

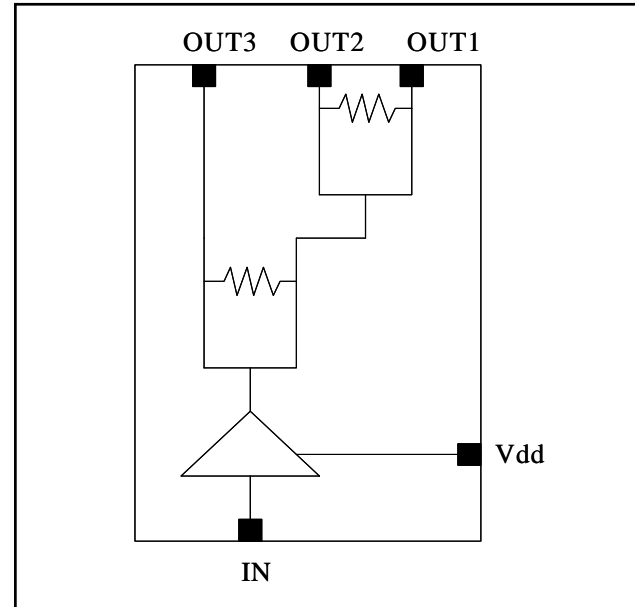
Features

- 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.

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 | — | 3.7 | — |
| | | dB | — | 3.4 | — |
| Noise Figure | IN-OUT 3 50 – 150 MHz 150 – 860 MHz | dB | — | 3.4 | — |
| | | dB | — | 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

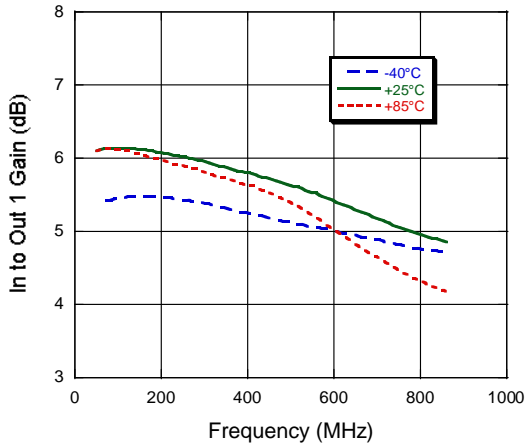
Please observe the following precautions to avoid damage:

Static Sensitivity

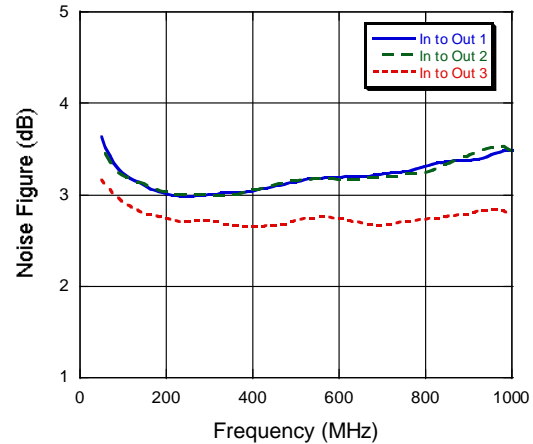
Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

Typical Performance Curves

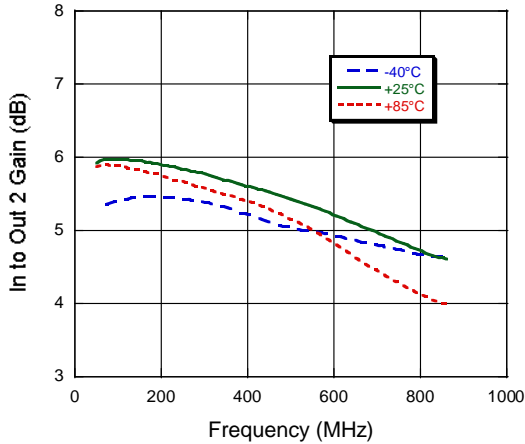
In – Out 1



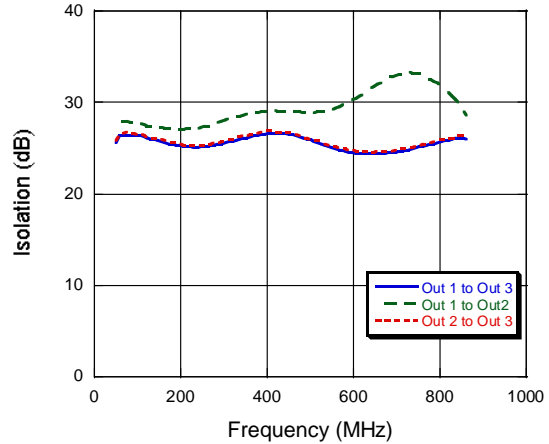
Noise Figure



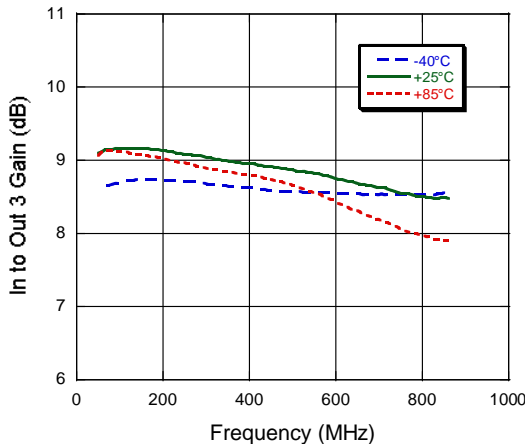
In – Out 2



Isolation

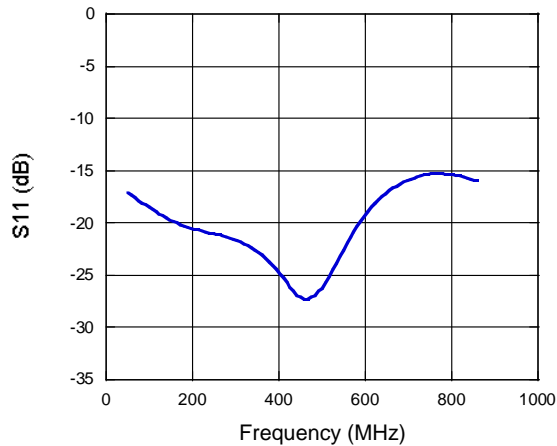


In – Out 3

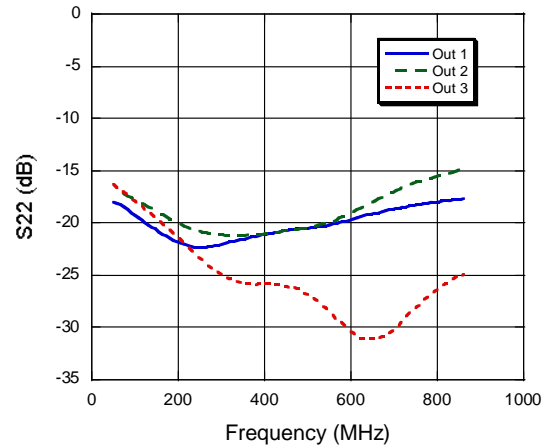


Typical Performance Curves

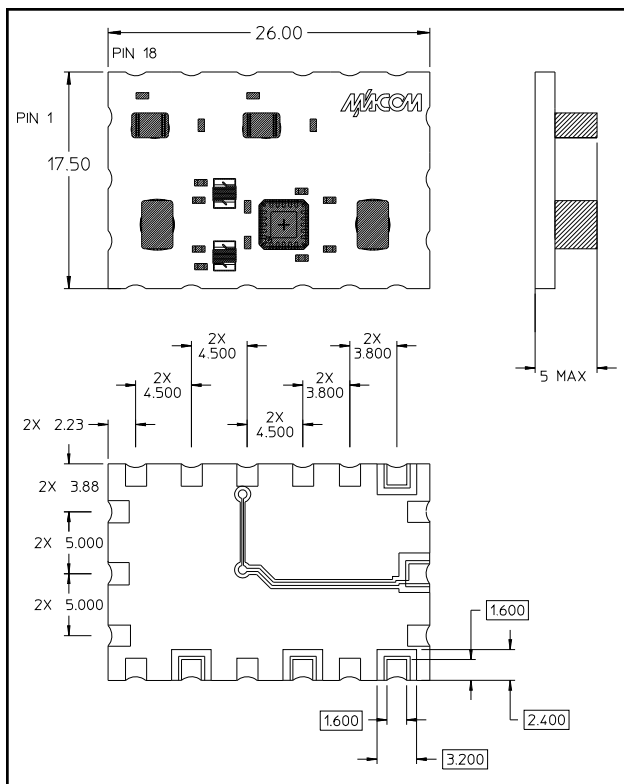
Input Return Loss



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

