# 900MHz Band GaAs Power Amplifier IC

## DESCRIPTION

MGF7100 Series monolithic microwave integrated circuits are for use in 824-849 MHz, 872-905 MHz and 890-915 MHz applications.

## APPLICATION

- RF output stage of Handheld phone

Note: This is not a final specification.
Some parametric limits are subject to change

## FEATURES

- High output power ($P_o$ = 31.5dBm TYP.)
- High efficiency ($\eta$ t - 60% TYP.)
- Small size (11.1 x 14.3 x 2.0mm)
- Surface mount package

## ABSOLUTE MAXIMUM RATINGS ($T_a$ = 25°C)

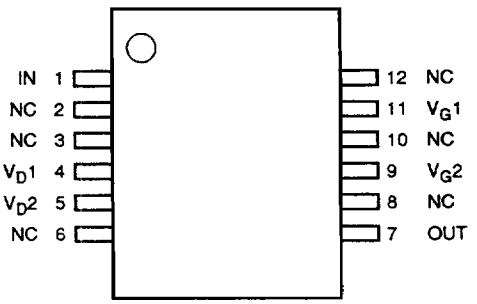
| SYMBOL | PARAMETER | RATINGS | UNIT |
|---|---|---|---|
| $V_D$1,2 | Drain operating voltage | 10 | V |
| $V_G$1,2 | Gate operating voltage | –6 | V |
| $P_{IN}$ | Input power | 13 | dBm |
| $T_{c(op)}$ | Operating temperature | –30 ~ +110 | °C |
| $T_{stg}$ | Storage temperature | –40 ~ +120 | °C |

## ELECTRICAL CHARACTERISTICS ( $T_a$=25°C)

| Symbol | Item | Test Conditions | Limits | | | Units |
|---|---|---|---|---|---|---|
| | | | Min | Typ | Max | |
| AMPS | Frequency | MGF7103 | 824 | | 849 | MHz |
| E-TACS | | MGF7104 | 872 | | 905 | |
| NMT-900 | | MGF7105 | 890 | | 915 | |
| $P_O$ | Output power | $V_D$1 = $V_D$2 = 5.8V, $P_{IN}$ = 7dBm (Note 1) | 31.0 | 31.5 | | dBm |
| $\eta$t | Efficiency | $V_D$1 <5.8V, $V_D$2 = 5.8V<br>$P_{IN}$ = 7dBm, $P_O$ = 30.5dBm (Note 1) | 50 | 60 | | % |
| 2SP, 3SP, 4SP | Harmonics | | | | –30 | dBc |
| $I_{GG}$ | Gate current | | | | 5 | mA |
| $V_G$2 | Gate voltage | $V_D$2 = 5.8V, $I_D$2 = 200mA (Note 1) | –3.25 | | –2.0 | V |
| $R_{PC}$ | Power Control | $V_D$2 = 5.8V, $V_D$1 = 0 to 5.8V<br>$P_{IN}$ = 7dBm, ZG = ZL = 50 Ω | 20 | | | dB |

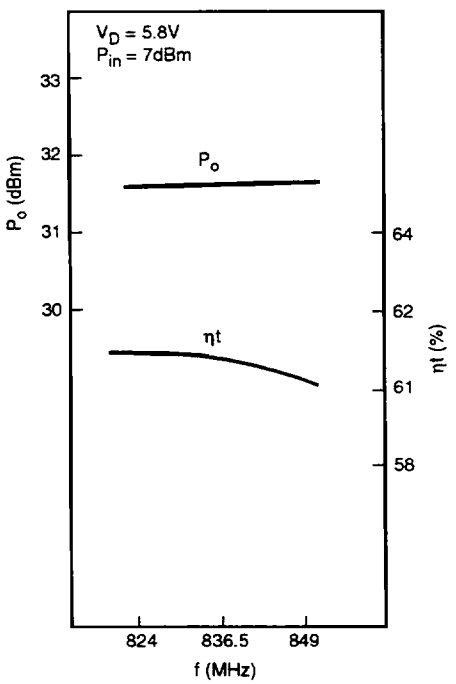
Note 1: Idle Current: $I_D$1 = 60mA, $I_D$2 = 200mA, ZG = ZL = 50Ω

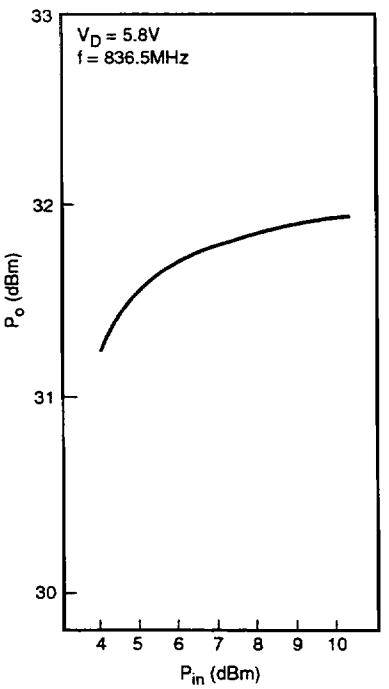
**PIN CONFIGURATION (TOP VIEW)**

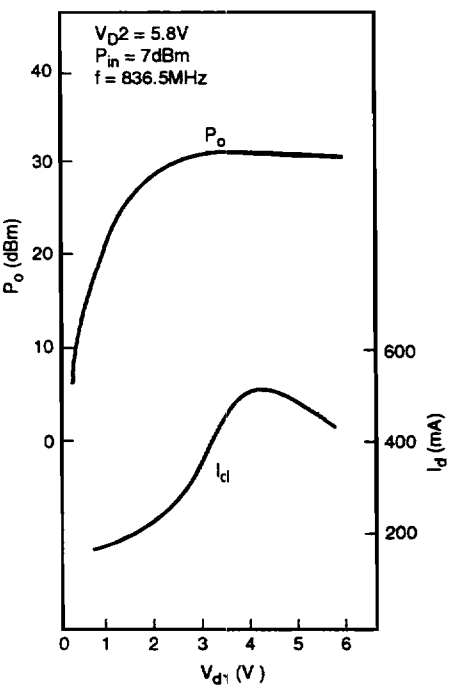



$V_D1$ ~ $V_D2$: DRAIN BIAS
$V_G1$ ~ $V_G2$: GATE BIAS
CASE: GND
NC: NO CONNECTION

## TYPICAL CHARACTERISTICS



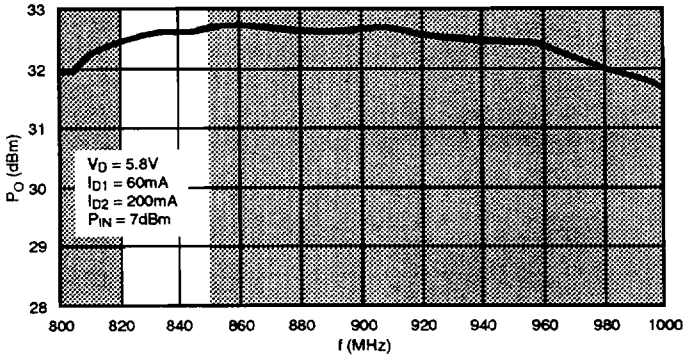



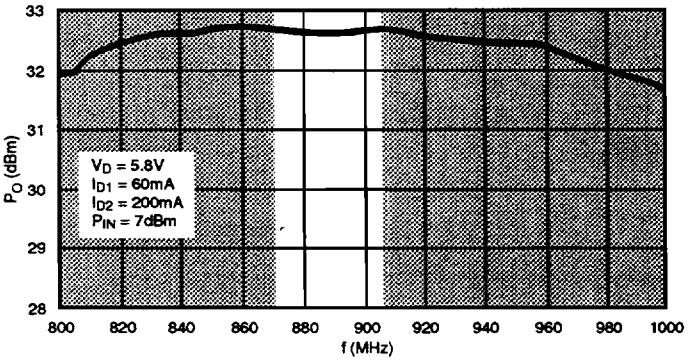

APC Characteristics

## TYPICAL CHARACTERISTICS

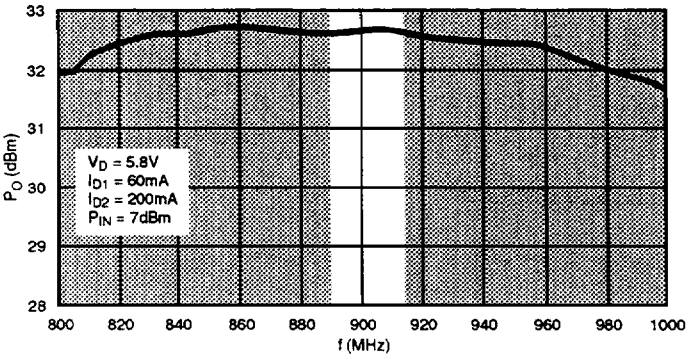
**MGF7103**
**Typical Frequency vs. Output Power Curve**



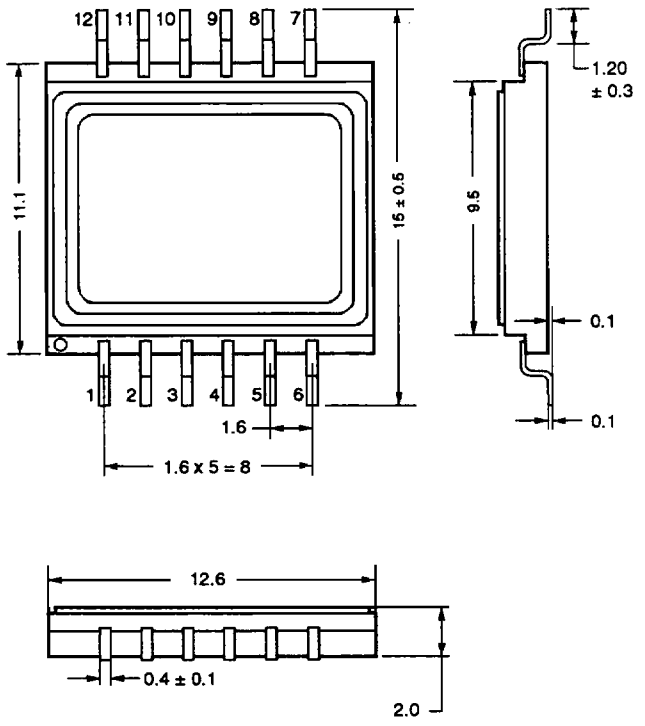

**MGF7104**
**Typical Frequency vs. Output Power Curve**




**MGF7105**
**Typical Frequency vs. Output Power Curve**



## OUTLINE DRAWING




## ORDERING INFORMATION

| Part Number | Grade | Tested at | $P_{1dB}$ | Notes |
|---|---|---|---|---|
| MGF7103-01 | Industrial | 824 – 849 MHz | 31.5 dBm | |
| MGF7104-01 | Industrial | 872 – 905 MHz | 31.5 dBm | |
| MGF7105-01 | Industrial | 890 – 915 MHz | 31.5 dBm | |