

75 Ohm RF Amplifier 50-1002 MHz

TAT7427B Preliminary Datasheet

Overview

The TAT7427B is a 75 Ohm RF Amplifier designed for CATV applications from 50 to 1002 MHz (with operation up to 1.25GHz). The balance of low noise and distortion provides an ideal solution for drop and distribution amplifiers. It is particularly well suited for new home networks requiring higher gain for a large number of splits.

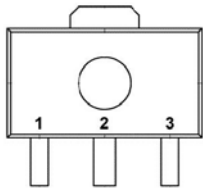
The TAT7427B is fabricated using 6-inch GaAs pHEMT technology to optimize performance and cost. It provides excellent gain and return loss consistency inherent to the pHEMT process.

Features

- 75 Ohm, 40-1000 MHz Bandwidth
- Low Noise: < 2dB to 1000 MHz
- Low Distortion: CSO -70, CTB -88 dBc typical
- SOT-89 package

Applications

- Distribution Amplifiers
- Multi Dwelling Units
- Drop Amplifiers
- Single Ended Gain Block



Pin Configuration

Pin No.	Pin Name	Description
1	RF IN	RF Input
2	GND	Ground
3	RF OUT	RF Output



SOT-89 Package

Electrical Performance Specifications at 25 °C, Performance expected to meet or exceed:

Table 1. RF Characteristics to 1 GHz				
Parameter	Min	Typical	Max	Unit
Bandwidth	50		1002	MHz
RF Gain	17.6	18.5	19.0	dB
Gain Flatness		0.3	0.7	+/- dB
Noise Figure @ 1 GHz		2.5	3.3	dB
Input Return Loss		-23		dB
Output Return Loss		-20		dB
CSO (10 dBmV/ch at input, 80 ch NTSC flat)	-62	-70		dBc
CTB (10 dBmV/ch at input, 80 ch NTSC flat)	-75	-88		dBc
Output IP2 (>5 dBm/tone)		61		dBm
Output IP3 (>5 dBm/tone)		39		dBm
Idd, 6V (nominal at part, 7.3V applied to test circuit)		145	175	mA

Ordering Information

Part Number	Description	Package Description	Component Packaging
TAT7427B-T1-EB	Drop Amplifier optimized Evaluation Board	Evaluation board	
TAT7427B-T1	RFIC 40-1000MHz	RoHS Compliant SOT-89	1,000 piece Tape and Reel: Individual units marked "TAT7427B"

Absolute Maximum Ratings

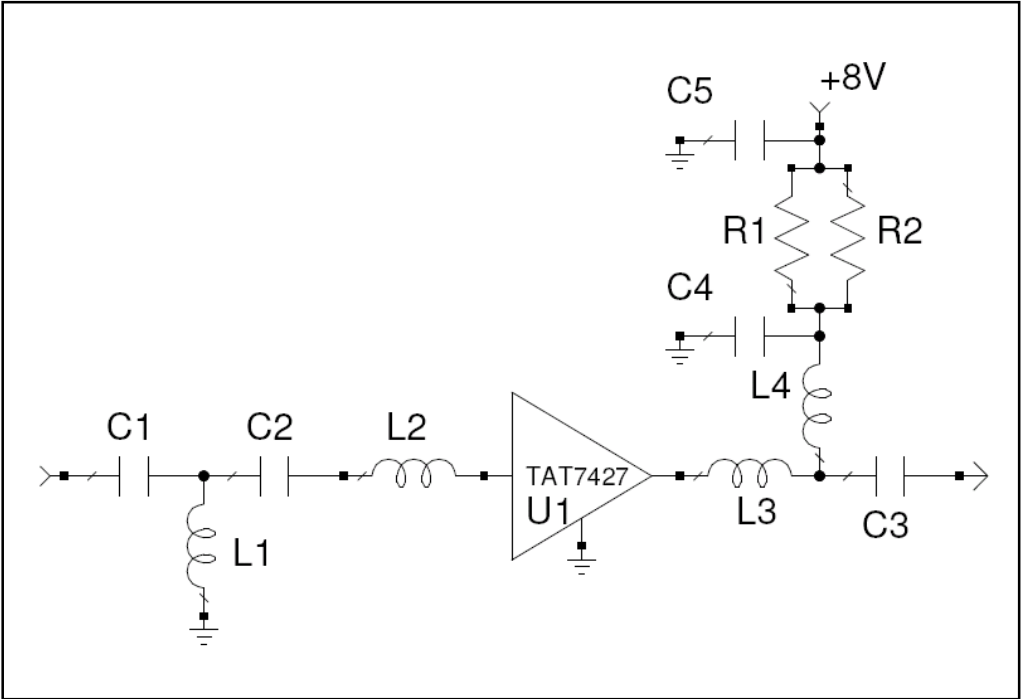
Parameter	Absolute Maximum
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +150°C

Note: exceeding any of these limits may cause permanent damage to this device

ESD Classification and Moisture Sensitivity Level

Parameter	
ESD Classification	
- Human Body Model	Class 1A (400V)
- Charged Device Model	Class IV (1000V)
Moisture Sensitivity Level	Level 3
RoHS	RoHS compliant per EU directive

TAT7427B Application Schematic/Bill of Material

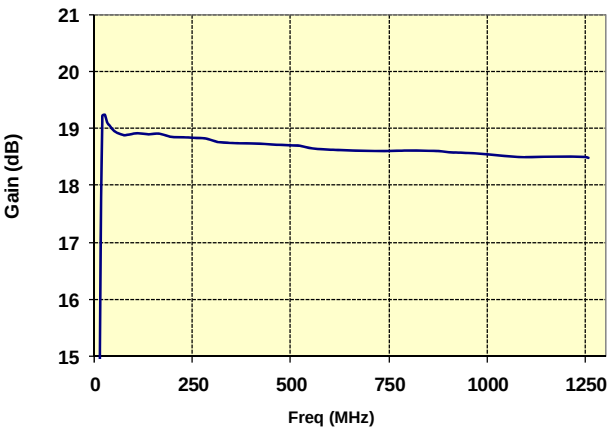


Note: 6V to 6.5V nominal at part

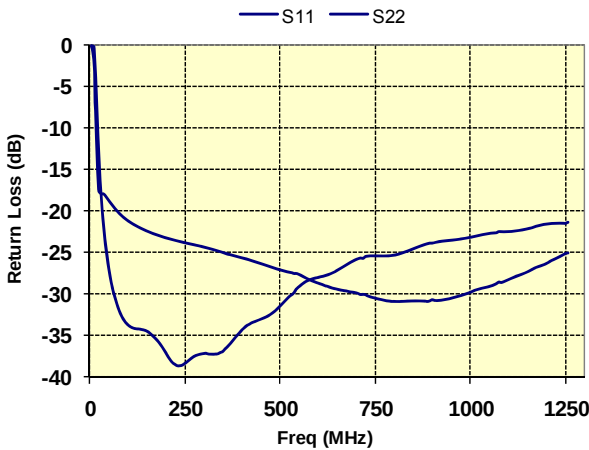
Designator	Value	Mfg	P/N
C1, C4, C5	0.01μF	AVX	0603YC103KAT
C2	680 pF	Murata	GRM1555C1H681JA01D
C3	120 pF	Murata	GRM1555C1H121JA01D
L1	880 nH	Murata	LQH31HNR88K03
L2	3.9 nH	Coilcraft	0603HP-3N9XJLU
L3	5.6 nH	Coilcraft	0603CS-5N6XJLU
L4	500 nH	Murata	LQH31HNR50K03
R1, R2	16 Ω	Panasonic	ERJ-8GEYJ160V
U1		TriAccess	TAT7427B-T1

TAT7427B Performance Data on Evaluation Board

Gain

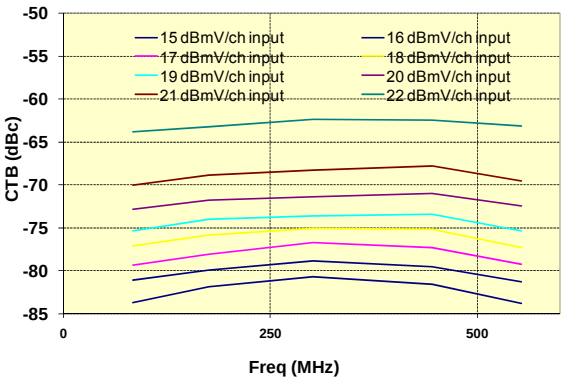


Input (S11) & Output (S22) Return Loss

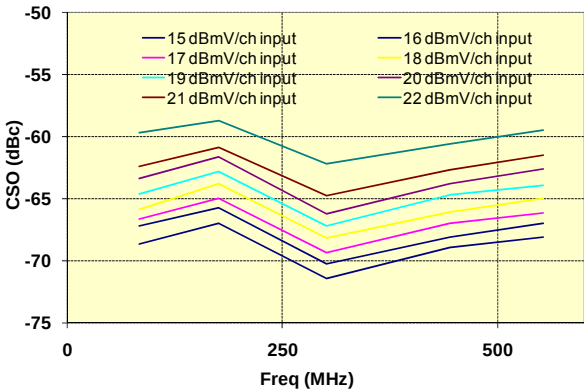


Noise Figure

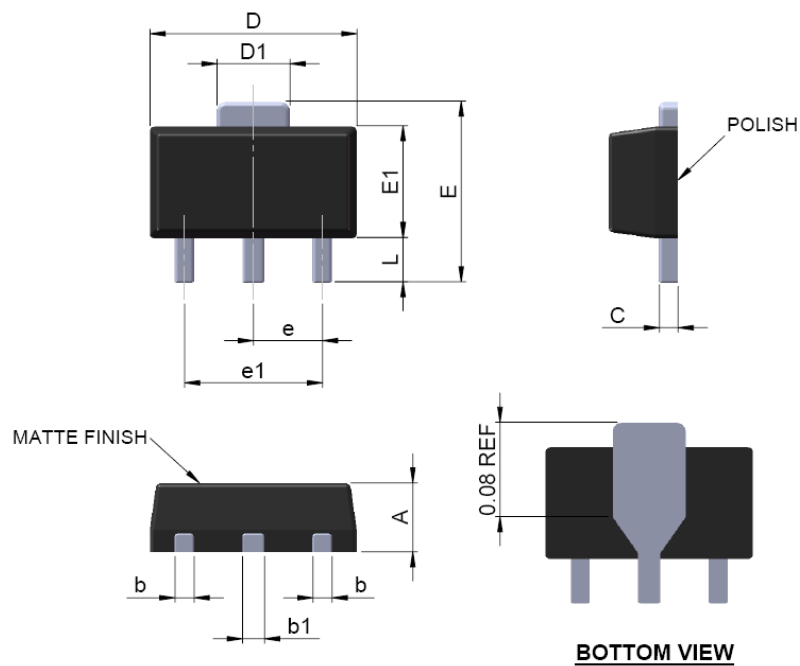
Composite Triple Beat
As a function of input power level / ch, 80 ch. Flat NTSC



Composite Second Order
As a function of input power level 80 ch. Flat NTSC



Mechanical Dimensions



SYMBOL	MIN	NOM	MAX
A - Thickness	1.40	1.50	1.60
C - Lead thickness	0.35		0.43
D - Body width	4.40		4.60
E1 - Body length	2.30		2.60
E - Total length	3.64		4.25
e - Lead spacing	1.40	1.50	1.60
e1 - Dual lead spacing	2.90	3.00	3.10
b - Outer lead width	0.35		0.48
b1 - Center lead width	0.40		0.56
L - Lead length	0.74		1.20
d1 - Tab lead width	1.40		1.80
Above body	0.35		0.64

DIMENSIONS ARE IN MM