Announcing Rugged Plastic for Industrial Applications

MRFE6VP5150N
MRFE6VP5300N
RF Industrial Challenges

- Modern manufacturing techniques
  - Enables surface mount plastic in industrial environments
  - Reduced cost compared to ceramic packaging
  - Competitive with lower performance, older technologies
- Reliability, ruggedness, stability
  - Mission critical applications
  - Harsh, uncontrolled environment
- High performance
  - High gain and efficiency across a wide frequency range: simplifies cooling and enables smaller end products
Freescale Solutions: Rugged Plastic Device Family

Features include

- Industrial capable plastic packages
- 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 broadcast bandwidths
- Freescale product longevity program

Freescale announces the MRFE6VP5150N and MRFE6VP5300N for industrial and broadcast applications. These products are the first of Freescale’s enhanced ruggedness portfolio housed in plastic packages. Plastic packaged devices enable modern surface-mount manufacturing techniques to be used in traditional industrial applications.

The new products are targeted at applications including medical, laser, and FM and VHF broadcast systems. They are designed for operation at frequencies from 2 to 500 MHz.

These new devices offer high performance at a lower price point than comparable air cavity ceramic packaged products.

Announced June 2014

MRFE6VP5150N – sampling now; production Q314
MRFE6VP5300N – in production
## Key Product Features

Designed for 50 V Operation at Frequencies between 2 to 500 MHz

<table>
<thead>
<tr>
<th>Package</th>
<th>MRFE6VP5150N</th>
<th>MRFE6VP5300N</th>
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<tbody>
<tr>
<td>TO-270WB-4 Package</td>
<td></td>
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<tr>
<td></td>
<td>• 1.8 to 600 MHz</td>
<td>• 1.8 to 600 MHz</td>
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<tr>
<td></td>
<td>• 150 W output power at 50 V</td>
<td>• 300 W output power at 50 V</td>
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<tr>
<td></td>
<td>• Ruggedness &gt; 65:1 VSWR</td>
<td>• Ruggedness &gt; 65:1 VSWR</td>
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<tr>
<td></td>
<td>• High gain</td>
<td>• High gain</td>
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<tr>
<td></td>
<td>• &lt; 0.5 W drive for rated power out @ 230 MHz</td>
<td>• &lt; 0.5 W drive for rated power out @ 230 MHz</td>
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<tr>
<td></td>
<td>• &lt; 0.9 W drive for 170 W output power from 87.5 –108 MHz</td>
<td>• &lt; 0.9 W drive for 300 W output power from 87.5 –108 MHz</td>
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<tr>
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<td>• Efficiency</td>
<td>• Efficiency</td>
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<td>• 72% typical at 230 MHz</td>
<td>• 70% typical at 230 MHz</td>
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<tr>
<td></td>
<td>• &gt; 75% typical 87.5 –108 MHz</td>
<td>• &gt; 77% typical 87.5 –108 MHz</td>
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Package images not to actual size
• Designed for high VSWR industrial, medical and broadcast applications
• Extreme ruggedness > 65:1 VSWR capable and 3 dB overdrive
• Excellent broadband performance
  87.5 to 108 MHz in a single fixture
• Functional performance
  Output Power: 179 W
  Gain: 22.5 dB typical
  High efficiency: 74.6% typical

**Pout (W) vs Pin (W)**

**Gain and Efficiency vs Frequency**
• Designed for high VSWR industrial, medical and broadcast applications
• Extreme ruggedness > 65:1 VSWR capable and 3 dB overdrive
• Excellent broadband performance
  87.5 to 108 MHz in a single fixture
• Functional performance
  Output Power: 338 W
  Gain: 23.5 dB typical
  High efficiency: 76.9% typical
RF Power Products Resources and Support

- [www.freescale.com/RFpower](http://www.freescale.com/RFpower)
  - 50 V LDMOS [White Paper](http://www.freescale.com/RFpower)
  - 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](http://www.freescale.com/RF/models)

- **Evaluation Boards**
  - Test fixtures and test fixture kits available upon request

- **Application Support**
  - Direct assistance available by Freescale RF applications team

- **Freescale Product Longevity Program**
  - [www.freescale.com/productlongevity](http://www.freescale.com/productlongevity)

- **You Tube Videos**
  - [www.youtube.com/freescale](http://www.youtube.com/freescale) (search “RF Power”)

- **Social Media**
  - Blogs & Twitter (@RFLeonard)
Freescale LDMOS Leadership

- Leaders in LDMOS technology since its inception, building on more than 50 years of leadership and experience to deliver innovative, high performance products.
- Dedicated, performance-optimized portfolio for all frequency from 1 MHz to over 2 GHz.
- Comprehensive line of enhanced ruggedness devices.
- Advanced packaging technology that delivers superior thermal performance with both ceramic air cavity and over-molded plastic packages.
- Leader in reliability, performance and consistency.
- Leader in mobile radio and cellular infrastructure markets.