

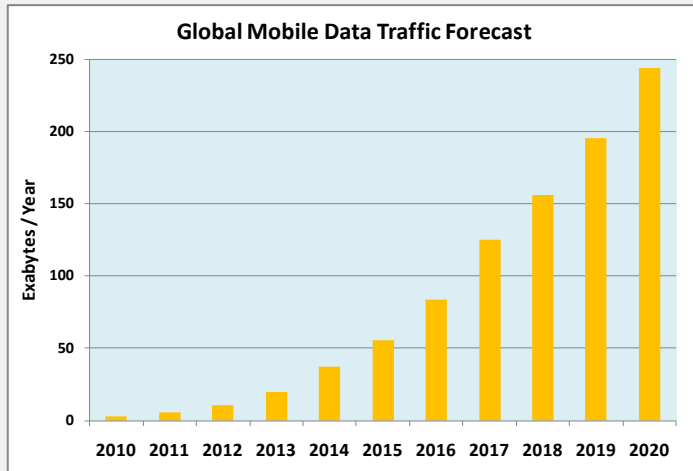
Freescale Introduces Airfast GaN RF Power Solutions

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Market Dynamics & Product Requirement Trends

Mobile Broadband: Needs of an 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



Current Product Portfolio

- ▶ **RF Power**
 - Macro cells
- ▶ **Signal Bandwidth**
 - 20 – 35 MHz
- ▶ **RF Bandwidth**
 - Single Tx Band
- ▶ **RF PA Size and Cost**
 - Mix of single and 2 stage final stage device
 - Air cavity devices (above 1 GHz)
- ▶ **RF Performance**
 - Class AB and Symmetric Doherty
 - 30 – 40% Line Up Efficiency

Next Generation Solutions

- ▶ **RF Power**
 - Femto - Macro cells
- ▶ **Signal Bandwidth**
 - Support for Full Bands / All Frequencies
- ▶ **RF Bandwidth**
 - Single Tx band to Multi Tx band
 - Linearization and Filtering/out-of-band emissions considerations
- ▶ **RF PA Size and Cost**
 - Plastic packaging
 - Package uniformity over all Tx bands
 - Additional Integration
 - Reduction in board space
- ▶ **RF Performance**
 - Advanced High Efficiency PAs
 - 45%+ Line Up Efficiency (all bands)

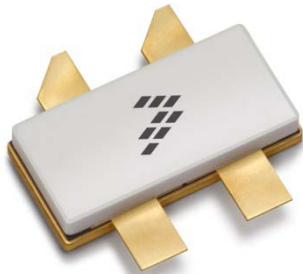


Market Need for Airfast 48V GaN AFG25HW355S

- 48V GaN offers 4x the power density of 28V LDMOS.
- Device is configured in a dual-path (Doherty compatible) configuration
- Dual-path concept offers size reduction by combining main and peaking into single package
- Advantages of GaN technology in power amplifiers includes:
 - Smaller product form factors
 - Low parasitic loss
 - Elevated power density
 - Higher frequency operation
- Potential GaN cellular applications include:
 - Quasi-linear high efficiency (Doherty)
 - High powered pulsed (non-linear) applications
 - Broadband power amplifiers
 - Switch-mode amplifier configurations

Key Product Features

AFG25HW355S



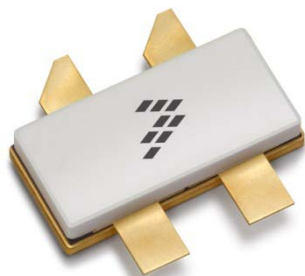
>400W Peak Power

Airfast RF Power Solutions 48V GaN

- Designed for cellular operation from 2300 MHz to 2700 MHz
- Dual path device
- Ideal for in-package Doherty application
- Housed in NI-780S-4 package

Key Product Features

AFG25HW355S



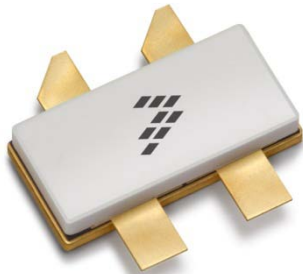
>400W Peak Power

Airfast RF GaN AFG25HW355S Targeting

- 2300 - 2700 MHz performance in Doherty test fixture:
- Peak power of >400W
- At average power of 47W
 - Gain: 16 dB
 - Drain Efficiency: 50%
 - Over 400 MHz RF bandwidth

AFG25HW355S Availability

AFG25HW355S



>400W Peak Power

- Initial samples and Doherty fixture available 4Q12
- Final samples available 1Q13
- Qualified level part available 2Q13

