

Ku-Band

High Power Transceiver 25W

A complete airborne Satcom solution in a compact package



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GaN technology provides 25W linear power at higher efficiency and better reliability than GaAs

The HPT is a complete airborne Satcom solution in a compact package, including a high power SSPA, a wideband block upconverter, a dual band downconverter, all necessary power conditioning, plus digital control and status interfaces. The upconverter and downconverter can use either an external reference source accepted through the Tx IF input or an integrated high stability vibration isolated frequency reference (optional). The HPT is configurable to work with a wide range of satcom modems.

Smiths Interconnect uses GaN SSPA technology to achieve the specified output power at high efficiency with fewer active devices. The approach results in reduced size and complexity and allows a planar SSPA layout with improved thermal performance and lower device stress. The SSPA bias circuits also allow power dissipation to track output power, resulting in lower thermal load when operating below maximum output power. The SSPA output incorporates isolation from load faults for improved reliability. The HPT meets all relevant specs for commercial air transport use, including DO-160G, Boeing and Airbus.

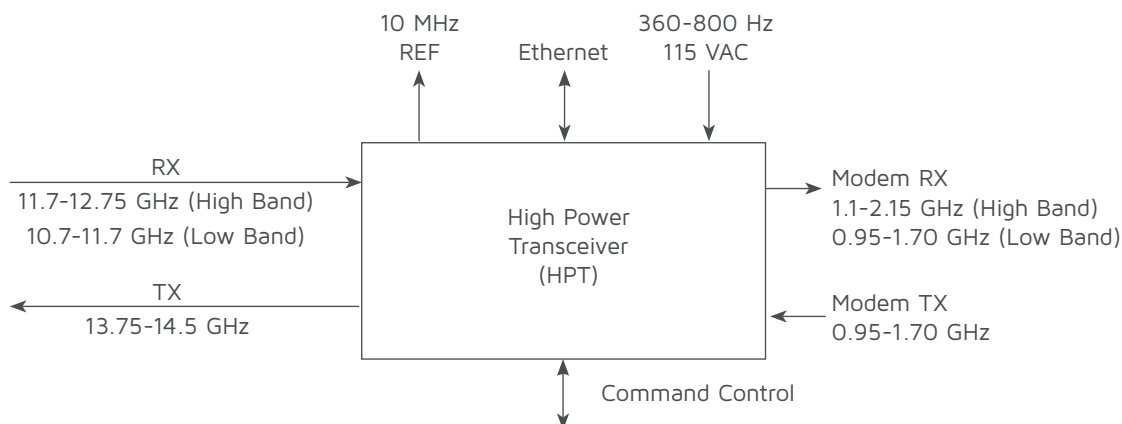
Optional and Modular Design

- Low vibration sensitivity 10 MHz OCXO installed on a vibration isolation platform
- 10 MHz OCXO isolation system attenuates vibration from cable and fan
- 10 MHz OCXO isolation system has high shock tolerance allowing for standard shipment without damage

Features & Benefits

- Qualified for commercial airborne use
- Modular BUC, BDC, SSPA, power supply and controller in compact package
- Optional internal reference ensures compliance when exposed to random vibration DO-160 profiles
- Advanced features for system interoperability
- SSPA employs GaN devices for higher power efficiency than GaAs devices
- GaN provides lower Θ_{JA} and higher maximum channel temperature limit than GaAs devices
- Meets the spectral mask requirement with no complex linearization
- Built-in SSPA protection against high VSWR loads
- External visual indicators for HPT operational status
- Software calibration for improved factory yield
- Modular design for improved maintainability

- Each module contains multiple Built-in-Test (BIT) functions
- Modularity allows for quick troubleshooting and replacement of stocked modules (if needed)
- Gain is factory calibrated over temperature and frequency and digitally controlled inside the HPT



Technical Characteristics

	Transmit	Receive
Rated Output Power (see spectral regrowth)	25W (+44dBm)	N/A
Transmit RF Frequency	13.75-14.5 GHz	Low Band 10.7-11.7 GHz High Band 11.7-12.75 GHz
IF Frequency	950-1700 MHz	Low Band 950-1950 MHz High Band 1100-2150 MHz
IF VSWR	Input <1.5:1	Output <1.5:1
RF VSWR	Output <1.5:1	Input <1.5:1
Small Signal Gain	53 ±2dB	20 ±2 dB
Gain Variation (over frequency at fixed temperature)	±1.0 dB over any 36 MHz band	±0.5 dB (in any 36 MHz Band) ±1.2 dB (over operating frequency range)
Gain Variation (over temperature at fixed frequency)	±1.0 dB/°C	
Output P1dB	>+44 dBm	N/A
Spectral Regrowth (guaranteed over temperature and frequency at rated output power)	<-30 dBc (OQPSK at 2x symbol rate offset)	N/A
Phase Noise (with optional internal reference)	1 kHz <-69 dBc/Hz 10 kHz <-69 dBc/Hz 100 kHz <-81 dBc/Hz 1 MHz <-87 dBc/Hz 10 MHz <-122 dBc/Hz	10 kHz <-30 dBc/Hz 100 kHz <-50 dBc/Hz 1 kHz <-55 dBc/Hz 10 kHz <-70 dBc/Hz 100 kHz <-95 dBc/Hz 1 kHz <-120 dBc/Hz 10 MHz <-120 dBc/Hz
Noise Power Density – Transmit	<-110 dBm/Hz (14.47-14.5 GHz)	N/A
Output Spurious (unmodulated CW@ rated output power)	<-60 dBc (13.75-14.5 GHz)	N/A
3rd Order Intermodulation Products (OIP3)	N/A	>0 dBm
Image Rejection	N/A	40 dB (minimum)
Group Delay (linear)	N/A	±1.0 ns (over any 36 MHz band)
IF Leakage (Input Terminated)	N/A	<-88 dBm
In-Band Spurious (@ -50 dBm input)	N/A	<-56 dBc

10 MHz Reference (Optional)	
Accuracy	0.03 ppm at 25°
Stability	0.03 ppm ppm first year, better than 0.16 ppm over 20 years
Output Level	+7.5 ±1.5 dBm
Power	
AC Power (typical)	115 VAC, 360-800 Hz
AC Power Draw (typical at rated output power)	<345W
Physical	
Size	17.5" L x 13.6" W x 2.5" H
Weight	21 lbs Max
Operating Temperature (ambient air)	-15°C to +55°C
Relative Humidity	DO-160G 6.3.1A Compliant

Interfaces	
Input Power	3-pin Circular (38999 Compliant)
Ethernet	4-pin Circular (38999 Compliant)
ACU Discrete	6-pin Circular (38999 Compliant)
TX IF	TNC
RX IF	TNC
Reference	TNC
RF Output	Type N
RX Input	Type N
Maintenance	RJ-45 Circular (38999 Compliant)
Debug	9-Pin D-Sub

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