RF Microwave Heating and Cooking

MHT1002N
MHT1003N

October 2014
Modernizing RF Power

Innovative Tools

New Heating Products
2.45 GHz
915 MHz

Worldwide Technical Support
Modernizing RF Power: Magnetron To Solid State

**Magnetron**
- 4,000 V supply voltage
- 500 hours lifetime
- Performance degrades over time

**On-off control:**
Energy is ‘flooded’ to cavity

**RF Transistor**
- 28-50 V supply voltage
- Up to 20 years lifetime
- No performance degradation

**High Resolution control:**
Phase, amplitude, frequency
Energy can be directed
Solid State Microwave Cooking: How Is It Different?

More Functionality and Performance

**Tube Source**
- Turntable
- Waveguide
- Magnetron
- Stirrer

**Solid State Source**
- Solid State RF Power

**Direct energy to load**
- Reflected energy received
- Absorbed energy analyzed
- Power & location adjusted
- Multiple sources

**“Floods” and heats cavity**
- Crude on/off control
- Electro-mech BOM
- Degrades over time

**Selective heating**
- Versatile: complex combinations
- Improved consistency (quality)
- Long life
- Reduced time

**More effective use of energy via closed loop, controlled microwave power**
MHT1003N – 250 W Discrete

- 250 W CW @ 2.45 GHz
- 32 V operation
- 58% overall efficiency; 10 points better than current generation
- 15 dB gain, < 10 W drive for full power
- SMT or through board mounting option
- Superior thermal performance
  - Better than ceramic package
  - Enables higher safe power levels
- Optimized reference boards available
- Samples now
- Production 4Q 2014

RF Power Tool
EVB Available!
MHT1002N – 350 W Discrete

- 350 W CW @ 915 MHz
- 50 V operation
- 20 dB gain
- Plastic package
- **63% overall efficiency**
- Single-ended or push-pull use
- Internal matching
- Production **Now!**
Freescale RF Power Tool System

- Complete RF test bench
  - RF generator
  - 4 wattmeters/directional couplers
  - 4 bias supplies
  - Voltmeters
  - Ammeters
  - Thermometers
  - RF driver amplifier

- Seamless interface to Freescale RF evaluation boards

- Evaluate and develop your application using Freescale RF power devices

- Set RF conditions and monitor performance in real time

- Use data logging to store and compare results
RF Power Tool System – Only from Freescale

RF Power Tool Block Diagram

- Generator
- Control
- Kinetis Sensor Aggregator
- Power Amplifier
- Sensor System:
  - RF
  - DC
  - Temperature

RF Power Tool

MHT1003N
Smart EVB

Orderable Part#s
RFPOWER TOOL1000
RFPT-H2450-250
RF Heating and Cooking Solutions from Freescale

- Solid State RF Drivers
- Solid State RF Power Stages: Discrete and Integrated Circuits
- Complete Line of Microcontrollers Supporting Microwave Ovens
- Reference RF Circuits
- Reference Microwave Oven Circuits
- Antenna Design Support
- RF Power Application Development Tools