SPACE POWER SYMPOSIUM (C3)
Poster Session (P)

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THE RESEARCH OF UNDERVOLTAGE SELF-LOCKING CONTROL FOR SATELLITE PAYLOAD POWER SUPPLY

Abstract

When satellite power energy insufficient voltage drops, the payload power supply to be shut down in order to ensure power supply of satellite platform. In this paper, the payload power supply undervoltage self-locking control is designed. The undervoltage detection circuit monitor the bus voltage, when voltage drops happens, action circuit will send the shutdown command according to the difference of relay pull voltage and release voltage, so as to realize undervoltage self-locking protection of payload power supply. When the bus voltage recovers, payload returns to work normally after power turns on. Considering the vibration when satellite launches and power bus transient drop when satellite is in orbit, the undervoltage self-locking control circuit contain delay and filter circuit, in order to enhance the anti-jamming. The undervoltage self-locking control circuit is applicable for different bus voltage such as 100V, 42V and so on, by means of different resistor selection. The simulating and experiment result shows the undervoltage self-locking control method simple and effective, and it has been applied in the satellite payload power supply. It plays an important role in ensuring satellite platform power supply safety, and it has a wide range of promotional value which can be applied to the fields of deep space exploration, manned moonfall.