

Key Technologies (7)  
Key Technologies (2) (2)

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## DESIGN OF REDUNDANT SYSTEM FOR ROCKET TO GROUND COMMUNICATION PROCESSOR BASED ON HETEROGENEOUS DUAL CORE SOC

### Abstract

Aiming at the requirements of high reliability,high speed,long distance and low cost of data communication between rocket and ground for commercial launch vehicle.The redundant system of rocket ground communication processor which uses heterogeneous dual core SOC for launch vehicle and ground data communication is studied and designed.The heterogeneous SOC on-chip communication technology of FPGA and CPU,the binding technology of dual network communication ports,8B/10B coding and decoding technology,enhanced RS485 communication technology and dual computer hot standby redundancy communication technology are adopted to solve the hot standby redundancy problem of dual computer and the high-speed and long-distance serial communication between the rocket and the ground.A good balance among reliability, security and economy of data communication between rocket and ground is achieved.The test results show that the designed redundant system based on heterogeneous dual core SOC can achieve the highest speed of 20Mbps and the longest distance of 150 meters.The volume of redundant system based on heterogeneous dual core SOC is 1/2 of that of traditional rocket ground communication processor,the cost is 2/3 of that of traditional rocket ground communication processor,and the communication rate is 10 times of that of traditional rocket ground communication processor.