RF Programmable Signal Processor System for Fuze Programming

Douglas Cox, Trong Huynh, John Ambrose
Presented by Douglas Cox
dougc@mix-sig.com
MSI’s Signal Processor ICs for Fuzing Applications

HDL304 for the 734A1 Fuze
HDL400 for fuzing 40mm
HDL401 for fuzing 30 mm

All developed for ARDEC

Mixed Signal Integration
2157F O’Toole Avenue
San Jose, CA 95131
www.mix-sig.com
Introduction

Electronic fuzing is moving to smaller cannon and even bullets.

• Design to program smaller munitions
• Need for fuze programming
• Proximity or Contact
  – Distance
    • for buried targets
    • hard targets
    • soft targets
One Solution: RF Programming
Benefits

- Smaller Antenna
- Programming Speed
- Smaller Electronics
One Solution: RF Programming
Comparison of RF to Magnetic

• RF Options
  – Smaller Antenna
    • Higher Frequency allows smaller antennas
  – Distance programming: inches, not contact
  – Programming speed
    • High carrier frequency for higher data rates
  – Writer size
    • As with the receiver, transmitter is smaller
RF Options

- Direct; stored for flight duration
- Loaded to EE; for longer data storage
Technical Issues

• Getting the RF into the Bullet
• Programming Speed
• Antenna Size
  – Receiving enough RF energy in a short time
  – Forward acting antenna
• Unauthorized Programming
  – Can’t program remotely; inches not feet
  – Encryption may be required for EEPROM
• Proving Safe and Arm not affected by RF
Possible RF path: Writer to Cartridge
Summary

Electronic fuzing is moving to smaller cannon and even bullets.

- Design to fit smaller munitions.
- RF approach provides smaller antennae, non-contact and faster programming.