Energy Harvesting IC for Fuzing Applications

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What is Energy Harvesting?

• Vibration detection
  – Using transducer
  – or Piezoelectric device

• Applications
  – Sensors for remote equipment
    • motors (bearing failure detection).
MSRFIF
MSRFIF Die Plot
MSRFIF Evaluation Board
Simplified Schematic

TSSOP Package

Piezoelectric wafer

VA = 3
VO = 2.0
Bench Data

• Piezoelectric wafer is tuned
• Voltage generated by Motion fed to charge pump of MSRFIF.
• VDD out is 2.5V at 100 μA
Technical Issues

• Piezo efficiency
  – Amount of motion limited for application

• Piezo size
  – Need larger size for voltage/current needs

• Charge pump efficiency
  – Optimized for RF
MSRFIF provides a charge pump to power Fuzing technology

- Piezoelectric wafer for energy harvesting.
- Perfect for micropower microcontrollers
- Possible to achieve more current in future designs