



RF PRODUCTS AEROSPACE & DEFENSE

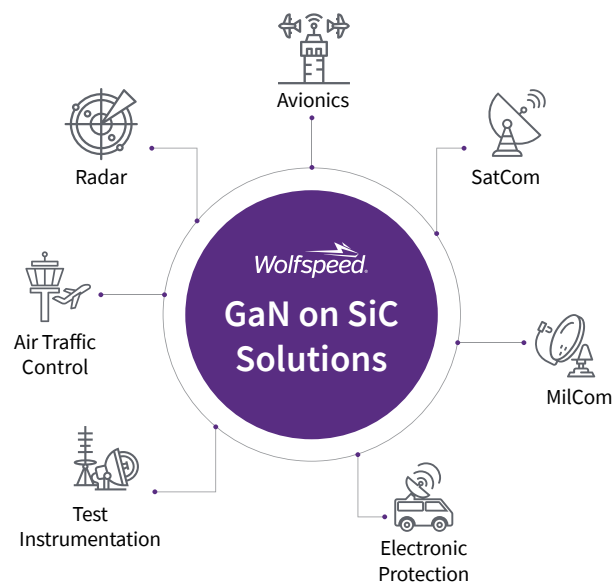
**IMPROVING SWAP-C WITH INNOVATIVE
GaN ON SiC SOLUTIONS**

RF CATALOG



WOLFSPEED GaN ON SiC

DIFFERENTIATED RF SOLUTIONS FOR AN EVER-CHANGING WORLD



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 Gallium Nitride (GaN) on Silicon Carbide (SiC). 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

Best-in-class Power Added Efficiency
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

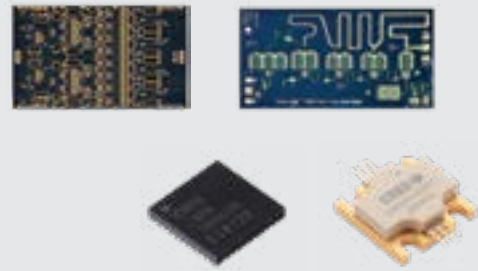
SOFTWARE AND HARDWARE DESIGN SUPPORT

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.



MMIC Power Amplifiers

| Part Number | Frequency (GHz) | Output Power (W) | Voltage (V) |
|--------------------|-----------------|------------------|-------------|
| CMPA0060002D/F/F1 | 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 |
| CMPA0760020F | 0.7-6.0 | 20 | 28 |
| CMPA1842040D/F | 1.8-4.2 | 45 | 28 |
| CMPA1D1J001S | 12.7-18 | 1 | 22 |
| 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 |
| CMPA5259100S | 5.0-5.9 | 110 | 50 |
| 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/F | 6.0-18.0 | 25 | 28 |
| CMPA801B030D1/S/F1 | 7.9-11.0 | 40 | 28 |
| CMPA851A005D/S | 8.5-10.5 | 5 | 28 |
| CMPA851A012D/S | 8.5-10.5 | 20 | 28 |
| CMPA851A025D/S | 8.5-10.5 | 45 | 28 |
| CMPA851A050D/S | 8.5-10.5 | 80 | 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 |
| CMPA1D1E025F | 13.75-14.5 | 25 | 40 |
| CMPA1D1E030D | 13.75-14.5 | 30 | 40 |
| CMPA1E1F060D/F | 13.4-15.5 | 60 | 28 |
| CMPA1F1H060D/F | 15.4-17.7 | 80 | 28 |

INTERNALLY MATCHED, PACKAGED 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.



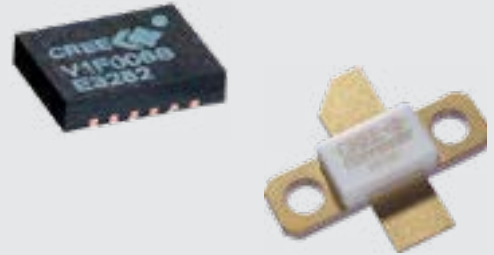
| | Part Number | Frequency (GHz) | Output Power (W) | Voltage (V) |
|--|--------------|-----------------|------------------|-------------|
| Internally Matched, Discrete Transistors | GTVA10400 | 0.96-1.215 | 400 | 50 |
| | GTVA10700 | 0.96-1.215 | 700 | 50 |
| | GTVA101K42EV | 0.96-1.4 | 1400 | 50 |
| | 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) |
|--|---------------|-----------------|------------------|-------------|
| Partially Matched, Packaged Discrete Transistors | CGHV14250F/P | 0.5-1.6 | 250 | 50 |
| | CGHV14500F/P | 0.5-1.8 | 500 | 50 |
| | CG2H30070F | 0.5-3.0 | 70 | 28 |
| | CGHV14800F/F1 | 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 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

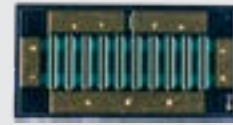
| Part Number | Frequency (GHz) | Output Power (W) | Voltage (V) |
|---------------|-----------------|------------------|-------------|
| CGH09120F | DC-1.0 | 120 | 28 |
| CGHV40180F/P | DC-2.0 | 200 | 50 |
| CGHV27060MP | DC-2.7 | 60 | 50 |
| CGH40090PP | DC-3.0 | 90 | 28 |
| CGHV40100F/P | DC-3.0 | 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 |
| CG2H40025F/P | DC-6.0 | 25 | 28 |
| 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 |
| CGH35060P1/P2 | 3.1-3.5 | 60 | 28 |

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.



Discrete Transistor Die

| Part Number | Frequency (GHz) | Output Power (W) | Voltage (V) |
|-------------|-----------------|------------------|-------------|
| 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

PRODUCT LINE UPS

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 $V_{DD} = 50\text{ V}$

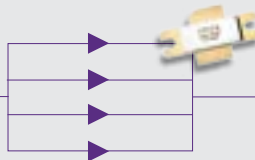
CMPA0527005F



CGHV14250F



4X CGHV14800F



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

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

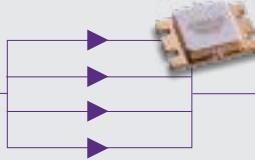
CGHV27030S



CGHV31500F



4X CGHV31500F



1.8 kW, 2.7-3.1 GHz
37 dB Total Gain

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

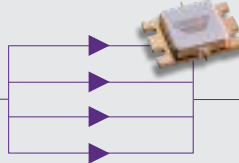
CGHV59070F/P



CGHV59350F



4X CGHV59350F



1.1 kW, 5.2-5.9 GHz
35 dB Total Gain

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

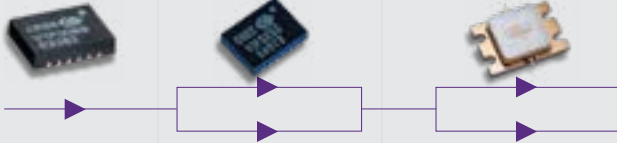
CGHV1F006S



2X CGHV1F025S



2X CGHV50200F



4.4 - 5.0 GHz
39 dB Total Gain

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

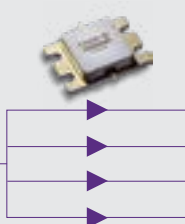
CGHV1F025S



CGHV96100F2



4X CGHV96100F2



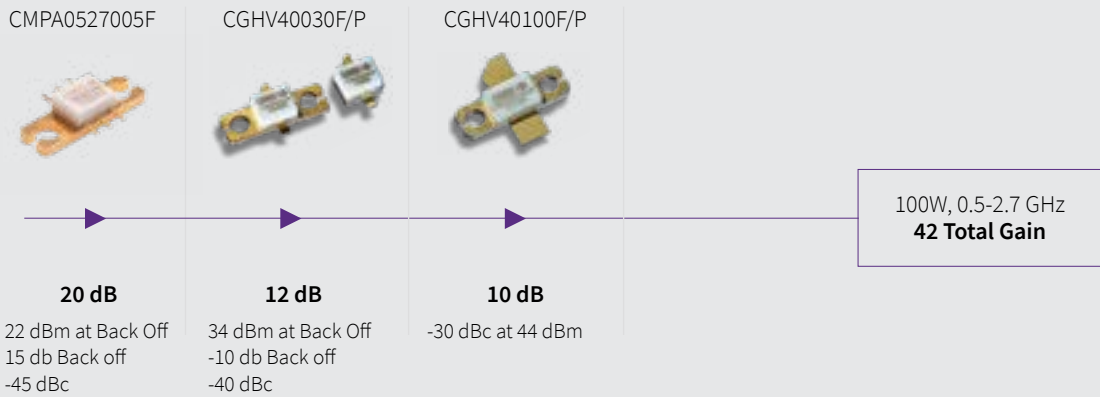
400 W, 8.3-9.6 GHz
22 dB Total Gain

PRODUCT LINE UPS

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 $V_{DD} = 50 V$



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

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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