



# RF PRODUCTS AEROSPACE & DEFENSE

**IMPROVING SWAP-C WITH INNOVATIVE  
GaN ON SiC SOLUTIONS**

RF CATALOG



# MEET THE NEW WOLFSPEED



GaN on SiC Solutions

## FOR THE PAST 30 YEARS —

first as a division of Cree and now as Wolfspeed — we have only focused on one thing: perfecting wide bandgap semiconductor technology. No one has more experience or expertise in the development and commercialization of Silicon Carbide (SiC) and Gallium Nitride (GaN). Wolfspeed's GaN HEMTs and MMICs enable enhanced innovation, performance and efficiency across a

broad spectrum of RF and microwave applications for both the commercial and military sectors.

## WOLFSPEED'S GaN SOLUTIONS

enable next generation electronic systems that are the best-in-class in efficiency and performance, including the lowest Failure-in-Time (FIT) rate in the industry with a RF accelerated lifetime greater than 1 million hours at 225 °C.

Unleashing the Power of Possibilities.™

# FLEXIBLE RF GaN ON SiC SOLUTIONS

## ENABLING HIGH PERFORMANCE POWER SYSTEMS

### BROAD PORTFOLIO

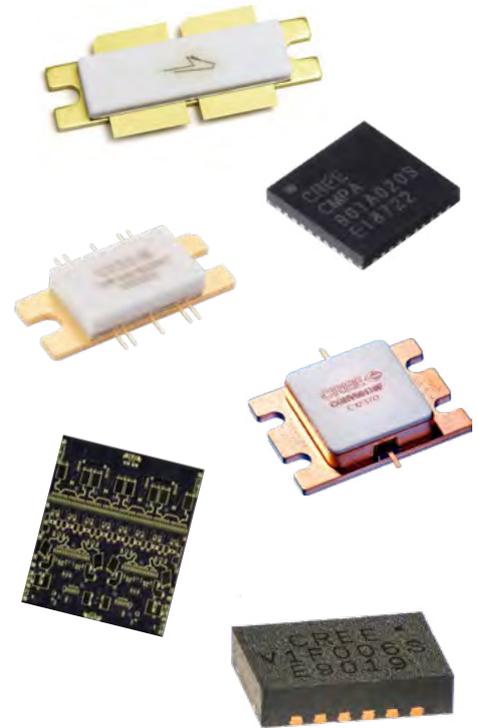
Up to 50 V Operation  
DC through Ka-band  
1W - 2.5 kW output power

### FEATURES

High PAE  
Long-pulse capability  
Variety of power levels to optimize system performance  
Optimum package solutions:  
bare die, SMT, bolt-down flange

### BENEFITS

Reduces thermal load and simplifies cooling system  
Minimizes BOM with multiple stages of gain  
Enables new architectures with higher power  
Reduces overall system complexity and cost



## THE WOLFSPEED ADVANTAGE

### EXPERIENCE

>200 Billion Field Hours  
>20 Years of GaN Production  
MRL8 Certified

### INNOVATION

> 1,000 Patents Issued Worldwide  
5+ MMIC Process Technologies

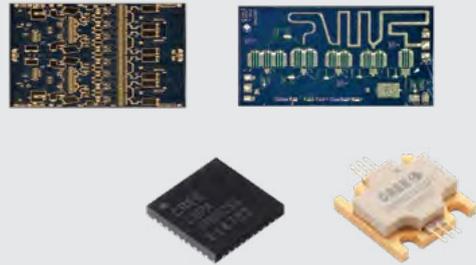
### SOFTWARE AND HARDWARE DESIGN SUPPORT

Highly accurate modeling tools  
Reference Designs & Evaluation Boards  
Videos & App Notes

# MMIC POWER AMPLIFIERS

## HIGH PERFORMANCE IN A SMALL FOOTPRINT

Our high performance MMICs are offered in both bare die and packaged platforms, matched to 50 ohms and support applications from DC to 20GHz. With a variety of power levels, multiple stages of gain and best in class efficiency, Wolfspeed MMIC solutions truly provide the customer the tools to innovate.



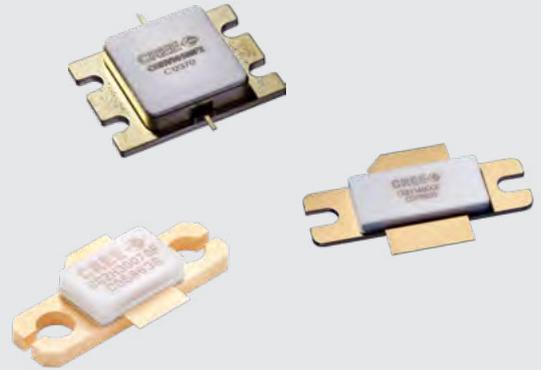
	Part Number	Frequency (GHz)	Output Power (W)	Voltage (V)
MMIC Power Amplifiers	CMPA0060002F1	DC-6.0	2	28
	CMPA0060002D/F	DC-6.0	2	28
	CMPA0060025D/F1	DC-6.0	25	50
	CMPA0530002S	0.5-3.0	2	28
	CMPA0527005F	0.5-2.7	5	50
	CMPA0560008S	0.5-6.0	8	28
	CMPA2060035D/F1	2.0-6.0	35	28
	CMPA2560025D/F	2.5-6.0	25	28
	CMPA2735015D/S	2.7-3.5	15	50
	CMPA2735030D/S	2.7-3.5	30	50
	CMPA2735075D/F1	2.7-3.5	75	28
	CMPA2738060F	2.7-3.8	60	50
	CMPA2935150S	2.9-3.5	150	50
	CMPA3135060S	3.1-3.5	75	50
	CMPA5259080S	5.0-5.9	110	40
	CMPA5259025F/S	5.2- 5.9	25	28
	CMPA5259050F/S	5.2-5.9	50	28
	CMPA5585030D/F	5.5-8.5	30	28
	CMPA601C025D/F	6.0-12.0	25	28
	CMPA601J025D	6.0-18.0	25	28
CMPA801B030D1/S/F1	7.9-11.0	40	28	
CMPA901A020S	9.0-10.0	20	28	
CMPA901A035D/F1	9.0-10.0	40	28	
CMPA9396025S	9.3-9.6	30	40	
CMPA1C1D060D	12.7-13.25	60	40	
CMPA1C1D080F	12.75-13.25	90	40	
CMPA1D1E025D/F	13.75-14.5	25	40	
CMPA1D1E030D	13.75-14.5	30	40	

# INTERNALLY MATCHED, PACKAGED DISCRETE TRANSISTORS

## ENABLING INNOVATION WITH HIGHER POWER

IM-FETs are single-stage, 50-ohm matched power blocks. Ideal in supporting system power levels from 50W to multi-kW, the Wolfspeed portfolio offers solutions that cover S - X band in industry standard packaging.

Partially-matched transistors offer the system designer a building block to support performance customization. With Wolfspeed's variety of power levels over frequency and the industry's best models, customers can execute a board design that meets requirements.



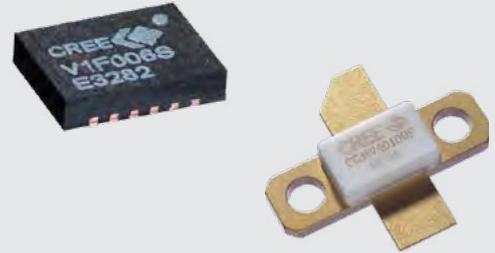
Part Number	Frequency (GHz)	Output Power (W)	Voltage (V)
GTVA10400	0.96-1.215	400	50
GTVA10700	0.96-1.215	700	50
GTVA101K42EV	0.96-1.4	1400	50
GTVA12350	1.2-1.4	350	50
GTVA12600	1.2-1.4	600	50
CGH31240F	2.7-3.1	240	28
CGHV31500F1	2.7-3.1	500	50
CGHV38375F	2.75-3.75	400	50
CGHV35400F1	2.9-3.5	500	50
CGH35240F	3.1-3.5	240	28
CGHV37400F	3.3-3.7	400	50
CGHV50200F	4.4-5.0	200	40
CGHV59350F	5.2-5.9	400	50
CGHV96050F2	7.9-9.6	50	40
CGHV96100F2	7.9-9.6	100	40
CGHV96130F	8.4-9.6	130	40

Part Number	Frequency (GHz)	Output Power (W)	Voltage (V)
CGHV14250F/P	0.5-1.6	250	50
CGHV14500F/P	0.5-1.8	500	50
CG2H30070F	0.5-3.0	70	28
CGHV14800F	0.9-1.4	800	50
CGH21240F	1.8-2.3	240	28
CGH25120F	2.3-2.7	120	28
GTVA311801FA	2.7-3.1	180	50
CGHV35120F	2.7 -3.5	120	50
CGHV35150F/P	2.9-3.5	150	50
GTVA355001EC	2.9-3.5	500	50
CGHV35060MP	3.1-3.5	60	50
CGHV59070F/P	5.2-5.9	70	50

# UNMATCHED, PACKAGED DISCRETE TRANSISTORS

## MAXIMUM FLEXIBILITY IN DESIGN

For designers wanting high-performance HEMTs, we offer a line of packaged GaN on SiC HEMTs with no internal matching. This allows maximum flexibility for the designer to target specific system requirements. Packages available include metal-ceramic and plastic overmold.



Unmatched, Packaged Discrete Transistors

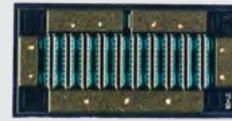
Part Number	Frequency (GHz)	Output Power (W)	Voltage (V)
CGH09120F	DC-1.0	120	28
CGHV40180F/P	DC-2.0	200	50
CGHV27060MP	DC-2.7	60	50
CGH40090PP	DC-3.0	90	28
CGHV40100F/P	DC-3.0	100	50
CGH40120F/P	DC-3.0	120	28
CG2H40120F/P	DC-3.0	120	28
CGH40180PP	DC-3.0	180	28
CGHV40200PP	DC-3.0	200	50
CGH40035F/P	DC-3.0	35	28
CGH40045F/P	DC-4.0	45	28
CG2H40045F/P	DC-4.0	45	28
CGHV40050F/P	DC-4.0	50	50
CGH27060F/P	DC-4.0	60	28
CGH40006S/P	DC-6.0	6	28
CGH40010F/P	DC-6.0	10	28
CG2H40010F/P	DC-6.0	10	28
CGHV27015S	DC-6.0	15	50
CGH35015P	DC-6.0	15	28
CGH40025F/P	DC-6.0	25	28
CGHV27015S	DC-6.0	25	50
CGH27030F/P	DC-6.0	30	28
CGH27030S	DC-6.0	30	28
CGHV27030S	DC-6.0	30	50
CGH35030P	DC-6.0	30	28
CGHV40030F/P	DC-6.0	30	50
CG2H40035F/P	DC-6.0	35	28
CGHV1F006S	DC-15.0	6	20-40
CGHV1F025S	DC-15.0	25	20-40
CGH35060P	3.1-3.5	60	28

# DISCRETE TRANSISTOR DIE

## MAXIMUM INTEGRATION FOR SIZE ADVANTAGE

We offer families of GaN on SiC HEMTs for RF designers to customize the performance of their RF power amplifiers. Bare die offer maximum flexibility, making them ideal for designers wanting to make hybrids and modules.

Below is a list of discrete FETs operating at 28, 40 and 50 V with power levels ranging from 6 W to >300 W.



	Part Number	Frequency (GHz)	Output Power (W)	Voltage (V)
Discrete Transistor Die	CGH60008D	DC-6.0	8	28
	CGH60015D	DC-6.0	15	28
	CGH60030D	DC-6.0	30	28
	CGHV60040D	DC-6.0	40	50
	CGH60060D	DC-6.0	60	28
	CGHV60075D5	DC-6.0	75	50
	CGH60120D	DC-6.0	120	28
	CGHV60170D	DC-6.0	170	50
	CGHV40320D	DC-4.0	320	50
	CG2H80015D	DC-8.0	15	28
	CG2H80030D	DC-8.0	30	28
	CG2H80045D	DC-8.0	45	28
	CG2H80060D	DC-8.0	60	28
	CG2H80120D	DC-8.0	120	28
	CGHV1J006D	DC-18.0	6	28-40
	CGHV1J025D	DC-18.0	25	28-40
	CGHV1J070D	DC-18.0	70	40

Visit [wolfspeed.com/RF](https://www.wolfspeed.com/RF) to learn more

# OUR PRODUCT SOLUTIONS

Wolfspeed has solutions for each stage of amplification depending on your system requirements. Below are just a few of the possible line ups covering some popular radar bands. We have the application team in place to discuss how we can support your specific needs through Ka-band.

## L-BAND Solutions $V_{DD} = 50\text{ V}$

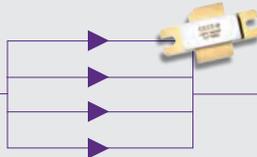
CMPA0527005F



CGHV14250F



4X CGHV14800F



>2kW, 0.96-1.1 or 1.2-1.4 GHz  
56.5 dB Total Gain

## S-BAND Solutions $V_{DD} = 50\text{ V}$

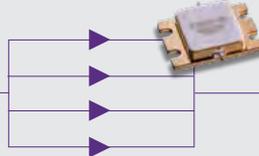
CGHV27030S



CGHV31500F



4 X CGHV31500F



1.8 kW, 2.7-3.1 GHz  
37 dB Total Gain

## C-BAND Solutions $V_{DD} = 50\text{ V}$

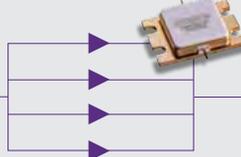
CGHV59070F/P



CGHV59350F



4 X CGHV59350F



1.1 kW, 5.2-5.9 GHz  
35 dB Total Gain

## SatCom, $V_{DD} = 40\text{ V}$

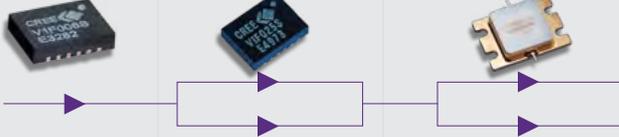
CGHV1F006S



2 X CGHV1F025S



2 X CGHV50200F



4.4 - 5.0 GHz  
39 dB Total Gain

## X-BAND Solutions $V_{DD} = 40\text{ V}$

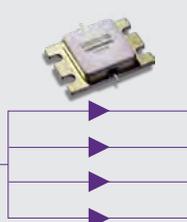
CGHV1F025S



CGHV96100F2



4 X CGHV96100F2



400 W, 8.3-9.6 GHz  
22 dB Total Gain

# OUR PRODUCT SOLUTIONS

MILCOM Line Up

Wolfspeed also offers line up solutions for the tactical radio market covering 0.5-2.7 GHz. An example is shown below utilizing some of our unmatched, packaged discrete products. We have a team standing by to help you with your unique requirements.

## 100W $V_{DD} = 50V$

CMPA0527005F



**20 dB**

22 dBm at Back Off  
15 db Back off  
-45 dBc

CGHV40030F/P



**12 dB**

34 dBm at Back Off  
-10 db Back off  
-40 dBc

CGHV40100F/P



**10 dB**

-30 dBc at 44 dBm

100W, 0.5-2.7 GHz  
**42 Total Gain**

## INDUSTRY LEADING DESIGN SUPPORT TOOLS

Enabling faster and easier design with GaN on SiC

**Models: Large Signal & ECAD**

Highly accurate large signal models enabling more first pass successes. Also, 3D models, footprints, and symbols to accelerate development time.

**Reference Designs**

Get an early jump on your development with our transistor reference designs and MMIC evaluation boards.

**Application Notes**

Document Type	Document Name
Application Notes	Sweat Soldering Assembly Proc
Application Notes	GaN HEMT Bias Sequencing and
Application Notes	Application Fixture for Tactical

Extensive library includes decades of experience, analysis, and design ideas that enable engineers to innovate.

**Software Support**

Compatible with industry-leading EDA Software Packages; Advanced Design System (ADS) and Microwave Office (MWO).



**Unleashing the Power of Possibilities.™**

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