

## Features:

- Frequency Range: 2400 – 2700 MHz
- P1dB: +33 dBm
- Pave: +26 dBm @ 2.5% EVM under 802.16/64 QAM
- OIP3: +44 dBm
- Gain: 14 dB
- Vdd = +7.5V
- Input and Output Fully Matched to 50  $\Omega$
- MTTF > 100 years @ 85°C ambient temperature
- RoHS Compliant Surface-Mount QFN 5X5mm Package



## Applications:

- WiMax
- WLAN
- Wireless Security Systems
- ISM Band Applications

## Description:

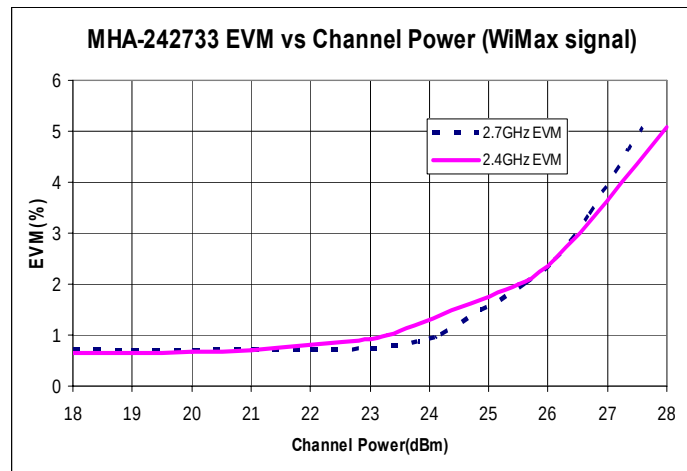
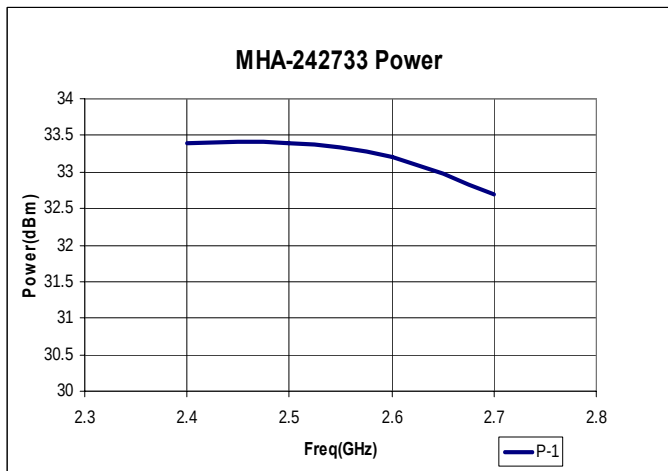
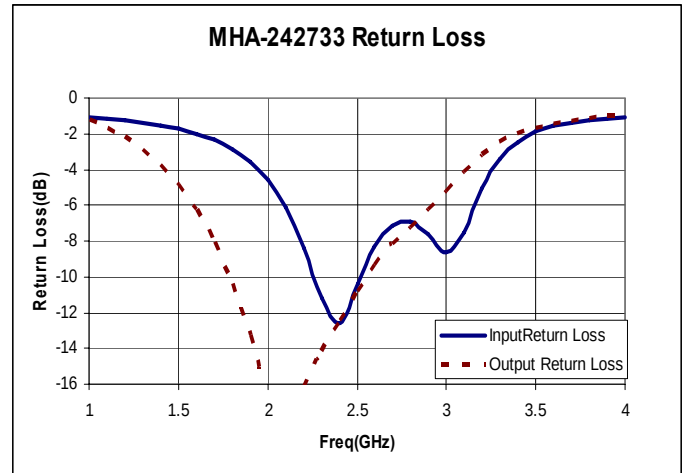
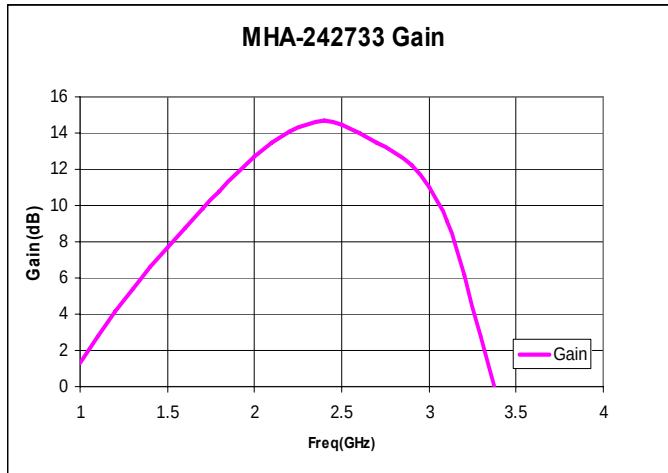
The MMA-242733-Q5 is a high linearity InGaP HBT MMIC amplifier. It is in a low cost QFN 5X5mm Green Package. Applications include the driver and the output stage of the power amplifiers for WLAN and WiMax infrastructure base stations and access points. The third order intercept performance of the MMA-242733-Q5 is excellent and is typically 11 dB above the 1 dB gain compression point. It provides +33 dBm P1dB, +44 dBm OIP3 and output power of +26 dBm @ 2.5% EVM under 802.16/64 QAM test signal.

## ELECTRICAL SPECIFICATIONS: Vcc=7.5V,, Icq=640mA, Ta=25 °C, Z0=50 ohm

| Parameter                           | Units  | Typical Data |
|-------------------------------------|--------|--------------|
| Frequency Range                     | MHz    | 2400-2700    |
| Gain (Typ / Min)                    | dB     | 14 / 12      |
| Gain Flatness (Typ / Max)           | +/- dB | 1.0 / 1.5    |
| Input Return Loss                   | dB     | 8            |
| Output Return Loss                  | dB     | 8            |
| Output P1dB                         | dBm    | 33           |
| Output IP3 <sup>(1)</sup>           | dBm    | 44           |
| Pout @ 2.0% EVM                     | dBm    | 25           |
| Operating Current Range (Typ / Max) | mA     | 640 / 800    |
| Thermal Resistance                  | °C / W | 12           |

(1) Output IP3 is measured with two tones at output power of 13 dBm/tone separated by 10 MHz.

**Typical RF Performance:**  $V_{ds}=7.5.0V$ ,  $I_{cq}=640mA$ ,  $Z_0=50\text{ ohm}$ ,  $T_a=25\text{ }^{\circ}C$



## Absolute Maximum Ratings: ( $T_a = 25^\circ\text{C}$ )\*

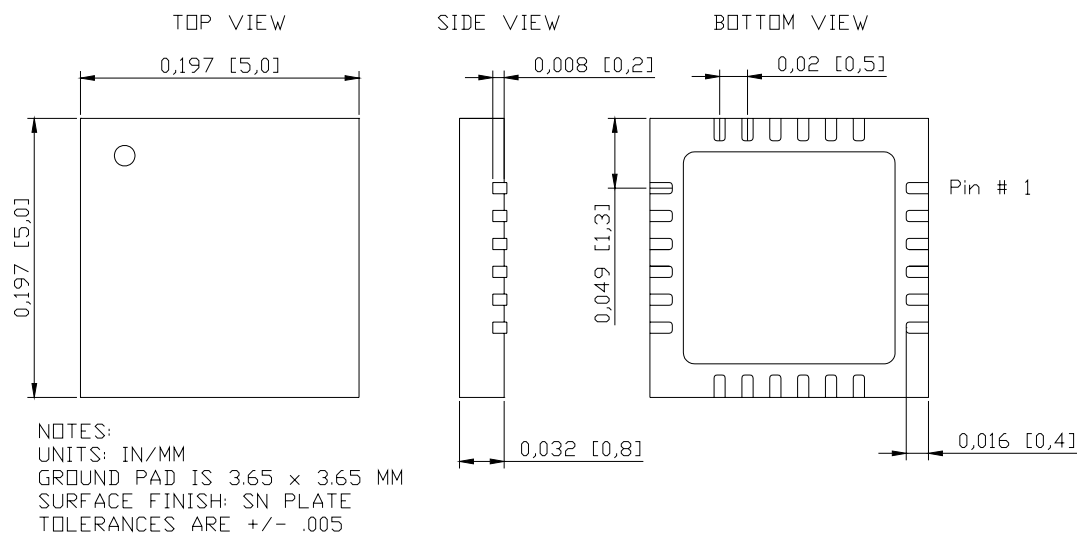
| SYMBOL              | PARAMETERS           | UNITS | ABSOLUTE MAXIMUM |
|---------------------|----------------------|-------|------------------|
| V <sub>cc</sub>     | Drain-Source Voltage | V     | 9.0              |
| I <sub>cc</sub>     | Drain Current        | mA    | 1000             |
| I <sub>pc</sub>     | Gate Current         | mA    | 9.0              |
| P <sub>diss</sub>   | DC Power Dissipation | W     | 6.0              |
| P <sub>in max</sub> | RF Input Power       | dBm   | +30.0            |
| T <sub>ch</sub>     | Channel Temperature  | °C    | 150.0            |
| T <sub>stg</sub>    | Storage Temperature  | °C    | -60.0 to 150.0   |

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

## Typical Scattering Parameters: $V_{ds}=7.5\text{V}$ , $I_{cq}=640\text{mA}$ , $Z_0=50\text{ ohm}$ , $T_a=25^\circ\text{C}$

| Freq(GHz) | dB(S11) | Ang(S11) | dB(S21) | Ang(S21) | dB(S12) | Ang(S12) | dB(S22) | Ang(S22) |
|-----------|---------|----------|---------|----------|---------|----------|---------|----------|
| 1.5       | -1.74   | 44.6     | 7.71    | -5.9     | -55.30  | -7.9     | -4.8    | 67.4     |
| 1.6       | -2.01   | 26.0     | 8.80    | -28.9    | -53.60  | -41.4    | -6.2    | 51.7     |
| 1.7       | -2.36   | 6.5      | 9.85    | -52.7    | -53.70  | -70.5    | -8.1    | 34.4     |
| 1.8       | -2.86   | -14.1    | 10.80   | -77.4    | -53.70  | -92.8    | -10.4   | 14.2     |
| 1.9       | -3.56   | -36.1    | 11.80   | -103.0   | -52.70  | -128.0   | -13.3   | -10.5    |
| 2.0       | -4.59   | -60.3    | 12.70   | -129.0   | -52.00  | -177.0   | -16.6   | -45.4    |
| 2.1       | -6.14   | -88.6    | 13.50   | -157.0   | -49.40  | 143.0    | -18.1   | -95.8    |
| 2.2       | -8.40   | -124.0   | 14.10   | 173.0    | -47.10  | 102.0    | -16.2   | -138.0   |
| 2.3       | -11.20  | -171.0   | 14.50   | 143.0    | -44.30  | 65.0     | -14.1   | -163.0   |
| 2.4       | -12.60  | 123.0    | 14.70   | 111.0    | -42.20  | 32.1     | -12.4   | -180.0   |
| 2.5       | -10.40  | 64.8     | 14.50   | 79.0     | -40.60  | -1.1     | -10.8   | 168.0    |
| 2.6       | -8.32   | 24.1     | 14.00   | 47.3     | -39.60  | -31.8    | -9.3    | 158.0    |
| 2.7       | -7.13   | -7.9     | 13.50   | 15.7     | -38.90  | -61.0    | -8.2    | 150.0    |
| 2.8       | -6.88   | -33.3    | 12.90   | -16.5    | -38.60  | -88.8    | -7.2    | 142.0    |
| 2.9       | -7.63   | -51.4    | 12.20   | -50.5    | -38.40  | -119.0   | -6.2    | 134.0    |
| 3.0       | -8.66   | -57.6    | 11.00   | -87.0    | -39.10  | -151.0   | -5.2    | 128.0    |
| 3.1       | -7.52   | -56.1    | 9.12    | -125.0   | -41.10  | 176.0    | -4.1    | 120.0    |
| 3.2       | -5.07   | -65.9    | 6.18    | -160.0   | -44.70  | 146.0    | -3.2    | 110.0    |
| 3.3       | -3.41   | -82.7    | 2.78    | 169.0    | -49.10  | 127.0    | -2.5    | 99.5     |
| 3.4       | -2.45   | -101.0   | -0.75   | 143.0    | -56.40  | 109.0    | -2.0    | 89.8     |
| 3.5       | -1.89   | -118.0   | -4.24   | 120.0    | -64.90  | 156.0    | -1.7    | 80.9     |

**Mechanical Information:** *This Package is RoHS compliant*



**All dimensions are in mm**

| Pin Assignment |          |       |          |
|----------------|----------|-------|----------|
| Pin #          | Function | Pin # | Function |
| 1              | N/A      | 13    | N/A      |
| 2              | N/A      | 14    | N/A      |
| 3              | RF in    | 15    | RF out   |
| 4              | RF in    | 16    | RF out   |
| 5              | N/A      | 17    | N/A      |
| 6              | N/A      | 18    | N/A      |
| 7              | N/A      | 19    | N/A      |
| 8              | N/A      | 20    | N/A      |
| 9              | N/A      | 21    | N/A      |
| 10             | Vcc      | 22    | Vpc      |
| 11             | N/A      | 23    | N/A      |
| 12             | N/A      | 24    | N/A      |