



Custom MMIC

Custom MMIC Selection Guide



2020



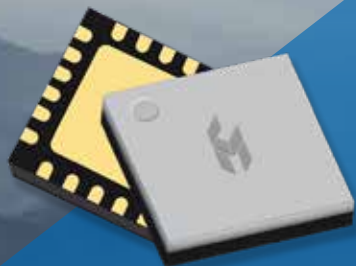
A Proud Tradition of Engineering Excellence and Quality

Since 2006 Custom MMIC has been recognized as a top tier quality manufacturer of RF and Microwave MMICs, earning numerous industry and supplier excellence awards. We strive to exceed our customers' expectations and to challenge the boundaries of RF and Microwave IC design.



Helping customers overcome their toughest design challenges.

Custom MMIC is the industry's innovation leader for GaAs and GaN high performance MMIC devices. We have a broad range of high performance standard MMIC products optimized for the needs of our customers. As a fabless manufacturer, our team of experienced MMIC designers are leveraging a variety of best-in-class processes including GaAs, GaN and InGaP using the world's most trusted foundries.



Supporting high performance applications.

Custom MMIC has been focused on the design challenges of Aerospace and Defense applications since its inception. Our MMIC design expertise, combined with our extensive knowledge of the entire RF/Microwave signal chain, enables us to help make your next system design a reality. Our products serve mission critical and state of the art systems in:

- **Aerospace and Defense**
- **Space and SATCOM**
- **Test and Instrumentation**
- **Wireless Communications**

When your design demands nothing but the best you can count on Custom MMIC to deliver. *Where can we take you next?*

STANDARD PRODUCT SELECTION GUIDE

Low Noise Amplifiers

Part Number	Frequency (GHz)	Gain (dB)	Noise Figure (dB)	Output P1dB (dBm)	Output Psat (dBm)	OIP3 (dBm)	Bias Voltage (V)	Bias Current (mA)	Package
CMD228/P4	2 - 6	30/28	1.2/1.5	12/13	14	23/25	3-5 / 3-5	45	DIE & 4x4 QFN
CMD308/P4*	2 - 6	31	1.6	12	15		3-5	45	DIE & 4x4 QFN
CMD283/C3	2 - 6	27	0.6	16	18	26	2-5	42	DIE & 3x3 QFN
CMD290 (GaN)	2 - 26	12.5	2.3	19	22.5	27	10-28/ -3	100	DIE
CMD276C4 (GaN)	2.6 - 4	14.5	1.2	25.5	28	32	5-28 / -1.5	225	4x4 mm QFN
CMD185P3	4 - 8	15.5	1.9	15	17	29	2-5	75	3x3 mm QFN
CMD270/P3	4 - 8	15.5	1.8	16	17	30	2-5	60	DIE & 3x3 QFN
CMD219 (GaN)	4 - 8	23	1.0	18	26	28	5-28 / -2.3	75	DIE
CMD219C4(GaN)	4 - 8	22.5	1.0	17	25.5	28	5-28 / -2.3	75	4x4 mm QFN
CMD277C4 (GaN)	5 - 7	20	1.2	26.5	29.5	33.5	5-28 / -1.5	200	4x4 mm QFN
CMD119P3	5 - 9	22	1.2	11	13	21	2-4.5	30	3x3 mm QFN
CMD318P3*	5 - 9	22	1.25	14	15	25.5	2.5-4.5	33	3x3 mm QFN
CMD218/C4 (GaN)	5 - 9	22	1.1	21.5	26	30	5-28 / -2.7	80	DIE & 4x4 QFN
CMD229P4	5 - 11	26	1.5	13	15	24	3-5 / 3-5	45	4x4 mm QFN
CMD309/P4*	5 - 11	27	1.5	13	16	23	3-5	45	DIE & 4x4 QFN
CMD132/P3	5 - 11	23/21	1.4	10	13	22	2-4.5	30	DIE & 3x3 QFN
CMD263/P3	5 - 11	23/22	1.4	11	15	23/21	2-4.5	35	DIE & 3x3 QFN
CMD186P3	6 - 11	18.5	2.1	17	20	28	2-5	78	3x3 mm QFN
CMD271P3	6 - 11	20	1.8	16.5	18	27	3-5	66	3x3 mm QFN
CMD157/P3	6 - 18	26	1.5	11	13.5	23	2-4.5	52	DIE & 3x3 QFN
CMD264/P3	6 - 18	26	1.5/1.7	13	15	27/24	2-4.5	63	DIE & 3x3 QFN
CMD194C3	6 - 20	20	2.0	15.5	16.5	26	2-5	120	3x3 mm QFN
CMD278/C4 (GaN)	8 - 12	15	1.8	28	30	33	5-28 / -1.5	280	DIE & 4x4 QFN
CMD167P3	8 - 16	16	1.8	11	13	23	2-4	50	3x3 mm QFN
CMD307/P3*	8 - 16	17	2.0	12	14	25	2-4	55	DIE & 3x3 QFN
CMD189P3	10 - 14	19	1.4	4	7	13	1-4 / 1.5	20	3x3 mm QFN
CMD167	10 - 17	15	2.0	11	13	24	2-4	55	DIE
CMD160C4	17 - 25	26.5	1.4/1.6	8	11	16	1.5-3.5/1.5	26	4x4 mm QFN
CMD298/C4*	17 - 25	27	1.4	8	11.5	17	1.5-3.5/1.5	27	DIE & 4x4 QFN
CMD163/C4	17 - 27	24/23	1.3/1.7	19/18	20/19	26	2-4 / 3	120	DIE & 4x4 QFN
CMD299/K4*	18 - 40	17	3.5	8	9	17	3 / 3	33	DIE & 4x4 QFN
CMD162	26 - 34	22	1.7/2.0	7	9	14	1-4	25	DIE
CMD188	26 - 34	20	1.4	6	8	15	1-4 / 2	20	DIE
CMD190	33 - 45	19	2.1	4	7	13	1-4 / 2	25	DIE

* = recent release

STANDARD PRODUCT SELECTION GUIDE

Low Phase Noise Amplifiers

Part Number	Frequency (GHz)	Phase Noise (dBc/Hz @10kHz)	Gain (dB)	Output P1dB (dBm)	Output Psat (dBm)	OIP3 (dBm)	Bias Voltage (V)	Bias Current (mA)	Package
CMD245/C4	6 - 18	-165	18	18	22	29	3-5 / 3	76	DIE & 4x4 QFN
CMD274/P4	2 - 20	-165	17	19	22	30	5 / 3	86	DIE & 4x4 QFN
CMD246/C4	8 - 22	-165	17	13	18	25	3-5 / 3	48	DIE & 4x4 QFN
CMD275/P4*	DC - 26.5	-165	16	18	20.5	29	5 / 3	74	DIE & 4x4 QFN
CMD247	30 - 40	<-160	13	13.5	15	21	2-4 / 2-3	28	DIE

* = recent release

Distributed Amplifiers

Part Number	Frequency (GHz)	Gain (dB)	Noise Figure (dB)	Output P1dB (dBm)	Output Psat (dBm)	OIP3 (dBm)	Bias Voltage (V)	Bias Current (mA)	Package
CMD311P34*	DC - 20	12	2.5	11	13.5	22	3-8 / 3-8	40	3x4 mm QFN
CMD173/P4	DC - 20	15	2	18	20	28	5-8 / 3	78	DIE & 4x4 QFN
CMD192/C5	DC - 20	19.5	1.9	24.5	26	31	5-8 / -1	200	DIE & 5x5 QFN
CMD244K5*	DC - 20	17.5	2.5	25	26.5	31	5-8 / -0.65	185	5x5 mm QFN
CMD201/P5	DC - 20	12/11	3.4	29/27	30	38	10/-0.5/5	400	DIE & 5x5 QFN
CMD249/P5	DC - 20	13	3.4	30	31	38	10/-0.95	400	DIE & 5x5 QFN
CMD233/C4	2 - 20	9	4.5	20.5	22	24	3-6	120	DIE & 4x4 QFN
CMD295/C4*	2 - 20	26.5	3	16	17	28.5	2-4 / 2	135	DIE & 4x4 QFN
CMD241/P4	2 - 22	13.5	2.3	21	23	28	5-8 / -0.65	74	DIE & 4x4 QFN
CMD197/C4	1 - 24	16	2.5	22/24	24/25	32/31	5-8	225	DIE & 4x4 QFN
CMD317*	1 - 24	16	3.0	24	24.5	33	5-8	225	DIE
CMD284/P4*	DC - 22	17	2.5	19	20.5	28	5-8	108	DIE & 4x4 QFN
CMD240/P4/C4	DC - 22	15	2.2	19	22	28	5-8 / -0.65	80	DIE & 4x4 QFN
CMD244	DC - 24	18	2.5	25	26.5	32	5-8 / -0.65	185	DIE
CMD292*	DC - 30	13	3	27	28.5	33	10/-0.6/3.5	250	DIE
CMD242/K4*	DC - 40	11	4.4	18	21	27	5-8 / -0.32	100	DIE & 4x4 QFN
CMD304*	DC - 67	10	3.5	11	14		3-5 / -0.4	40	DIE

* = recent release

STANDARD PRODUCT SELECTION GUIDE

Driver Amplifiers

Part Number	Frequency (GHz)	Gain (dB)	Noise Figure (dB)	Output P1dB (dBm)	Output Psat (dBm)	OIP3 (dBm)	Bias Voltage (V)	Bias Current (mA)	Package
CMD231/C3	2 - 6	14.5	4.5	13.5	16.5	23.5	3-8	45	DIE & 3x3 QFN
CMD232/C3	2 - 9	15	4.5	17	18.5	23	5-6	90	DIE & 3x3 QFN
CMD191C4	4 - 10	20	4.5	21.5	22.5	30	5	123	4x4 mm QFN
CMD315C4*	4 - 10	19.5	5.5	21	22.5	33	5	143	4x4 mm QFN
CMD158	6 - 16	20	3.5	20	21	26	3-6	95	DIE
CMD158P3	6 - 14	19.5	4	19.5	20.5	26.5	3-6	95	3x3 mm QFN
CMD158C4	6 - 16	21	4	20	21	26	3-6	95	4x4 mm QFN
CMD305*	6 - 16	18.5	4.5	20	21	34	3-5.25	100	DIE
CMD305P3*	6-14	18	5	19	20.5	31.5	3-5.25	100	3x3 mm QFN
CMD187C4	2 - 20	22.5	6	14/13	16	29	3 / 2	115	4x4 mm QFN
CMD291/P4*	16-24	23/22	5	25.5	27	32	5 / -0.5	250	DIE & 4x4 QFN
CMD166	20 - 40	9	4.5	17	18	27	2-4	76	DIE
CMD293*	20 - 45	20	6	26	26.5	31.5	5 / -0.45	480	DIE
CMD199	26 - 35	15	3.5	19.5	21.5	24.5	5	72	DIE
CMD243	26 - 35	15.5	4.4	21	22.5	26	3-5	90	DIE

Power Amplifiers

Part Number	Frequency (GHz)	Gain (dB)	Noise Figure (dB)	Output P1dB (dBm)	Output Psat (dBm)	OIP3 (dBm)	Bias Voltage (V)	Bias Current (mA)	Package
CMD169P4	5 - 7	19	6.5	28.4	29.4	37	7 / 3	375	4x4 mm QFN
CMD170P4	7.5 - 9	30	6.5	28.3	29	34	7 / 3	365	4x4 mm QFN
CMD216 (GaN)	14 - 18	16		37	38	43	28 / -3.4	550	DIE
CMD262 (GaN)	26 - 28	26		37.5	38.5		28 / -4	400	DIE
CMD217 (GaN)	28 - 32	20		36.7	39.3	41	28 / -3.4	580	DIE
CMD184 (GaN)	0.5 - 20	13		34.5	36.5	42	28 / -2.8/10	700	DIE
CMD201/P5	DC - 20	12	3.4	29/27	30	38	10 / -0.5/5	400	DIE & 5x5 QFN
CMD249/P5	DC - 20	13	3.4	30	31	38	10 / -0.95	400	DIE & 5x5 QFN

* = recent release

STANDARD PRODUCT SELECTION GUIDE

Switches (Non-Reflective)

Part Number	Part Desc.	Freq. (GHz)	Insert. Loss (dB)	Isolation (dB)	Input P1dB (dBm)	Return Loss (dB)	Switch Speed (nS)	Control Voltage (V)	Package
CMD272P3	DPDT	DC - 10	1	43	25	14	4	0/+5	3x3 mm QFN
CMD273P3	DPDT	DC - 12	1.7	42	25	13	12	0/+5	3x3 mm QFN
CMD204	SPST	DC - 20	1	50	25	17	1.8	0/-5	DIE
CMD204C3	SPST	DC - 20	1.3	48	25	15	1.8	0/-5	3x3 mm QFN
CMD230	SPDT refl	DC - 26	1.4	40	21	16	3.4	0/-5	DIE
CMD195C3	SPDT	DC - 18	2	37	25	13	1.8	0/-5	3x3 mm QFN
CMD196C3	SPDT	DC - 18	1.5	46	23	17	1.8	0/-5	3x3 mm QFN
CMD195	SPDT	DC - 20	2	41	25	17	1.8	0/-5	DIE
CMD196	SPDT	DC - 28	1.75	46	23	15	1.8	0/-5	DIE
CMD234C4	SP3T	DC - 15	2	40	21	9	66	0/-5	4x4 mm QFN
CMD203	SP4T	DC - 20	2.4	39	21	9	66	0/-5	DIE
CMD203C4	SP4T	DC - 20	2.4	39	21	9	66	0/-5	4x4 mm QFN
CMD302C4*	SP4T	DC - 20	1.8	35	21	17	59	0/-5	4x4 mm QFN
CMD235C4	SP5T	DC - 18	2.5	40	21	9	66	0/-5	4x4 mm QFN
CMD236C4	SP6T	DC - 18	2.5	42	18	9	60	0/-5	4x4 mm QFN
CMD215	SPDT refl	DC - 40	2.3	36	19	16	4	0/-5	DIE

* = recent release

Multipliers

Part Number	Part Description	Input Freq. (GHz)	Output Freq. (GHz)	Input Power (dBm)	Output Power (dBm)	Fo Isolation (dB)	3 Fo Isolation (dB)	Package
CMD225/C3	Passive Freq. Doubler	4 - 8	8 - 16	15	3	48	50	DIE & 3x3 QFN
CMD226/C3	Passive Freq. Doubler	7 - 11	14 - 22	15	5	44	46	DIE & 3x3 QFN
CMD227/C3	Passive Freq. Doubler	8 - 15	16 - 30	15	4	40	43	DIE & 3x3 QFN
CMD214	Active Freq. Doubler	12 - 18	24 - 36	13	17	32	25	DIE
CMD213	Active Freq. Doubler	15 - 20	30 - 40	17	17	46		DIE
CMD256	Passive Freq. Doubler	14 - 20	28 - 40	15	0	38		DIE

* = recent release

MULTIPLIERS / SWITCHES /

STANDARD PRODUCT SELECTION GUIDE

Mixers

Part Number	Part Desc.	Freq. LO / RF (GHz)	Freq. IF (GHz)	LO Drive (dBm)	Conver. Gain (dB)	LO-RF Isolation (dB)	LO-IF Isolation (dB)	Input IP3 (dBm)	Package
CMD251C3	Fund. Mixer	4 - 8.5	DC - 2.2	+17	-7	45	36	21	3x3 mm QFN
CMD252C4	I/Q / IRM	4 - 8	DC - 2.4	+20	-6.5	52	27	25	4x4 mm QFN
CMD312*	Fund. Mixer	4 - 28	DC - 3	17	-8	43	50	20	DIE
CMD182/C4	I/Q / IRM	6 - 10	DC - 3.5	+15	-6	46	20	18	DIE & 4x4 QFN
CMD257C4	I/Q / IRM	6 - 10	DC - 3.5	+21	-5.5	40	18	25	4x4 mm QFN
CMD177/C3	Fund. Mixer	6 - 14	DC - 5	+13	-6.5	43	37	16	DIE & 3x3 QFN
CMD253/C3	Fund. Mixer	6 - 14	DC - 5	+19	-6	43	39	23	DIE & 3x3 QFN
CMD313*	Fund. Mixer	6 - 45	DC - 3	17	-9	41	42	20	DIE
CMD183C4	I/Q / IRM	7.5 - 13	DC - 4.5	+15	-5.5	43	23	18	4x4 mm QFN
CMD258/C4	I/Q / IRM	7.5 - 13	DC - 3.5	+21	-5.5	38	20	25	4x4 mm QFN
CMD178C3	Fund. Mixer	11 - 21	DC - 6	+13	-6	45	45	16	3x3 mm QFN
CMD254C3	Fund. Mixer	11 - 21	DC - 6	+19	-6	48	44	22	3x3 mm QFN
CMD303*	Sub Harm	13 - 21	DC - 3	2.00	-8.50	28	48	12	DIE
CMD179	Fund. Mixer	16 - 26	DC - 9	+13	-6.5	40	48	17	DIE
CMD179C3	Fund. Mixer	16 - 26	DC - 9	+13	-6.5	40	48	17	3x3 mm QFN
CMD255C3	Fund. Mixer	16 - 26	DC - 9	+19	-6.5	40	33	24	3x3 mm QFN
CMD180/C3	Fund. Mixer	20 - 32	DC - 10	+13	-7	36	36	18	DIE & 3x3 QFN
CMD310/C3*	Sub Harm	20 - 32	DC - 7	-2.00	-8.5	36	53	11	DIE & 3x3 QFN
CMD181	Fund. Mixer	26 - 45	DC - 12	+17	-6.5	37	29	22	DIE
CMD261	Fund. Mixer	30 - 46	5 - 20	+19	-8	30	20	21	DIE

* = recent release

Phase Shifters

Part Number	Frequency (GHz)	Number of Bits	Bit Resolu. (deg)	Insert. Loss (dB)	Return Loss (dB)	Phase Error (deg)	Input P1dB (dBm)	Input IP3 (dBm)	Package
CMD175P4	2 - 4	5	11.25	7	17	+/- 5	24	37	4x4 mm QFN
CMD176P4	13 - 17	4	22.5	8	14	+/- 5	26	41	4x4 mm QFN
CMD297/P34*	5 - 18	Analog	N/A	3	10	240 deg range			DIE & 3x4 QFN

* = recent release

MIXERS / PHASE SHIFTERS

STANDARD PRODUCT SELECTION GUIDE

Voltage Variable Attenuators

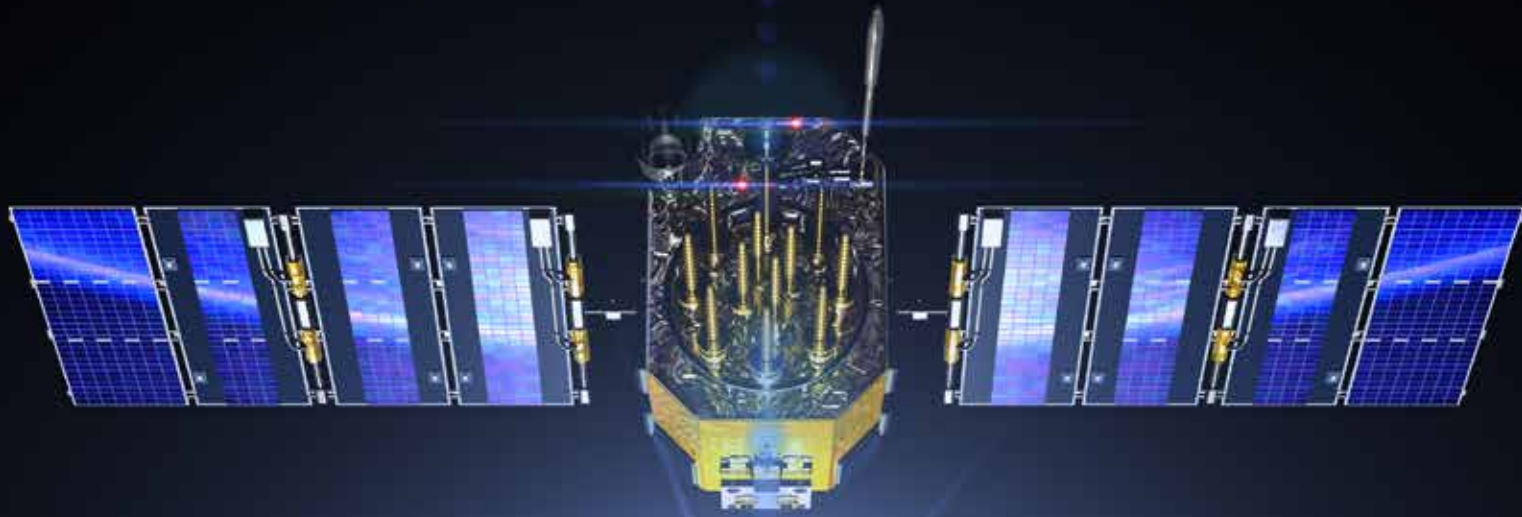
Part Number	Frequency (GHz)	Insert. Loss (dB)	Attn Range (dB)	Input P1dB (dBm)	Input IP3 (dBm)	Return Loss (dB)	Control Voltage (V)	Max. Power (dBm)	Package
CMD172	18 - 40	1.6	37	15	25	12	0 / -3	30	DIE
CMD285C3*	DC - 20	3.2	33	20	30	11	0 / -5	27	3x3 mm QFN

* = recent release

Digital Step Attenuators

Part Number	Frequency (GHz)	Number of Bits	Insertion Loss (dB)	Atten Range (dB)	Input P0.1dB (dBm)	Input IP3 (dBm)	Control Voltage (V)	Package
CMD279C3	2 - 18	5	3.5	15.5	27	42	0 / +5	3x3 mm QFN
CMD280C3	DC - 18	5	3	15.5	24	42	0 / -5	3x3 mm QFN
CMD281C3	DC - 22	2	1.5	6	28	42	0 / -5	3x3 mm QFN
CMD282C3	DC - 22	2	1.9	12	23	42	0 / -5	3x3 mm QFN
CMD279	2 - 30	5	3.5	15.5	27	42	0 / +5	DIE
CMD280	DC - 30	5	3	15.5	24	42	0 / -5	DIE
CMD281	DC - 40	2	1.2	6	28	42	0 / -5	DIE
CMD282	DC - 40	2	1.5	12	23	42	0 / -5	DIE

* = recent release



Helping you to explore the next frontier.

We encourage you to explore our growing selection of industry leading MMIC devices from our standard product portfolio. Custom MMIC has an extensive history of successfully screening and qualifying our product to space applications per MIL-PRF-38534, MIL-PRF-38535, NASA INST standards and customer specific requirements. We collaborate with our customers to determine the appropriate screening and qualification based on their specific mission. Our space product screening and qualification are performed in-house and with approved partners. Whether you are looking for a space screened die, hermetically sealed packaged product or non-hermetic packaged product, Custom MMIC is prepared to help you address your qualification requirements.





Global sales reach with a personal touch.

Here at Custom MMIC we have the advantage of being experienced and agile, able to deliver fast response times to meet your technical and supply chain needs. We have partnered with a global network of knowledgeable Microwave sales agents strategically located in North America, EMEA and APAC countries. Each of our sales agents are hand selected by Custom MMIC because of their proven track record in the industry and their relentless commitment to customer service and satisfaction.

To find a Custom MMIC sales agent closest to you, visit our contact page at [**www.custommmic.com/contact**](http://www.custommmic.com/contact)



Custom MMIC
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-467-4290
Fax: 978-467-4294
www.CustomMMIC.com

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