

# Where can we take you next?

Aerospace/Defense  
and Space



Industrial/Scientific  
and Medical



Wireless  
Communications



## Custom MMIC Selection Guide







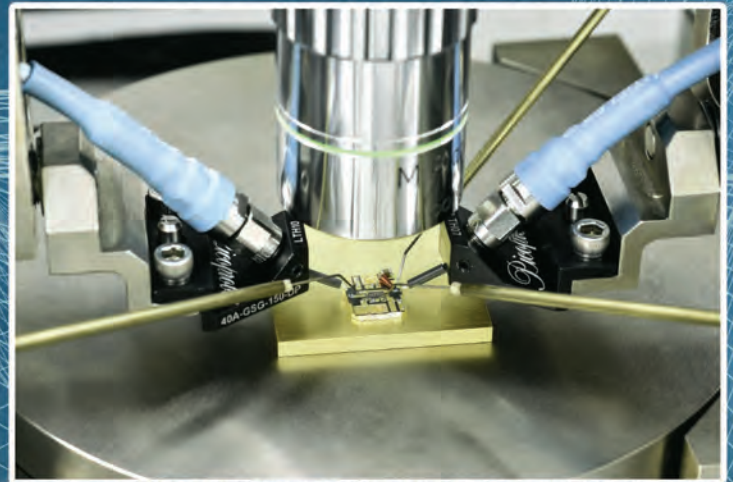
Helping customers overcome their toughest design challenges.

Custom MMIC has been helping customers overcome their toughest design challenges for over a decade, and we now offer over 160 high performance standard MMIC products. 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. This combined with our extensive knowledge of the entire RF/Microwave signal chain enables us to make your next design a reality.



### Available MMIC Product Categories

- **Amplifiers:**  
Low Noise, Distributed, Power, Driver, Low Phase Noise
- **Attenuators:**  
Voltage Variable, Digital
- **Mixers**
- **Multipliers**
- **Phase Shifters**
- **Switches**
- **Space Qualified**
- **Evaluation Boards**



### A Proud Tradition of Engineering Excellence and Quality

Since 2006 Custom MMIC has been recognized as a top tier quality supplier of RF and Microwave products earning us numerous industry and top supplier excellence awards. We continue to exceed our customers expectations and strive to challenge the boundaries of RF and Microwave engineering design.



# 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
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
CMD185/P3	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
CMD218/C4 (GaN)	5 - 9	22	1.1	21.5	26	30	5-28 / -2.7	80	DIE & 4x4 QFN
CMD229	5 - 11	27	1.4	13	15	25	3-5 / 3-5	45	DIE
CMD229P4	5 - 11	26	1.5	13	15	24	3-5 / 3-5	45	4x4 mm 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
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
CMD194/C3	6 - 20	20	2.0	15.5	16.5	26	2-5	120	DIE & 3x3 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
CMD161	10 - 14	19	1.05	5	12		2-4 / 1.5	20	DIE
CMD189P3	10 - 14	19	1.4	4	7	13	1-4 / 1.5	20	3x3 mm QFN
CMD159	10 - 17	26	1.1	4	10	14	2-4 / 1.5	29	DIE
CMD167	10 - 17	15	2.0	11	13	24	2-4	55	DIE
CMD160/C4	17 - 25	26.5	1.4/1.6	8	11	16	1.5-3.5 / 1.5	26	DIE & 4x4 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*	18 - 40	17	3.5	8	9	17	3 / 3	33	DIE
CMD162	26 - 34	22	1.7	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

## 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



# STANDARD PRODUCT SELECTION GUIDE

## 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
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
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
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
CMD240/P4	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	DC - 40	11	4.4	18	21	27	5-8 / -0.32	100	DIE
CMD304*	DC - 67	10	3.5	11	14		3 / -0.4	40	DIE

## 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
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
CMD187/C4	2 - 20	22.5	6	14/13	16	29	3 / 2	115	DIE & 4x4 QFN
CMD295/C4*	2 - 20	26.5	3	16	17	28.5	3 / 2	135	DIE & 4x4 QFN
CMD291*	16-24	23	5	25.5	27	32	5 / -0.5	250	DIE
CMD166	20 - 40	9	4.5	17	18	27	2-4	76	DIE
CMD207	20 - 40	35	5.5	18.5	21	29	4 / 3	270	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
CMD171P4	9.5 - 11	21	6.5	28.4	29	35	7 / 3	380	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 Description	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

## Mixers

Part Number	Part Description	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
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
CMD253C3	Fund. Mixer	6 - 14	DC - 5	+19	-6	43	39	23	3x3 mm QFN
CMD183C4	I/Q / IRM	7.5 - 13	DC - 4.5	+15	-5.5	43	23	18	4x4 mm QFN
CMD258C4	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
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
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

# STANDARD PRODUCT SELECTION GUIDE

## 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

## 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*	5 - 18	Analog	N/A	3	10	240 deg range			DIE

## Voltage Variable Attenuators

Part Number	Frequency (GHz)	Insert. Loss (dB)	Atten. 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

## 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



# To boldly go where no MMIC has gone before.

## Custom MMIC is ready to answer the call for space qualified MMIC devices

Our commitment to serve RF/Microwave system designers with high performance space qualified MMICs is unprecedented.

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.



*We have over 160 products which can be space qualified with high confidence.*







Custom MMIC

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### GaAs and GaN MMIC Amplifiers

The RF / Microwave Designer's Lineup of High Performance MMIC Amplifiers

Custom MMIC leverages our deep understanding of gallium arsenide (GaAs) gallium nitride (GaN) heterojunction bipolar transistors (HBT) and monolithic microwave integrated circuits (MMIC) technology to deliver the RF / Microwave industry's most advanced MMIC amplifiers. Our expert integrated circuit (IC) engineering teams have been designing innovative MMIC power amplifiers (PA), low noise amplifiers (LNA), low phase noise amplifiers (LPNA), distributed amplifiers, and driver amplifiers for over a decade. They meet the needs of the most demanding RF, microwave, and millimeter-wave military, space and instrumentation system design requirements. Working closely with the foremost MMIC foundries, Custom MMIC continues to push GaAs and GaN performance boundaries with products up to 50 GHz utilizing a wide range of semiconductor processes.

[See Additional Product Details](#)

Select Band: All

MPN PRODUCT

MPN	Power	Gain	Noise	Linearity	Phase Noise	1dB Compression	3dB Compression	Operating Frequency	Process
EN50K	40-100	11	35	-70	34.5	38	14-12	22	50
EN50N	20-40	11	44	-70	33	32	14-12	22	50

**List of available online resources**

- Product Datasheets
- Application Notes and Tech Briefs
- Analysis and Simulation Tools
- Design Calculators
- Frequently Asked Questions
- Product Cross Reference Matrix
- Military Requirements
- Certifications/Qualifications

## The Products and Design Resources You Need to Succeed

Custom MMIC understands that your time is valuable and you need technical resources that will deliver the most accurate and helpful information in the shortest time possible.

That's why the Custom MMIC website has been developed with the design engineer in mind. Clear, clean and concise navigation enables users to quickly find the products best suited for their specific application and access all the relevant design information they need to make an informed engineering decision. With just a few clicks of the mouse, users can use the embedded page filters to customize their own search to help narrow down the list of viable products. Take it for a test drive, we are confident you will keep coming back for more.

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