

Miniaturised High Frequency DC DC Converter

Indian Space Research Organisation (ISRO) at its Vikram Sarabhai Space Centre (VSSC) has developed a Miniaturised, High Frequency, Surface Mount Technology (SMT) based DC DC Converter. These converters are designed for aerospace applications and can also be used for commercial/Industrial applications.



SMT DC DC converters have usage heritage in all ISRO's launch vehicles programme and orbital platform experiments. These DC-DC converter modules can meet the environments of aerospace applications and can withstand Vibration test, Shock test, Humidity test, Temperature soak tests. The converters are based on fixed frequency single ended forward topology with magnetic feedback and have an internal built in EMI filter to meet the conducted emissions and conducted susceptibility requirements of MIL-STD-461C. These converters are production friendly as these are based on surface mount technology. Thermal management is provided by conductive heat transfer and by using potting compounds. Design is tested at an ambient of 70°C for 320 hours.

Features

- Input voltage range 26 V to 32 V_{DC}
Note: Can be modified to 24V-40 V_{DC} or 12V- 24V_{DC}
 - with minor modification
- Built in EMI filter to meet MIL STD 461 C
- Voltage feedforward topology
- Single and dual output models
- Up to 50 watts of output power
- Indefinite short circuit protection
- +5V/1.8A, +5.25V/1.8A, +7.5V/1.2A, +10V/2.5A, +15V/1A, +28V/0.9A, ±5V/0.5A & ±15V/0.5A
- Without Short circuit protection
+5V/1.8A, +5.25V/1.8A, +7.5V/1.2A, +10V/2.8A, +15V/1A, +24V/1.5A, +28V/1A, +28V/1.8A, +32V/1A, ±5V/1A & ±15V/0.5A

Note : Can be modified to any other voltage levels (from 5V- 32V) by minor design modification

- Fully isolated, magnetically coupled feedback
- Isolation resistance : 100MΩ @ 50V DC
- Fixed High Frequency switching
- Efficiency from 70-80%
- Typical output ripple is 50 mV
- Load regulation < 1%
- Line regulation < 0.2%
- Case size : 97 mm × 44 mm × 24.5 mm (Flanged)
- Weight : 125 gms