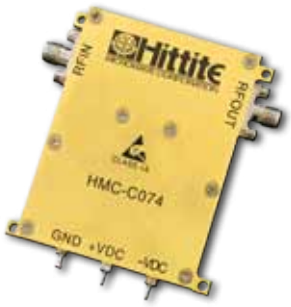
v02.0711

# HMC-C074

## SINGLE STAGE POWER AMPLIFIER MODULE, 10 MHz - 6 GHz




## Features

Gain: 13 dB

High P1dB Output Power: +29.5 dBm

High Output IP3: +40 dBm

Excellent Gain Flatness: ±0.75 dB

Regulated Supply and Bias Sequencing

Field Replaceable SMA Connectors

Operating Temperature: -40°C to +70°C

## Typical Applications

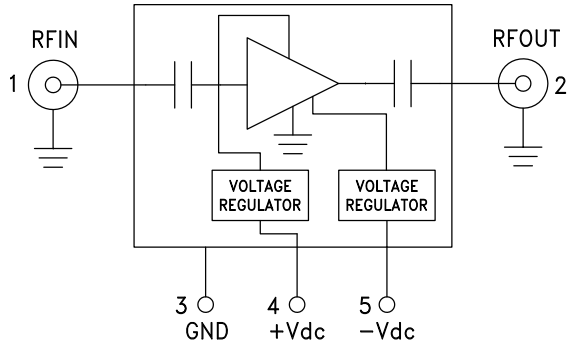
The HMC-C074 is ideal for:

- Telecom Infrastructure
- Test Instrumentation
- Military & Space

## General Description

The HMC-C074 is a Single Stage Power Amplifier which operates between 10 MHz and 6 GHz. The amplifier provides 13 dB of gain, +40 dBm output IP3 and +29.5 dBm of output power at 1 dB gain compression while consuming only 450 mA from a +15V supply. Gain flatness is excellent at ±0.75 dB from 10 MHz - 6 GHz making the HMC-C074 ideal for EW, ECM, Radar and test equipment applications. The amplifier I/Os are internally matched to 50 Ohms and are DC blocked. Integrated voltage regulators allow for flexible biasing of both the negative and positive supply pins, while internal bias sequencing circuitry allows robust operation.

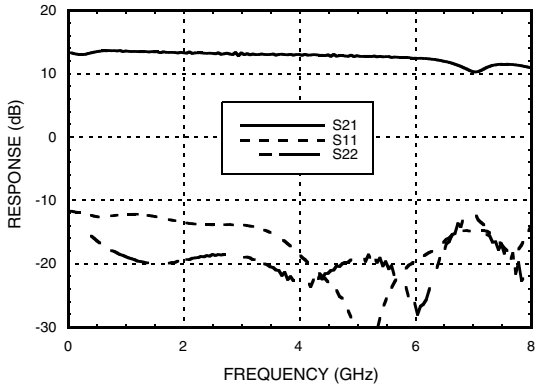
## Functional Diagram



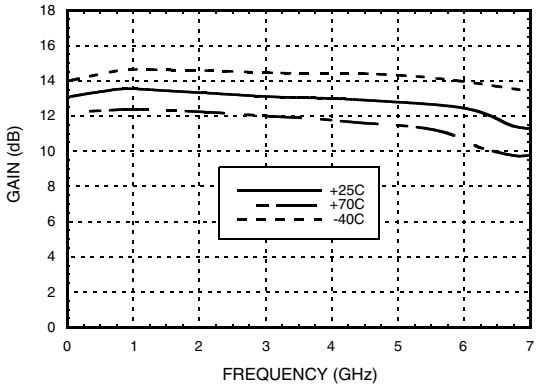

## Electrical Specifications, $T_A$ = +25° C, -Vdc = -5V, +Vdc = 15V

| Parameter | Min. | Typ. | Max. | Units |
|---|---|---|---|---|
| Frequency Range | | 0.01 - 6 | | GHz |
| Gain | 11.5 | 13 | | dB |
| Gain Flatness | | ±0.75 | | dB |
| Gain Variation Over Temperature | | 0.02 | | dB/ °C |
| Input Return Loss | | 17 | | dB |
| Output Return Loss | | 17 | | dB |
| Output Power for 1 dB Compression (P1dB) | 27.5 | 29.5 | | dBm |
| Saturated Output Power (Psat) | | 30 | | dBm |
| Output Third Order Intercept (IP3) | | 40 | | dBm |
| Noise Figure | | 5 | | dB |
| Supply Current (+15V) | | 450 | 500 | mA |
| Supply Current (-5V) | | 5 | | mA |

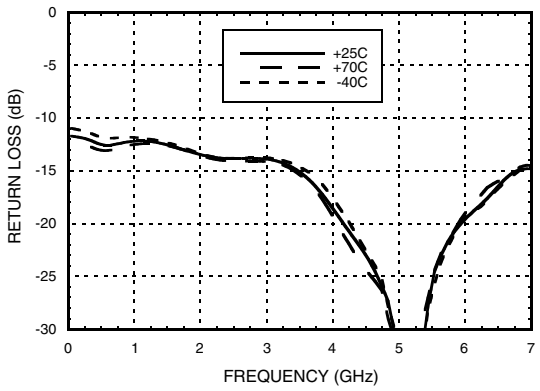
### Gain & Return Loss



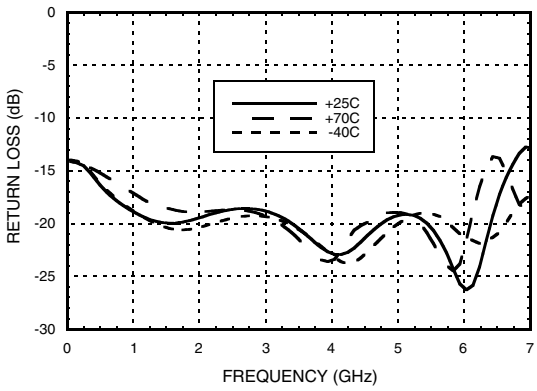

### Gain vs. Temperature



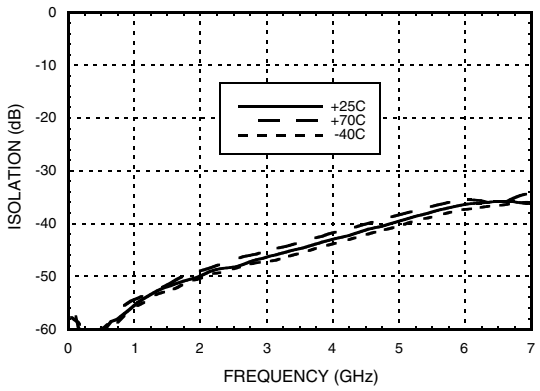

### Input Return Loss vs. Temperature



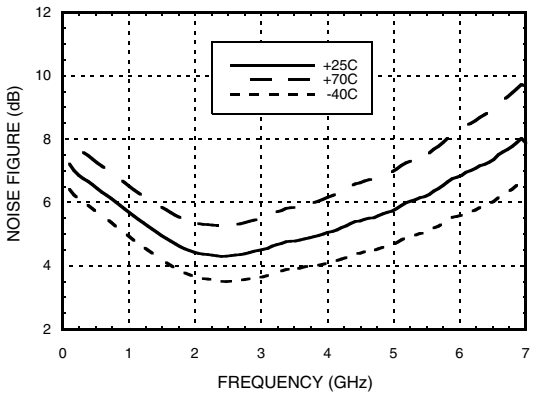

### Output Return Loss vs. Temperature



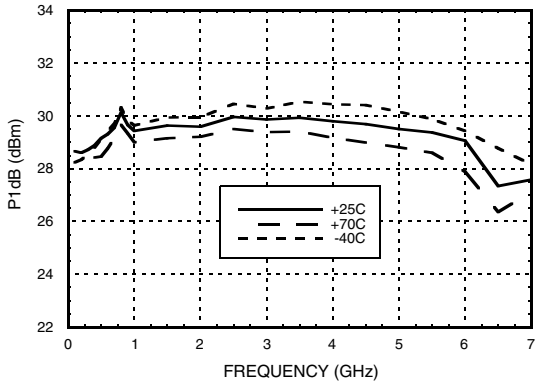

### Reverse Isolation vs. Temperature



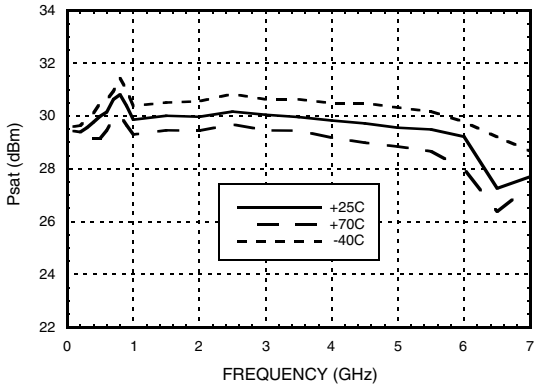

### Noise Figure vs. Temperature



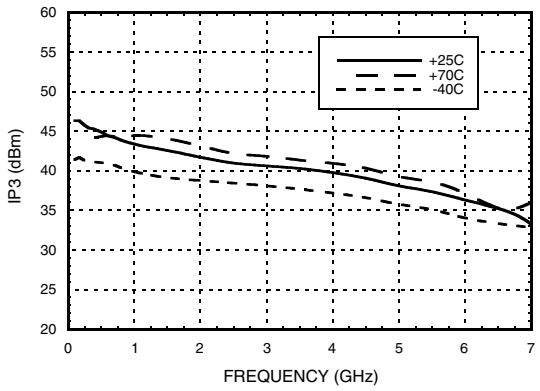
### Output P1dB vs. Temperature



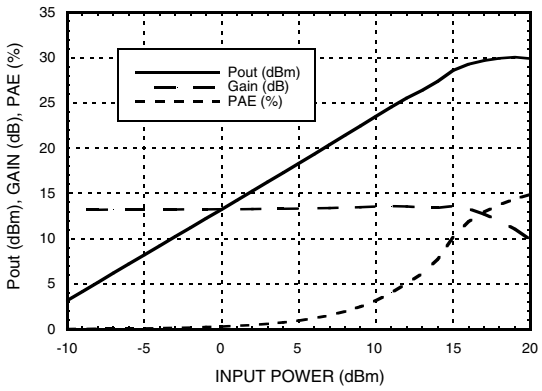

### Output Psat vs. Temperature



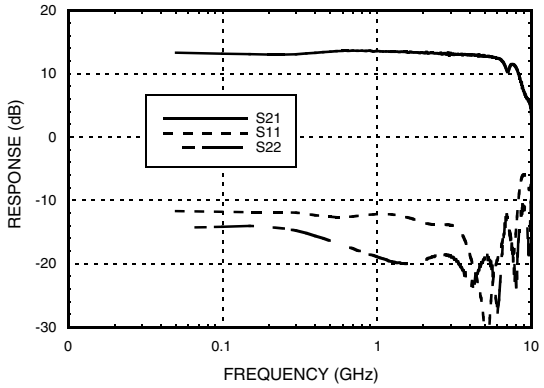

### Output IP3 vs. Temperature



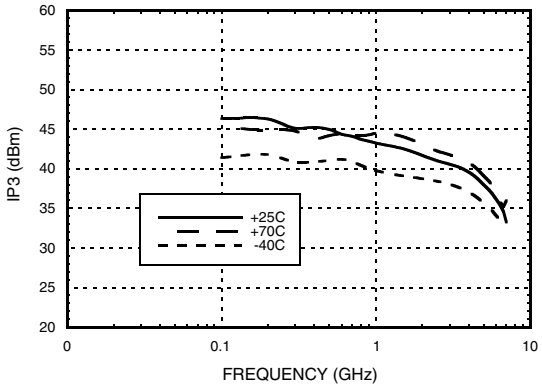

### Power Compression @ 3 GHz




### Gain & Return Loss vs. Frequency Log Scale




### Output IP3 vs. Temperature Log Scale

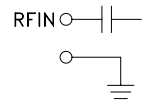
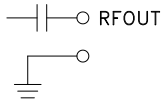
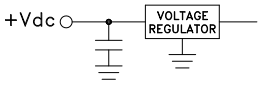
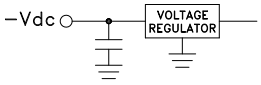


## Absolute Maximum Ratings

| | |
|---|---|
| Positive Bias Supply Voltage (+Vdc) | +16V Max |
| Negative Bias Supply (-Vdc) | -16V Min. |
| RF Input Power (RFIN) | 25 dBm |
| Thermal Resistance | 9.46 °C/W |
| Storage Temperature | -55 to +150 °C |
| Operating Temperature | -40 to +70 °C |

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

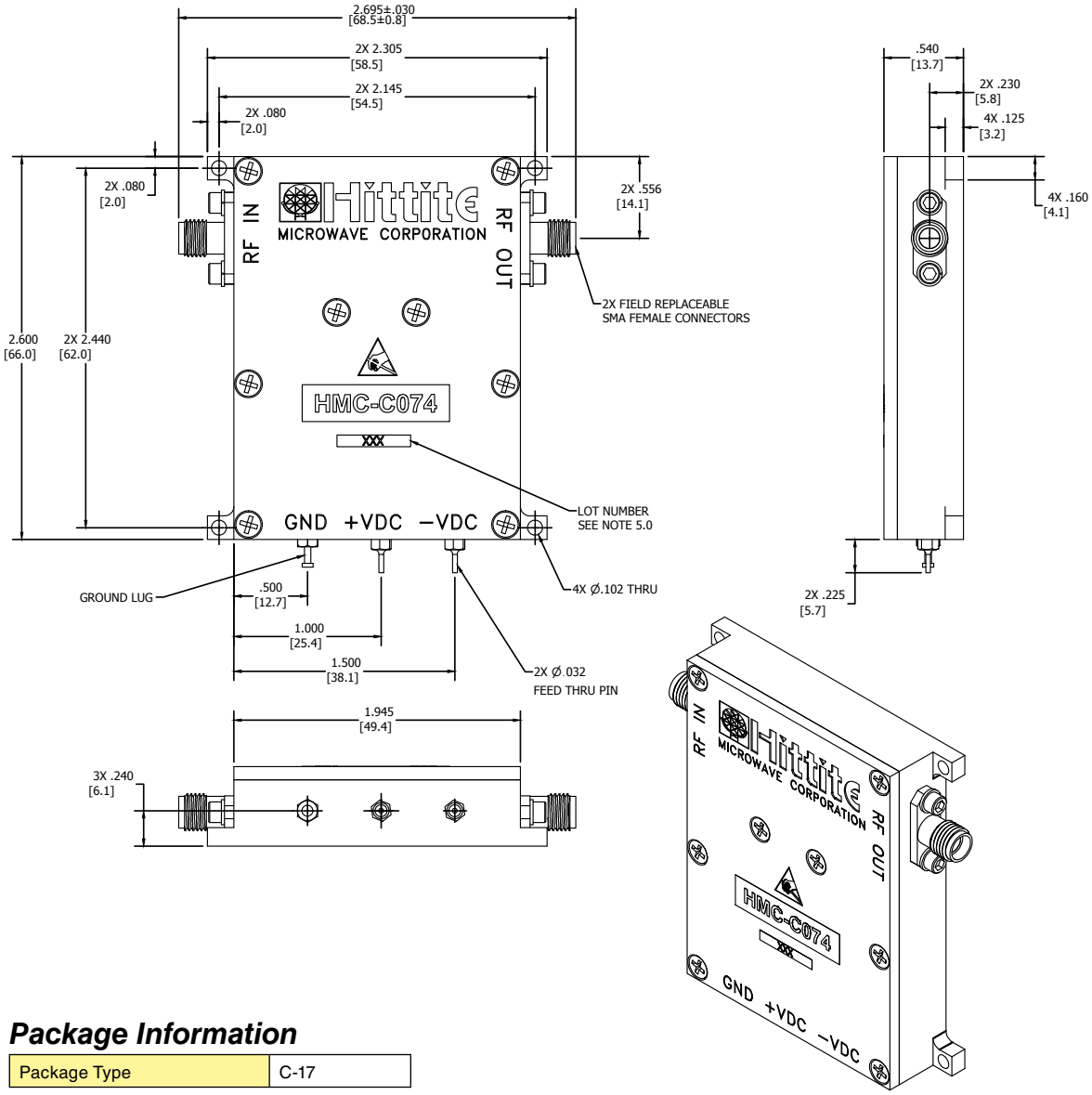
## Pin Descriptions

| Pin Number | Function | Description | Interface Schematic |
|---|---|---|---|
| 1 | RFIN & RF Ground | RF input connector, SMA female, field replaceable. This pin is AC coupled and matched to 50 Ohms. |   |
| 2 | RFOUT & RF Ground | RF output connector, SMA female. This pin is AC coupled and matched to 50 Ohms. |   |
| 3 | GND | Power supply ground. |   |
| 4 | +Vdc | Positive power supply voltage for the amplifier. (+14V to +16V) |   |
| 5 | -Vdc | Negative power supply voltage for the amplifier. (-5V to -16V) |   |

# HMC-C074

## SINGLE STAGE POWER AMPLIFIER MODULE, 10 MHz - 6 GHz

### Outline Drawing




### Package Information

| | |
|---|---|
| Package Type | C-17 |

NOTES:

1. PACKAGE, COVER MATERIAL: ALUMINUM
2. FINISH: GOLD PLATE OVER NICKEL PLATE.
3. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].
4. TOLERANCES:
   4.1 .XX = ±.02
   4.2 .XXX = ±.010
5. MARK LOT NUMBER ON 0.080 X 0.250 LABEL WHERE SHOWN, WITH 0.030" MIN TEXT HEIGHT.

**Notes:**