Description

The TTRM4010D-D02 2x2 Bi-Directional Amplifier is a class AB GaN module with an operating frequency range of 4400 to 5000 MHz. Designed for both military and commercial applications, this amplifier features an input voltage range of +10 to +32 VDC and a saturated RF output power of +47 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.

TTRM4010D-D02

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Features

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Applications

- Unmanned Systems
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- Aircraft Systems

CHARACTERISTICS & SPECIFICATIONS

Specifications subject to change without notice. Typical performance at 12VDC at 25°C in a 50Ω system.

Tx Specifications (Per Channel)

Parameter	Min.	Typ.	Max	Unit
Operating Frequency	4400	—	5000	MHz
64QAM Power Output 20 MHz BW, -27 dB EVM Limit	40	—	—	dBm
BPSK Power Output 20 MHz BW, -7 dB EVM Limit	46	—	—	dBm
Saturated Power Output CW Sweep at Design Limit	—	47	—	dBm
Small Signal Gain	23	26	—	dB
Small Signal Gain Flatness	—	—	2	dB (peak to peak)
Input Return Loss	—	—	-15	dB
Tx / Rx Switching Time	—	1	2	µS

Rx Specifications (Per Channel)

Parameter	Min.	Typ.	Max	Unit
Small Signal Gain	10	13	—	dB
Small Signal Gain Flatness	—	—	2	dB (Peak to Peak)
Noise Figure	—	2	2.5	dB
Input Return Loss	—	—	-10	dB

Power Supply Specifications

Parameter	Min.	Typ.	Max	Unit	Notes
Supply Voltage Range	10	28	32	VDC	—
RMS Operating Current Draw (Idle)	—	5.8	—	A	12VDC Supply Voltage, Idle in Receive Mode
RMS Operating Current Draw (64QAM Power Output)	—	6.3	—	A	12VDC Supply Voltage, 802.11 WLAN Signal, 50% Duty Cycle
RMS Operating Current Draw (BPSK Power Output)	—	13.8	—	A	12VDC 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)	6.13 x 5.63 x 0.67 (155.7 x 143 x 17)	in (mm)	—
Cooling	Baseplate Conduction	—	—
Weight	13 (369)	oz (g)	—

Interface Specifications

Parameter	Value	Notes
RF Connectors (Input / Output)	SMA-F / SMA-F	—
Power / Signal Connector	MDM-25SH003B	Connector appearing on unit (Manufacturer P/N)
Mating Connector	MDM-25PH003B	Mating connector required for interfacing (Manufacturer P/N)
Test Integration Cable	CBL38	Triad P/N available for purchase separately

Environmental Specifications

Parameter	Min.	Max	Unit
Operating Temperature (Housing Temp.)	-20	85	°C
Storage Temperature	-55	85	°C
Altitude	0 (0)	30000 (9144)	ft. (m.)
Ingress Protection Rating	IP55		—
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)	24	dBm	CW Power
Over Temp Protection Trip Level	85	°C	Internally Monitored System Temperature
RF Output Open Load Survivability	45	dBm	CW with Open Circuit at Antenna Port

DC / CONTROL CONNECTORS

Input / Output Pins

TTRM Connector Part Number			Mating Connector Part Number	
MDM-25SH003B			MDM-25PH003B	
Pin	**Label**	**Type**	**I/O**	**Notes**
1	Vin	Power	N/A	Supply Voltage - Range Specified in Data Sheet
2	Vin	Power	N/A	Supply Voltage - Range Specified in Data Sheet
3	Vin	Power	N/A	Supply Voltage - Range Specified in Data Sheet
4	Vin	Power	N/A	Supply Voltage - Range Specified in Data Sheet
14	Vin	Power	N/A	Supply Voltage - Range Specified in Data Sheet
15	Vin	Power	N/A	Supply Voltage - Range Specified in Data Sheet
16	Vin	Power	N/A	Supply Voltage - Range Specified in Data Sheet
17	Vin	Power	N/A	Supply Voltage - Range Specified in Data Sheet
10	GND	Power	N/A	Power Supply Return (Ground)
11	GND	Power	N/A	Power Supply Return (Ground)
12	GND	Power	N/A	Power Supply Return (Ground)
13	GND	Power	N/A	Power Supply Return (Ground)
22	GND	Power	N/A	Power Supply Return (Ground)
23	GND	N/A	N/A	Power Supply Return (Ground)
24	GND	Power	N/A	Power Supply Return (Ground)
25	GND	Power	N/A	Power Supply Return (Ground)
5	TEMP	Signal	Output	Temp Monitor Temp in DegC = (Vout - 0.5V) * 100
18	STATUS	Signal	Output	Amplifier Status TTL HIGH = Normal Operation TTL LOW = Error Condition
20	Tx/Rx	Signal	Input	Manual Switching TTRM: TTL High = Tx Amp Enabled TTL Low = Rx Amp Enabled Automatic Switching TTRM: Pin not required. Do not use.
6, 7, 8, 9, 19, 21	N/C	N/A	N/A	NO CONNECTION

MECHANICAL DRAWING