



Freescale Announces Two New Cellular Base Station Drivers AFT27S006N and AFT27S010N

December 2013





A *Global Leader* in Microcontrollers and Digital Networking Processors







- > **50** Year Legacy
- > **5,500** Engineers
- > **6,000** Patent Families

Five Core Product Groups

- Microcontrollers
- Digital Networking
- Automotive MCU
- Analog & Sensors
- RF

Four Primary Markets

- Automotive 
- Networking 
- Industrial 
- Consumer 





Maintain RF's leadership market share position in cellular infrastructure PAs and leverage market position to grow revenue in adjacent spaces for RF



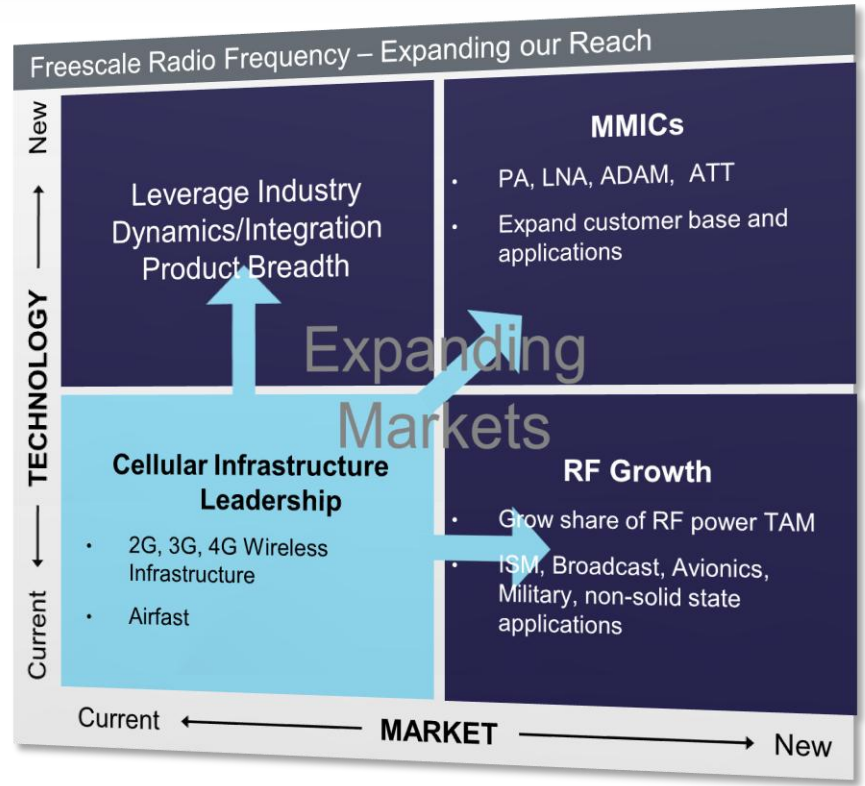
RF Cellular

- Continue strong position with Airfast technology and MMIC portfolio expansion



RF Industrial

- Continue strong position in current markets while expanding into additional RF Industrial applications





RF Market Focus

Performance Leadership with Airfast RF Power Solutions

Markets & Applications

Super Macro

High Power RF
LDMOS, LDMOS ICs

Macro

High Power RF
LDMOS, LDMOS ICs

Micro

Medium Power
LDMOS, LDMOS ICs

Pico

LDMOS ICs, MMICs

RF Power Products Growth

Markets & Applications

Industrial, Scientific, Medical

- CO2 Lasers
- Plasma Generation
- MRI

Broadcast

- UHF & VHF Television
- FM Radio
- Shortwave Radio

Aerospace

- Distance Measuring
- Weather Radar
- Air Traffic Mgmt

Military/Defense

- Long Range Radar
- HF, VHF, UHF Comms
- Radio Navigation

Land Mobile Radio

- Public Safety
- Marine
- Dispatch

GaAs MMIC Solutions Expansion

Markets & Applications

Wireless Infrastructure

ADAM, GPA, LNA, MMIC
PA Driver

Small Cell

MMIC PA, LNA

Smart Energy

MMIC PA, LNA

Land Mobile Radio

MMIC PA Driver, LNA, ATT



NXP Market Leadership with Technology & Service Differentiation

- **Freescale RF maintains a clear #1** position for cellular infrastructure
 - More than 2x market share of next largest supplier*
- Freescale's latest Airfast performance puts us in **best-in-class** at all frequency bands and power levels
- Our unparalleled worldwide **applications support** and most reliable **supply chain** gives us an undisputed market leadership position
- We are creating further differentiation in our product offerings to continue to **grow our cellular market share**

*Source: ABI Research, December 2012

Customers Facing...

- Skyrocketing data rates
- Multiple wireless standards
- Increasing network complexity
- Stringent power requirements
- Worldwide rise in IP traffic

Mobile Broadband for Evolving Cellular Market

- Enable increased capacity requirements on cellular networks
- Support for 4G data rates and beyond
- Reduced energy consumption
- Shrinking equipment footprint
- Reduced time-to-market for new designs

Past Product Portfolio

RF Power
Macrocells

Signal Bandwidth
20 – 35 MHz

RF Bandwidth
Single Tx band

RF PA Size and Cost

- *Mix of single and two-stage final stage device*
- *Air cavity devices (above 1 GHz)*

RF Performance

- *Class AB and symmetric Doherty*
- *30 – 40% lineup efficiency*

Current Solutions

RF Power
Covering femto to macrocells

Signal Bandwidth
Support for full bands/broad range of frequencies

RF Bandwidth

- *Single Tx to Multi Tx band*
- *Linearization and filtering/out-of-band emissions considerations*

RF PA Size and Cost

- *Plastic packaging*
- *Package uniformity over range of Tx bands*
- *Additional integration*
- *Reduction in board space*

RF Performance

- *Advanced high efficiency PAs*
- *45%+ lineup efficiency (multiple bands)*

Airfast Goals

RF Power Solutions: Fast Forward to the Future

Develop innovative RF solutions that meet and exceed market needs for performance, bandwidth and cost efficiency.

Airfast Delivers Multi-Generational Performance Improvements

- ☑ 5 points higher drain efficiency over prior generation
- ☑ 25% higher power density
- ☑ Significantly improved linearity
- ☑ Industry leading instantaneous bandwidth, up to 160 MHz
- ☑ Second generation over-molded plastic packaging: most technically advanced and cost-effective packages available for high power RF transistors

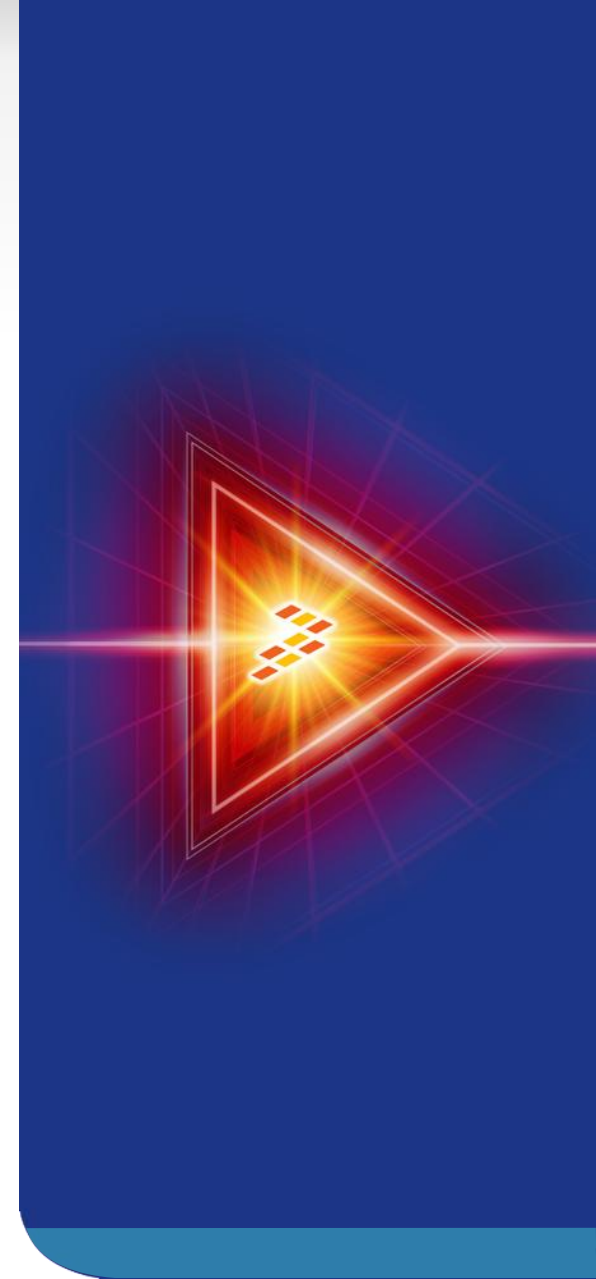
Beyond components - System Level Solutions

- ☑ DPD validated reference circuit designs for the full PA lineup to shorten customer's development time and cost



Two New Airfast Drivers for Cellular Base Stations

- Building on the success of the MW6S004N, the industries workhorse, Freescale introduces two new drivers:
- **AFT27S006N, AFT27S010N**
 - Covering the full cellular infrastructure frequency range from 700 to 2700 MHz
 - Excellent 20 to 24 dB gain performance across the entire frequency range
 - Ultra small footprint (PLD-1.5W)
 - Two power options (6 W and 10 W) are ideally suited for MIMO applications rated between 20 to 40 W average power



AFT27S006N Key Product Features



Designed as a driver for 20 to 40 W cellular base station MIMO applications across all bands

Availability:

- In Production

Airfast RF Power Solutions 28 V LDMOS

- Designed for cellular operation from 728 to 2700 MHz
- PLD-1.5W package

AFT27S006N Class AB Performance

At an average power of 28.8 dBm:

- 2600 MHz
 - Gain: 22.0 dB, Drain Efficiency: 21.2%
- 2350 MHz
 - Gain: 23.5 dB, Drain Efficiency: 21.5%
- 2140 MHz
 - Gain: 22.8 dB, Drain Efficiency: 19.8%
- 748 MHz
 - Gain: 24.4 dB, Drain Efficiency: 19.9%

AFT27S010N Key Product Features

AFT27S010N



10 W Rated Power

Designed as a driver for 20 to 40 W cellular base station MIMO applications across all bands

Availability:

- In Production

Airfast RF Power Solutions 28 V LDMOS

- Designed for cellular operation from 728 to 2700 MHz
- PLD-1.5W package

AFT27S010N Class AB Performance

At an average power of 1.26 W:

- 2600 MHz
 - Gain: 21.0 dB, Drain Efficiency: 22.7%
- 2350 MHz
 - Gain: 21.6 dB, Drain Efficiency: 22.6%
- 2140 MHz
 - Gain: 21.8 dB, Drain Efficiency: 23.0%
- 748 MHz
 - Gain: 24.3 dB, Drain Efficiency: 24.7%

