

CATV Amplifier Splitter Module
50 - 860 MHz

MAMUCT0021
V1

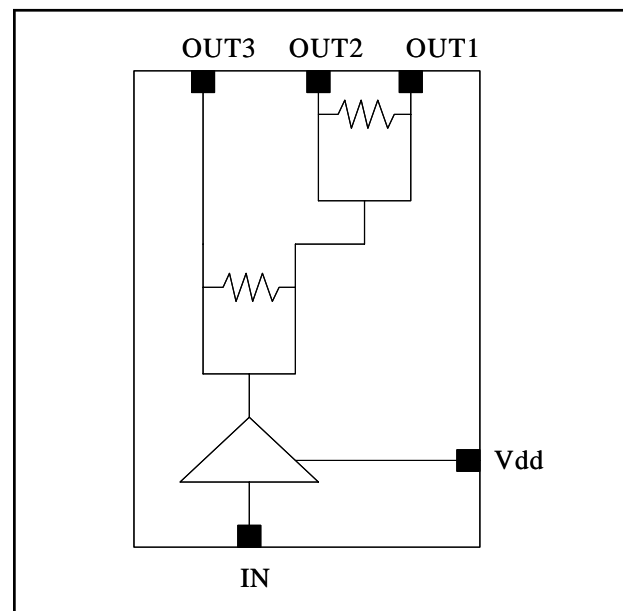
Features

- Low Noise Figure
- Low Distortion
- Multifunction Integration
- Single Positive Supply
- 75 ohm Impedance
- Lead-Free Surface Mount Package
- Electroless Nickel Immersion Gold (ENIG) Finish
- 260°C Reflow Compatible
- RoHS* Compliant Version of MAMUSS0007

Description

M/A-COM's MAMUCT0021 is an integrated module consisting of an amplifier and two equal split power dividers. The push-pull, low distortion, amplifier includes the baluns and DC bias circuitry. The device is ideally suited for use in the CATV market where low noise figure, low distortion and high linearity are required.

Functional Schematic



Ordering Information

Part Number	Package
MAMUCT0021TR	500 Piece Reel
MAMUCT0021SMB	Sample Test Board (Includes 5 Samples)

Absolute Maximum Ratings ^{1,2}

Parameter	Absolute Maximum
Input Power	+20 dBm
Operating Voltage	+10 volts
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

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

Pin Configuration

Pin No.	Pin Name	Description
1	GND	Ground
2	GND	Ground
3	GND	Ground
4	GND	Ground
5	GND	Ground
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	IN	RF Input
10	GND	Ground
11	V _{DD}	+5V
12	GND	Ground
13	OUT 1	RF Output 1
14	GND	Ground
15	OUT 2	RF Output 2
16	GND	Ground
17	OUT 3	RF Output 3
18	GND	Ground

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

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Electrical Specifications: $T_A = 25^\circ\text{C}$, Freq: 50 - 860 MHz, $V_{DD} = +5$ Volts, $Z_0 = 75 \Omega$

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Gain	IN-OUT1, IN-OUT2	dB	4	5	6.8
Gain	IN-OUT3	dB	7.6	8.5	9.8
Gain Unbalance	IN-OUT1 vs IN-OUT2	dB	—	0.6	—
Gain Flatness	IN-OUT1/2	dB	0	1.1	1.6
Gain Flatness	IN-OUT 3	dB	0	0.8	1
Noise Figure	IN-OUT1, IN-OUT2 50 – 150 MHz 150 – 860 MHz	dB dB	— —	3.7 3.4	— —
Noise Figure	IN-OUT 3 50 – 150 MHz 150 – 860 MHz	dB dB	— —	3.4 3.0	— —
Return Loss	IN	dB	—	15	—
Return Loss	OUT	dB	—	17	—
Isolation	OUT-OUT	dB	—	24	—
Composite Triple Beat, CTB	135 channels, +13 dBmV/channel at the input	dBc	—	-78	-70
Composite Second Order, CSO	135 channels, +13 dBmV/channel at the input	dBc	—	-78	-70
Cross modulation	135 channels, +13 dBmV/channel at the input	dBc	—	-66	—
I_{DD}	$V_{DD} = +5$ Volts	mA	—	200	225

Handling Procedures

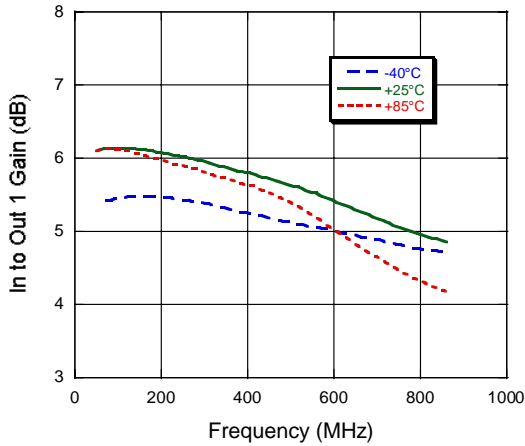
Please observe the following precautions to avoid damage:

Static Sensitivity

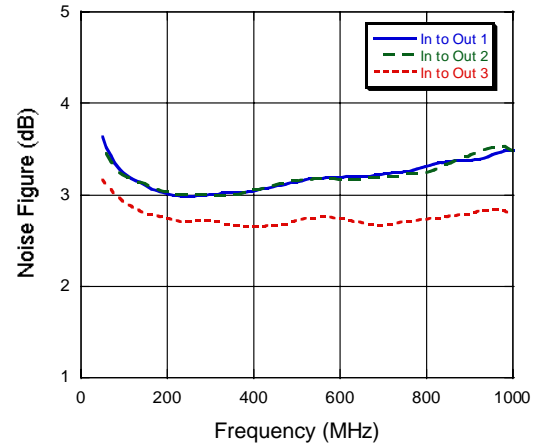
Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

Typical Performance Curves

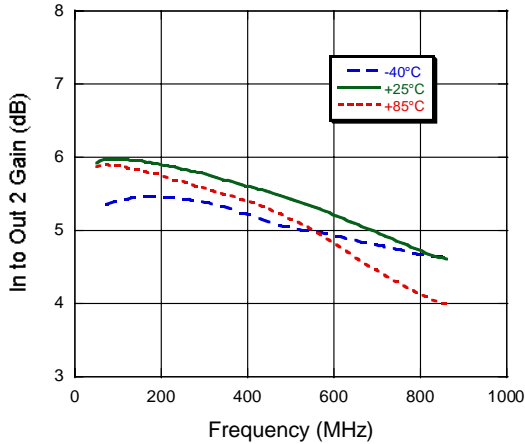
In – Out 1



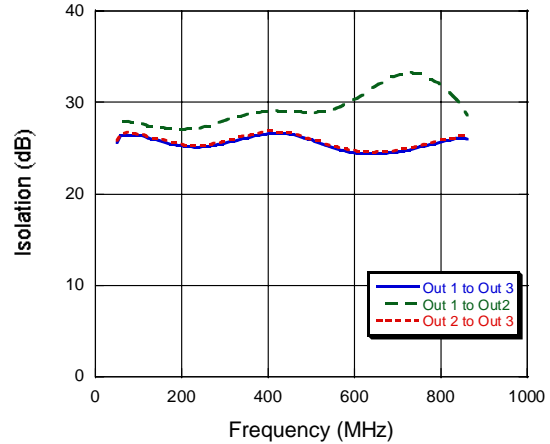
Noise Figure



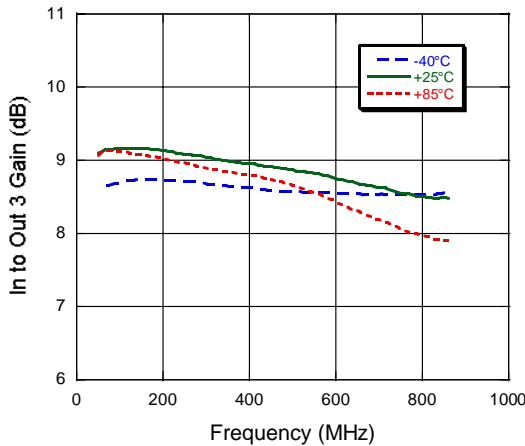
In – Out 2



Isolation



In – Out 3

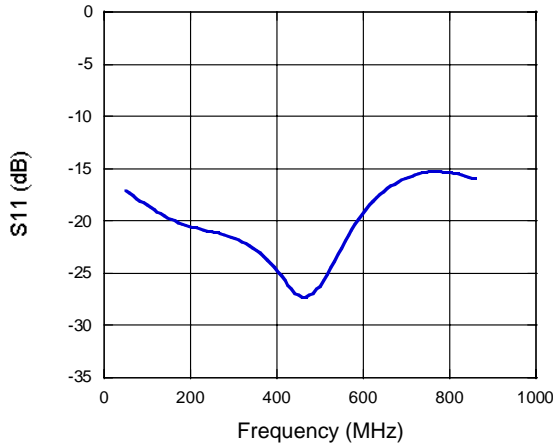


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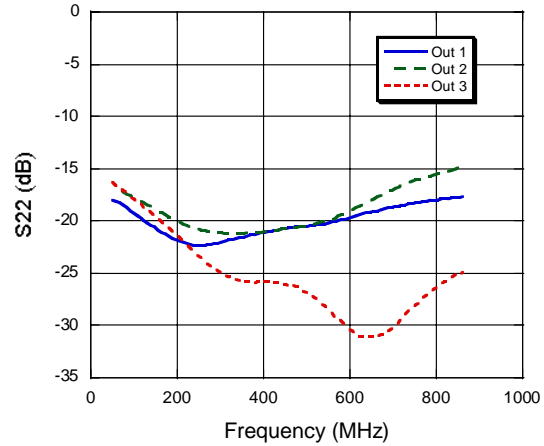
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Typical Performance Curves

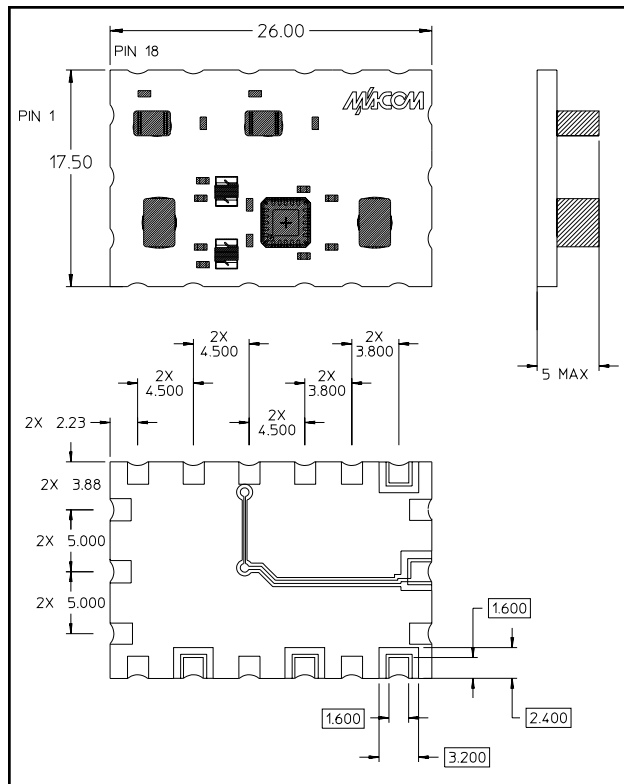
Input Return Loss



Output Return Loss



Lead-Free Surface Mount Package^{3,4}



3. All dimensions in mm.
4. Reference Application Note M538 for lead-free solder reflow recommendations.

Recommended Board Layout

