Description

The TTRM2002-D01 SISO Bi-Directional Amplifier is a class AB GaN module with an operating frequency range of 2200 to 2500 MHz. Designed for both military and commercial applications, this amplifier features an input voltage range of +10 to +30 VDC and a saturated RF output power of +40 dBm. With the capability of supporting any signal type and modulation format, all in a low-SWaP package, this unit is ideal for applications where high power-density, efficiency, and linearity are essential.

TTRM2002-D01

TABLE OF CONTENTS

Features

- Temperature Monitor Output
- Over-Temperature Protection
- Tx/Rx Status Monitor
- Amplifier Status Output
- Automatic Tx/Rx Switching
- Under Voltage Protection

Applications

- Unmanned Systems
- Military or Commercial Radio Systems
- Aircraft Systems
- Military MANET
- UAS, UGV, and USV Video/Data Links
- Point-to-Point and Mesh Networking

CHARACTERISTICS & SPECIFICATIONS

Specifications subject to change without notice. Typical performance at 28VDC at 25°C in a 50Ω system.

Tx Specifications (Per Channel)

Parameter	Min.	Typ.	Max	Unit
Operating Frequency	2200	—	2500	MHz
64QAM Power Output 20 MHz BW, -27 dB EVM Limit	33	—	—	dBm
BPSK Power Output 20 MHz BW, -7 dB EVM Limit	40	—	—	dBm
Saturated Power Output CW Sweep at Design Limit	—	40	—	dBm
Small Signal Gain	24	27	—	dB
Small Signal Gain Flatness	—	—	2	dB (peak to peak)
Input Return Loss	—	—	-12	dB
Tx / Rx Switching Time	—	1	2	µS

Rx Specifications (Per Channel)

Parameter	Min.	Typ.	Max	Unit
Small Signal Gain	13.5	16.5	—	dB
Small Signal Gain Flatness	—	—	2	dB (Peak to Peak)
Noise Figure	—	2	2.5	dB
Input Return Loss	—	—	-9	dB

Power Supply Specifications

Parameter	Min.	Typ.	Max	Unit	Notes
Supply Voltage Range	10	28	30	VDC	—
RMS Operating Current Draw (Idle)	—	0.2	—	A	28VDC Supply Voltage, Idle in Receive Mode
RMS Operating Current Draw (64QAM Power Output)	—	0.7	—	A	28VDC Supply Voltage, 802.11 WLAN Signal, 50% Duty Cycle
RMS Operating Current Draw (BPSK Power Output)	—	1	—	A	28VDC Supply Voltage, 802.11 WLAN Signal, 50% Duty Cycle

CHARACTERISTICS & SPECIFICATIONS (CONT.)

Specifications subject to change without notice.

Mechanical Specifications

Parameter	Value	Unit	Notes
Dimensions (L x W x H)	2.3 x 2.3 x 0.45 (58.4 x 58.4 x 11.4)	in (mm)	—
Cooling	Baseplate Conduction	—	—
Weight	3 (85)	oz (g)	—

Interface Specifications

Parameter	Value	Notes
RF Connectors (Input / Output)	SMP-M / SMP-M	—
Power / Signal Connector	M80-8671222	Connector appearing on unit (Manufacturer P/N)
Mating Connector	M80-8881205	Mating connector required for interfacing (Manufacturer P/N)
Test Integration Cable	CBL64	Triad P/N available for purchase separately

Environmental Specifications

Parameter	Min.	Max	Unit
Operating Temperature (Housing Temp.)	-40	85	°C
Storage Temperature	-55	85	°C
Altitude	0 (0)	30000 (9144)	ft. (m.)
Ingress Protection Rating	IP40		—
Shock / Vibration	Designed to comply with MIL-STD-810 Shock / Vibration Test Methods		—

Protections & Maximum Ratings

Parameter	Value	Unit	Notes
Maximum RF Input (Per Channel)	33	dBm	CW Power
Over Temp Protection Trip Level	88	°C	Internally Monitored System Temperature
RF Output Open Load Survivability	40	dBm	CW with Open Circuit at Antenna Port

DC / CONTROL CONNECTORS

Input / Output Pins

TTRM Connector Part Number			Mating Connector Part Number	
M80-8671222			M80-8881205	
Pin	**Label**	**Type**	**I/O**	**Notes**
1	VDC	Power	Input	Supply Voltage - Range Specified in Data Sheet
2	VDC	Power	Input	Supply Voltage - Range Specified in Data Sheet
3	VDC	Power	Input	Supply Voltage - Range Specified in Data Sheet
4	TEMP	Signal	Output	Temperature Monitor Temp in DegC = (Vout - 0.5V) * 100
5	N/C	N/A	N/A	Not Connected
6	Tx/Rx Status	Signal	Output	BDA Operational State TTL High = Tx Amp Active TTL Low = Rx Amp Active
7	I/O	Signal	Input	TA: TTL High or No Connection = Enable TTL Low = Disable Manual Switching TTRM: TTL High = Tx Amp Enabled TTL Low = Rx Amp Enabled Automatic Switching TTRM: Pin not required. Do not use.
8	Bypass	Signal	Input	Bypass Control TTL High or Open = Amplifier Mode GND = Bypass
9	Amp Status	Signal	Output	BDA Status TTL High = Normal Operation TTL Low = Error Condition
10	GND	Power	Input	Supply Voltage Return (Ground)
11	GND	Power	Input	Supply Voltage Return (Ground)
12	GND	Power	Input	Supply Voltage Return (Ground)

MECHANICAL DRAWING