



MAAM-007796 V1

Low Noise FTTx Amplifier 50 - 1000 MHz

Features

- Low Distortion
- Low Noise Figure
- Lead-Free 4 mm 20-Lead PQFN Package
- 100% Matte Tin Plating over Copper
- Halogen-Free "Green" Mold Compound
- 260°C Reflow Compatible

Description

M/A-COM's MAAM-007796 is a GaAs PHEMT MMIC amplifier in a lead-free 4 mm 20-lead PQFN package. The Amplifier is designed to meet the high gain, high linearity and low noise requirements of FTTx receivers.

Ordering Information ¹

Part Number	Package
MAAM-007796-TR1000	1000 piece reel
MAAM-007796-TR3000	3000 piece reel
MAAM-007796-000SMB	Sample Test Board (Includes 5 Samples)

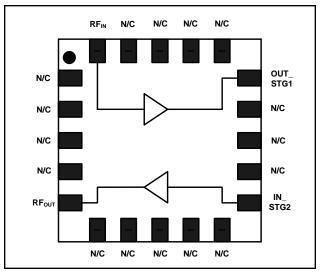
1. Reference Application Note M513 for reel size information.

Absolute Maximum Ratings ^{2,3}

Parameter	Absolute Maximum
Input Power	+5 dBm
Operating Voltage	+10 volts
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

- 2. Exceeding any one or combination of these limits may cause permanent damage to this device.
- M/A-COM does not recommend sustained operation near these survivability limits.

Functional Schematic



Pin Configuration ⁴

Pin No.	Pin Name	Description	
1	N/C	No Connection	
2	N/C	No Connection	
3	N/C	No Connection	
4	N/C	No Connection	
5	RF Out	RF Output	
6	N/C	No Connection	
7	N/C	No Connection	
8	N/C	No Connection	
9	N/C	No Connection	
10	N/C	No Connection	
11	IN_STG2	STAGE2 RF INPUT	
12	N/C	No Connection	
13	N/C	No Connection	
14	N/C	No Connection	
15	OUT_STG1	STAGE1 RF OUTPUT	
16	N/C	No Connection	
17	N/C	No Connection	
18	N/C	No Connection	
19	N/C	No Connection	
20	RF In	RF Input	

The exposed pad centered on the package bottom must be connected to RF and DC ground.

Visit www.macom.com for additional data sheets and product information.

^{*} Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

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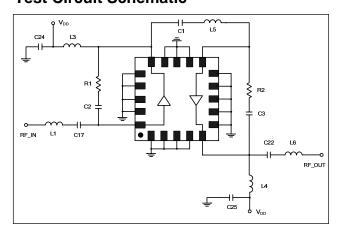
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Electrical Specifications: $T_A = 25$ °C, Freq: 50 - 1000 MHz, $V_{DD} = +5$ Volts, $Z_0 = 75$ ohms

Parameter	Test Conditions	Units	Min.	Тур.	Max.
Gain	RF _{IN} to RF _{OUT}	dB	20	21	22
Gain Flatness	RF _{IN} to RF _{OUT}	dB	0	0.4	0.7
Noise Figure	RF _{IN} to RF _{OUT}	dB	3	3.8	4.8
Input Return Loss	RF _{IN}	dB	-	15	-
Output Return Loss	RF _{out}	dB	-	15	-
Output IP3	Two tones at 397 & 403 MHz, +5 dBm output per tone	dBm	-	35	-
Composite Triple Beat, CTB	132 Channels, +20 dBmV/Channel at the Output	dBc	-	-70	-
Composite Second Order, CSO	132 Channels, +20 dBmV/Channel at the Output	dBc	-	-70	-
Cross modulation	132 Channels, +20 dBmV/Channel at the Output	dBc	-	-70	-
P1dB	400 MHz	dBm	-	20	-
I _{DD}	V _{DD} = +5 Volts	mA	140	160	180

Test Circuit Schematic



Off-Chip Component Values 5

Component	Value	Package		
C1-C3, C17, C22, C24-C25	0.01 μF	0402		
L1	5.6 nH	0402		
L3, L4	1.0 µH	1210		
L5	3.9 nH	0402		
L6	4.7 nH	0402		
R1, R2	300 Ω	0402		

L3 and L4 supplied from EPCOS, part number B82422A1102K100.

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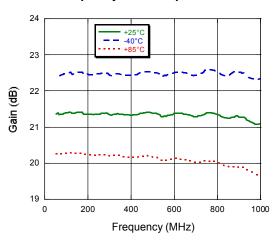


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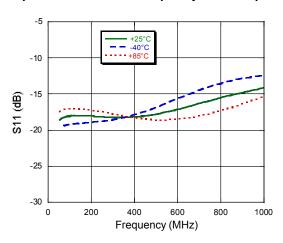
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Typical Performance Curves

Gain vs. Frequency over Temperature to 1 GHz

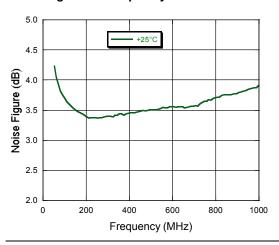


Input Return Loss vs. Frequency over Temperature

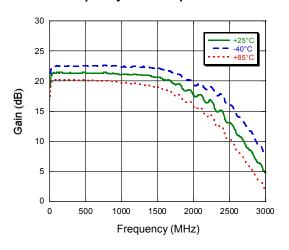


Noise Figure vs. Frequency

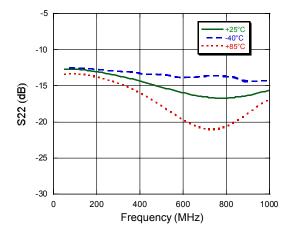
Downloaded from Elcodis.com electronic components distributor



Gain vs. Frequency over Temperature to 3 GHz



Output Return Loss vs. Frequency over Temperature



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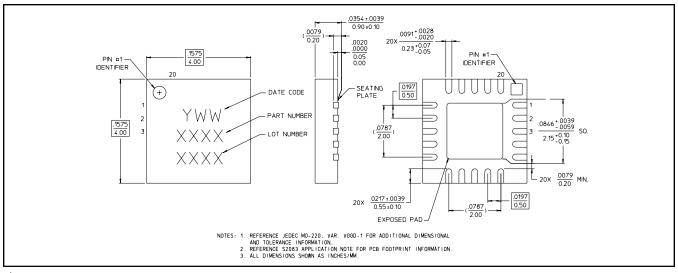




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Lead-Free 4 mm 20-Lead PQFN[†]



Reference Application Note M538 for lead-free solder reflow recommendations. Meets JEDEC moisture sensitivity level 1 requirements.

Handling Procedures

Please observe the following precautions to avoid damage:

Static Sensitivity

Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

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