

Applications

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

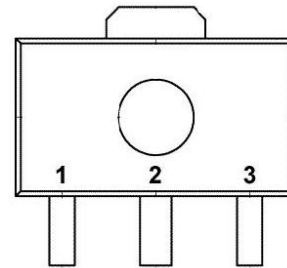


SOT-89 Package

Product Features

- 50-2600 MHz bandwidth
- Low Noise Figure: 2.4 dB up to 1600 MHz
- Extremely Flat Gain Response
- Low Power Consumption: 100 mA with 5 V
- SOT-89 package

Functional Block Diagram



General Description

The TAT7460 is a 75 Ohm RF Amplifier designed for use up to 2600 MHz, addressing the CATV and Satellite bands in a single part. The TAT7460 is fabricated using 6-inch GaAs pHEMT technology to optimize performance and cost.

Pin Configuration

Pin No.	Label
1	RFin
2	Gnd
3	RFout/V _{DD}
4	Gnd

Ordering Information

Part No.	Description
TAT7460	75Ω pHEMT Amplifier
TAT7460-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	0		+85	°C
Tj for $>10^6$ hours MTTF			+150	°C

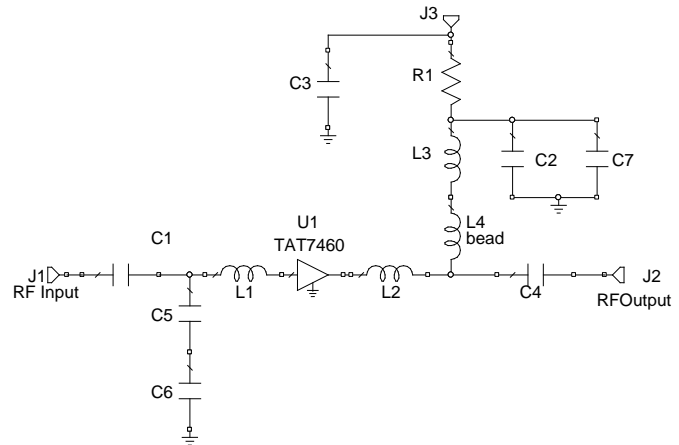
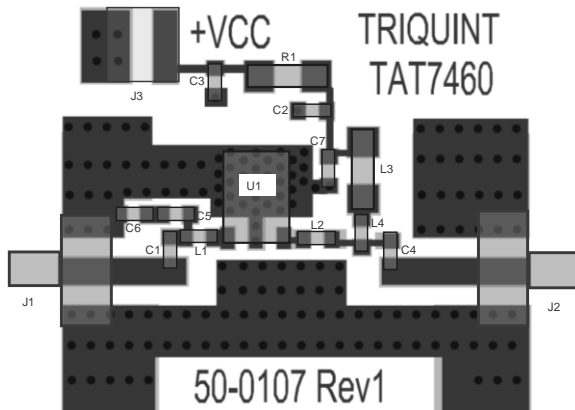
Electrical specifications are measured at specified test conditions. Specifications are not guaranteed over all recommended operating conditions.

Electrical Specifications

Test conditions unless otherwise noted: $V_{DD}=+5$ V, Temp= +25°C, Freq.=50-2600 MHz

Parameter	Conditions	Min	Typ	Max	Units
Operational Frequency Range		50		2600	MHz
Gain		16.1	16.5		dB
Gain Flatness			+/- 0.5		dB
Input Return Loss			18		dB
Output Return Loss			18		dB
CSO	30 dBmV/channel at output 80 channels flat		-61		dBc
CTB			-72		dBc
XMOD			-71		dBc
Output IP2	Pout = +5 dBm/tone $\Delta f = 100$ MHz	+56.2	+58		dBm
Output IP3		+31.1	+36		dBm
Output P1dB			+20.5		dBm
Noise Figure	50-1600 MHz		2.5		dB
Device Current (I_{DD})			100	120	mA
Thermal Resistance, θ_{jc}	Junction to case		51		°C/W

TAT7460-EVB Evaluation Board (50-2600 MHz)

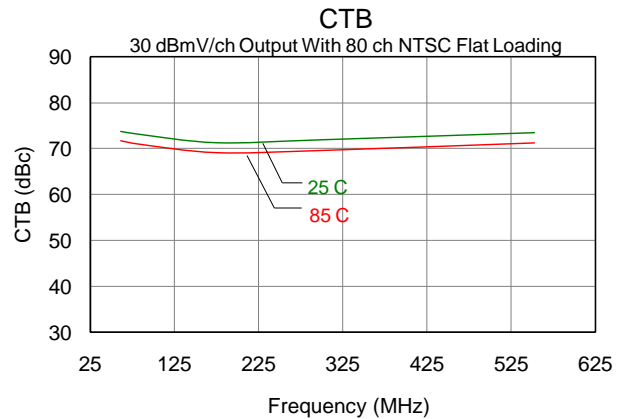
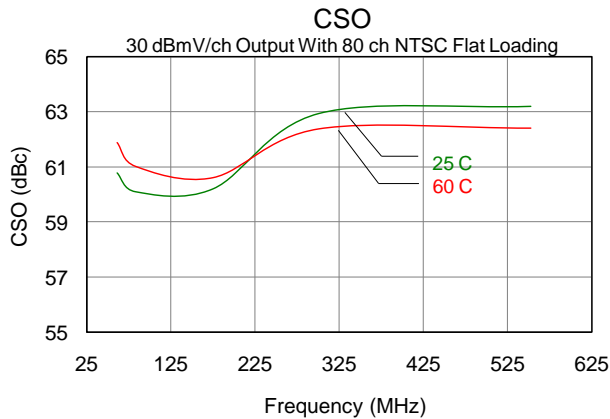
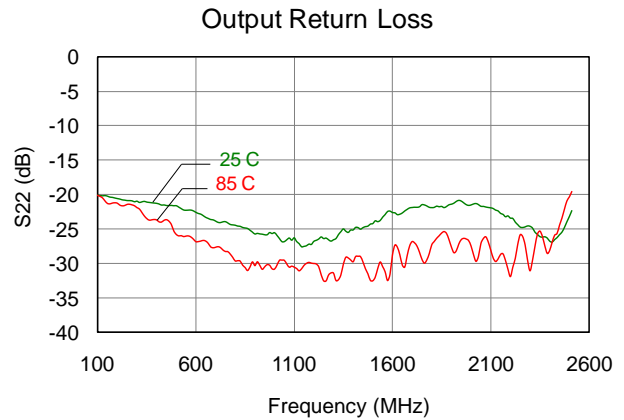
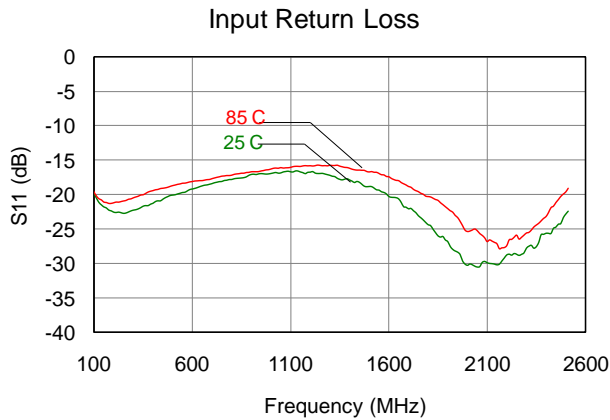
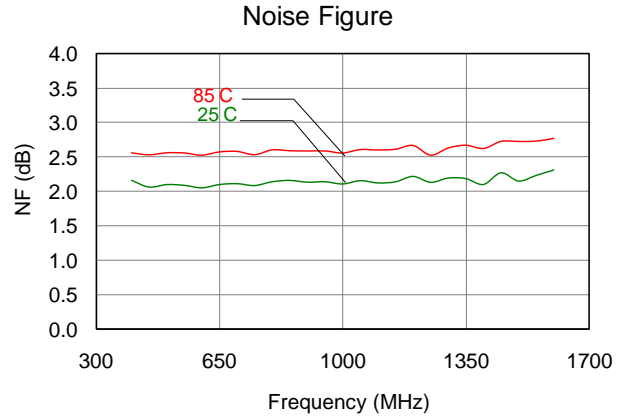
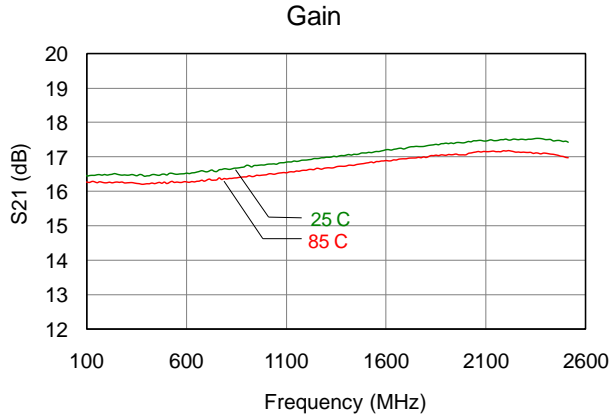


Bill of Material – TAT7460-EVB

Reference Des.	Value	Description	Manuf.	Part Number
U1		75 Ω pHEMT Amplifier	TriQuint	TAT7460
C1	470 pF	Ceramic Cap, 0603, 16 V, 5%	Various	
C2, C3, C7	0.01 uF	Ceramic Cap, 0603, X7R, 16 V, 5 %	Various	
C4	390 pF	Ceramic Cap, 0603, 16 V, 5%	Various	
C5	0.7 pF	Ceramic Cap, 0603, 50 V, ±0.1 pF	Various	
C6	0.5 pF	Ceramic Cap, 0603, 50 V, ±0.1 pF	Various	
L1	3.6 nH	Wirewound Ind, 0603, 5%	Various	
L2	3.3 nH	Wirewound Ind, 0603, 5%	Various	
L3	880 nH	Wirewound Ind, 1206, 5%	Various	
L4	Bead	Ferrite Bead, 0402, 200 mA, 1.0 kΩ	Murata	BLM15AG102SN1
R1	0 Ω	Thick Film Res, 1206	Various	
J1, J2	Connector	F-Connector	Various	

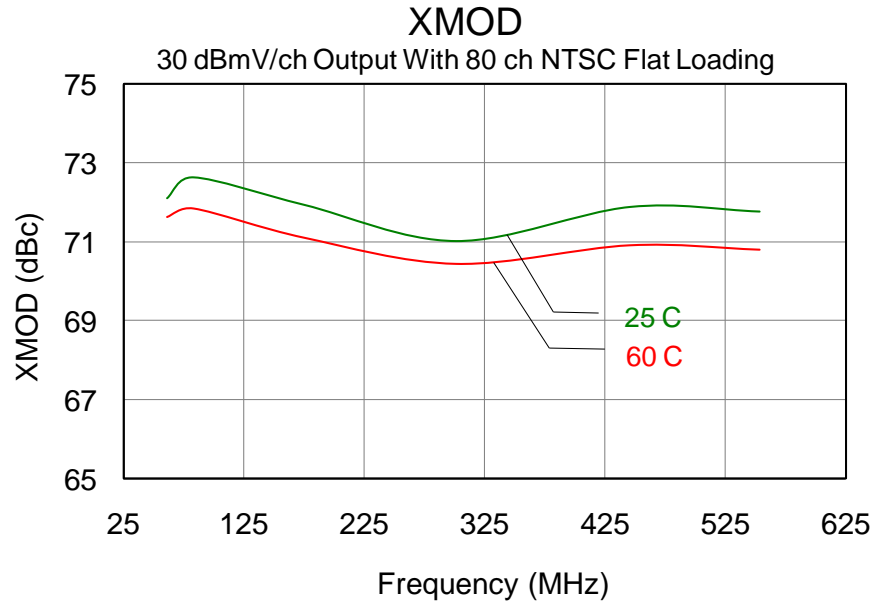
Performance Plots – TAT7460-EVB

Test conditions unless otherwise noted: $V_{DD}=+5\text{ V}$, $I_{DD}=100\text{ mA}$, $\text{Temp}=+25^\circ\text{C}$



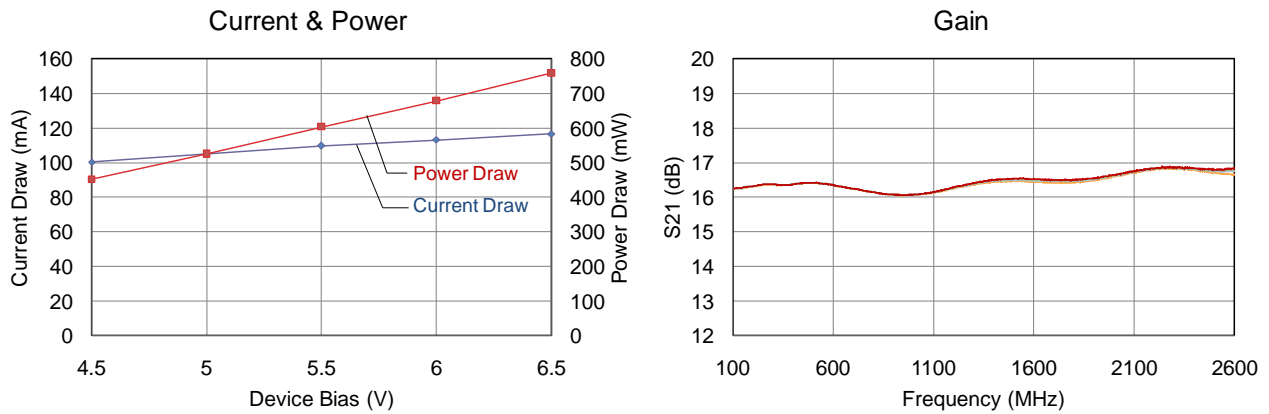
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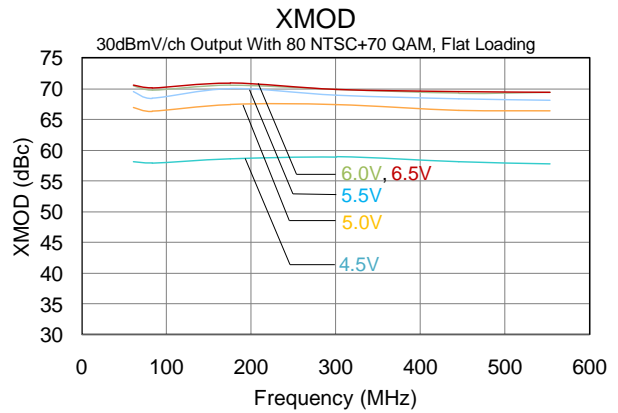
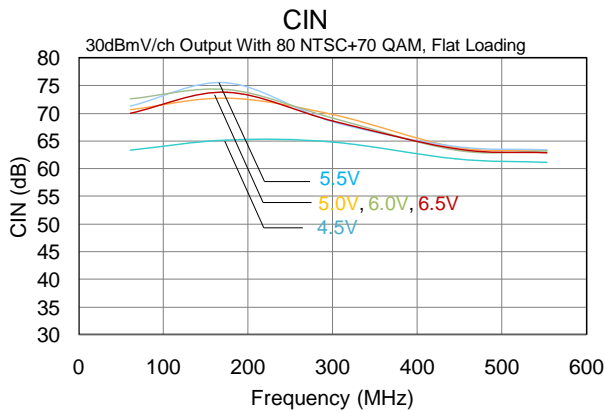
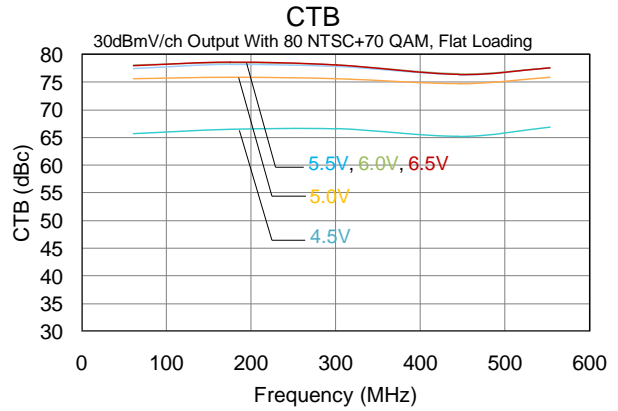
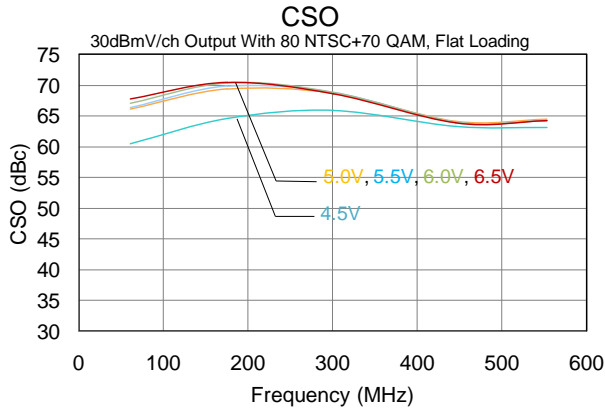
Performance Plots Over Bias – TAT7460-EVB

Test conditions unless otherwise noted: $V_{DD}=+4.5\text{ to }6.5\text{ V}$, $I_{DD}=100\text{-}120\text{ mA}$, $\text{Temp}=+25^\circ\text{C}$



Performance Plots Over Bias – TAT7460-EVB

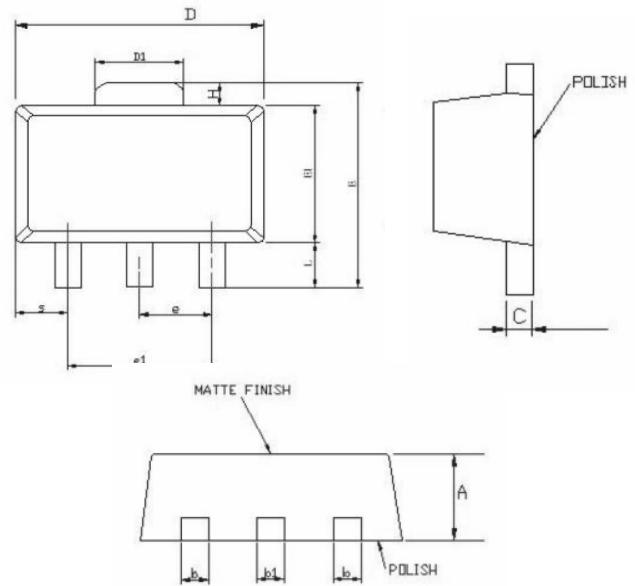
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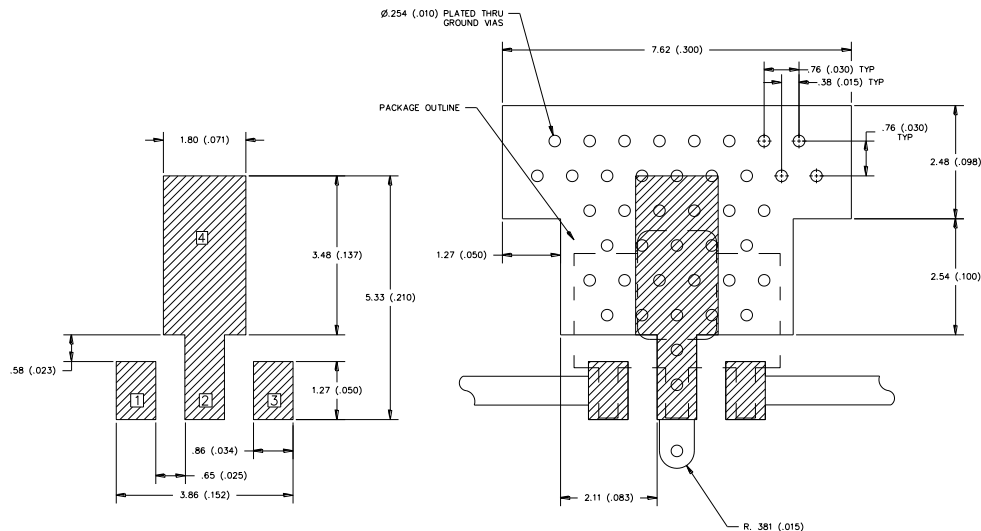
Package Marking and Dimensions

Marking: Part Number – TAT4760
Lot code – XXXXYWW

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.40	1.50	1.60	0.055	0.059	0.063
L	0.89	1.04	1.20	0.0350	0.041	0.047
b	0.36	0.42	0.48	0.014	0.016	0.018
b1	0.41	0.47	0.53	0.016	0.018	0.020
C	0.38	0.40	0.43	0.014	0.015	0.017
D	4.40	4.50	4.60	0.173	0.177	0.181
D1	1.40	1.60	1.75	0.055	0.062	0.069
E	3.64	—	4.25	0.143	—	0.167
E1	2.40	2.50	2.60	0.094	0.098	0.102
e1	2.90	3.00	3.10	0.114	0.118	0.122
H	0.35	0.40	0.45	0.014	0.016	0.018
S	0.55	0.75	0.85	0.026	0.030	0.034
e	1.40	1.50	1.60	0.054	0.059	0.063



PCB Mounting Pattern



Notes:

1. Ground / thermal vias are critical for the proper performance of this device. Vias should use a .35 mm (#80/.0135") diameter drill and have a final, plated thru diameter of .25 mm (.010").
2. Add as much copper as possible to inner and outer layers near the part to ensure optimal thermal performance.
3. RF trace width depends upon the PC board material and construction.
4. All dimensions are in millimeters (inches). Angles are in degrees.

Product Compliance Information

ESD Sensitivity Ratings



Caution! ESD-Sensitive Device

ESD Rating: Class 1A+
Value: $\geq 450V$
Test: Human Body Model (HBM)
Standard: JEDEC Standard JESD22-A114

ESD Rating: Class IV
Value: Passes $\geq 1000 V$
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: Annealed matte tin over copper.

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 (C₁₅H₁₂Br₄O₂) Free
- PFOS Free
- SVHC Free

Contact Information

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