

EPI-Hi Electronics



MISC Booting for SPP

Rick Cook Electrical Systems Engineer



Boot Logic

Solar Probe Plus A NASA Mission to Touch the Sun

DPU MISC Reset Circuitry Block Diagram



- Supports three ways to initiate boot: Power On Reset (POR), CMD-IN and Watch Dog Timer
- "Reset Bit Field" is writable by CMD-IN and R/W by software
- "Serial Boot" bit determines if boot is to be performed serially via CMD-IN or from MRAM
- "MRAM Page Select" bit determined which page (0 or 1) of MRAM is source of boot images.
- "Dump SRAM" bit determines if SRAM is dumped prior to boot. This bit is set by the watch dog timeout.



FPGA Resident Boot Program

- Permanently coded as part of FPGA design.
- Simple and small: <64 24 bit words
- Either performs serial boot of Main Program into low SRAM via CMD-IN
- Or loads second boot program from MRAM into high SRAM



NASA Mission to Touch the St



Second Boot Program

- Optionally performs
 SRAM dump prior to
 booting Main Program
 from MRAM to low
 SRAM.
- SRAM dump is somewhat complex, does not fit into FPGA resident boot program; hence need for second boot program.



A NASA Mission to Touch the Sun



Main Program

- Reads and parses ITF from S/C.
- Determines if in "autonomy mode".
- If so, boots peripheral MISCs, executes MRAM Patch File, applies HV bias, begins science operations in mode specified in S/C status message.
- If not, just awaits further commands; i.e. during commissioning.

