IAF SPACE POWER SYMPOSIUM (C3)
Advanced Space Power Technologies (3)

Author: Mr. Zhipo Ji
Beijing Spacecrafts, China Academy of Space Technology (CAST), China, China, 273768471@qq.com

Prof. Chengan Wan
Beijing Spacecrafts,China Academy of Space Technology (CAST), China, wan001@vip.sina.com
Mr. Qingxiao Sun
Beijing Spacecrafts,China Academy of Space Technology (CAST), China, China, sunqx0453@126.com

DESIGN OF EMI FILTER APPLIED FOR HIGH-POWER SAR DC/DC CONVERTER

Abstract

In the paper, a series of especially-designed DC/DC converters (SAR DC/DC converters) applied for the antenna payload power supply is presented. Contraposing the function principle of the cheese antenna modules, capacitive and pulsed payload power supply is demanded for SAR DC/DC converters. The input and output currents exist in severe pulse resulting in the complex design of satellite payload power supply. For the sake of reducing input current pulses, SAR DC/DC converters are systemically designed and analyzed through the small-signal modeling, the design rule is educed for the input filter of SAR DC/DC converters. Based on the mentioned above rule, the common filter is optimized, as a result, the design rationality and availability are validated through simulative analysis and experiment validation, which results remarkably guarantee the reliability and robustness of satellite payload power supply.

Keywords: SAR, reliability, DC/DC converters, satellite payload power supply.