

AMP51505925-TRX

Wi-Fi TX/RX Booster Amplifier for Radiating Cables 5150 ... 5925 MHz

Features

- rugged and compact design
- phantom supply / forwarding
- signal direction detection
- up to 1 W PEP TX power
- reverse polarity detection
- low noise RX amplifier
- optical indications

Applications

- radio coverage in rail and street tunnels and buildings
- insertion loss compensation of cables
- Wi-Fi 802.11 a/n/ac systems

At a Glance

AMP51505925-TRX is a compact, high dynamic RX and TX amplifier module for radio coverage range extension in tunnels and buildings. The module is designed for the frequency range 5150...5925 MHz and therefore suitable in Wi-Fi 802.11a/n/ac applications.

AMP51505925-TRX contains a high linearity TX power amplifier and a low noise RX amplifier path. As default the internal TX / RX switch is set to RX (LNA path). An integrated high speed level detector at the input recognizes transmitter power coming from the access point to set TX/RX switch to the TX (power amplifier path).

The gain of the AMP51505925-TRX is dimensioned that radiating cables segments of approx. 100 m can be driven.

Phantom Supply

The supply of the module with DC power occurs via phantom supply via the RF ports. Internal BIAS-Ts route the DC power between RF input and output. This enables cascading further booster amplifier modules without the effort of additional power supplies.

Optical Indications

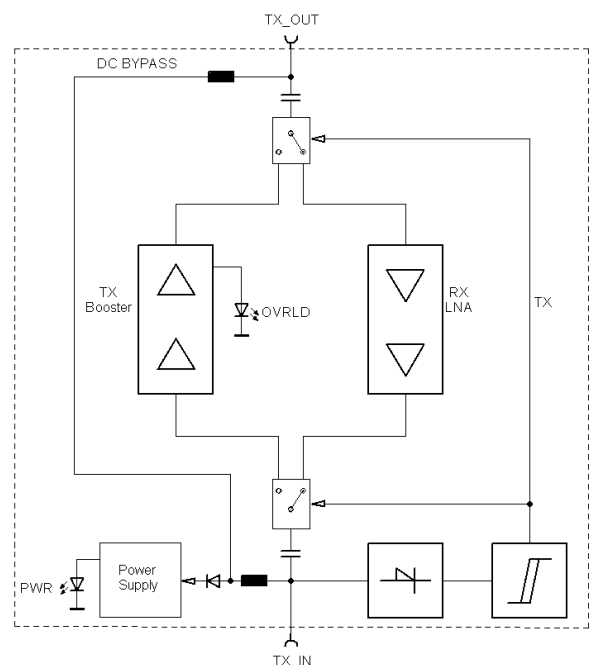
For maintenance friendly operation the module offers two LEDs. One for DC power indication and one for indication of TX overload state. TX overload is active when the TX Amplifier is in compression caused by too much input power.



Rugged Design

The booster amplifier is housed in a milled aluminum case. This saves the circuits against mechanical damage and gives best shielding for avoiding EMI influences caused by radio signals coming from the environment.

Block Diagram



RF Specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	Z_{in} / Z_{out}		50		Ohm	
frequency range	f	5150		5925	MHz	
RX mode						
gain	S_{12}		20		dB	
noise figure	NF		3.5		dB	
input power	P_{RX}			-30	dBm	limited by tx detection
OIP3	OIP3 ^{*1}		+22		dBm	
TX/RX switching delay	$t_{TX/RX}$		250		ns	90% TX _{IN} to 90% RX _{OUT}
TX/RX slew rate	$t_{10/90\%}$		100		ns	
TX mode						
linear gain	S_{21}		20		dB	
1 dB compression	P_{1dB}		+28		dBm	
OIP3	OIP3 ^{*2}		+35		dBm	
TX detection threshold	P_{THRES}		-15		dBm	P _{IN} , average
RX/TX switching delay	$t_{TX/RX}$		400		ns	10% TX _{IN} to 90% TX _{OUT}
RX/TX slew rate	$t_{10/90\%}$		100		ns	
RF connectors	X _{RF}	N female				

*1: measured with output level of 2 x +7 dBm,

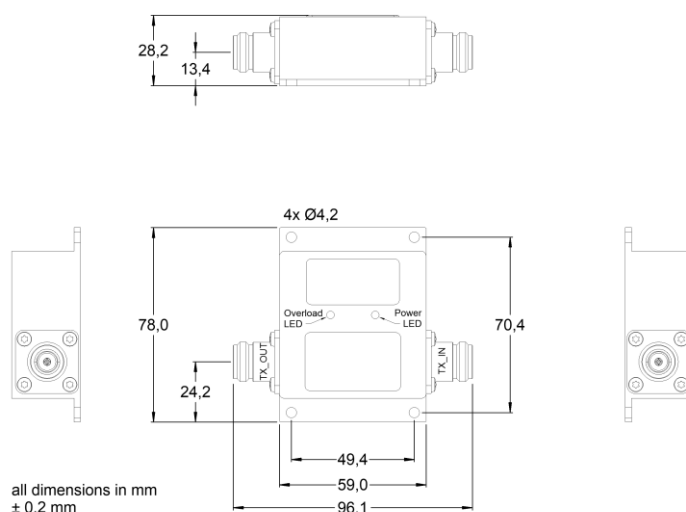
*2: measured with output level of 2 x +20 dBm,

OIP3 test frequencies: 5250 / 5350 MHz, 5450 / 5550 MHz, 5725 / 5825 MHz

Common Specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
supply voltage	U_{PHTM}	12		28	V	phantom supply
supply current	I_{PHTM}		90		mA	@ 24 V, RX (idle)
supply current	I_{PHTM}			200	mA	@ 24 V, 100% TX
power consumption	P_{DC}		1.7		W	RX (idle)
			4.8		W	100% TX
DC Bypass current	I_{BYP}			1.35	A	cascading AMP51505925-TRX
dimensions	W x H x D	approx. 59 x 28 x 78			mm	without connectors
weight	m		240		g	
operating temp. range	T_o	0		+50	°C	
storage temp. range	T_s	-40		+70	°C	
ordering information	AMP51505925-TRX			1802.5001.1		

Dimensions



Application Example

