

Solid State Broadband High Power Amplifier

1029 - BBM3I4AAJ
400 – 1000 MHz / 10 Watts

The BBM3I4AAJ (SKU 1029) is suitable for broadband and band specific high power linear applications. This amplifier utilizes push-pull MOSFET power devices that provide high gain, wide dynamic range, low distortions, and good linearity. Exceptional performance, long term reliability and high efficiency are achieved by employing advanced broadband RF matching networks and combining techniques, EMI/RFI filters, machined housings and qualified components.



- Solid-state Class A linear design
- Instantaneous ultra broadband
- Small form factor and lightweight
- Suitable for CW, AM, and FM (Consult factory for other modulation types)
- 50 ohm input/output impedance
- High reliability and ruggedness

ELECTRICAL SPECIFICATIONS @ +28V_{DC}, 25°C, 50Ω System

| Parameter | Symbol | Min | Typ | Max | Unit |
|--|------------------|-----|------|------|------|
| Operating Frequency | BW | 400 | | 1000 | MHz |
| Power Output CW | P _{SAT} | 10 | 12 | | Watt |
| Power Output @ 1dB Gain Compression | P _{1dB} | 5 | 10 | | Watt |
| Power Gain @ 1dB Gain Compression | G _{1dB} | 40 | | | dB |
| Input Power for Rated P _{SAT} | P _{IN} | | 0 | 3 | |
| Small Signal Gain Flatness | ΔG | | ±1.0 | ±1.5 | dB |
| Gain Adjustment Range | VVA | 20 | 25 | | dB |
| Input Return Loss | S ₁₁ | | | -10 | dB |
| Noise Figure (max gain) | NF | | 7 | 10 | dB |
| Third Order Intercept Point 2-Tone @ 27dBm/Tone, 100kHz Spacing | IP3 | | +48 | | dBm |
| Harmonics @ P _{OUT} = 5W | H | | -25 | | dBc |
| Spurious Signals | Spur | | -70 | -60 | dBc |
| Operating Voltage | V _{DC} | 26 | 28 | 30 | Volt |
| Quiescent Current | I _{DQ} | | 2.5 | | Amp |
| Current Consumption @ P _{OUT} = 10W | I _{DD} | | | 3.0 | Amp |

MECHANICAL SPECIFICATIONS

| Parameter | Value | Unit |
|----------------------------|----------------------------------|-------|
| Dimension | 6.0 x 3.0 x 1.1 | Inch |
| Weight | 1.0 | Pound |
| RF Connectors Input/Output | Type-SMA, Female | |
| DC Interface Connector | D-Sub 9-Pin, Male | |
| Cooling | External Heatsink (Not Supplied) | |

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

| Parameter | Symbol | Min | Typ | Max | Unit |
|---|------------------|-----|----------|--------|------|
| Operating Case Temperature | T _C | 0 | | +75 | °C |
| Non-operating Temperature | T _{STG} | -40 | | +85 | °C |
| Relative Humidity (non-condensing) | RH | | | 95 | % |
| Altitude (MIL-STD-810F Method 500.4) | ALT | | | 30,000 | Feet |
| Vibration/Shock MIL-STD-810F - Method 514.5/516.5 – Proc I | VI/SH | | Airborne | | |

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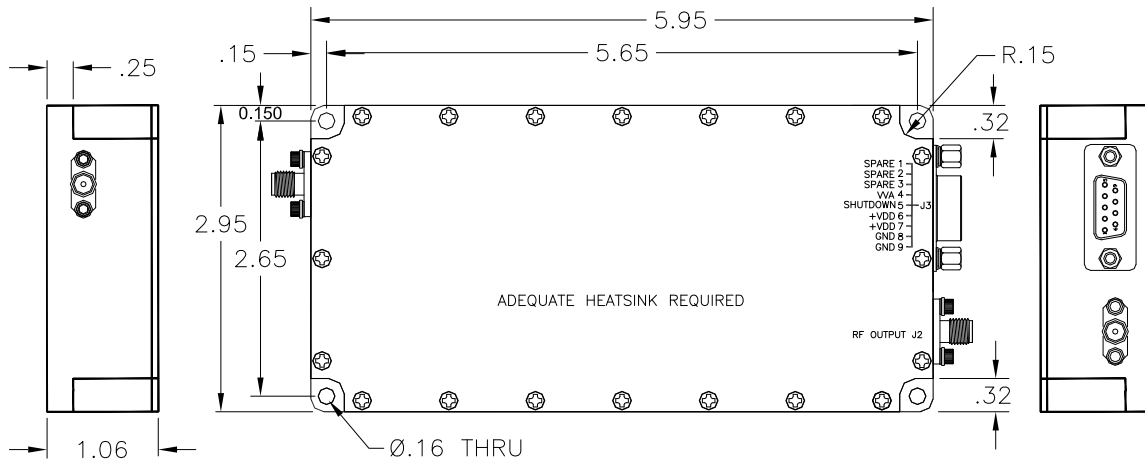
LIMITS

| | | |
|-------------------------------------|--|-----|
| Input RF drive level without damage | +10 dBm | Max |
| Load VSWR @ P _{OUT} = 5W | ∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous | - |
| Thermal Overload | 85°C shutdown | Max |

DC INTERFACE CONNECTOR – D-Sub 9-Pin, Male

| Pin # | Description | Specification |
|-------|-------------|--|
| 1-3 | N/C | No Connection |
| 4 | VVA | Continuous Control levels: 0-5V _{DC} ; Maximum Gain: 5V _{DC} , Minimum Gain: 0V _{DC} |
| 5 | Shutdown | Amplifier Disable: TTL Logic High (5V) (Internally Pulled-Low) |
| 6&7 | VDD | +26.0-30.0V _{DC} |
| 8&9 | GND | Ground |

OUTLINE DRAWING



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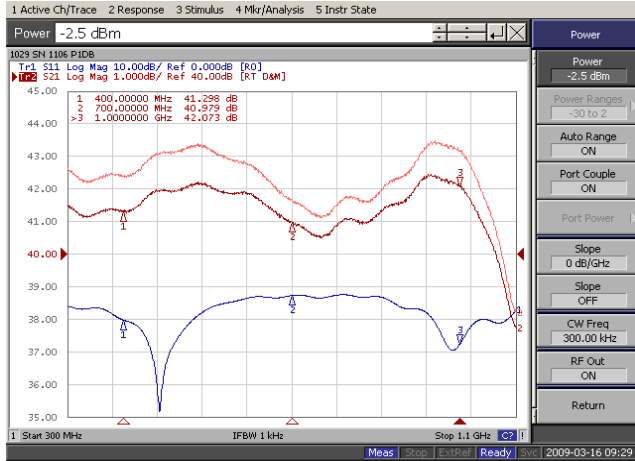
1029 - BBM314AAJ

400 – 1000 MHz / 10 Watts

TYPICAL PERFORMANCE PLOTS

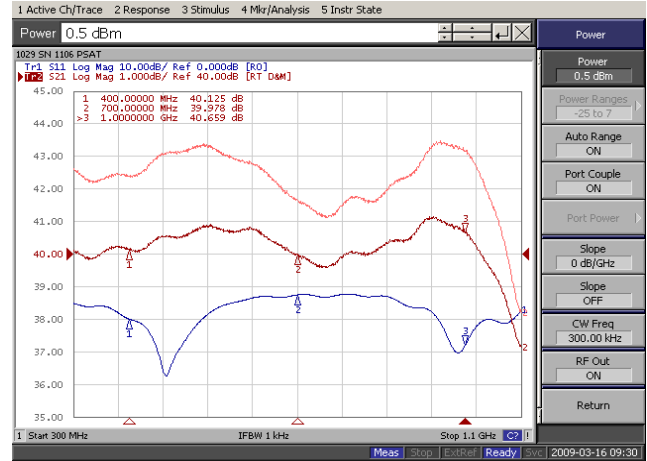
Plot 1 – Small Signal Gain and P_{1dB}

Top Curve: Small Signal Gain @ $P_{IN} = -20dBm$
 Middle Curve: Power Gain @ P_{1dB} , $P_{IN} = -2.5dBm$
 Reference: 40dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



Plot 2 – Small Signal Gain and P_{SAT}

Top Curve: Small Signal Gain @ $P_{IN} = -20dBm$
 Middle Curve: Power Gain @ P_{SAT} , $P_{IN} = 0.5dBm$
 Reference: 40dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



Plot 3 – Gain Adjustment Range

Top Curve: Max. Gain @ $VVA_{CTRL} = 5.0V$, $P_{IN} = -20dBm$
 Middle Curve: Min. Gain @ $VVA_{CTRL} = 2.5V$, $P_{IN} = -20dBm$
 Reference: 10dB, 10dB/div.
 Bottom Curve: Input Return Loss @ Minimum Gain
 Reference: 0dB, 10dB/div.

