TAT7460B1A

75Ω 5V 50-2600 MHz RF Amplifier

Applications

- Distribution Amplifiers
- Multi-Dwelling Units
- Drop Amplifiers
- Single-ended Gain Block
- FTTH Receivers

SOT-89 Package

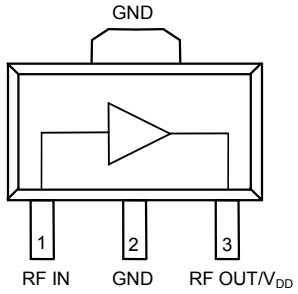
Product Features

- 50–2600 MHz Bandwidth
- Low Noise Figure: 3.0 dB up to 1600 MHz
- Extremely Flat Gain Response
- Low Power Consumption: 100 mA with 5 V
- SOT-89 package

General Description

The TAT7460B1A is a 75 Ohm RF Amplifier designed for use up to 2600 MHz, addressing the CATV and Satellite bands in a single part. The TAT7460B1A is fabricated using six inch GaAs pHEMT technology to optimize performance and cost.

Functional Block Diagram



Pin Configuration

Pin No.	Label
1	RF IN
2	GND
3	RF OUT / V_{DD}
Backside Tab	GND

Ordering Information

Part No.	Description
TAT7460B1A	75Ω pHEMT Amplifier
TAT7460B1A-EVB	50–2600 MHz Evaluation Board

Standard T/R size = 1000 pieces on a 7” reel.

Absolute Maximum Ratings

Parameter	Rating
Storage Temperature	−65 to 150 °C
Device Voltage (V_{DD})	+10 V

Operation of this device outside the parameter ranges given above may cause permanent damage.

Recommended Operating Conditions

Parameter	Min	Typ	Max	Units
Device Voltage (V_{DD})	4.5	5.0	6.5	V
Device Voltage (I_{DD})		100	120	mA
Case Temperature	−40		+85	°C
Tj for >10^6 hours MTTF			+150	°C

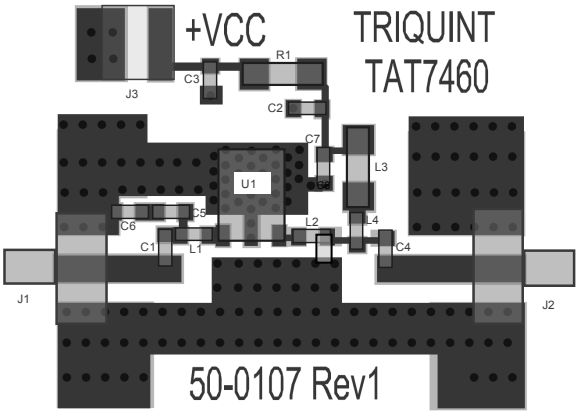
Electrical specifications are measured at specified test conditions. Specifications are not guaranteed over all recommended operating conditions.

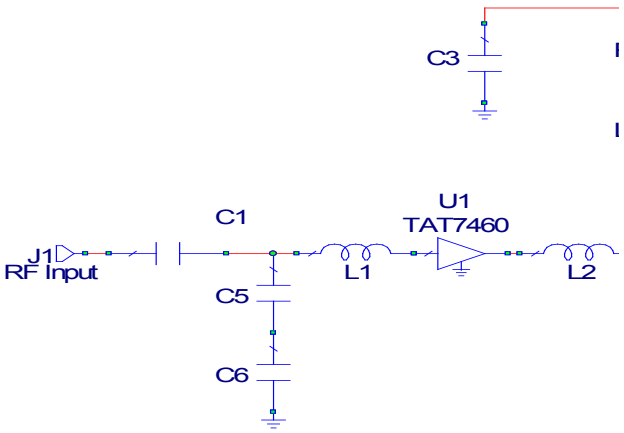
Electrical Specifications

Test conditions unless otherwise noted: V_{DD}=+5 V, Temp= +35 °C, Freq.=50–2600 MHz

Parameter	Conditions	Min	Typ	Max	Units
Operational Frequency Range		50		2600	MHz
Gain			17		dB
Gain Flatness	Deviation from sloped response		+/- 0.35		dB
Input Return Loss			14		dB
Output Return Loss			14		dB
CSO	30 dBmV/channel at output 80 channels flat		-60		dBc
CTB			-73		dBc
XMOD			-70		dBc
Output IP2	Pout = +5 dBm/tone f1 = 225 MHz, f2 = 325 MHz	+46	+52		dBm
Output IP3		+31	+38		dBm
Output P1dB			+20		dBm
Noise Figure	50–1600 MHz		3.0		dB
Device Current (I_{DD})		70	90	120	mA
Thermal Resistance, θ_{jc}	Junction to case		36		°C/W

TAT7460-EVB Evaluation Board (50-2600 MHz)



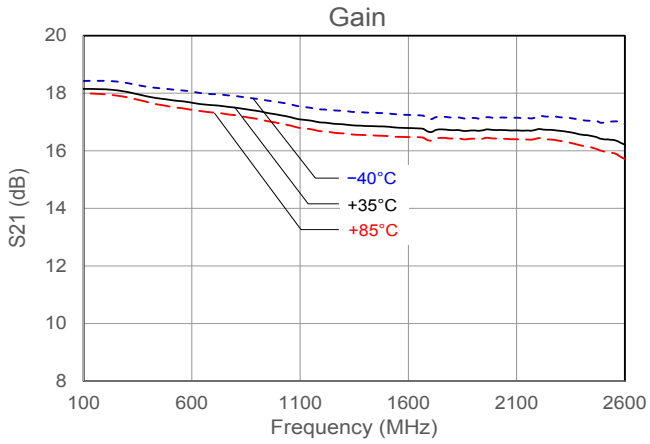


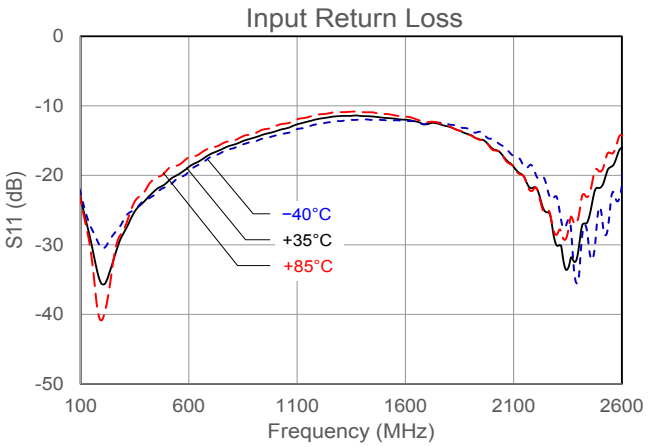
Bill of Material – TAT7460-EVB

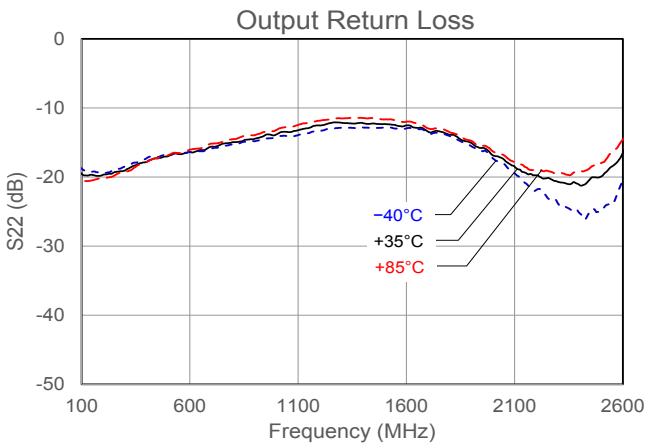
Reference Des.	Value	Description	Manuf.	Part Number
U1	-	75 Ω pHEMT Amplifier	TriQuint	TAT7460B1A
C1, C4	470 pF	Ceramic Cap, 0603, 16 V, 5%	Various	
C2, C3, C7	0.01 uF	Ceramic Cap, 0603, X7R, 16 V, 5 %	Various	
C5, C6	0.5 pF	Ceramic Cap, 0603, 50 V, ±0.1 pF	Various	
C8	0.2 pF	Ceramic Cap, 0402, 50 V, ±0.05 pF	Various	
L1	4.3 nH	Wirewound Ind, 0603, 5%	Various	
L2	2.2 nH	Wirewound Ind, 0603, 5%	Various	
L3	880 nH	Wirewound Ind, 1206, 5%	Various	
L4	-	Ferrite Bead, 0402, 200 mA, 1.0 kΩ	Murata	BLM15AG102SN1
R1	0 Ω	Thick Film Res, 1206	Various	
J1, J2	-	F-Connector	Various	

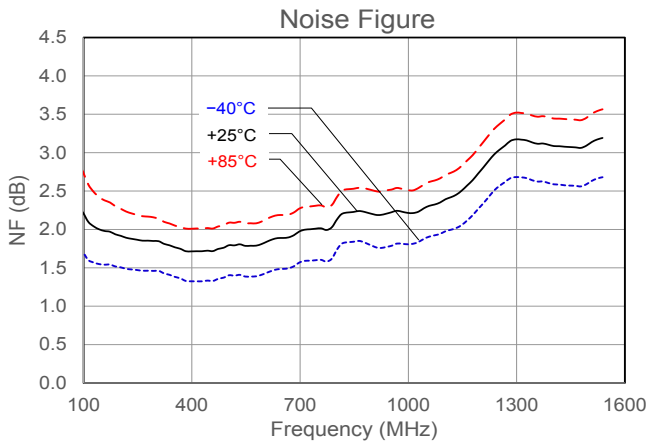
Performance Plots – TAT7460B1A

Test conditions unless otherwise noted: V_{DD} = +5 V, I_{DD} = 90 mA









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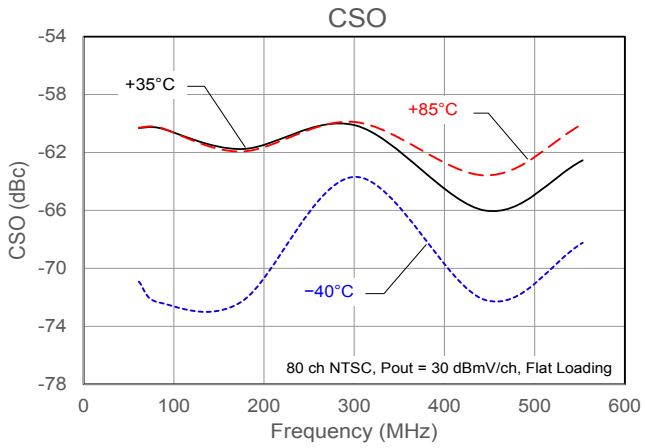
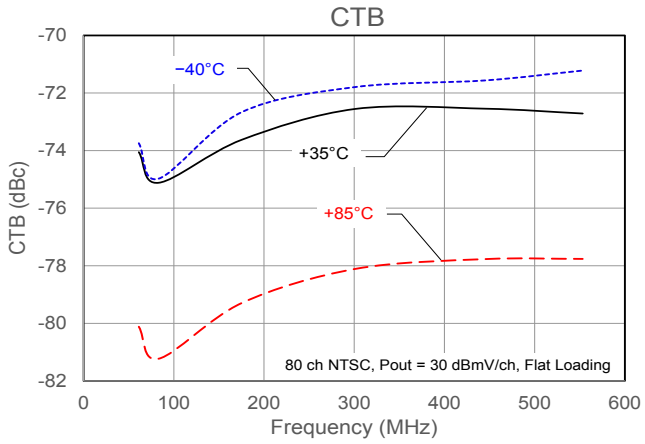
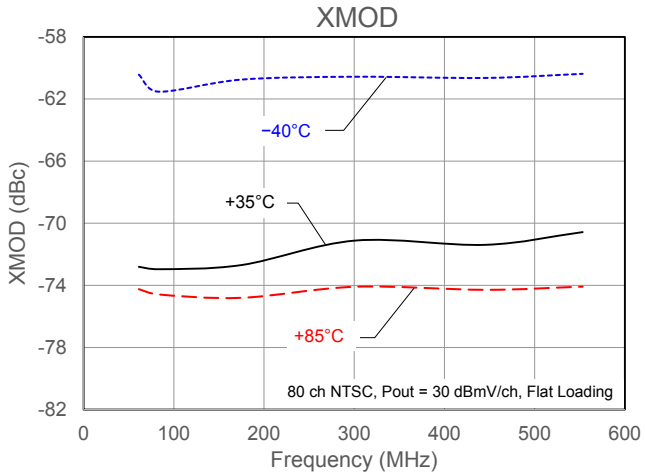
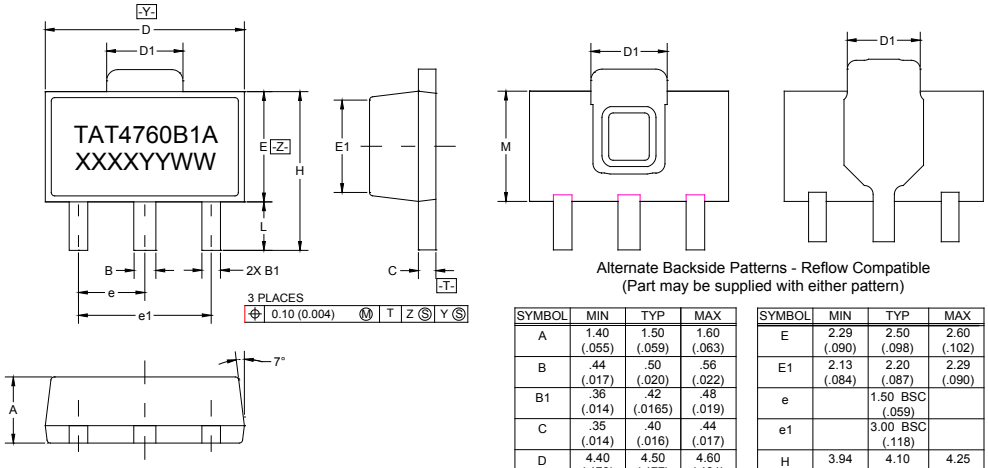






Package Marking and Dimensions

Marking: Part Number – TAT4760B1A
Lot code – XXXXYYWW

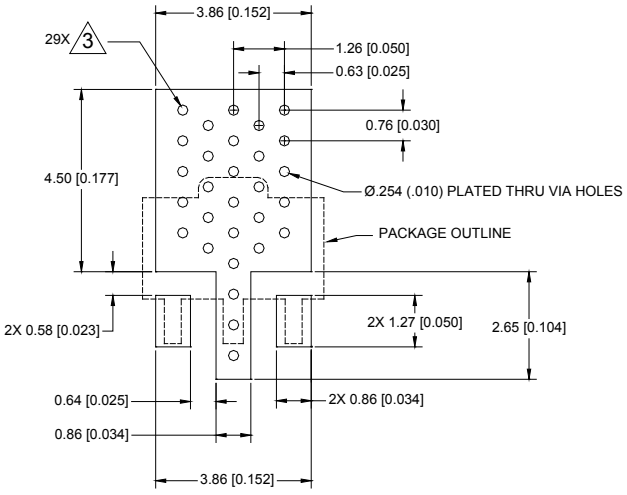


SYMBOL	MIN	TYP	MAX
A	1.40 (.055)	1.50 (.059)	1.60 (.063)
B	.44 (.017)	.50 (.020)	.56 (.022)
B1	.36 (.014)	.42 (.0165)	.48 (.019)
C	.35 (.014)	.40 (.016)	.44 (.017)
D	4.40 (.173)	4.50 (.177)	4.60 (.181)
D1	1.62 (.064)	1.73 (.068)	1.83 (.072)

SYMBOL	MIN	TYP	MAX
E	2.29 (.090)	2.50 (.098)	2.60 (.102)
E1	2.13 (.084)	2.20 (.087)	2.29 (.090)
e		1.50 BSC (.059)	
e1		3.00 BSC (.118)	
H	3.94 (.155)	4.10 (.161)	4.25 (.167)
L	.89 (.035)	1.10 (.043)	1.20 (.047)
M	2.2 (.087)	2.40 (.095)	2.6 (.102)

Notes:
1. All dimensions are in millimeters (inches). Angles are in degrees.
2. Dimension and tolerance formats conform to ASME Y14.4M-1994.
3. The terminal #1 identifier and terminal numbering conform to JESD 95-1 SPP-012.
4. Contact plating: NiPdAu

PCB Mounting Pattern



Notes:
1. All dimensions are in millimeters [inches]. Angles are in degrees.
2. Use 1 oz. copper minimum for top and bottom layer metal.
3. Vias are required under the backside paddle of this device for proper RF/DC grounding and thermal dissipation.
   We recommend a 0.35mm (#80/.0135") diameter bit for drilling via holes and a final plated thru diameter of 0.25 mm (0.10").
4. Ensure good package backside paddle solder attach for reliable operation and best electrical performance.

Product Compliance Information

ESD Sensitivity Ratings

Caution! ESD-Sensitive Device

ESD Rating: Class 1A
Value: Passes 250 V to <500 V
Test: Human Body Model (HBM)
Standard: JEDEC Standard JESD22-A114

ESD Rating: Class IV
Value: Passes > 1000 V
Test: Charged Device Model (CDM)
Standard: JEDEC Standard JESD22-C101

MSL Rating

MSL Rating: Level 3
Test: 260°C convection reflow
Standard: JEDEC Standard IPC/JEDEC J-STD-020

Solderability

Compatible with both lead-free (260 °C maximum reflow temperature) and tin/lead (245 °C maximum reflow temperature) soldering processes.

Contact plating: NiPdAu

RoHs Compliance

This part is compliant with EU 2002/95/EC RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment).

This product also has the following attributes:

- Lead Free
- Halogen Free (Chlorine, Bromine)
- Antimony Free
- TBBP-A ($C_{15}H_{12}Br_40_2$) Free
- PFOS Free
- SVHC Free

Contact Information

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