



# Freescale Introduces

## **MMRF5014H**

125 W CW, 50 V GaN on SiC RF Power Transistor

November 2014



# Freescale RF Military Overview

- Freescale RF is **#1 in RF power** for cellular infrastructure\*
- Strong presence in ISM, mobile radio, broadcast and avionics
- June 2013: Freescale RF announced new focus supporting U.S. defense industry

## Freescale RF Military Value Proposition

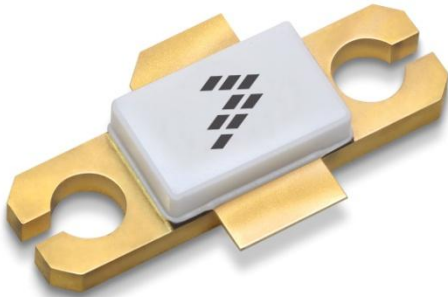
- **Products and Technology**
  - Leveraging **20 years of innovation** in RF power
  - Highest performing RF portfolio
- **Support**
  - **U.S. LDMOS fabrication** and dedicated internal manufacturing
  - Freescale **product longevity** program (10 or 15 years)
  - Dedicated U.S.-based applications & systems engineering support
- **Compliance**
  - ITAR compliant, secure technical data handling

*\*Source: ABI 2013 Report*



# MMRF5014H — Device Details

## Product Overview



### Product Performance

- Output Power: 125 W
- Supply Voltage: 50 V
- Frequency of Operation: up to 2690
- Gain : 16 dB min
- Drain Efficiency: 58% min
- Wideband GaN on SiC RF Power Transistor

### Description

This 125 W RF power transistor is designed for wideband operation up to 2690 MHz. The high gain, rugged and wideband performance of this device make it ideal for large-signal, common-source amplifier applications for linear and compressed amplifier circuits.

### Features

- Advanced GaN on SiC, offering high power density
- Suitable for octave and decade bandwidth wideband amplifiers
- Input matching for extended wideband performance
- High ruggedness, 20:1 VSWR
- Low thermal resistance
- 200-2500 MHz wideband reference circuit



# MMRF5014H — Featured Device

## Applications

- Wideband or narrowband amplifiers
- Ideal for multi octave communication applications
- Professional and military radios
- Radar, jammers and electronic warfare
- General purpose wideband amplifiers

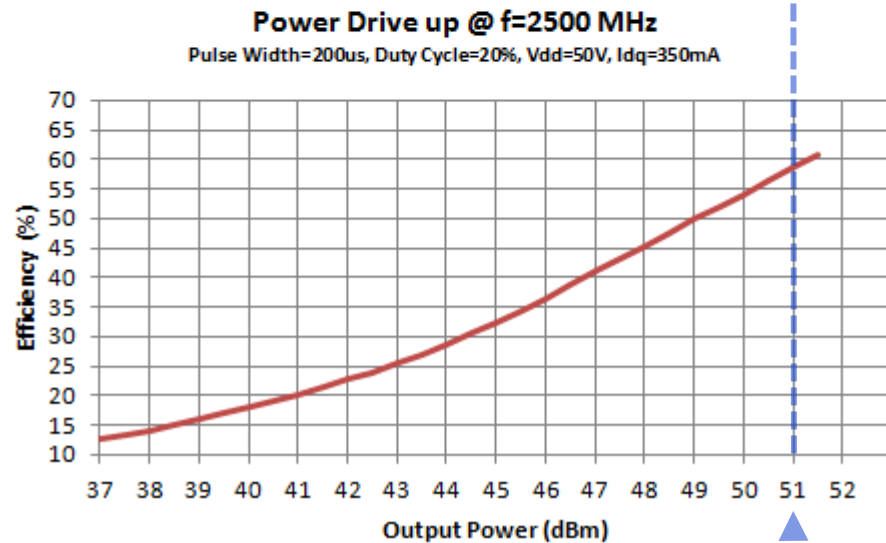
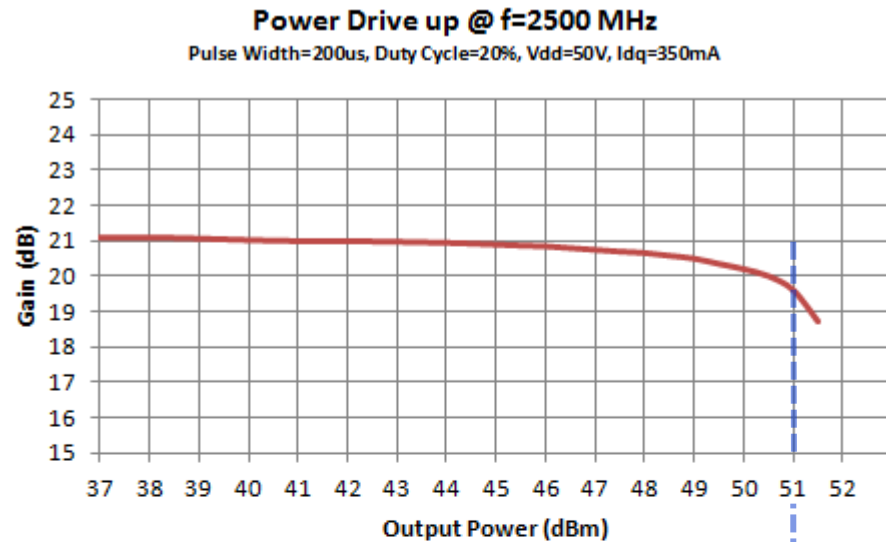
## Competitive Advantages

- Industry leading wideband 200-2500 MHz performance
  - 12 dB min gain and 40% min efficiency
- Low thermal resistance due to die attached technology and packaging
- 125 watts CW capable
- Device will be on Freescale's 15 year Product Longevity Program
- Able to replace multiple RF amplifiers with one wideband PA
- Application circuit support
- Dedicated RF Military team
- Availability: Sampling now. In production Q4 2014. (Orderable Part#: MMRF5014HR5)

# NXP MMRF5014H

## 125 W GaN

### Power Drive Up



125W



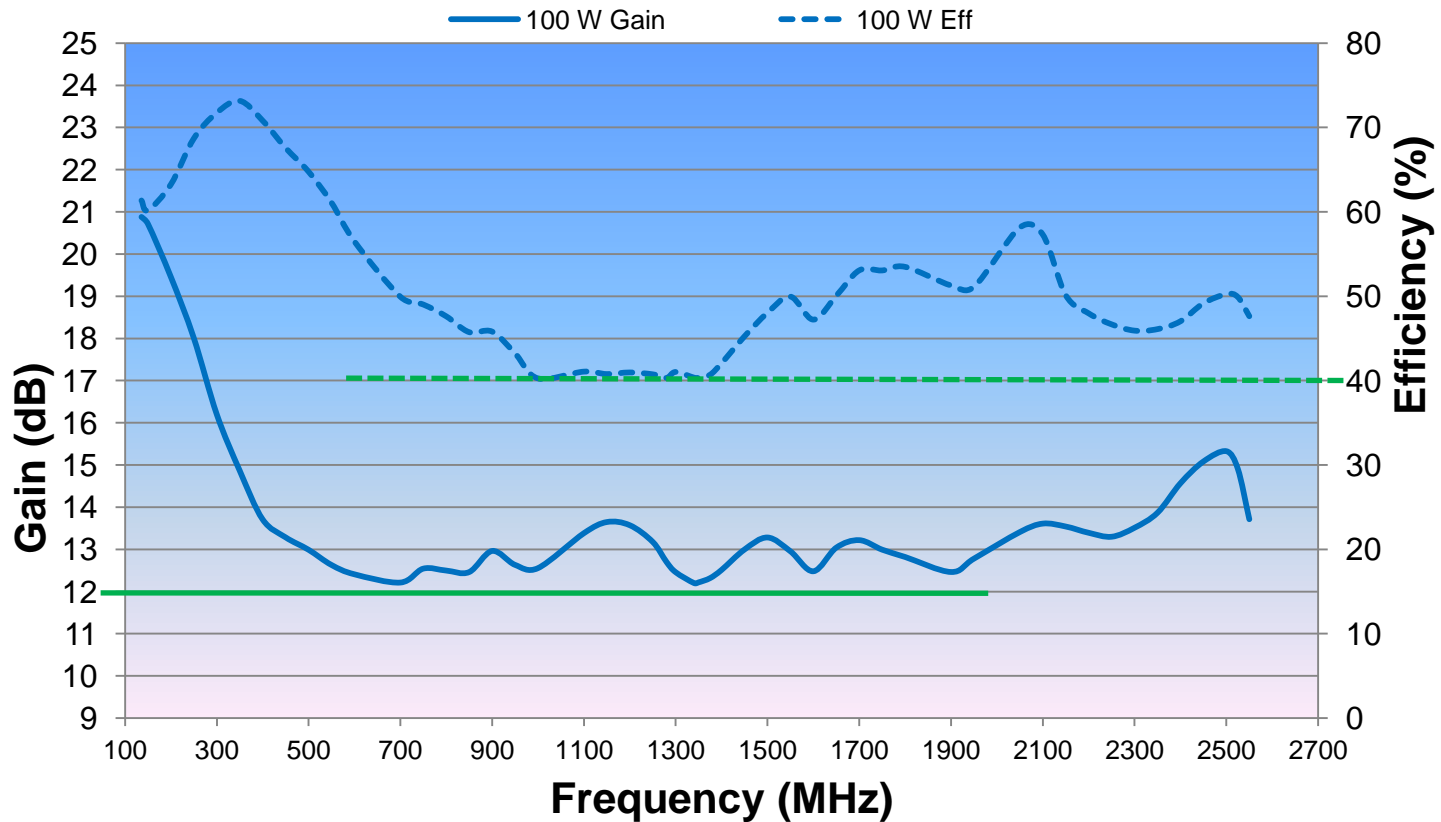
# NXP MRF5014H

## 200-2500 MHz Circuit

- Design Goals Met
- ▶ 100 W CW
  - ▶ 200-2500 MHz
  - ▶ 12 dB min gain
  - ▶ 40% min eff
  - ▶ 0.8° C/W

### MMRF5014H 100W GaN CW Performance

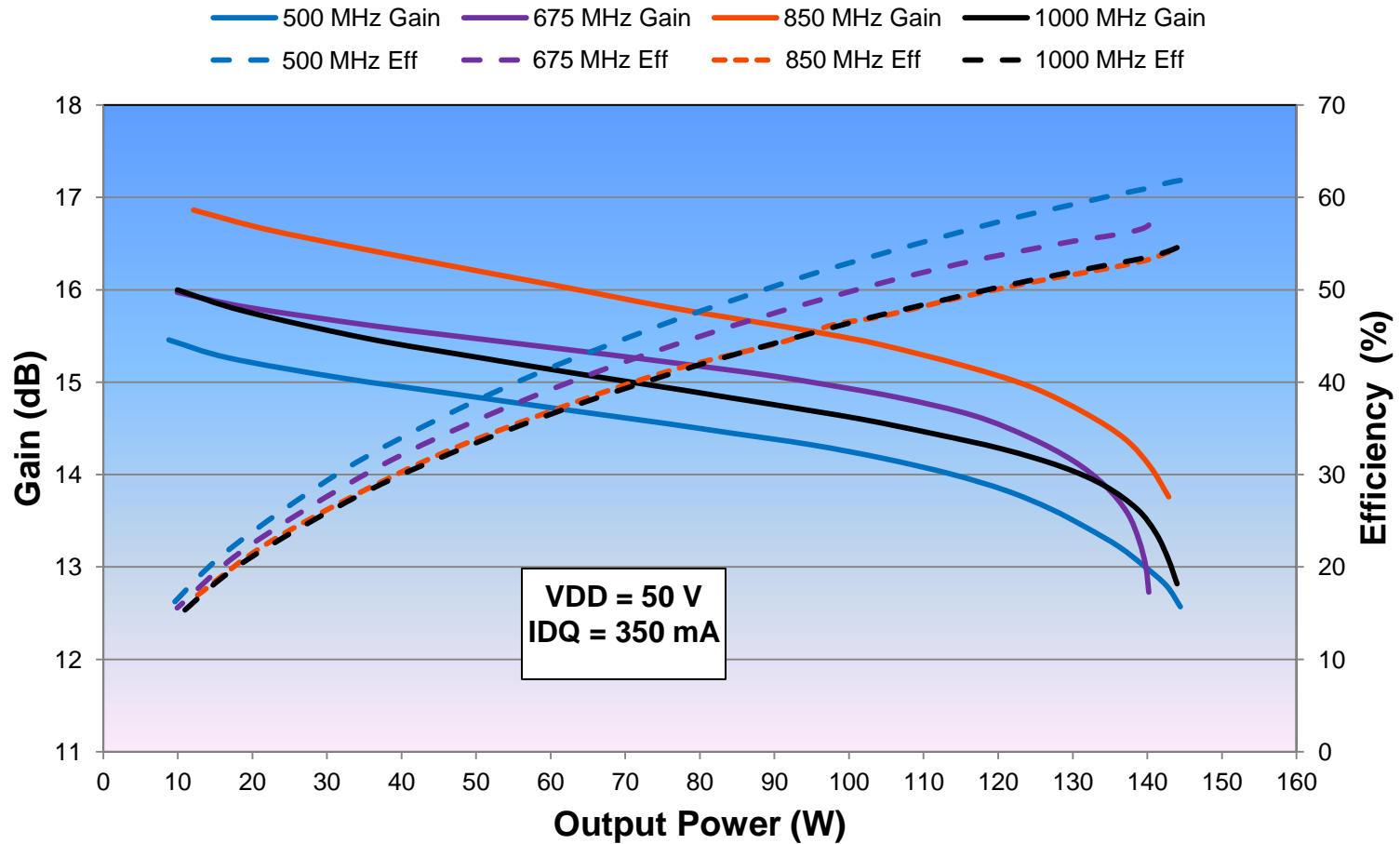
VDD = 50 V, IDQ=350 mA





# MRF5014H — 500-1000 MHz Circuit

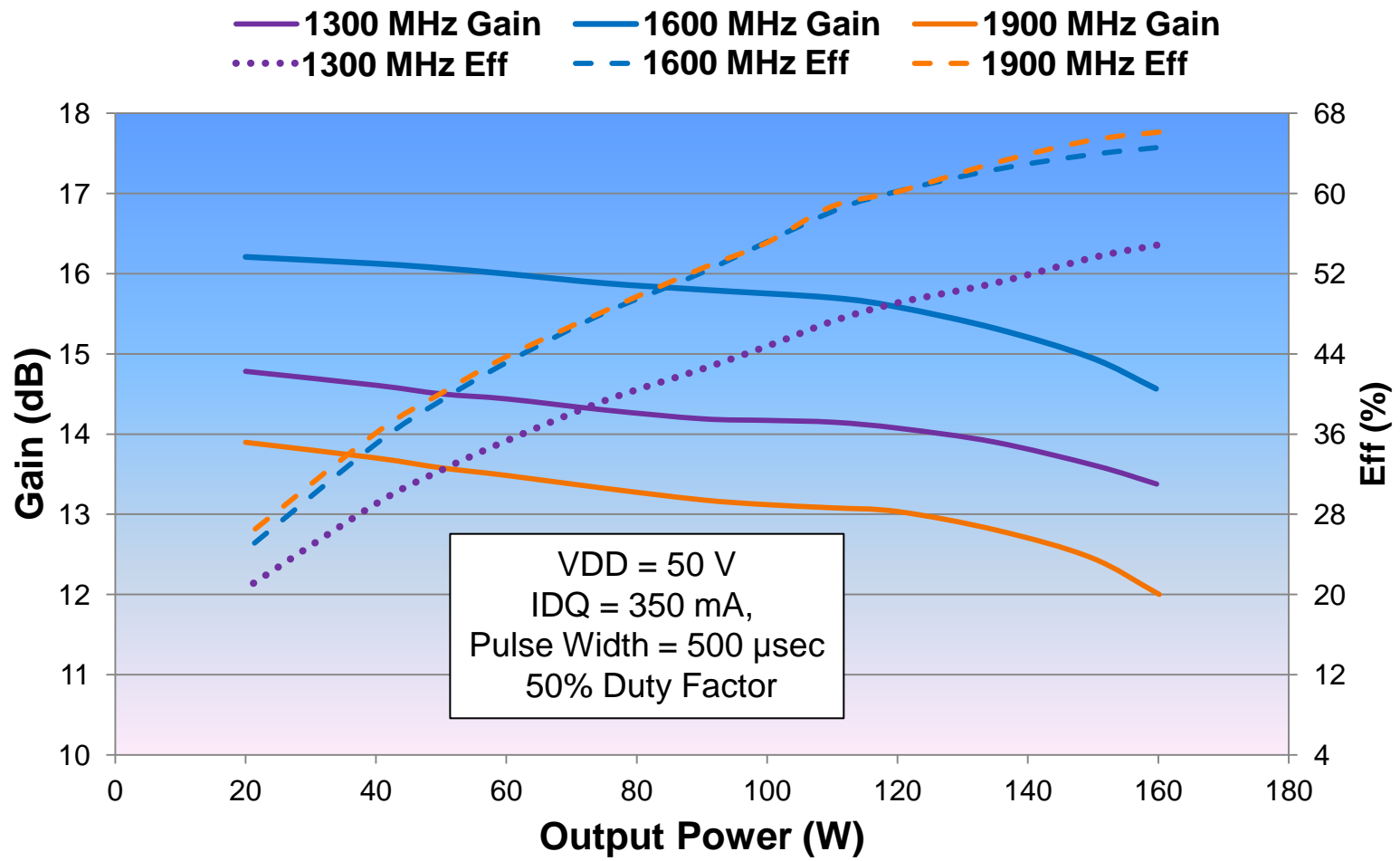
## CW Performance





# MRF5014H — 1300-1900 MHz Circuit

## Pulsed Performance







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