



T/R MODEL MMTR85105P37A
8.5~10.5GHz
5 Watt
X BAND POWER AMPLIFIER MODULE

Advantages:

- Operating Frequency :8.5~10.5GHz
- Psat: 37W Min
- Supply Voltage: +28V
- 50 Ohms Input and Output Matched

ELECTRICAL SPECIFICATIONS @ +28VDC, 25°C, 50Ω

	Parameter	Symbol	Min	Typ	Max	Units
TX	Operating Frequency	BW	8.5		10.5	GHz
	RF Output Power @P _{SAT}	P _{SAT}	37			dBm
	Input Number of channels	Number			1	
	Output Number of channels	Number			4	
	Input Power	P _{in}	-5		5	dBm
	Power Flatness	ΔG _p			±1	dB
	Duty Cycle	Duty Cycle		30	100	%
	Pulse Width	P _{WIDTH}	0.5		300	μS
	Rise /Fall time (Pulse Performance)	T _{RISE/FALL}			50	nS
	Power droop	D _{roop}			0.7	dB
	Transmit Channel Output ON/OFF Ratio	Transmit ON/OFF		-110		dBc
	Power Added Efficiency	Efficiency		30		%
RX	Gain@0dB Attenuation, 1 channel	G	27			dB
	Output Number of channels	Number			3	
	Gain Flatness	ΔG			±1	dB
	RF Input Power @P1	P1			-15	dBm
	Noise Figure @0dB Attenuation	N		3.5		dB
	In/Output Impedance	Impedance		50		Ω
	VSWR (Input & Output)	VSWR		1.8		
	T/R Switching Time @1kHz TTL	T _{ON/OFF}			400	nS
	Phase Shifter Range	Phase	0		360	
	Phase Shifter Accuracy	Phase _{Accuracy}			6	
	Phase Shifter Number of Bits	Phase _{Number}			6	Bit
	Phase Distortion @8.5-10.5GHz	Phase		±10	±15	
	Phase Distortion @400MHz	Phase			±7	
	Attenuator Range	ATT	0		31.5	dB
	Attenuator Accuracy@RMS	ATT _{Accuracy}			1.7	dB
	Attenuator Number of Bits	ATT _{Number}			6	Bit
	Spurious Signals	Spur		-60		dBc
Operating Voltage@5W	V _{DC}			28		Volt
				-5		Volt
				5		Volt

**MECHANICAL SPECIFICATIONS**

Parameter	Value	Units	Notes
Dimensions	90x130x9 [3.54x5.12x0.35]	mm [inch]	Maximum
Weight	0.4 [0.88]	kg [lbs]	Maximum
RF Connectors Input	SMA, Female		
RF Connectors Output	SMP, Female		
DC Interface Connector	J30JM-21ZK, Male		
Control Interface Connector	J30JM-15ZK, Male		
Cooling	External Heatsink Required (Not Supplied)		

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Minimum	Typical	Maximum	Units	Notes
Operating Temperature	-40		60	°C	
Non-operating Temperature	-45		85	°C	Storage
Relative Humidity (non-condensing)			95	%	

ABSOLUTE MAXIMUM RATING

Input RF drive level without damage	+10 dBm (Max)
Load VSWR @ P _{OUT} =3W	∞ @ all load phase & amplitude for duration of 1 minutes; 3:1 @ all load phase & amplitude continuous.
Over Temperature	85°C heatsink

DC INTERFACE CONNECTOR

Pin#	Description	Specifications
1,2,12,13	VDD	28V _{DC} (Pay attention to the current of this voltage in the module and the maximum current passing through the J30J connector pins)
3,4,14,15	GND	Ground(Comes from 28V)
5,16	-5V	-5V _{DC} (Pay attention to the current of this voltage in the module and the maximum current passing through the J30J connector pins)
6,17	GND	Ground(Comes from -5V)
7,8,18	+5V	5V _{DC} (Pay attention to the current of this voltage in the module and the maximum current passing through the J30J connector pins)
9,19,20	GND	Ground(Comes from +5V)
10,11,21	NC	No electrical connection

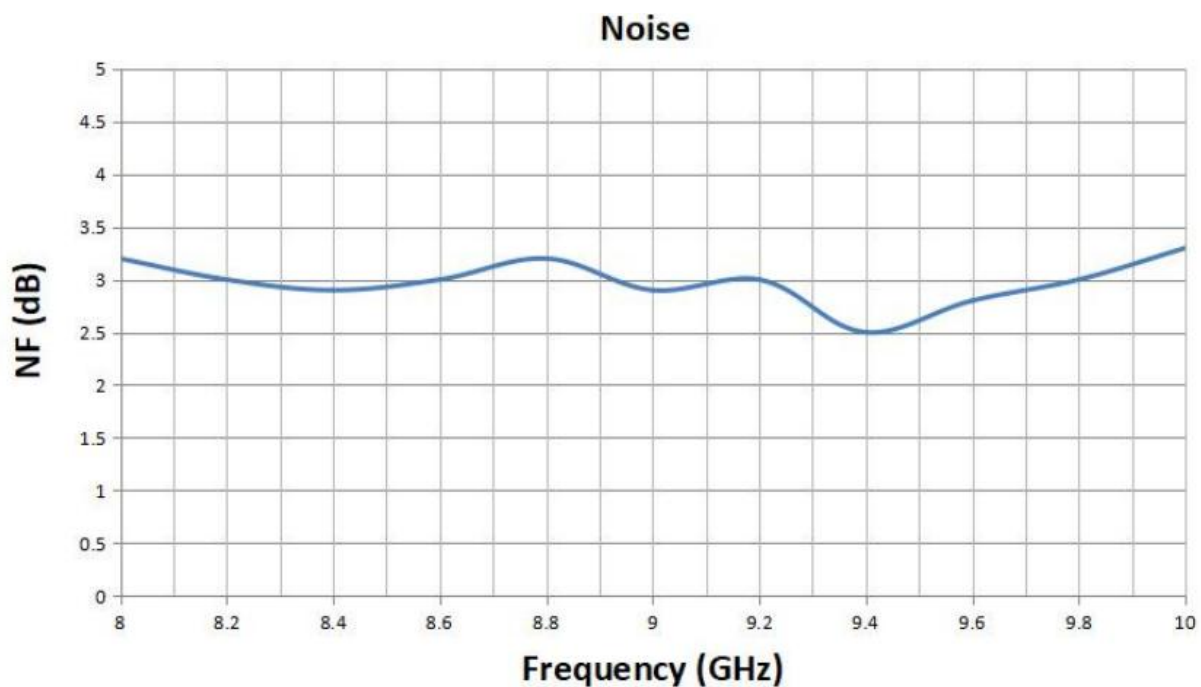
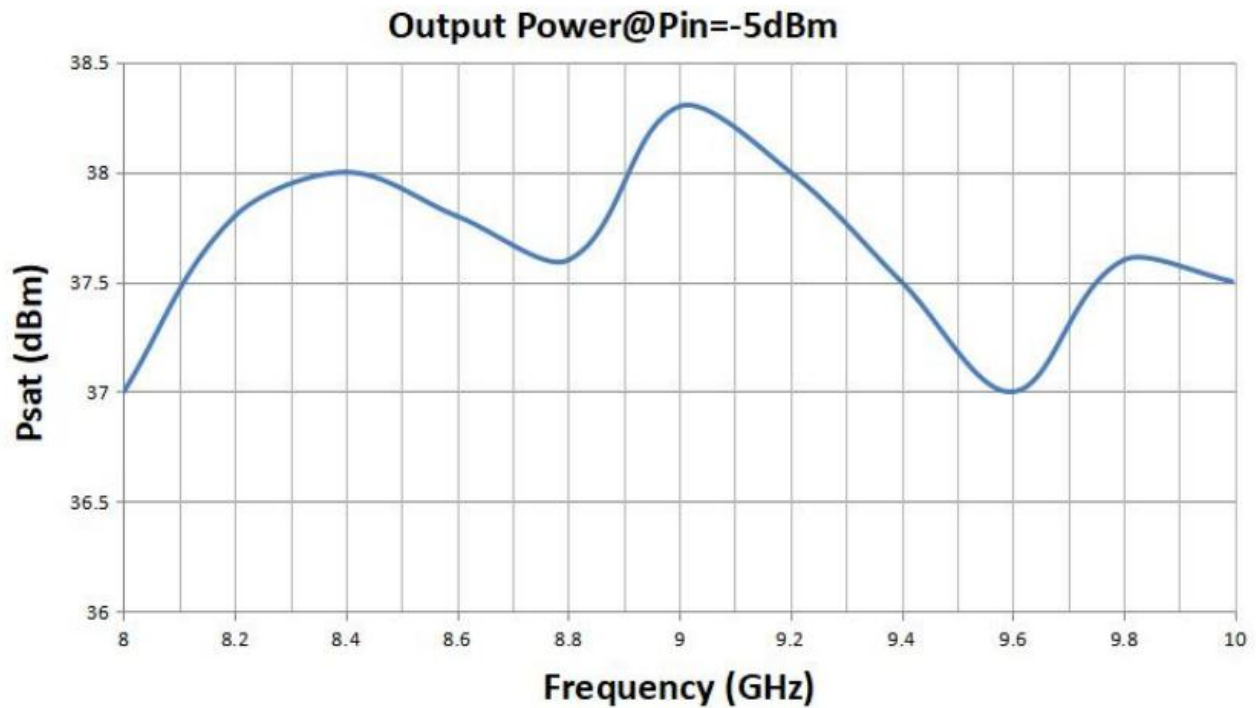
CONTROL INTERFACE CONNECTOR

Pin#	Description	Specifications
1	T (for all channel)	Channel T Enable: TTL Logic High (5V)(Internally Pulled-Low)
2	R (for all channel)	Clock signal(SPI 5V)
3	Data out (1 & 2 Channel)	Main device data output, secondary device data input (SPI 5V)
4	CLK (1 & 2 Channel)	Channel R Enable: TTL Logic High(5V)(Internally Pulled-Low)<5MHz
5	Data in(1 & 2 Channel)	Main device data input, secondary device data input (SPI 5V)
6	Data out(3 & 4 Channel)	Main device data output, secondary device data input (SPI 5V)
7	CLK (3 & 4 Channel)	Channel R Enable: TTL Logic High(5V)(Internally Pulled-Low)



8	Data in (3 & 4 Channel)	Main device data input, secondary device data input (SPI 5V)
13	Load (for all channel)	Load Phase shifters and Attenuators for 4 channels(5V)
9,10,11,12,14,15	GND	Ground

TYPICAL PERFORMANCE PLOTS (FOR REFERENCE ONLY)



Note: Adequate heatsink required.