

Technical Data

MRFIC0970/D
Rev. 0, 07/2002

3.2 V GSM GaAs
Integrated Power
Amplifier



MRFIC0970



(Scale 2:1)

Package Information

Plastic Package
Case 1308
(QFN-20)

Ordering Information

Device	Marking	Package
MRFIC0970	0970	QFN-20

The MRFIC0970 is a single supply, RF power amplifier designed for the 2.0 W GSM900 handheld radios. The device is packaged in the QFN-20 package, with exposed backside pad, which allows excellent electrical and thermal performance through a solderable contact.

- Target 3.2 V Characteristics:
 - RF Output Power: 34.5 dBm Typical
 - Efficiency: 50% Typical
- Single Positive Supply Solution
- Available in Tape and Reel only. R2 Suffix = 2500 Units per 12 mm, 13 inch Reel

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Table 3. Electrical Specifications

($V_{D1,2,3} = 3.2\text{ V}$, $V_{abc} = 2.6\text{ V}$, $P_{in} = 5.0\text{ dBm}$, Peak measurement at 12.5% duty cycle, 4.6 ms period, $T_A = 25^\circ\text{C}$, unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	880	-	915	MHz
Output Power	P_{out}	34.5	-	-	dBm
Power Added Efficiency	PAE	50	-	-	%
Minimum Output Power ($V_{ref} = 0.04$, $V_{abc} = 2.6\text{ V}$)		-	-	-17	dBm
Power Control Slope ($V_{ref} = 0.1$ to 1.8 V , $\Delta V_{ref} = 0.01\text{ V}$)		-	-	50:1	$\frac{RFV_{rms}}{V_{ref}}$
Bleed thru Power ($P_{in(f_0)} \leq -12\text{ dBm}$, $V_{ref} = 0.04$, $V_{abc} = 10\text{ k load}$)		-	-	-36	dBm
RF Leakage Current ($I_{DD1} + I_{DD2} + I_{DD3}$, $P_{in}(f_0) \leq 5.0\text{ dBm}$) ($V_{abc} = 10\text{ k load}$, $V_{ref} = 0.04\text{ V}$)		-	-	35	mA
Output Power Switching Speed (\pm step input of V_{ref} RF P_{out} within 1.0 dB of final value)		-	-	1.0	μs
Input Return Loss	S11	-	-	6.0	dB
Noise Power in Rx band 925 to 935 MHz 935 to 960 MHz	NP	-	-	-73 -85	dBm
Stability-Spurious Output (Load VSWR 6:1 all phase angles, Adjust $V_{D1, 2\&3}$ for specified power)	P_{spur}	-	-	-30	dBc
Load Mismatch Stress (Load VSWR = 10:1 all phase angles, 5 seconds, Adjust $V_{D1, 2\&3}$ for specified power)	No Degradation in Output Power Before & After Test				

2 Pin Connections

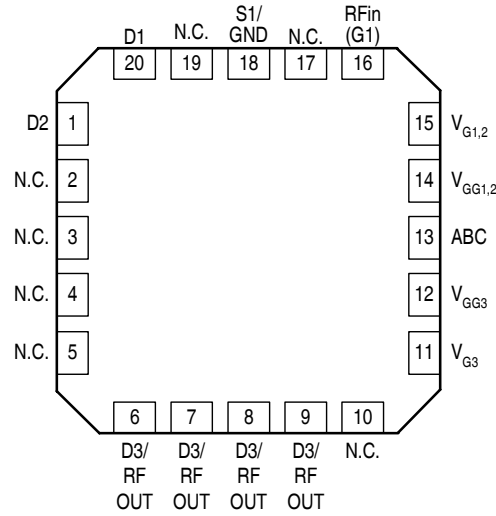


Figure 2. Pin Connections

3 Typical Performance Characteristics

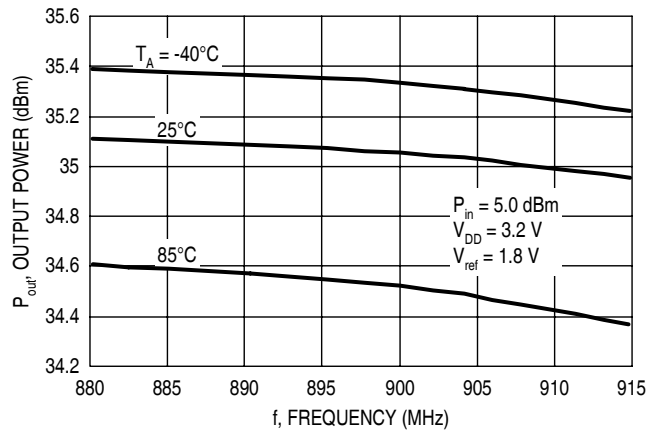


Figure 3. Output Power versus Frequency

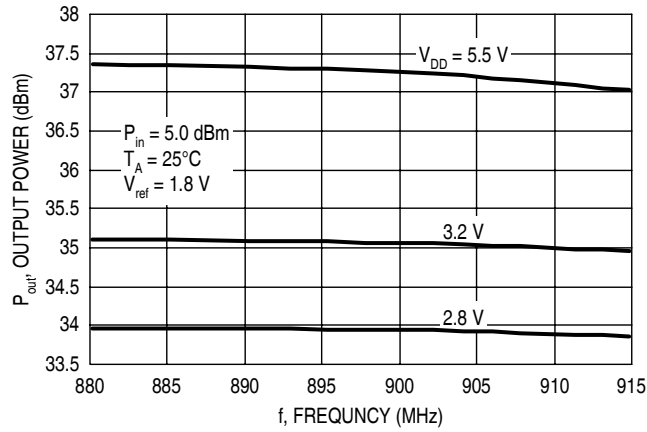


Figure 4. Output Power versus Frequency

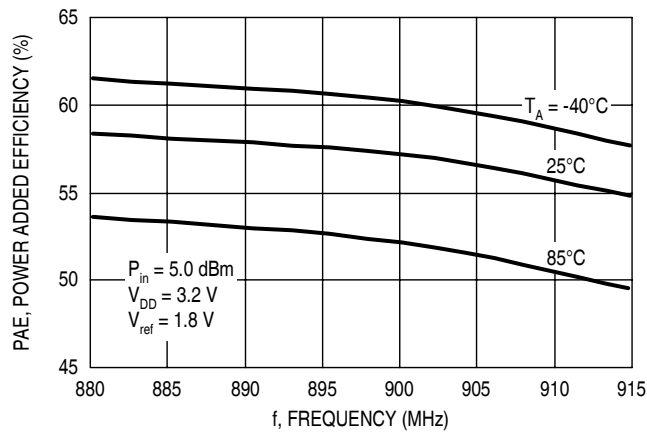


Figure 5. Power Added Efficiency versus Frequency

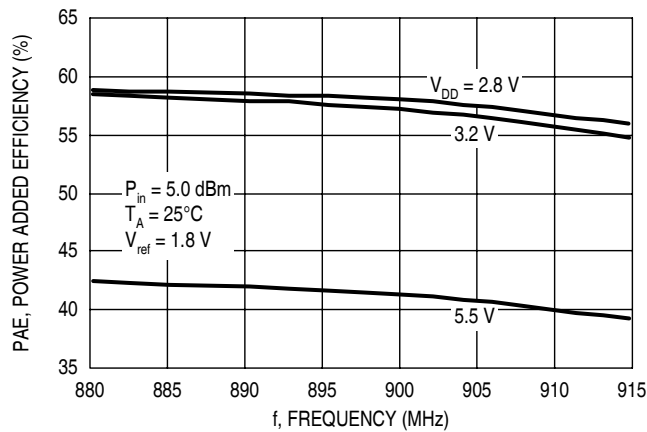


Figure 6. Power Added Efficiency versus Frequency

4 Application Schematic

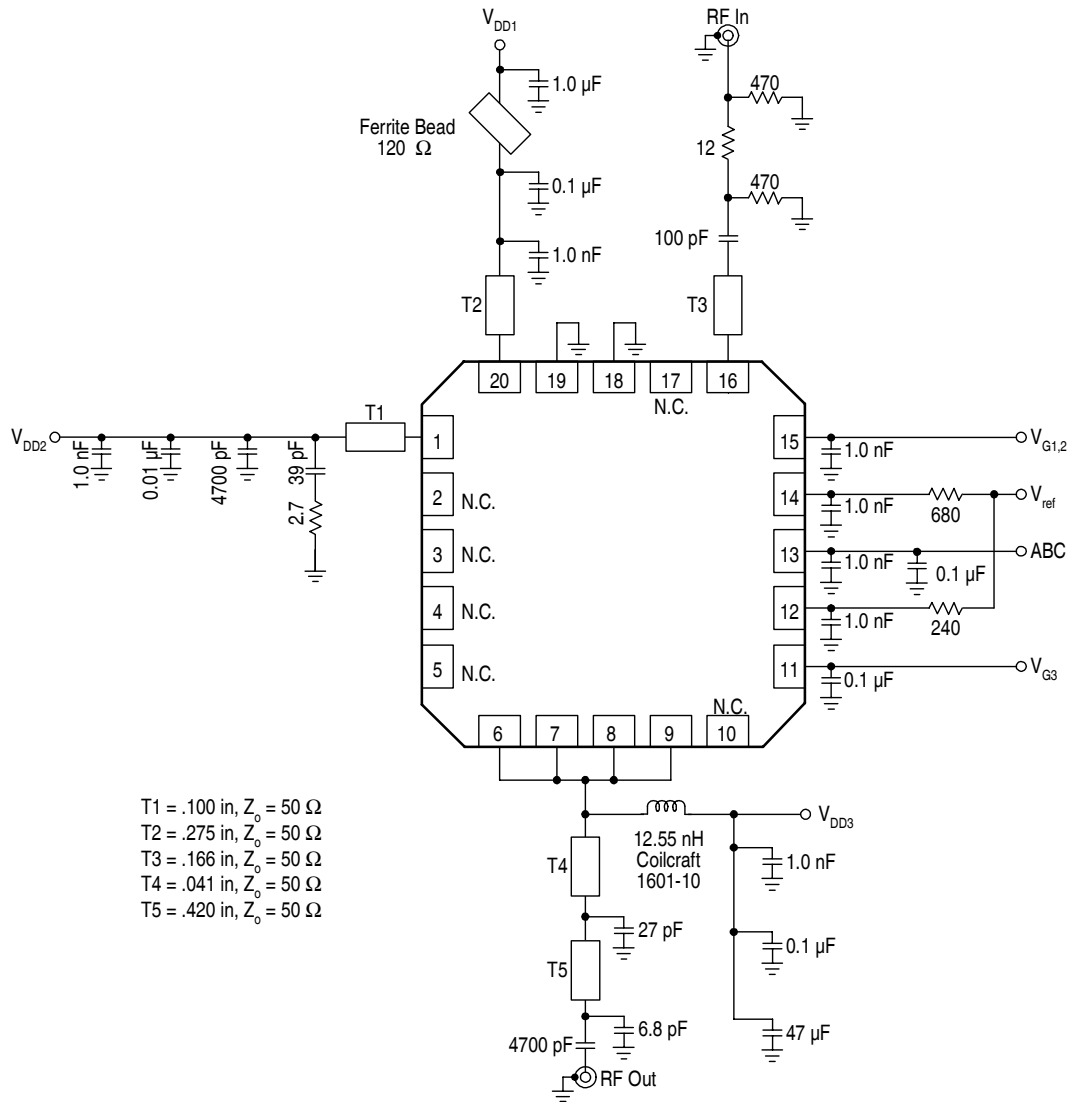
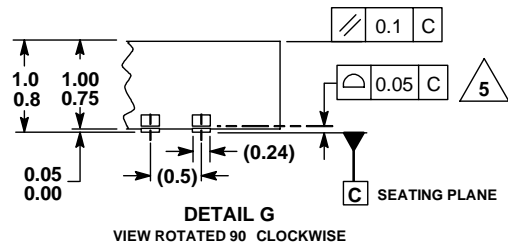
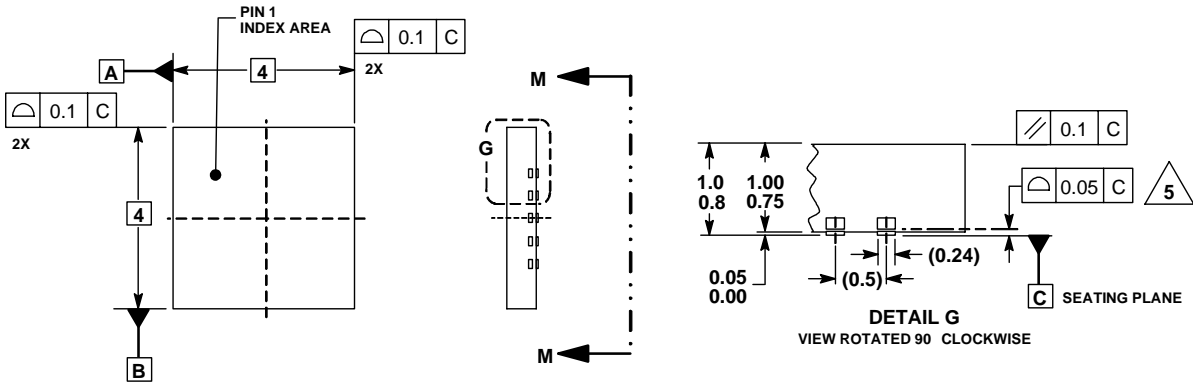


Figure 7. Application Schematic

5 Packaging



- NOTES:
1. DIMENSIONS ARE IN MILLIMETERS.
 2. DIMENSIONS AND TOLERANCES PER ASME Y14.5M, 1994.
 3. THE COMPLETE JEDEC DESIGNATOR FOR THIS PACKAGE IS: HF-PQFP-N.
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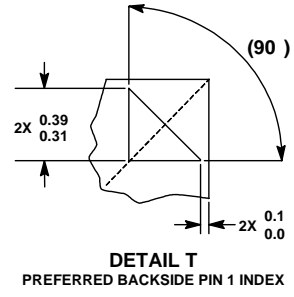
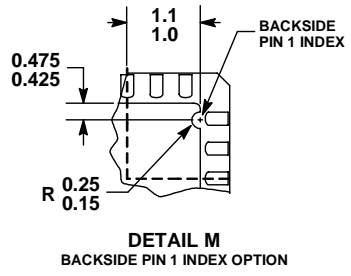
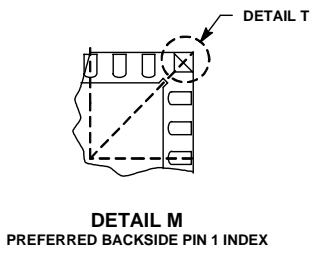
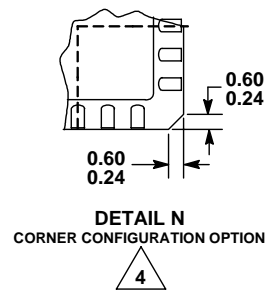
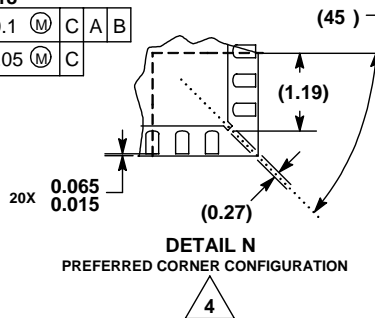
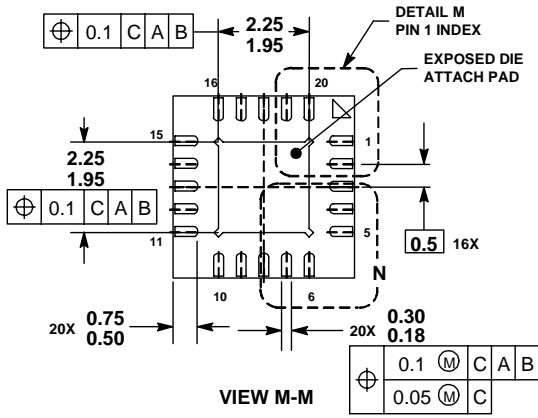


Figure 8. Outline Dimensions for QFN-20 (Case 1308-02, Issue C)

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