

Features:

- **Frequency Range: 1 – 10 GHz**
- **P-1dB: 16dBm**
- **Gain: 15dB**
- **Single Positive Bias: + 6V**
- **Fully Matched Input/Output to 50 ohms**
- **Advanced 0.25 um AlGaAs / InGaAs PHEMT Technology with Excellent Reliability**
- **Surface Mount 3.0 X 3.0 X 0.8 mm Package**

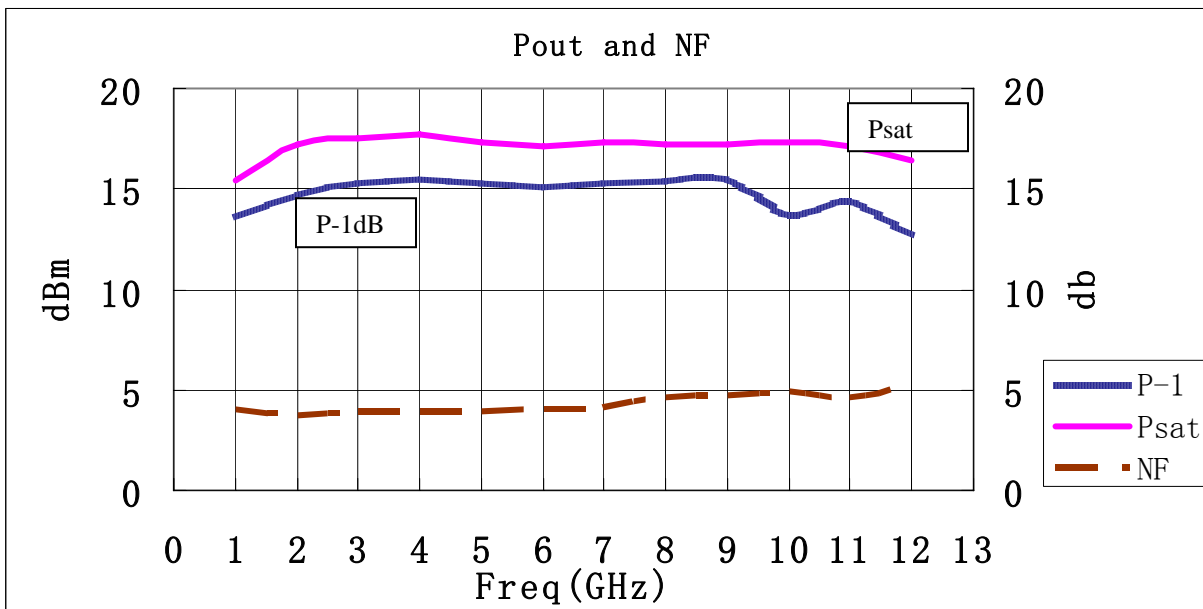
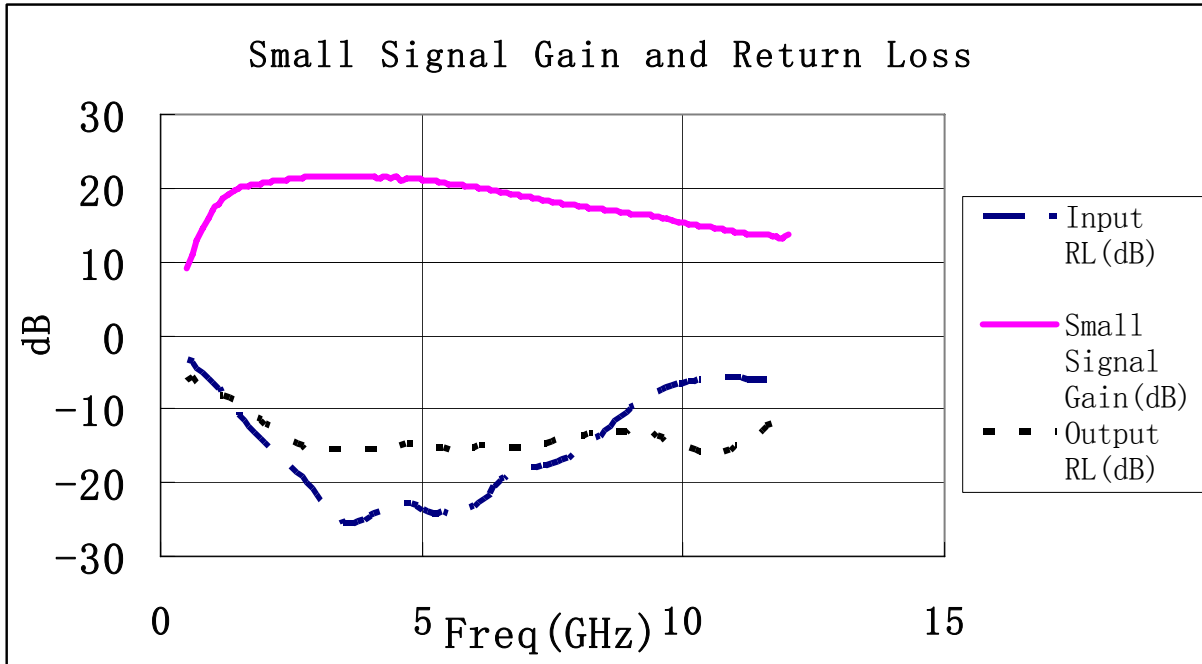
Description:

The MMA-011015-C3 is a 1-10 GHz broadband MMIC driver amplifier fabricated with advanced 0.25 um AlGaAs / InGaAs PHEMT technology with excellent reliability. The fully matched MMIC amplifier is easy to cascade with other stages and is unconditionally stable. The typical applications include test instrumentation, and commercial wireless equipment, etc.

Electrical Specifications: (Vds = 6.0V, Ids=75mA, Zo=50 ohm, TA=25 °C)

| Parameter | Units | Min. | Typ. | Max. |
|---------------------------|-------|------|------|------|
| Frequency Range (Min/Max) | GHz | 1 | | 10 |
| Small Signal Gain | dB | 10 | 15 | |
| Gain Flatness | +/-dB | | 2.5 | |
| Input Return Loss | dB | | -10 | |
| Output Return Loss | dB | | -10 | |
| Output P1dB | dBm | | +16 | |
| Noise Figure | dB | | 4.5 | |
| Quiescent Current | mA | | 75 | |
| Thermal Resistance | °C/W | | 120 | |

Typical RF Performance: ($V_{ds} = 6.0V$, $I_{ds} = 75mA$, $T_A = 25^\circ C$, 50 Ohm system unless stated otherwise)





MMA-011015-C3

1 - 10 GHz Fully Matched Driver Amplifier Data Sheet

S-parameters: (V_{ds} = 6.0V, I_{ds}=75mA, T_A=25 °C, 50 Ohm system)

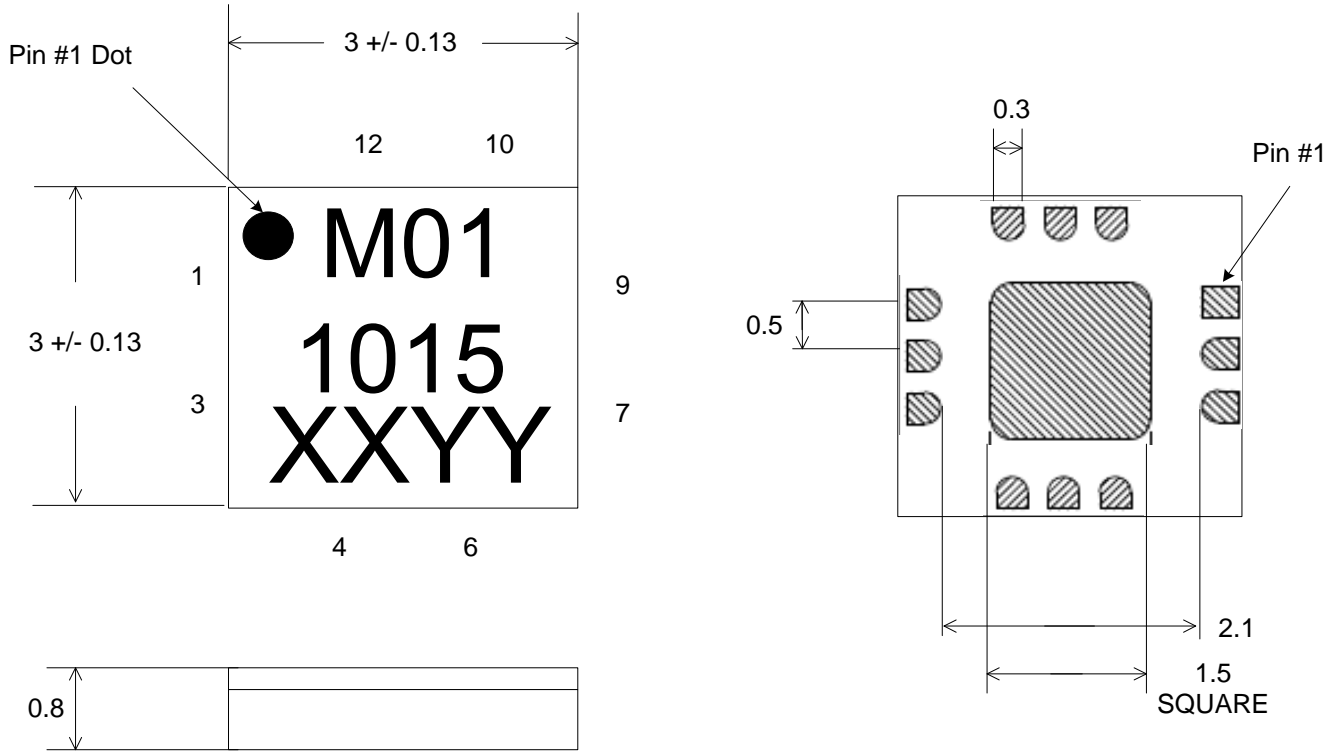
| Freq(GHz) | magS11 | angS11 | magS21 | angS21 | magS12 | angS12 | magS22 | angS22 |
|-----------|--------|--------|--------|---------|--------|---------|--------|---------|
| 1.0 | 0.47 | -174.2 | 7.00 | -9.38 | 0.006 | 84.91 | 0.42 | 18.93 |
| 1.5 | 0.29 | 120.5 | 9.87 | -74.03 | 0.014 | -18.02 | 0.33 | -81.20 |
| 2.0 | 0.19 | 71.2 | 10.91 | -131.30 | 0.018 | -85.27 | 0.25 | -156.30 |
| 2.5 | 0.13 | 25.7 | 11.51 | 178.00 | 0.018 | -138.30 | 0.19 | 148.70 |
| 3.0 | 0.08 | -11.0 | 11.88 | 127.60 | 0.017 | 175.00 | 0.17 | 102.60 |
| 3.5 | 0.05 | -27.3 | 11.83 | 78.99 | 0.016 | 129.50 | 0.17 | 65.33 |
| 4.0 | 0.06 | -41.8 | 11.93 | 31.65 | 0.014 | 84.32 | 0.17 | 29.09 |
| 4.5 | 0.07 | -82.0 | 11.89 | -16.77 | 0.013 | 40.10 | 0.18 | -12.11 |
| 5.0 | 0.07 | -145.3 | 11.31 | -64.18 | 0.013 | -5.37 | 0.18 | -52.05 |
| 5.5 | 0.06 | 131.8 | 10.74 | -111.10 | 0.012 | -55.78 | 0.17 | -90.80 |
| 6.0 | 0.07 | 56.8 | 10.14 | -157.80 | 0.011 | -104.80 | 0.17 | -135.70 |
| 6.5 | 0.10 | -6.0 | 9.38 | 157.10 | 0.010 | -147.40 | 0.17 | 175.70 |
| 7.0 | 0.13 | -61.6 | 8.76 | 113.00 | 0.010 | 166.90 | 0.17 | 127.50 |
| 7.5 | 0.13 | -123.2 | 8.07 | 68.80 | 0.010 | 122.90 | 0.19 | 82.03 |
| 8.0 | 0.16 | 168.8 | 7.53 | 26.25 | 0.009 | 80.10 | 0.21 | 39.85 |
| 8.5 | 0.23 | 104.8 | 7.09 | -17.00 | 0.009 | 39.33 | 0.21 | 0.17 |
| 9.0 | 0.32 | 48.0 | 6.61 | -60.04 | 0.007 | 3.40 | 0.23 | -35.98 |
| 9.5 | 0.41 | -1.4 | 6.33 | -104.30 | 0.008 | -33.67 | 0.21 | -84.15 |
| 10.0 | 0.47 | -46.7 | 5.84 | -147.80 | 0.007 | -72.67 | 0.17 | -139.60 |

Absolute Maximum Ratings (*):

| SYMBOL | PARAMETER | UNITS | ABSOLUTE MAXIMUM |
|---------------------|-----------------------|-------|------------------|
| V _{ds} | Drain-Source Voltage | V | 8.0 |
| I _{ds} | Drain Current | mA | 150 |
| P _{in max} | RF Input Power | dBm | +12 |
| T _{oper} | Operating Temperature | °C | -40 to +85 |
| T _{ch} | Channel Temperature | °C | 175 |
| T _{stg} | Storage Temperature | °C | -60 to 150 |

(*) Operation of this device above any one of these parameters may cause permanent damage.

Package Pin-out:



| Pin | Description |
|-----------------------------|-------------|
| 2 | RF Input |
| 8 | RF Output |
| 10 | Vd |
| 1, 3, 7, 9, 13 (center pad) | Ground |
| 4, 5, 6, 11, 12 | N/C |

Application Circuit:

