



Freescale **Airfast Mobile Radio**

Announcing:

AFT05MS006N

Previously Announced:

AFT09MS007N AFT09MS015N

AFT05MS031N AFT09MS031N

AFT09MP055N AFT05MP075N



March.2014



Mobile Radio Applications



Public Safety: P25, TETRA



Transportation



Construction



Marine



Dispatch



M2M

RF Mobile Radio Challenges



- Reliability / Ruggedness / Stability
 - Mission critical applications
 - Harsh, uncontrolled environment
- Reduce equipment size
 - Smaller vehicles
 - Reduce installation costs
- Increase features without increasing size
 - Reduce installation costs
 - Multi-band / multimode radios

Mobile Radio Technology Forums

Airfast: A New Standard

RF Land Mobile
Market Focus

Mobile Radios



M2M Communications /
Remote Monitoring



- Industry-leading RF performance
- VHF, UHF and 900 MHz devices
- Output power from 6 W to 75 W
- Exceptional ruggedness – > 65:1 VSWR
- High efficiency
- High gain – ranging from 15 dB to 21 dB
- Exceptional thermal performance
- Available in over-molded plastic and air cavity ceramic packages
- Advanced, integrated ESD protection





Freescale Solutions: **Airfast** Mobile Radio Devices

Features include

- Best ruggedness in the industry:
 - LDMOS devices handle > 65:1 VSWR with 3 dB overdrive
- High gain
 - eliminates stages, reducing system cost
- High efficiency
 - allows use of smaller heatsinks and housings
 - less heat improves reliability
- Broadband capability
 - enables full performance across complete LMR band
 - slightly reduced performance across multiple bands.
- Available in over-molded plastic packages and air cavity ceramic packages
- Freescale longevity program

Freescale announces the 6 W Airfast device for handheld/portable applications. The new device offers high performance at a lower power level and lower price point than the 7 W device. It joins the previous announced devices in the Freescale mobile radio portfolio. These devices are designed for mobile applications operating at frequencies from 136 to 941 MHz.

This device provides significantly improved performance over previous generation devices.

High gain enables reduction in the number of stages. Efficiency improvements dramatically reduce heatsink size.

Ruggedness enables reliable operation in extreme environments.

Announced June 2013

AFT09MS007N – now in production

AFT09MS015N – now in production



AFT09MP055N – now in production





Key Product Features

Designed for 7.5 V and 12 V Operations at Frequencies between 136-941 MHz

	AFT05MS006N	AFT09MS007N	AFT09MS015N
<p>PLD-1.5W Package*</p>  <p>*not actual size</p>	<ul style="list-style-type: none"> • 136-941 MHz • > 6 W output power at 7.5 V • Ruggedness > 65:1 VSWR • High gain < 0.02 W drive for rated power out • Over-molded plastic package: PLD-1.5W 	<ul style="list-style-type: none"> • 136-941 MHz • > 7 W output power at 7.5 V • 3 W output power at 3.6 V • Ruggedness > 65:1 VSWR • High gain < 0.025 W drive for rated power out • Over-molded plastic package: PLD-1.5W 	<ul style="list-style-type: none"> • 136-941 MHz • > 16 W output power at 12.5 V • Ruggedness > 65:1 VSWR • High gain < 0.5 W drive for rated power out • Over-molded plastic package: PLD-1.5W



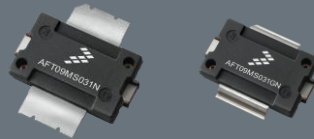
NXP Product Features

Characterized for 12.5 V-13.6 V Operations at Frequencies between 136-941 MHz

AFT05MS031N



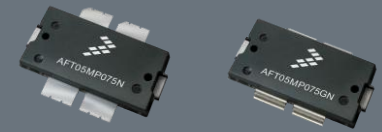
AFT09MS031N



AFT09MP055N



AFT05MP075N



- 136-520 MHz
- > 31 W output power at 13.6 V
- Ruggedness > 65:1 VSWR
- High gain < 0.5 W drive for rated power
- 2 lead over-molded plastic package
 - TO-270-2
 - TO-270G-2

- 764-941 MHz
- > 31 W output power at 13.6 V
- Ruggedness >65:1 VSWR
- High gain < 0.6W drive for rated power
- 2 lead over-molded plastic package
 - TO-270-2
 - TO-270G-2

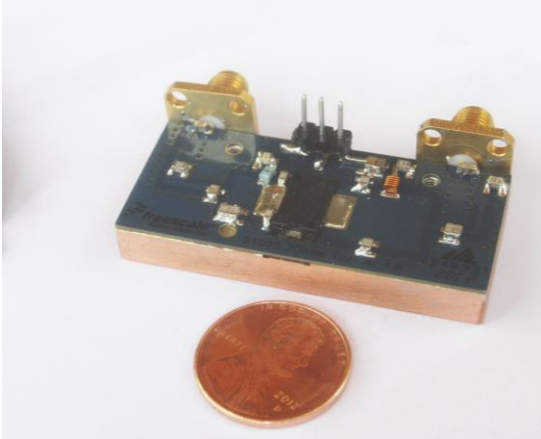
- 761-941 MHz
- > 55 W output power at 12.5 V
- Ruggedness > 65:1 VSWR
- High gain < 2 W drive for rated power
- 4 lead over-molded plastic package
 - TO-270WB-4
 - TO-270WBG-4

- 136-520 MHz
- > 75 W output power at 12.5 V
- Ruggedness > 65:1 VSWR
- High gain < 1 W drive for rated power
- 4 lead over-molded plastic package
 - TO-270WB-4
 - TO-270WBG-4

NXP Compact Reference Designs

Reference Design Features

- Compact size
- Full performance
- Standard components
- Easy to duplicate
- Low cost PC – similar to FR4
- Full range of reference designs covering all mobile radio bands and power levels in development



Why **Airfast** Mobile Radio Transistors

- **Ruggedness, Stability and Reliability**

- Mission critical applications require mobile transmitters to operate even under non-ideal conditions
 - poorly regulated supply voltage
 - poorly maintained feed lines and antennae

- **Higher efficiency**

- High efficiency = less heat
- Lower temperatures improve reliability, key for radios used for mission critical applications

- **Compact circuit size**

- Reduce radio size to fit “under dash” in smaller cars
- New multi-band radios can implement multiple transmitters in existing circuit space

- **Linearity**

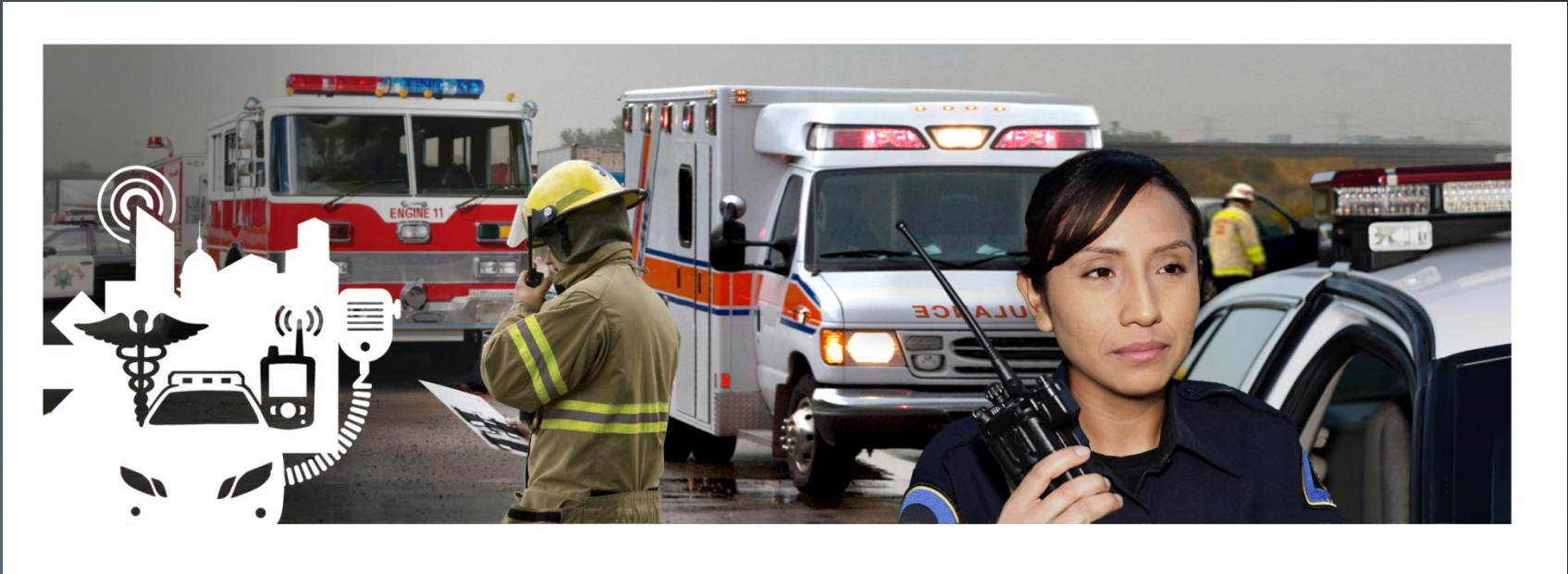
- New digital modulation formats require that the amplifier be linear, while still maintaining high efficiency

RF Power Products Support Documentation

- www.freescale.com/RFpower
 - 50 V LDMOS [White Paper](#)
 - Application notes
 - Data sheets
 - MTTF calculators
 - Package index
 - Portfolio application pages
 - Product summary pages
 - RF Power selector tool
- **Models**
 - ADS and AWR compatible large-signal models in development
 - www.freescale.com/RF/models
- **Evaluation Boards**
 - Test fixtures & test fixture kits available upon request, via your local sales or distribution contact.
- **Application Support**
 - Direct assistance available by Freescale RF applications team, via your local sales or distribution contact.
- **Freescale Product Longevity Program**
 - www.freescale.com/productlongevity
- **You Tube Videos**
 - www.youtube.com/freescale (search "RF Power")
- **Social Media**
 - Blogs & Twitter ([@RFLeonard](#))

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