MSS50-CR53-H40	18000	DC	0.46	15	0.5	4	H40
MSS50-448-H40	18000	DC	0.48	10	0.5	4	H40
MSS50-B53-H40	18000	DC	0.48	15	0.29	4	H40
MSS30-346-H20	18000	DC	0.5	16	0.29	2	H20
MSS40-155-H20	18000	DC	0.51	14	0.38	3	H20
MSS39-146-B10B	26000	DC	0.1	—	0.38	3.5	B10Bp
MA4E2513L-1289	26000	DC	0.12	10	-0.7	3	ODS-1289
MA4E2501L-1290	26000	DC	0.12	10	0.33	5	ODS-1290
MA4E2502H-1246	26000	DC	0.12	11	0.65	3	ODS-1246
MA4E2502M-1246	26000	DC	0.12	12	-1.58	3	ODS-1246
MA4E2514M-1116	26000	DC	0.12	12	0.47	3	ODS-1116
MA4E2502L-1246	26000	DC	0.12	16	0.33	3	ODS-1246
MA4E2514L-1116	26000	DC	0.12	16	0.33	3	ODS-1116
MNM207	26000	DC	0.14	20	0.425	4	DIE/Various
MA4E2532M-1113	26000	DC	0.16	10	0.47	5	ODS-1113
MNM201	26000	DC	0.2	20	0.4	3	DIE/Various
MNM212	26000	DC	0.21	20	0.475	5	DIE/Various
MA4E2508H-1112	26000	DC	0.24	6	0.7	5	ODS-1112
MA4E2508M-1112	26000	DC	0.24	12	0.42	5	ODS-1112
MA4E2508L-1112	26000	DC	16	0.24	-1.7	5	ODS-1112
MSS39-144-B10B	40000	DC	0.08	—	0.38	3.5	B10Bp
MSS25-141-B10D	40000	DC	0.08	65	0.28	3	B10D
MSS20-140-B10D	40000	DC	0.08	80	—	0.8	B10D
MSS20-141-B10D	40000	DC	0.08	80	—	0.8	B10D
MSS25-143-B10D	40000	DC	0.1	60	0.26	3	B10D
MSS25-047-C15c	40000	DC	0.1	65	0.26	3	C15c
MSS20-142-0402	40000	DC	0.1	80	—	0.8	0402
MSS20-142-B10D	40000	DC	0.1	80	—	0.8	B10D
MSS20-143-B10D	40000	DC	0.1	80	—	0.8	B10D
MSS20-145-B10D	40000	DC	0.12	80	—	0.8	B10D
MSS20-146-B10D	40000	DC	0.12	80	—	0.8	B10D
MSS25-049-C15c	40000	DC	0.12	52	0.22	3	C15c



Schottky Mixer and Detector Diodes (continued)							
Part Number	Max Frequency (MHz)	Min Frequency (MHz)	Total Capacitance (pF)	Dynamic Resistance (Ω)	Vf (V)	Vb (V)	Package
MSS25-145-B10D	40000	DC	0.12	52	0.22	3	B10D
MGS912	60000	DC	0.03	28	2.9	20	B89
MGS906	60000	DC	0.04	14	1.5	10	B90
MGS907	60000	DC	0.04	14	1.5	10	B85
MGS908	60000	DC	0.04	14	1.5	10	B86
MA4E2037	60000	DC	0.05	4	0.8	4.5	Beam Lead
MA4E2039	60000	DC	0.05	4	0.8	4.5	Beam Lead
MA4E2040	60000	DC	0.05	4	0.8	4.5	Beam Lead
MGS901	60000	DC	0.06	7	0.75	5	Beam Lead
MGS903	60000	DC	0.06	7	0.75	5	Beam Lead
MGS904	60000	DC	0.06	7	0.75	5	B85
MGS905	60000	DC	0.06	7	0.75	5	B86
MGS907A	60000	DC	0.06	12	1.5	10	B85
MGS904A	60000	DC	0.08	5	0.75	5	B85
MGS902	60000	DC	0.1	7	0.75	5	Beam Lead
MGS909	60000	DC	0.1	21	2.1	15	B90
MGS910	60000	DC	0.1	21	2.1	15	B87

Switches						
Part Number	Max Freq (MHz)	Min Freq (MHz)	Insertion Loss (dB)	Isolation (dB)	Input IP3 (dBm)	Package
SPST						
MASW-001150-1316	2500	45	0.3	65	40	DIE
MA4SW110	26500	50	0.6	48	40	HMIC DIE
MA4AGSW1	50000	50	0.2	43	40	DIE
MA4AGSW1A	50000	50	1.2	48	40	DIE
SPDT						
SW-313-PIN	3000	50	0.8	52	46	CR-2
SW-228-PIN	4000	0	0.7	42	46	CR-2
SW-226-PIN	4000	0	1	48	46	CR-2
MASW-010647	10500	8000	0.8	37	60	DIE
MASW-011021	14000	6000	0.7	34	60	SURMOUNT™ DIE
MASW-002102-13580	18000	2	1.8	55	40	DIE
MASW-011108-DIE	18000	6000	0.6	44	—	DIE
CGY2890SUH	18000	6000	1.5	50	—	DIE
MASW-002103-1363	20000	50	0.8	38	40	SURMOUNT™ DIE
MASW-011052	26000	2000	0.8	50	43	DIE
MA4SW210B-1	26000	2000	1.2	48	40	DIE
MASW-002100-1191	26500	50	0.3	65	40	DIE
MA4SW210	26500	50	0.6	52	40	HMIC DIE
MASW-011144-DIE	40000	20000	65	30	—	DIE
MASW-010646	40000	26000	0.6	39	60	DIE
MASW-011036	40000	26000	0.7	40	60	DIE
MA4AGSW2	50000	50	0.6	46	40	DIE
MASW-011111	100000	80000	0.8	25	—	DIE
SP3T						
MASW-003102-13590	18000	2000	0.8	50	40	DIE
MASW-011053	18000	2000	0.8	50	48	DIE
MASW-003103-1364	20000	50	0.8	40	40	SURMOUNT™ DIE
MA4SW310B-1	26000	2000	1.2	47	40	DIE
MASW-003100-1192	26500	50	0.3	65	40	DIE
MA4SW310	26500	50	0.8	48	40	DIE
MA4AGSW3	50000	50	0.6	48	40	DIE
MASW-011029	100000	75000	1.3	33	—	DIE
SP4T						
MASW-004102-12760	18000	2	1.5	50	40	DIE
MA4SW410B-1	18000	2000	0.8	48	40	DIE
MASW-004103-1365	20000	50	0.8	50	63	SURMOUNT™ DIE
MASW-004240-13170	24000	10	2.5	50	—	DIE
MASW-004100-1193	26500	50	0.3	65	40	DIE
MA4SW410	26500	50	0.7	48	40	DIE
MASW-011087	30000	27000	0.85	50	55	DIE
MA4AGSW4	50000	50	0.8	42	40	DIE
SP5T						
MASW-010351	4000	10	1.4	57	50	PQFN-24, 4 mm
MA4SW510B-1	18000	2000	0.9	40	40	DIE
MASW-005102-13600	18000	2000	0.9	40	40	DIE
MASW-006102-13610	26500	50	0.3	65	40	DIE



Switches (continued)						
Part Number	Max Freq (MHz)	Min Freq (MHz)	Insertion Loss (dB)	Isolation (dB)	Input IP3 (dBm)	Package
MA4SW510	26500	50	0.9	38	40	DIE
MASW-005100-1194	26500	50	0.9	38	40	DIE
MA4AGSW5	50000	50	1.1	47	40	DIE
SP6T						
MA4SW610B-1	18000	2000	1.3	45	40	DIE
SP8T						
MA4AGSW8-1	50000	50	1.5	37	40	DIE

DIGITAL ATTENUATORS

Digital Attenuators								
Part Number	Max Freq (MHz)	Min Freq (MHz)	Attenuator Range (dB)	Insertion Loss (dB)	Bit Count	IIP3	LSB	Package
CGY2176AUH	8000	1000	31.5	5.6	6	—	—	DIE
CGY2171XBUH	15000	1000	31.5	5	6	—	—	DIE
CGY2390SUH	18000	6000	35	2.2	3	—	—	DIE
CGY2169UH	18000	10000	23.5	4	6	—	—	DIE

INTEGRATED ICs & MODULES

Radar Core Chips								
Part Number	Description	Max Freq. (GHz)	Min Freq. (GHz)	Transmit Gain (dB)	Transmit P1dB (dBm)	Receive Gain (dB)	Receive Noise Figure (dB)	Package
CGY2179UH	4 Bit, Ku-Band Core Chip	12.75	10.7	12	3	—	1.9	DIE
CGY2175AHV	3 Port, C-Band Integrated Core Chip	6	4	—	20	—	—	QFN
CGY2175AUH	3 Port, 6 Bit, C-Band Integrated Core Chip	6	4	—	20	—	—	DIE
CGY2170YHV	8 – 12 GHz 3 Port Core Chip	12	8	5.8	12	5.8	—	QFN
CGY2170YUH	6 Bit, X-Band Core Chip	12	8	6	11	6	—	DIE
CGY2179HV	4 Bit, Ku-Band Core Chip	12	11	12	3	—	1.9	QFN
CGY2330UH	12 – 15 GHz 2 Port Core Chip	15	13	—	—	—	—	DIE
CGY2351UH	Ka-Band Core Chip	30	26	—	—	—	—	DIE
CGY2350UH	5 Bit, Ka-Band Core Chip	36	34	3	—	—	—	DIE

POWER DIVIDERS/COMBINERS

Power Dividers/Combiners								
Part Number	Max Freq (MHz)	Min Freq (MHz)	Channels (#)	Amplitude Balance (dB)	Phase Balance (°)	Isolation (dB)	Max Input Power (dBm)	Package
M3H-50-PIN	100	1	3	0.2	1	30	30	TO-5
DS-310-PIN	300	0	4	0.2	4	25	30	FP-5
M3V-50-PIN	300	50	3	0.2	2	25	30	TO-5
DS-113-PIN	400	0	2	0.2	1	25	30	FP-2
DSS-113-PIN	400	0	2	0.2	1	25	30	SF-1
DS-318-PIN	500	5	2	0.2	1	18	30	RH-1
DS-109-PIN	500	10	2	0.2	1	25	30	FP-2
DS-319-PIN	500	10	2	0.2	1	25	30	TO-8
DSS-333-PIN	500	10	2	0.2	2	25	30	SF-1
DS-112-PIN	500	10	3	0.2	2	25	30	TO-5



POWER DIVIDERS/COMBINERS

Power Dividers/Combiners (continued)								
Part Number	Max Freq (MHz)	Min Freq (MHz)	Channels (#)	Amplitude Balance (dB)	Phase Balance (°)	Isolation (dB)	Max Input Power (dBm)	Package
DS-328-PIN	700	3	3	0.3	3	20	30	TO-8
DSS-327-PIN	1000	5	2	0.2	3	20	30	FP-2
DS-323-PIN	1000	25	3	0.4	4	24	30	FP-3
DS-324-PIN	1000	25	4	0.3	6	20	30	FP-5
DS-331-PIN	1500	750	2	0.2	6	10	30	TO-8
DS-313-PIN	2000	10	2	0.3	4	23	24	FP-2
DSS-313-PIN	2000	10	2	0.3	4	23	24	SF-1
MAPD-011062	20000	2000	2	0.2	2	15	50	PQFN-16, 3 mm

PHASE DETECTORS

Phase Detectors										
Part Number	SRD VBR Min (V)	SRD CJ Typ (pF)	SRD TL Typ (ns)	SRD TT Max (ps)	Cap CT Typ (pF)	SD CJ Typ (pF)	SD VF Typ	SD RD Typ (mV)	FMW Typ (GHz)	Package
MSPD2018-H50	15	0.35	5	55	0.6	0.1	430	16	22	H50
MSPD1012-H50	15	0.5	10	70	2.5	0.18	270	9	12	H50
MSPD1000-H50	15	1	35	95	20	0.4	270	7	0.5	H50



Low Noise Amplifiers									
Part Number	Max Freq (MHz)	Min Freq (MHz)	Gain (dB)	Noise Figure (dB)	OIP3 (dBm)	Output P1dB (dBm)	Bias Voltage (V)	Bias Current (mA)	Package
CGY2106XHV	3000	100	19	0.45	35	19	2.5	50	QFN
MAAM-011229-CQ3	4000	50	19	1.3	38	19.5	5	80	QFN-12, 3 mm
CGY2105XHV	4000	500	19	0.42	35	21	3	50	QFN
CGY2108GS	6000	500	21	0.6	36	10	5	50	Hermetic Ceramic
CGY2108HV	6000	500	21.5	0.5	36	22	5	50	Hermetic Ceramic
CGY2107HV	6000	500	24	0.5	36	19	5	50	QFN
MAAL-011134-CQ3	6000	700	14.5	1.1	31.0	16.0	3.0	51.0	QFN-12, 3 mm
CGY2178UH	6000	5000	30	1	22	15	3	40	DIE
MAAM37000-A1	7000	3500	17	2.2	25	14	4	75	Ceramic-8
MAAM37000-A1G	7000	3500	17	2.2	25	14	4	75	Ceramic Gull Wing-8
CGY2120XUH	7000	5000	13	0.5	—	12	1	50	DIE
MAAM-011252-CQ3	8000	30	19.5	1.7	32.4	18.1	5	65	QFN-12, 3 mm
CGY2220UH	12000	1000	36	1.5	12	—	1.5	54	DIE
MAAM71200-H1	12000	7500	15.5	2.7	21	11	4	40	Leadless Ceramic
CGY2221UH	12000	8000	16	1.6	29	17	5	82	DIE
CGY2124UH	12000	8000	33	1.1	20	10	5	55	DIE
CGY2221HV	13000	7500	16	1.6	29	17	5	82	QFN
CGY2232UH	14750	12750	24	1.3	—	0	3	24	DIE
CGY2125AUH	15000	13000	25	1.5	—	8	3.3	20	DIE
CGY2230UH	18000	1000	35	1.5	12	0	1.5	50	DIE
CGY2290SUH	18000	6000	8.5	3	—	13	5	30	DIE
CGY2121XUH	26000	18000	19	1.3	5	7	1.5	60	DIE
CGY2128UH	34000	24000	23	1.6	17.5	8.5	3.5	47	DIE
CGY2122XUH	43000	25000	32	1.5	10	1.2	1.1	30	DIE
CGY2260UH	44000	24000	25.5	1.7	22	6	1.5	50	DIE
CGY2272UH	69000	44000	29	1.7	—	5	1.5	46	DIE
CGY2190UH	110000	75000	23	2.8	—	1	1	33	DIE

Distributed Amplifiers								
Part Number	Max Freq (MHz)	Min Freq (MHz)	Gain (dB)	Gain Flatness	Noise Figure (dB)	OIP3 (dBm)	Output P1dB (dBm)	Package
CGY2145UH	45000	500	12.7	—	4.5	—	18	DIE
CGY2141UH	46000	10	16	—	4	—	19	DIE
CGY2160UH	47000	1500	14.5	—	1.5	—	17	DIE
CGY2144UH	54000	10	13	—	2.5	—	15	DIE

Amplifier Gain Block								
Part Number	Description	Max Freq (MHz)	Min Freq (MHz)	Output P1dB (dBm)	PSAT (dBm)	Gain (dB)	OIP3 (dBm)	Package
MAAP-010168	10 W Power Amplifier	3000	500	39	41	24	—	Ceramic Flanged-10
MAAM26100-B1	Power Amplifier	6000	2000	27	30.5	19	39	CR-2
MAAM26100-P1	Power Amplifier	6000	2000	28	30.5	20	40	CR-15
CGY2731UH	Gain Block	15000	12000	19	—	19	—	DIE

GaN Power Amplifiers								
Part Number	Description	Max Freq (MHz)	Min Freq (MHz)	Output P1dB (dBm)	PSAT (dBm)	Gain (dB)	OIP3 (dBm)	Package
MAAP-010168	10 W Power Amplifier	3000	500	39	41	24	—	Ceramic Flanged-10
CGY2135UH	Power Amplifier, 33 dBm	23000	18000	31.2	33	25	—	DIE
CGY2651UH	37 - 43 GHz 41 dBm	43000	37000	—	40	18	—	DIE

RF Power Amplifiers: GaN: *MACOM PURE CARBIDE*

Part Number	Max Freq (MHz)	Min Freq (MHz)	Supply Voltage (V)	Output Power P _{SAT} (W)	Gain (dB)	Efficiency (%)	Test Freq (GHz)	Package
MAPC-A1511	300	3	100	3000	19	79	0.13	AC-1230
MAPC-A1502	460	400	50	1250	17	83	400	AC-1230
MAPC-A1508	930	900	50	700 (CW)	16.5	73	0.915	AC-780
MAPC-A1507	930	900	50	1400 (CW)	16	73	0.915	AC-1230
MAPC-A1501	1215	960	65	1300	17.2	64.5	1.06	AC-780B
MAPC-A1500	1215	960	65	2600	18.5	66.2	1.06	AC-1230S
MAPC-A1504	1400	1200	50	500	17	54	1400	AC-780
MAPC-A1513	1850	1300	52	450	14	59	1.6	AP-780
MAPC-A1506	2400	2000	52	450	14	58	2.9	AP-780
MAPC-A1516	2500	2400	50	500 (CW)	14.5	70	2450	AC-780
MAPC-A1103	2700	0	50	270	18.4	68.2	2.6	AC-650S
MAPC-A1000	2700	30	50	25	13	51	2.7	DFN, 7 x 6.5 mm
MAPC-A2021	2700	1800	30	8	16.2	67	2.7	QFN, 4 x 4 mm
MAPC-A1522	3100	2700	65	1000	14.5	61	2900	AP-1230S
MAPC-A1505	3300	2700	50	700	14	68	2.2	AC-1230
MAPC-A1101	3500	0	50	85	15	70	3.5	AC-360S
MAPC-A1102	3500	0	50	150	13	65	3.5	AC-360S
MAPC-A1100	3500	1	50	65	18	71	3.5	AC-360S
MAPC-S1000	3500	30	50	15	13	52.2	3.5	AQFN, 5 x 5 mm
MAPC-A2004	3800	3300	50	90	14.5	52	3.6	DFN, 7 x 6.5 mm
MAPC-A2517	3800	3400	50	29	14	52.3	3.6	AC-780S
MAPC-A2002	4000	3400	50	50	16.2	61	3.6	DFN, 7 x 6.5 mm
MAPC-A2001	4000	3400	50	50	17.2	62	3.85	DFN, 7 x 6.5 mm
MAPC-A2500	4000	3400	50	450	13	52	3.6	AC-780S
MAPC-A2506	4000	3700	50	29	12.5	52.3	3.85	AC-780S
MAPC-A2011	4000	3700	50	90	14.5	52	3.8	DFN, 7 x 6.5 mm
MAPC-S1504	5900	5200	50	60	16.7	50.5	5.6	AC-400B
MAPC-S1101	12000	0	50	15	16	58	3.5	AQFN, 3 x 3 mm

TRANSFORMERS/BALUNS

Transformers/Baluns

Part Number	Description	Max Freq (MHz)	Min Freq (MHz)	Impedance Ratio	Insertion Loss (dB)	Impedance (Ω)	Package
MABA-011115	Transmission Line Balun	3000	5	1:1	0.8	50	SMT
MABA-011116	Transmission Line Balun	3000	5	1:2	1.7	50	SMT
MABA-011125	Balun	20 GHz	2 GHz	1:2	2	50	PQFN-16, 3 mm

COUPLER

Coupler

Part Number	Description	Max Freq (GHz)	Min Freq (GHz)	Coupling, Nom (dB)	Isolation (dB)	IL (dB)	Impedance (Ω)	Package
MACP-011088	Coupler, 16.5 dB	18	2	16.5	27	0.8	50	QFN-24, 4 mm



Frequency Multiplier								
Part Number	Min Input Frequency (MHz)	Max Input Frequency (MHz)	Min Output Frequency (GHz)	Max Output Frequency (GHz)	Input Power (dBm)	Multiply Factor (number)	Conversion Loss (number)	Package
CGY2770UH	11000	11500	—	—	—	8	—	DIE

CONNECTORIZED COMB GENERATORS

NLT GaAs Comb Generators						
Part Number	Power Max (dBm)	Power Min (dBm)	Output Harmonics 1	Output Harmonics 2	Output Harmonics 3	Package
MLPNC-7102-SMA800	23 @ 600 MHz	21 @ 400 MHz	-8 @ 4 GHz	-16 @ 12 GHz	-20 @ 20 GHz	SMA800
MLPNC-7103-SMA800	23 @ 1300 MHz	21 @ 800 MHz	-5 @ 6 GHz	-15 @ 18 GHz	-20 @ 30 GHz	SMA800
MLPNC-7100S1-SMA800	24 @ 250 MHz	18 @ 75 MHz	-15 @ 1 GHz	-18 @ 2 GHz	-24 @ 4 GHz	SMA800
MLPNC-7100-SMA850	24 @ 400 MHz	20 @ 100 MHz	-8 @ 4 GHz	-18 @ 12 GHz	-35 @ 20 GHz	SMA850
MLPNC-7102S1-SMA800	24 @ 700 MHz	18 @ 300 MHz	-10 @ 4 GHz	-15 @ 8 GHz	-22 @ 12 GHz	SMA800
MLPNC-7103S1-SMA800	24 @ 1500 MHz	18 @ 600 MHz	-10 @ 4 GHz	-8 @ 8 GHz	-20 @ 15 GHz	SMA800

CAPACITORS

MNS Chip Capacitors				
Part Number	Capacitance (pf)	Standoff Voltage (V)	Chip Style	Package
MA4M3010	10	200	350	DIE
MA4M2020	20	200	132	DIE
MA4M3030	30	200	352	DIE
MA4M1050	50	100	132	DIE
MA4M3050	50	200	354	DIE
MA4M3100	100	50	358	DIE
MA4M1100	100	100	199	DIE
MA4M3150	150	50	359	DIE

High Q MNOS Series Chip Capacitors: 9000 Series VB >50 V & 9100 Series VB >100 V				
Part Number	Capacitance (pf)	Working Voltage (V)	Chip Size + .002"	Package
910R1 thru 911R9	0.1 to 1.9	100	0.010" x 0.010" x 0.005"	DIE
912R0 thru 919R9	2 to 9.9	100	0.015" x 0.015" x 0.005"	DIE
902R0 thru 9010R	2 to 10	50	0.010" x 0.010" x 0.005"	DIE
9110R thru 9129R	10 to 29	100	0.020" x 0.020" x 0.006"	DIE
9011R thru 9029R	11 to 29	50	0.015" x 0.015" x 0.005"	DIE
9030R thru 9049R	30 to 49	50	0.020" x 0.020" x 0.006"	DIE
9130R thru 9149R	30 to 49	100	0.030" x 0.030" x 0.006"	DIE
9150R thru 9199R	50 to 99	100	0.040" x 0.040" x 0.008"	DIE
9050R thru 9099R	50 to 99	50	0.030" x 0.030" x 0.006"	DIE
90100 thru 90199R	100 to 199	50	0.040" x 0.040" x 0.008"	DIE
91100 thru 91199	100 to 199	100	0.050" x 0.050" x 0.008"	DIE
91200 thru 91399	200 to 399	100	0.070" x 0.070" x 0.008"	DIE
90200 thru 90399R	200 to 399	50	0.050" x 0.050" x 0.008"	DIE
90400 thru 90600R	400 to 600	50	0.070" x 0.070" x 0.008"	DIE

Beam Lead Capacitors: 9000 Series VB >50 V		
Part Number	Capacitance Range (pf)	Package
90R1 thru 90R9	0.1 to 0.9	14-1
90R5 thru 901R0	0.5 to 1	14-2
901R0 thru 901R5	1 to 1.5	14-1

Beam Lead Capacitors: 9000 Series VB >50 V (continued)		
Part Number	Capacitance Range (pf)	Package
901R0 thru 902R2	1 to 2.2	14-2
902R2 thru 904R7	2.2 to 4.7	14-2
905R6M	5.6 + 20%	14-2
906R8M	6.8 + 20%	14-2
908R2M	8.2 + 20%	14-2
9010ROM	10 + 20%	14-3
9015ROM	15 + 20%	14-3
9022ROM	22 + 20%	14-3
9033ROM	33 + 20%	14-3
9047ROM	47 + 20%	14-4
9068ROM	68 + 20%	14-4
9082ROM	82 + 20%	14-4
90100ROM	100 + 20%	14-4

DC Floating /RF Bypass Mounting Capacitors: 9100 & 9000 Series

Part Number	Capacitance Range (pF)	Chip Size A	Chip Size B	Pad Size D	Pad Size E	Customer Specified Field D
SP49	5 - 50	0.014	0.034	0.011	0.031	0.005 - 0.020
SP84	7 - 70	0.02	0.04	0.016	0.03	0.005 - 0.020
SP51	8 - 80	0.015	0.045	0.013	0.043	0.005 - 0.020
SP14	9 - 90	0.02	0.04	0.016	0.036	0.005 - 0.020
SP34	9 - 90	0.024	0.034	0.02	0.03	0.005 - 0.020
SP6	10 - 100	0.014	0.055	0.012	0.053	0.005 - 0.020
SP89	12 - 120	0.02	0.06	0.014	0.055	0.005 - 0.020
SP80	13 - 130	0.016	0.065	0.014	0.063	0.005 - 0.020
SP12	14 - 140	0.02	0.055	0.018	0.053	0.005 - 0.020
SP87	15 - 150	0.013	0.12	0.009	16	0.005 - 0.020
SP81	17 - 170	0.015	0.09	0.013	0.088	0.005 - 0.020
SP22	24 - 240	0.025	0.08	0.021	0.075	0.005 - 0.020
SP88	25 - 250	0.021	0.121	0.015	0.115	0.005 - 0.020
SP48	29 - 290	0.035	0.065	0.031	0.061	0.005 - 0.020
SP64	75 - 750	0.055	0.102	0.051	0.098	0.005 - 0.020
SP120	90 - 900	0.055	0.12	0.05	0.115	0.005 - 0.020
SP7	100 - 1000	0.085	0.085	0.081	0.081	0.005 - 0.020
SP2	150 - 1500	0.11	0.11	0.1	0.1	0.005 - 0.020
SP68	175 - 1750	0.101	0.124	0.097	0.12	0.005 - 0.020
SP5	200 - 1000	0.1	0.1	0.095	0.095	0.005 - 0.020
SP1	200 - 2000	0.11	0.14	0.1	0.13	0.005 - 0.020
SP20	200 - 2000	0.12	0.14	0.11	0.13	0.005 - 0.020
SP29	200 - 2000	0.121	0.121	0.115	0.115	0.005 - 0.020
SP38	200 - 2000	0.094	0.152	0.091	0.148	0.005 - 0.020
SP39	200 - 2000	0.12	0.134	0.11	0.13	0.005 - 0.020
SP40	200 - 2000	0.107	0.134	0.103	0.13	0.005 - 0.020
SP77	300 - 3000	0.118	0.175	0.114	0.171	0.005 - 0.020
SP52	300 - 3000	0.13	0.17	0.124	0.164	0.005 - 0.020
SP104	350 - 3500	0.142	0.171	0.138	0.167	0.005 - 0.020
SP111	350 - 3500	0.143	0.18	0.138	0.167	0.005 - 0.020
SP37	350 - 3500	0.151	0.168	0.147	0.164	0.005 - 0.020
SP44	350 - 3500	0.14	0.17	0.135	0.165	0.005 - 0.02



DC Floating /RF Bypass Mounting Capacitors: 9100 & 9000 Series(continued)							
Part Number	Capacitance Range (pF)	Chip Size A	Chip Size B	Pad Size D	Pad Size E	Customer Specified Field D	
SP55	360 – 3600	0.117	0.22	0.113	0.216	0.005 – 0.020	
MNOS Series Capacitors							
Part Number	Type	Range (pF)	Capacitance Range Min (pF)	Capacitance Dvw Min (V)	IR Min (Ω)	TCC Typ (ppm/+ °C)	Package
MBC50-0.2B14	Beam Lead	0.24	0.16	50	1000	55	B14
MBC50-1.0B14	Beam Lead	1.2	0.8	50	1000	55	B14
MBC50-1B12	Beam Lead	1.2	0.8	50	1000	55	B12
MBC50-1.5B14	Beam Lead	1.8	1.2	50	1000	55	B14
MBC50-2.0B14	Beam Lead	2.4	1.6	50	1000	55	B14
MBC50-2B12	Beam Lead	2.4	1.6	50	1000	55	B12
MBC50-3B12	Beam Lead	3.6	2.4	50	1000	55	B12
MBC50-4B12	Beam Lead	4.8	3.2	50	1000	55	B12
MBC50-6B12	Beam Lead	7.2	4.8	50	1000	55	B12
MBC50-8B12	Beam Lead	9.6	6.4	50	1000	55	B12
MBC50-10B12	Beam Lead	12	8	50	1000	55	B12
MBC50-15B12	Beam Lead	18	12	50	1000	55	B12
MBC50-20B12	Beam Lead	24	16	50	1000	55	B12
MBC50-33B13	Beam Lead	39.6	26.4	50	1000	55	B13
MBC50-47B13	Beam Lead	56.4	37.6	50	1000	55	B13
MBC50-68B13	Beam Lead	81.6	54.4	50	1000	55	B13
MBC50-82B13	Beam Lead	96	65.6	50	1000	55	B13
MBC50-100B13	Beam Lead	120	80	50	1000	55	B13
MC2DXXX010-010	Chips	5	0.1	50	1000	55	DIE
MC2SXXX010-010	Chips	8	0.25	50	1000	55	DIE
MC2SXXX011-011	Chips	12	1	50	1000	55	B12
MC2DXXX015-015	Chips	15	1.5	50	1000	55	DIE
MC2RXXX010-015	Chips	20	2	50	1000	55	DIE
MC2SXXX015-015	Chips	30	3	50	1000	55	DIE
MC2SXXX016-016	Chips	35	3	50	1000	55	DIE
MC2RXXX015-020	Chips	42	5	50	1000	55	DIE
MC2DXXX020-020	Chips	50	5	50	1000	55	DIE
MC2SXXX020-020	Chips	55	5	50	1000	55	DIE
MC2SXXX022-022	Chips	60	5	50	1000	55	DIE
MC2RXXX015-032	Chips	62	5	50	1000	55	DIE
MC2SXXX025-025	Chips	100	10	50	1000	55	DIE
MC2SXXX030-030	Chips	120	10	50	1000	55	DIE
MC2RXXX022-042	Chips	120	15	50	1000	55	DIE
MC2SXXX035-035	Chips	150	15	50	1000	55	DIE
MC2SXXX040-040	Chips	200	20	50	1000	55	DIE
MC2SXXX050-050	Chips	250	25	50	1000	55	DIE
MC2SXXX055-055	Chips	300	25	50	1000	55	DIE
MC2SXXX060-060	Chips	375	35	50	1000	55	DIE
MC2SXXX070-070	Chips	550	50	50	1000	55	DIE
MC2SXXX080-080	Chips	700	70	50	1000	55	DIE
MC2RXXX097-107	Chips	999	100	50	1000	55	DIE
MC2RXXX099-138	Chips	999	100	50	1000	55	DIE
MC2SXXX100-100	Chips	999	100	50	1000	55	DIE
MC2RXXX127-145	Chips	1800	200	50	1000	55	DIE

MNOS Series Capacitors

Part Number	Type	Range (pF)	Capacitance Range Min (pF)	Capacitance Dvw Min (V)	IR Min (Ω)	TCC Typ (ppm/+ °C)	Package
MC2RXXX142-160	Chips	2200	200	50	1000	55	DIE
MC2B0.8020-020	Binary Chip	1.8	1.2	50	1000	55	C20
MC2B002020-020	Binary Chip	4.5	3	50	1000	55	C20
MC2B004020-020	Binary Chip	9.6	6.4	50	1000	55	C20
MC2B008020-020	Binary Chip	18	12	50	1000	55	C20
MC2B016020-020	Binary Chip	36	24	50	1000	55	C20

DIGITAL PHASE SHIFTERS

Digital Phase Shifters

Part Number	Max Freq (MHz)	Min Freq (MHz)	Insertion Loss (dB)	Bit Count	LSB ($^{\circ}$)	IIP3 (dBm)	RMS Phase (%)	Package
CGY2177AUH	6800	4800	5	6	5.625	—	2	DIE
CGY2172XAUH	12000	8000	8	6	5.625	—	2	DIE
CGY2172XBUH	12000	8000	8	6	5.625	—	2	DIE
CGY2174UH	16000	14000	8	6	5.625	—	6	DIE
CGY2392SHV	18000	6000	10.8	6	5.625	—	1.09	QFN, 5 x 5 mm
CGY2392SUH	18000	6000	10.8	6	5.625	—	1.7	DIE
CGY2173UH	18000	6000	13	6	5.625	—	4	DIE

TRUE TIME DELAY

True Time Delay

Part Number	Description	Max Freq (MHz)	Min Freq (MHz)	Bit Count	Min Delay (ns)	Full Delay (ns)	Insertion Loss (dB)	CTRL Interface	Package
CGY2394SUH	6 - 18 GHz	18000	6000	1	330	330	6	0/+4	DIE
CGY2393SUH	6 - 18 GHz	18000	6000	5	10	310	6	0/+4	DIE



Space-Qualified Linearizers, SSPAs and Related Hardware for the LEO, MEO and GEO Space Industries.

MACOM's high-reliability linearization technology reduces amplifier distortion and allows an amplifier to operate at reduced OPBO thus operating at higher

efficiency for a given level of linearity. MACOM provides Space Qualified Products for all downlink frequencies including UHF, Ku, Ka, Q, V, and E bands.

Versatile Linearized Front-End Modules

Linearizers that enable HPAs to operate efficiently at different power levels over wide bandwidths, provide system gain, and the required RF drive power to the HPA. The versatile linearizer can be temperature compensated to maintain optimum RF performance. They can be configured to correct either a TWTA or an SSPA's nonlinear transfer characteristics over multi-gigahertz and a wide dynamic range.

Linearizer Modules for UHF, L, S, C, X and Ku-Band SSPAs

Drop-in, connectorized or pin connected linearizers for GaAs or GaN SSPAs. These modules provide the correction characteristic for SSPA transfer curves over wide frequency and temperature ranges.

UHF Linearized GaAs SSPA

Highest efficiency UHF SSPA with built-in linearizer. SSPAs for power levels of 50 W to over 300 W with multiple EPC options available.

GPS Linearized GaN SSPA

Drop-in, connectorized or pin connected linearizers for Highest efficiency SSPA with built-in linearizer. Wideband option including full GPS band available. SSPAs for power levels of 35 W to >400 W. Commandable over 5 dB power range at high efficiency. Multiple EPC options available.

UHF Linearized GaN SSPA

Highest efficiency (>78%) UHF SSPA with built in linearizer. SSPAs for power levels of 50 W to over 300 W. Multiple EPC options available.



QUALITY & RELIABILITY

MACOM's Commitment to Quality

Engineering, Manufacturing and Quality Assurance Partnerships at All Levels

MACOM Technology Solutions is committed to quality through interactions between engineering, manufacturing and quality assurance groups at design, development, manufacture, test and environmental screening levels for all MACOM products.

MACOM is firmly committed to producing and providing the highest level of quality products free of defects and deviations. Our primary goal is to achieve consistently high standards and customer satisfaction based on internal and customer expectations and requirements by:

- > Documenting procedures and specifications used in the manufacturing, testing and environmental screening of all MACOM products

- > Calibrating equipment with standards traceable to National Institute of Standards and Technology (NIST)
- > Assuring all incoming materials conform to documented specifications
- > Verifying process controls at fabrication, manufacturing and test levels
- > Performing environmental screening and conformance inspection up to and including space level per MIL-PRF-19500, MIL-PRF-38534, MIL-PRF-38535, PEM-INST-001 and/or customer specific requirements

Element Evaluation, Environmental Screening and Conformance Inspection

- > MACOM provides standard high-reliability test programs for our semiconductor and thin film products. Element evaluations are performed in accordance with MIL-PRF-38534 Class H and Class K levels for passive components and semiconductor die. Environmental Screening and Conformance Inspection are performed in accordance with MIL-PRF-19500 requirements and/or per customer specified requirements.
- > MMIC and Hybrid products use the standard process flows for class H and K devices
- > Table 1 and Table 2 represent MACOM standard element evaluation, environmental screening and conformance

inspection testing. Certain process steps may be omitted or modified due to device performance restraints, packaging, or screening levels.

Please note that the tables are provided for reference. Actual CI and PI flow can be modified to meet mission requirements. MACOM reserves the right to modify these flows as appropriate.

All MACOM environmental test flows are based on the appropriate MIL-PRF for the product.

MACOM's Lowell, Massachusetts facility is ISO9001:2008 registered. A copy of our ISO certificates is available upon request.

Table 1: MIL-PRF-38534 Element Evaluation for Passive Products

Step	Class		Process	Conditions	Comments
	K	H			
1			Subgroup 1		
2	X	X	Die Electrical	Rs (Resistors), Vr, Cj (Capacitors)	100% Electrical, Remove Rejects
3			Subgroup 2		
4	X	X	Die Visual	MIL-STD-883, Meth 2032	100% Visual Inspection, Remove Rejects
5			Subgroup 3		
6	X	—	Temperature Cycling	MIL-STD-883, Meth 1010, Cond C	10 Cycles, t + 10 Minutes Min, Ta = -65 [∞] °C to +150 [∞] °C
7	X	—	Constant Acceleration	MIL-STD-883, Meth 2001, Cond D	20,000 Gs, Y1 Direction
8	X	—	Aging (Capacitors Only)	MIL-STD-883, Meth 1015, Cond A	t = 240 Hours Min, Ta = +125 [∞] °C, Vr = V
9	X	X	Visual Inspection	MIL-STD-883, Meth 2017	—
10	X	X	End-point Electricals	Rs (Resistors), Vr, Ir, Ct (Capacitors)	Read & Record
11			Subgroup 4		
12	X	X	Bond Strength	MIL-STD-883 Meth 2011 Bond Strength = 3G Min	.001" Au Wire or Equivalent 10 (0) Wires or 20 (1) Wires

Table 2: MIL-PRF-38534 Element Evaluation for Semiconductor Die

Step	Class		Process	Conditions	Comments
	K	H			
1			Subgroup 1		
2	X	X	Die Electrical	Per Catalog Data Sheet/Device Specification	100% Electrical
3			Subgroup 2		
4	X	X	Die Visual	MIL-STD-883, Meth 2010	100% Visual Inspection
5			Subgroup 3		
6	X	X	Internal Visual	MIL-STD-883, Meth 2010 or MIL-STD-750, Meth 2072 or 2073	10 Cycles, t + 10 Minutes Min, Ta = -65 [∞] °C to +150 [∞] °C
7			Subgroup 4		
8	X		Temperature Cycling	MIL-STD-883, Meth 1010, Cond C	10 Cycles, t = 10 Minutes Min, Ta = -65 °C to +150 °C
9	X	X	Constant Acceleration	MIL-STD-883, Meth 2001, Cond D	20,000 g Y1 Direction
10	X	X	Pre Burn-In Electrical	—	Go/No Go
11	X		HTRB	MIL-STD-883, Meth 1015, Cond A	t = 240 Hours Min, Ta = +125 °C, Vr = __V
12	X	X	Post Burn-In Electrical	—	Go/No Go
13	X		Steady State Life	MIL-STD-883, Meth 1005, Cond B (when conditions provided)	t = 1000 Hours Min, Ta = +125 °C, Vr = __V or If = mA
14	X	X	Final Electricals	—	Read & Record
15			Subgroup 5		
16	X	X	Bond Strength	MIL-STD-883, Meth 2011	10 (0) Wires or 20 (1) Wires
17			Subgroup 6		
18	X		SEM	MIL-STD-883, Meth 2018 or MIL-STD-750, Meth 2077	—

MIL-PRF-19500 100% Environmental Screening Semiconductor Packaged Diodes

Step	Process	Conditions	Comments
1	Visual Inspection	MIL-STD-750, Meth 2073	Performed at Chip Level Prior to Assembly
2	Pre-Cap Visual	MIL-STD-750, Meth 2074	—
3	Temperature Storage	MIL-STD-750 Meth 1032	t = __ Hours, Ta = +150 °C
4	Temperature Cycling	MIL-STD-750 Meth 1051, Cond F	20 Cycles, t _{ext} = 10 Min Ta = -65 [∞] °C to +150 °C
5	Constant Acceleration	MIL-STD-750 Meth 2006	20,000 g Min Y1 Axis Only (Au Ribbon/Wire Bond Only)
6	PIND	MIL-STD-750 Meth 2052, Cond A	Shock Pulse = 1000 + 200 g, Noise = +20 mV Peak to Peak
7	FIST/BIST (Axial Lead Diodes Only)	MIL-STD-750 Meth 2081 (FIST), 2082(BIST)	Acc = __, Pulse = __, t = __mS, f = __Hz _Blows in Direction, V = __V, I = __A
8	Fine Leak	MIL-STD-750 Meth 1071, Cond H	5 x 10 ⁻⁸ atm cc ³ /s Max
9	Gross Leak	MIL-STD-750 Meth 1071, Cond C	—
10	Initial Electricals	Ir (or as specified)	Read & Record Serialize Diode



MIL-PRF-19500 100% Environmental Screening Semiconductor Packaged Diodes (continued)			
Step	Process	Conditions	Comments
11	HTRB1	MIL-STD-750 Meth 1038, Cond A	t = 48 Hours Min, Ta = +150 °C, Vr = ___ V
12	Interim Electricals	Ir (or as specified)	Read & Record within 16 Hours from Removal of Applied Bias
13	Delta HTRB Measurements	Delta Ir = +_nA or 100% (whichever is greater)	Read & Record Delta Ir from Initial-to-Interim Electrical Test
14	PDA	PDA = 5% max, Actual PDA = ___	PDA = (Qty Rej Delta Ir/qty acc Delta Ir) x 100
15	Forward Burn In ¹	MIL-STD-750 Meth 1038, Cond B	t = 240 Hours Min, Ta = + °C, If= mA
16	Final Electricals	Ir (or as specified)	Read & Record w/in 96 Hours from Removal of Applied Bias
17	Delta Forward B Measurements	Delta Ir = + nA or 100% (whichever is greater)	Read & Record Delta Ir from Interim to Final Electrical Test
18	PDA	PDA = 5% Max, Actual PDA = ___	
19	Fine Leak	MIL-STD-750 Meth 1071, Cond H	5 x 10 ⁻⁸ atm cc ³ /s Max
20	Gross Leak	MIL-STD-750 Meth 1071, Cond C	
21	Radiography	MIL-STD-750, Meth 2076	2 Views, X and Y
22	External Visual Inspection	MIL-STD-750 Meth 2071	

Notes: 1 Burn-In methods and conditions to be provided by customer and agreed upon by engineering.

MIL-PRF-19500 Group B Conformance Inspection

Group B Inspection	Sample Size ^{1,2}	Conditions	Comments
Subgroup 1			
Physical Dimensions	22 (8)	MIL-STD-750 Meth 2066	Electrical Rejects may be used Specified Case Outline Dimensions
Subgroup 2			
Solderability	15 (6) leads	MIL-STD-750 Meth 2026	Electrical Rejects may be used Leads from a Minimum of 3 Devices shall be tested
Resistance to Solvents	15 (6)	MIL-STD-750 Meth 1022	
Subgroup 3			
Temperature Cycling	22 (6)	MIL-STD-750 Meth 1051, Cond F	45 Cycles including Screening, t _{ext} = 10 Min Ta = -65 °C to +150 °C (JANS 100 Cycles)
Thermal Shock	22 (6)	MIL-STD-750 Meth 1056, Cond B	10 Cycles (JANS 25 Cycles) (Glass Axial Lead Only)
Surge	22 (6)	—	Only When Specified
Fine Leak	22 (6)	MIL-STD-750, Meth 1071, Cond H	5 x 10 ⁻⁸ atm cc ³ /s Max
Gross Leak	22 (6)	MIL-STD-750 Meth 1071, Cond C	
Electrical Tests ³	22 (6)	—	Read & Record
Intermittent Operating Life	22 (12)	MIL-STD-750 Meth 1037, 2000 Cycles	Submit to 6000 Cycles to Satisfy Group C Subgroup 6 Requirement
Electrical Tests ³	22 (12)	—	Read & Record
De-cap Internal Visual	6 (6)	MIL-STD-750 Meth 2075	Decap Devices
Bond Strength	22 (12) Wires or 1 (6) Devices	MIL-STD-750 Meth 2037	Use for Die Shear
SEM	22 (12)	MIL-STD-750, Meth 2077	When Specified
Die Shear	11 (6)	MIL-STD-750, Meth 2017	Use Bond Pull Samples
Subgroup 4			
Intermittent Operating Life	22 (12)	MIL-STD-750 Meth 1037, 2000 Cycles	Submit to 6000 Cycles to Satisfy Group C Subgroup 6 Requirement
Electrical Tests	22 (12)	—	Read & Record Satisfy with Group C Subgroup 6
Subgroup 5			
Accelerated Steady State Life	22 (12)	MIL-STD-750, Meth 1027 Schottky = Tj Max, 240 Hours.	t = 96 Hours, Ta = +275 °C Vr = V(pk), Io = mA, f = Hz
Electrical Tests ³	22 (12)	—	Read & Record
Subgroup 6			
Thermal Resistance	22 (8)	MIL-STD-750 Meth 408 (Meth 3101 Option JANS)	Read & Record
High Temp Life (Non-operating)	22 (12)	MIL-STD-750 Meth 1032	t = 340 Hours, Ta = T STG(MAX)
Electrical Tests ³	22 (12)	—	Read & Record

Notes:

1 Small lot sample size defined in parentheses (). Group A small lot sampling. Group B small lot sampling.

2 Electrical test parameters shall be defined by product type and specific requirements; test limits at temperature may vary from those published in this catalog.

3 Endpoint electrical tests parameters shall be defined by product type and specific requirements.



MIL-PRF-19500 Group C Conformance Inspection (all levels)			
Group C Inspection	Sample Size ^{1,2}	Conditions	Comments
Subgroup 1			
Physical Dimensions	15 (6)	MIL-STD-750, Meth 2066	—
Subgroup 2			
Thermal Shock	22 (6)	MIL-STD-750 Meth 1056, Cond A	Glass Axial Lead Only
Terminal Strength	22 (6)	MIL-STD-750 Meth 2036, Cond E	Leaded Packages Only, w = _oz.; t = _sec
Fine Leak	22 (6)	MIL-STD-750 Meth 1071, Cond H	5 x 10 ⁻⁸ atm cc ³ /s Max
Gross Leak	22 (6)	MIL-STD-750 Meth 1071, Cond C	—
Moisture Resistance	22 (6)	MIL-STD-750, Meth 1021	Omit Initial Conditioning
End-point Electricals ²	22 (6)	—	Read & Record
Subgroup 3			
Shock	22 (6)	MIL-STD-750 Meth 2016	Non-operating, 1500G, 0.5 ms, 5 Blows X1, Y1, Z1
Variable Frequency	22 (6)	MIL-STD-750 Meth 2056	—
Acceleration	22 (6)	MIL-STD-750 Meth 2006	1 Minute Min, 20K g X1, Y1, Z1
End-point Electricals ²	22 (6)	—	Read & Record
Subgroup 4			
Salt Atmosphere	15 (6)	MIL-STD-750, Meth 1041	Electrical Rejects may be used
Subgroup 5			
Thermal Resistance	15 (6)	MIL-STD-750, Meth 4081	Read & Record
Subgroup 6			
Intermittent Operating Life	22 (12)	MIL-STD-750, Meth 1037 6000 Cycles	Units from Group B-2000 Cycle Test may be used to Complete the 6000 Cycles
End-point Electricals ²	22 (12)	—	Read & Record
Bond Strength	11 Wires	MIL-STD-750 Meth 2037	Only when Group B Units Continue to Satisfy Group C Requirement, Read & Record
Subgroup 7			
Internal Water Vapor	3	MIL-STD-750, Meth 1018	3 Devices c = 0 or 5 Devices c = 1

Notes:

1 Small lot sample size defined in parentheses ().

2 Electrical test parameters shall be defined by product type and specific requirements; test limits at temperature may vary from those published in this catalog.

MIL-PRF-38534 100% Environmental Screening Hybrid Devices & MMICs					
Step	Process	MIL-STD-883 Test Method	Comments	K	H
1	Non Destruct Bond Pull	2023	—	X	—
2	Internal Visual	017	—	X	X
3	Temperature Cycling	1051	Cond C; 10 Cycles	X	X
4	Constant Acceleration	2001	Cond B; Y1 Only	X	X
5	PIND	2020	Cond A	X	Optional
6	Pre Burn-In Electrical Test	In Accordance with Device Specification	Read & Record, Serialize	X	X
7	Burn-In	1015	—	X	—
10	Interim Electricals	In Accordance with Device Specification	Read & Record	X	—
11	Burn-In	1015	—	X	X
12	Final Electricals	In Accordance with Device Specification	Read & Record	X	X
13	Fine Leak	1014	—	X	X
14	Gross Leak	1014	—	X	X
15	Radiography	2012	2 Views, X and Y	X	—
16	External Visual Inspection	2009	—	X	X

Notes:

1 Burn-In methods and conditions to be provided by MACOM. If provided by customer, MACOM reserves the right to review and approve conditions.

2 PDA for Class H is 10% or 1 device. Class K is 2% or 1 device.



MIL-PRF-38534 Group B Performance Inspection			
Group B Inspection	Sample Size ^{1,2}	MIL-STD-883 Test Method	Comments
Subgroup 1	2 (0)		
Physical Dimensions		2016	
Subgroup 3	3 (0)		
Resistance to Solvents		2015	
Subgroup 4	1 (0)		
Internal Visual and Mechanical		2014	
Subgroup 5	2 (0)		
Bond Strength		2011	Condition C; 100 Cycles
Subgroup 6	2 (0)		
Die Shear Strength		2019	
Subgroup 7	1 (0)		
Solderability		2003	Solder Temperature +245 °C + 5 °C
Subgroup 8	5 (0)		
Fine Leak		1014	Class H Only
Gross Leak		1014	Class H Only

Notes:

- 1 Small lot sample size with defects allowed provided in parentheses ().
- 2 Electrical test parameters shall be defined by product type and specific requirements; test limits at temperature may vary from those published in this catalog

MIL-PRF-38534 Group C Performance Inspection (all levels)			
Group C Inspection	Sample Size ^{1,2}	MIL-STD-883 Test Method	Comments
Subgroup 1	5 (0)		
Resistance to Soldering Heat		2036	
External Visual		2009	
PIND		2020	Condition A
Temperature Cycle		1010	Condition C; 100 Cycles
Mechanical shock		2002	B, Y1 Direction
Constant Acceleration		2001	5000 g, Y1 Direction
Random Vibration		2026	Condition A
Fine Leak		1014	
Gross Leak		1014	
PIND		2020	A, 1 Pass
Visual Examination		1010	Omit Initial Conditioning
End-point Electricals ²			Read & Record
Subgroup 2	5 (0)	1014	
Steady State Life Test		1005	1,000 Hours @ +125 °C or Equivalent
End-point Electricals ²			Read & Record
Subgroup 3	3 (0) or 5 (1)		
Internal Water Vapor		1018	
Subgroup 4	2 (0)		
Internal Visual		2017	
Wire Bond Strength		2011	
Element Shear		2019 or 2027	
Subgroup 5	3 (0)		
End-point Electricals ²			Group A-1
ESDS		3015	
End-point Electricals ²			Group A-1

Notes:

- 1 Small lot sample size with defects allowed provided in parentheses ().
- 2 Electrical test parameters shall be defined by product type and specific requirements; test limits at temperature may vary from those published in this catalog.



MIL-PRF-38534 Group D Performance Inspection			
Group D Inspection	Sample Size ^{1,2}	MIL-STD-883 Test Method	Comments
Subgroup 1			
Thermal Shock	5 (0)	2016	Condition C
Stabilization Bake	5 (0)	1008	+150 °C, 1 Hour
Lead Integrity	1 (0)	2004	
Fine Leak	5 (0)	1014	Condition A or B
Gross Leak	5 (0)	1014	Condition C or D
Subgroup 3			
Salt Atmosphere	5 (0)	1009	Condition A
Subgroup 4			
Metal Package Isolation	3 (0)	1003	600 V DC, 100 nA Maximum

PEM-INST-001					
Step	Baseline Screening Step IAW PEM-INST-001	Test Method/Condition	Reliability Level		
			Level 1 (Highest)	Level 2	Level 3 (Lowest)
1	External Visual/Serialization	Per Requirement (per Note 1)	X	X	X
2	Temperature Cycling	MIL-STD-883 Method 1010 Cond B or Manufacturers Rated Storage Temperature Range	20	20	20
3	Radiography	Per Requirement (Note 1)	X	X	X
4	C-SAM22 (6)	Per Requirement (Note 1)	X	X	X
5	Initial Pre Burn-in Electrical Test	IAW Device Specifications at T _A = +25 °C min/max Rated Operating Temperatures	X X	X X	X
6	Engineering Review	IAW Device Specifications/Requirements Steps 1 – 5			
7	Static Burn-in	MIL-STD-883 Method 1010 Cond A or B IAW Device Specifications/Requirements	240 Hours @ 125 °C	160 Hours @ 125 °C	160 Hours @ 125 °C
8	Post Static Burn-in Electrical Test	IAW Device Specifications/Requirements Calculated Delays When Applicable at T _A = +25 °C	X	X	X
9	Dynamic Burn-In	MIL-STD-833 Method 1015 Cond D IAW Device Specifications/Requirements	240 Hours @ 125 °C	160 Hours @ 125 °C	160 Hours @ 125 °C
10	Final Electrical Test	IAW Device Specifications at T _A = +25 °C min/max Rated Operating Temperatures	X	X	X
11	Calculated PDA Steps 7 – 10	Maximum Acceptance PDA	5%	10%	10%
12	External Visual Inspection	Per Requirements (per Note 1)	X	X	X

Notes:

- 1 "Per Requirement" will depend upon customer/application requirements. (Default will be MIL/Aero Standards and Specifications and/or PEM-INST-001).
- 2 Custom screening to the above baseline table is available. (Consult with Factory)
- 3 iQCI will follow requirements detailed in PEM-INST-001 as well as customer/application specific requirements

MACOM is Qualified to Perform the Following MIL-STD-750 Test Methods

Test Method	Test Condition	MIL-STD-750 Method Title
1016		Insulation Resistance
1020		ESD Test Method
1021		Moisture Resistance
1022		Resistance to Solvents
1026		Steady-State Operation Life
1027		Steady-State Operation Life (sample plan)
1031		High Temperature Life Non-Operating
1032		High Temperature Life (non-operating)
1033	A, B	Reverse Voltage Leakage Stability
1037		Intermittent Operation Life
1038	A, B	HTRB Burn-In & Power Burn-In
1039	A, B	HTRB Power Burn-In
1040	A, B	Burn-In (Thyristors Controlled Rectifiers)/Blocking Voltage Test
1041		Salt Atmosphere
1048		Blocking Life
1051	A, F, G	Temp Cycling (Air-to-Air) and LN2
1054		Potted Environment Stress Test
1055		Monitored Mission
1056	A, B, D	Thermal Shock
1057	B	Glass Cracking
1071	A, B, E, G1	Hermetic Seal
1081		Dielectric Withstanding Voltage
2005		Axial Lead Tensile Test
2006	A thru E	Constant Acceleration
2017	A	Die Attach Integrity (Die Shear)
2026		Solderability
2031	A, B	Resistance to Soldering Heat
2036	A, E	Terminal Strength
2037	D	Bond Strength (Destructive Bond Pull Test)
2038		Surface Mount End Cap Bond Integrity
2052	A	PIND Test
2066		Physical Dimensions
2068		Visual Inspection for Non Transparent Devices
2071		Visual and Mechanical Inspection
2072		Internal Visual Inspection (Pre-Cap)
2073		Chip and Die Visual Inspection
2074		Internal Visual Inspection
2075		Decap Internal Visual Design Verification
2078		Internal Visual For Wire Bonded Diodes and Rectifiers
2101SB		DPA Procedures for Diodes (Scribe and Break only)
3001		Breakdown Voltage, Collector to Base
3011		Breakdown Voltage, Collector to Emitter
3036		Collector to Base Cutoff Current
3041		Collector to Emitter Cutoff Current
3051		Safe Operating Area
3053		Safe Operating Area (Switching)

Test Method	Test Condition	MIL-STD-750 Method Title
3061		Emitter to Base Cutoff Current
3066		Base Emitter Voltage (Saturated or Nonsaturated)
3071		Saturation Voltage and Resistance
3076		Forward-Current Transfer Ratio
3100		Junction Temperature Measurement
3101		Thermal Impedance Testing of Diodes
3131		Thermal Impedance Testing of Transistors
3181		Thermal Resistance for Thyristors
3201		Small-Signal, Short-Circuit Input Impedance
3206		Small-Signal, Short-Circuit Forward-Current Transfer Ratio
3211		Small-Signal, Short-Circuit Reverse-Voltage Transfer Ratio
3216		Small-Signal, Open-Circuit Output Admittance
3236		Cibo Measurement
3240		Cibo Measurement
3246		Noise Figure
3251	A, B	Pulse Response Measurement
3306		Frequency Response
3401		Breakdown Voltage, Gate-to-Source
3403		Gate-to-Source Voltage or Current
3405		Drain-to-Source On-State Voltage
3407		Breakdown Voltage, Drain-to-Source
3411		Gate Reverse Current
3413		Drain Current
3421		Static Drain-to-Source On-State Resistance
3423		Small-Signal, Drain-to-Source On-State Resistance
4001		Capacitance
4011		Forward Voltage
4016		Reverse Current Leakage
4021		Breakdown Voltage (Diodes)
4022		Breakdown Voltage (Voltage Regulators Diodes) and Voltage-Reference
4023	A, B	Scope Display
4026		Forward Recovery, Voltage and Time
4031	A, B	Reverse Recovery TRR
4051		Small-Signal Reverse Breakdown Impedance
4065		Peak Reverse Power Test
4066	A1, A2, B	Test Procedure Surge Current
4071		Temperature Coefficient of Breakdown Voltage
4081		Thermal Resistance of Diodes (Forward Voltage, Switching Method)
4201		Holding Current
4206		Forward Blocking Current
4211		Reverse Blocking Current
4219		Reverse Gate Current
4221		Gate-Trigger Voltage
4226		Forward On Voltage





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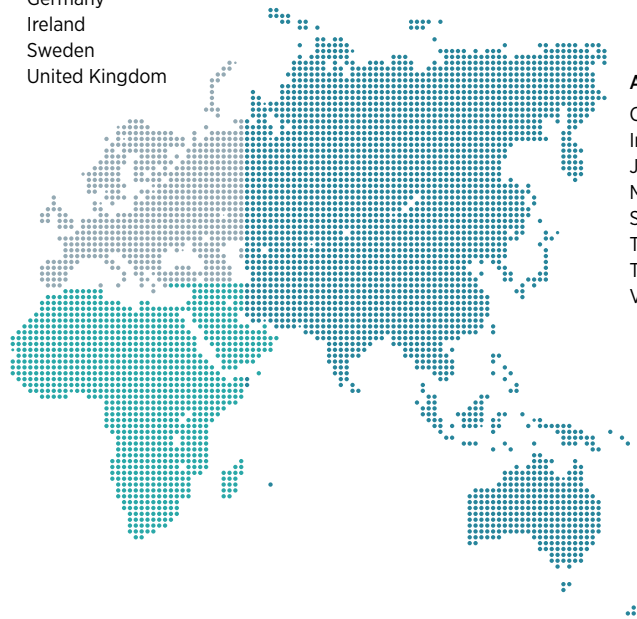
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