



RF Power Field Effect Transistor LDMOS, 800—2200 MHz, 2W, 28V

4/14/05

Preliminary

MAPLST0822-002PP



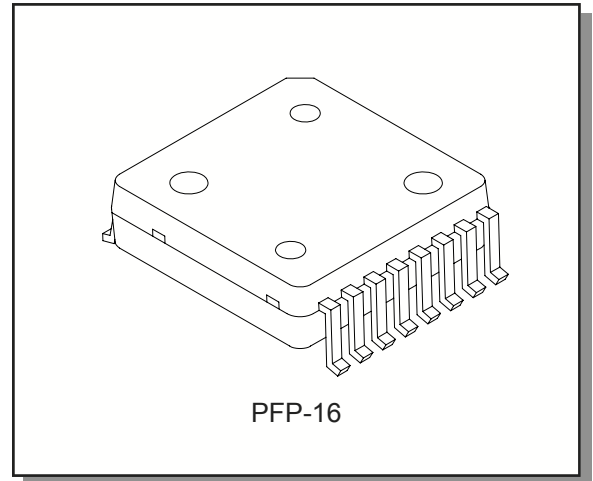
Features

- Designed for broadband commercial applications up to 2.2GHz
- High Gain, High Efficiency and High Linearity
- Ease of Design for Gain and Insertion Phase Flatness
- Excellent Thermal Stability

- W-CDMA Performance at 2.17GHz, 28Vdc
 - Average Output Power: 28dBm @ -39dBc ACPR
 - Gain: 14.5dB (typ.)
 - Efficiency: 23% (typ.)
 - 10:1 VSWR Ruggedness at 2W (CW), 28V, 2.11GHz

- Performance at 960MHz, 26Vdc, P_{1dB}
 - Average Output Power: 2W min.
 - Gain: 20dB (typ.)
 - Efficiency: 50% (typ.)
 - 10:1 VSWR Ruggedness at 2W, 26V, 960MHz

Package Style



Maximum Ratings

Parameter	Symbol	Rating	Units
Drain—Source Voltage	V _{DSS}	65	V _{dc}
Gate—Source Voltage	V _{GS}	+15, -0.5	V _{dc}
Total Power Dissipation @ T _C = 25 °C	P _D	6.9	W
Storage Temperature	T _{STG}	-65 to +150	°C
Junction Temperature	T _J	150	°C

Thermal Characteristics

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R _{θJC}	18	°C/W

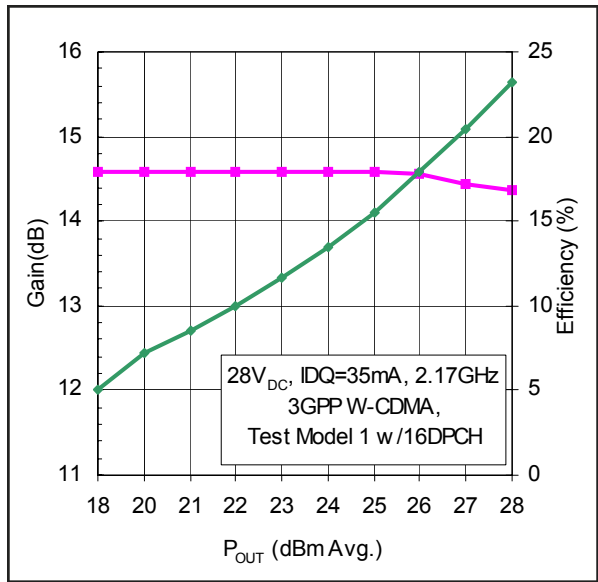
NOTE—CAUTION—MOS devices are susceptible to damage from electrostatic charge. Precautions in handling and packaging MOS devices should be observed.

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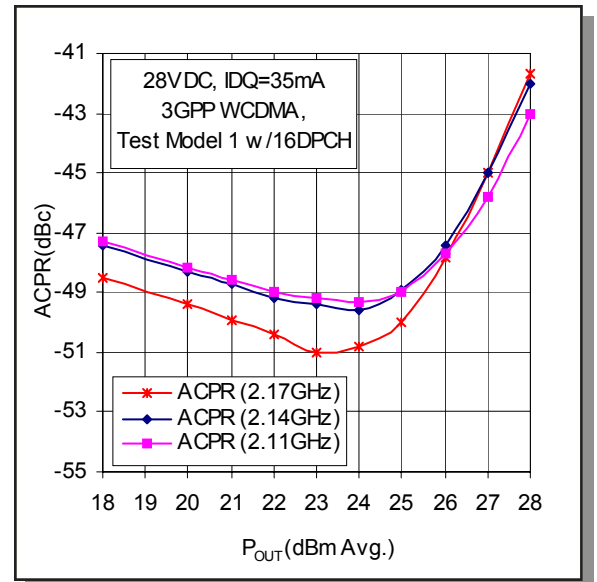
Characteristic	Symbol	Min	Typ	Max	Unit
DC CHARACTERISTICS @ 25°C					
Drain-Source Breakdown Voltage ($V_{GS} = 0$ Vdc, $I_D = 30$ μ Adc)	$V_{(BR)DSS}$	65	—	—	Vdc
Gate Threshold Voltage ($V_{ds} = 26$ Vdc, $I_d = 25$ mA)	$V_{GS(th)}$	2	—	5	Vdc
Gate Quiescent Voltage ($V_{ds} = 26$ Vdc, $I_d = 25$ mA)	$V_{GS(Q)}$	3	—	5	Vdc
Drain-Source On-Voltage ($V_{gs} = 10$ Vdc, $I_d = 0.1$ A)	$V_{DS(on)}$	—	0.30	—	Vdc

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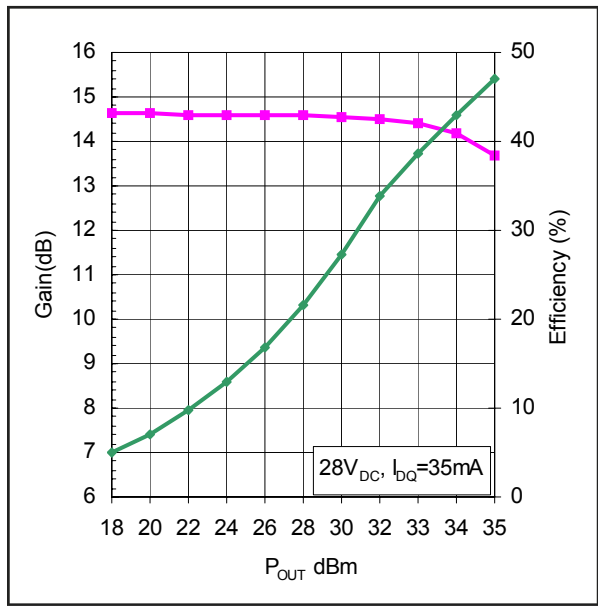
Characteristic	Symbol	Min	Typ	Max	Unit
RF FUNCTIONAL TESTS @ 25°C (In M/A-COM Test Fixture)					
Common Source Amplifier Gain ($V_{DD} = 28$ Vdc, $I_{DQ} = 35$ mA, $f = 2170$ MHz, $P_{OUT} = 2$ W)	G_P	—	14	—	dB
Drain Efficiency ($V_{DD} = 28$ Vdc, $I_{DQ} = 35$ mA, $f = 2170$ MHz, $P_{OUT} = 2$ W)	EFF (η)	—	38	—	%
Input Return Loss ($V_{DD} = 28$ Vdc, $I_{DQ} = 35$ mA, $f = 2170$ MHz, $P_{OUT} = 2$ W)	IRL	—	-9	—	dB
Output VSWR Tolerance ($V_{DD} = 28$ Vdc, $I_{DQ} = 35$ mA, $f = 2170$ MHz, $P_{OUT} = 2$ W, VSWR = 10:1, All Phase Angles at Frequency of Tests)	Ψ	No Degradation In Output Power Before and After Test			
RF FUNCTIONAL TESTS @ 25°C (In M/A-COM Test Fixture shown in Figure 10)					
Common Source Amplifier Gain ($V_{DD} = 26$ Vdc, $I_{DQ} = 35$ mA, $f = 1900$ MHz, $P_{OUT} = 2$ W)	G_P	—	14.5	—	dB
Drain Efficiency ($V_{DD} = 26$ Vdc, $I_{DQ} = 35$ mA, $f = 1900$ MHz, $P_{OUT} = 2$ W)	EFF (η)	—	40	—	%
Input Return Loss ($V_{DD} = 26$ Vdc, $I_{DQ} = 35$ mA, $f = 1900$ MHz, $P_{OUT} = 2$ W)	IRL	—	-10	—	dB
Output VSWR Tolerance ($V_{DD} = 26$ Vdc, $I_{DQ} = 35$ mA, $f = 1900$ MHz, $P_{OUT} = 2$ W, VSWR = 10:1, All Phase Angles at Frequency of Tests)	Ψ	No Degradation In Output Power Before and After Test			
RF FUNCTIONAL TESTS @ 25°C (In M/A-COM Test Fixture)					
Common Source Amplifier Gain ($V_{DD} = 26$ Vdc, $I_{DQ} = 35$ mA, $f = 1670$ MHz, $P_{OUT} = 2$ W)	G_P	—	15	—	dB
Drain Efficiency ($V_{DD} = 26$ Vdc, $I_{DQ} = 35$ mA, $f = 1670$ MHz, $P_{OUT} = 2$ W)	EFF (η)	—	45	—	%
Input Return Loss ($V_{DD} = 26$ Vdc, $I_{DQ} = 35$ mA, $f = 1670$ MHz, $P_{OUT} = 2$ W)	IRL	—	-11	—	dB
Output VSWR Tolerance ($V_{DD} = 26$ Vdc, $I_{DQ} = 35$ mA, $f = 1670$ MHz, $P_{OUT} = 2$ W, VSWR = 10:1, All Phase Angles at Frequency of Tests)	Ψ	No Degradation In Output Power Before and After Test			
RF FUNCTIONAL TESTS @ 25°C (In M/A-COM Test Fixture shown in Figure 12)					
Common Source Amplifier Gain ($V_{DD} = 26$ Vdc, $I_{DQ} = 50$ mA, $f = 960$ MHz, $P_{OUT} = 2$ W)	G_P	—	20	—	dB
Drain Efficiency ($V_{DD} = 26$ Vdc, $I_{DQ} = 50$ mA, $f = 960$ MHz, $P_{OUT} = 2$ W)	EFF (η)	—	50	—	%
Input Return Loss ($V_{DD} = 26$ Vdc, $I_{DQ} = 50$ mA, $f = 960$ MHz, $P_{OUT} = 2$ W)	IRL	—	-12	—	dB
Output VSWR Tolerance ($V_{DD} = 26$ Vdc, $I_{DQ} = 50$ mA, $f = 960$ MHz, $P_{OUT} = 2$ W, VSWR = 10:1, All Phase Angles at Frequency of Tests)	Ψ	No Degradation In Output Power Before and After Test			



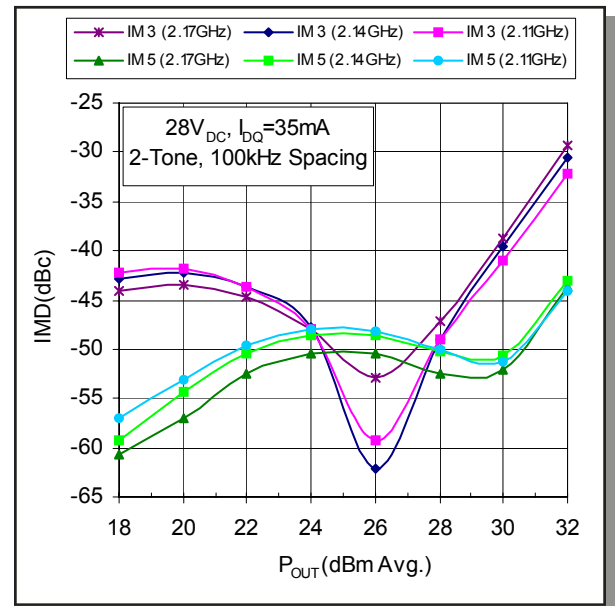
Graph 1. W-CDMA: Gain and Efficiency versus Output Power



Graph 2. W-CDMA: ACPR versus Output Power

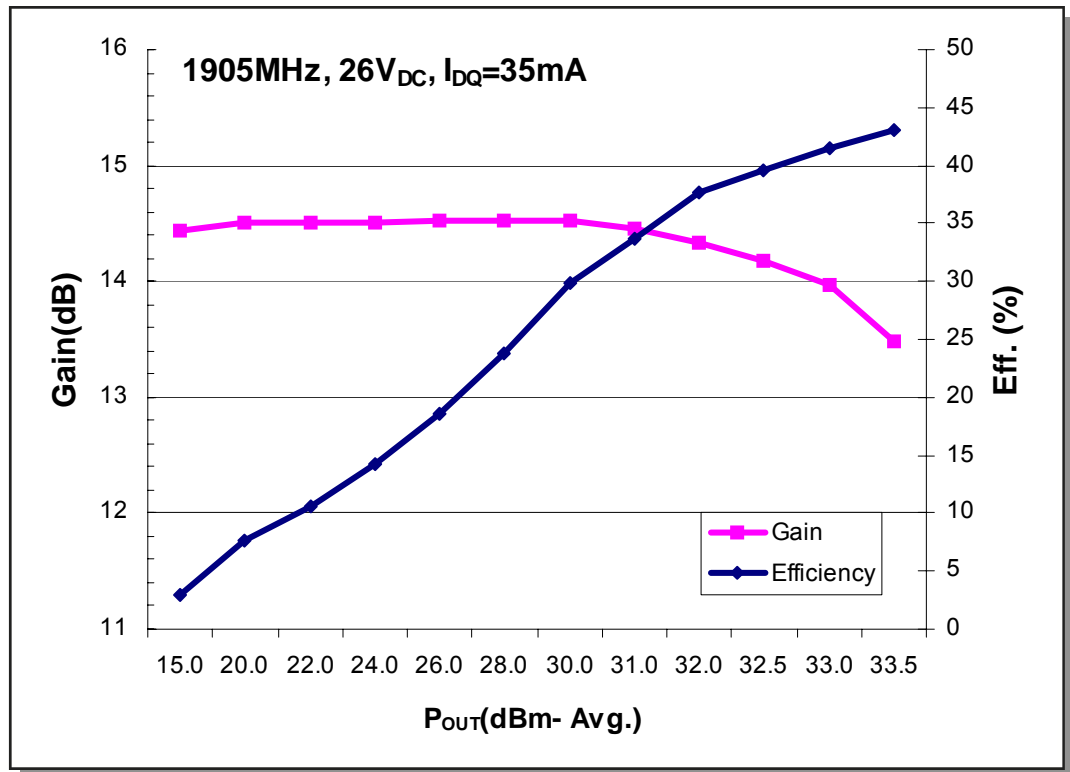


Graph 3. CW: Gain and Efficiency versus Output Power

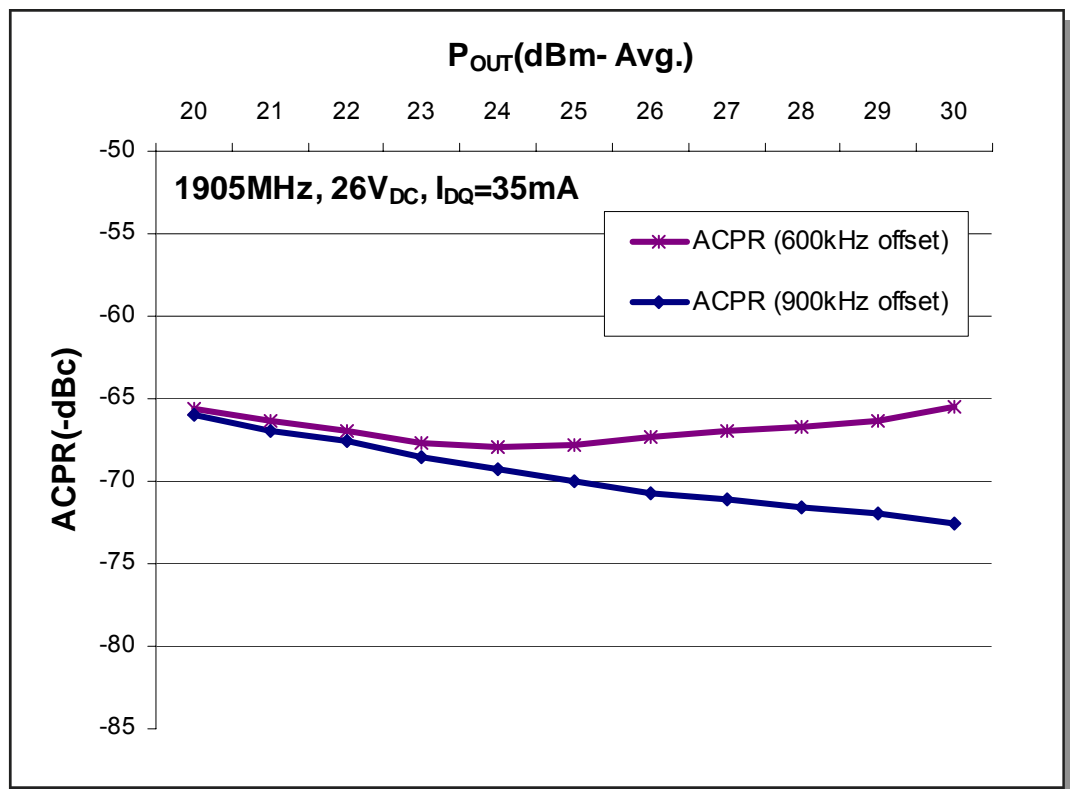


Graph 4. Two Tone: Intermodulation Distortion versus Output Power

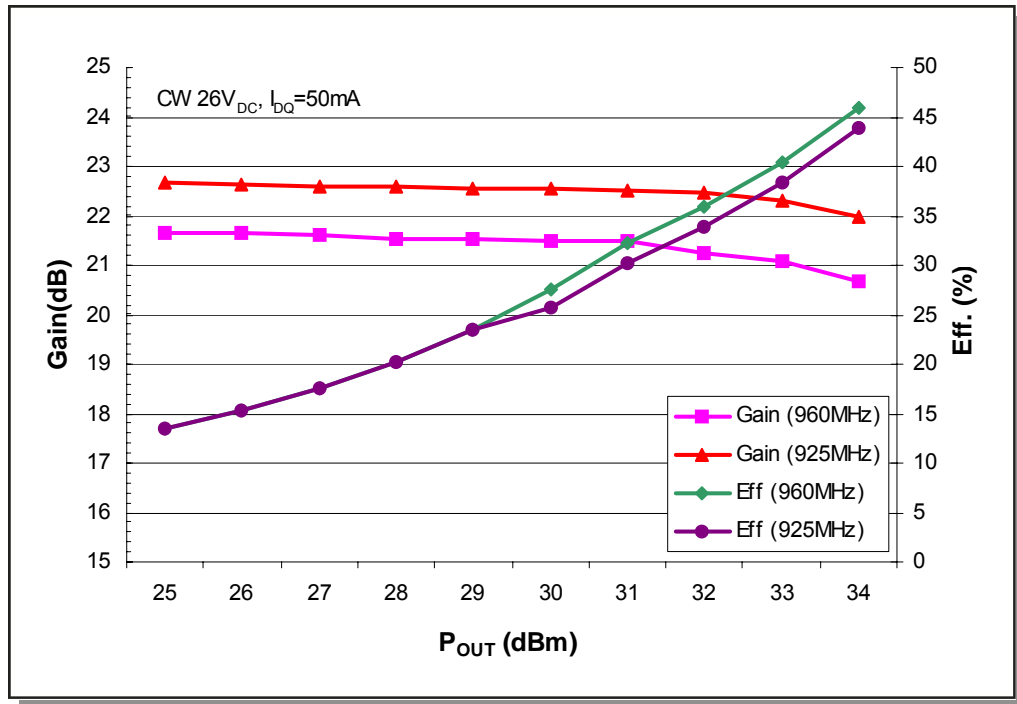
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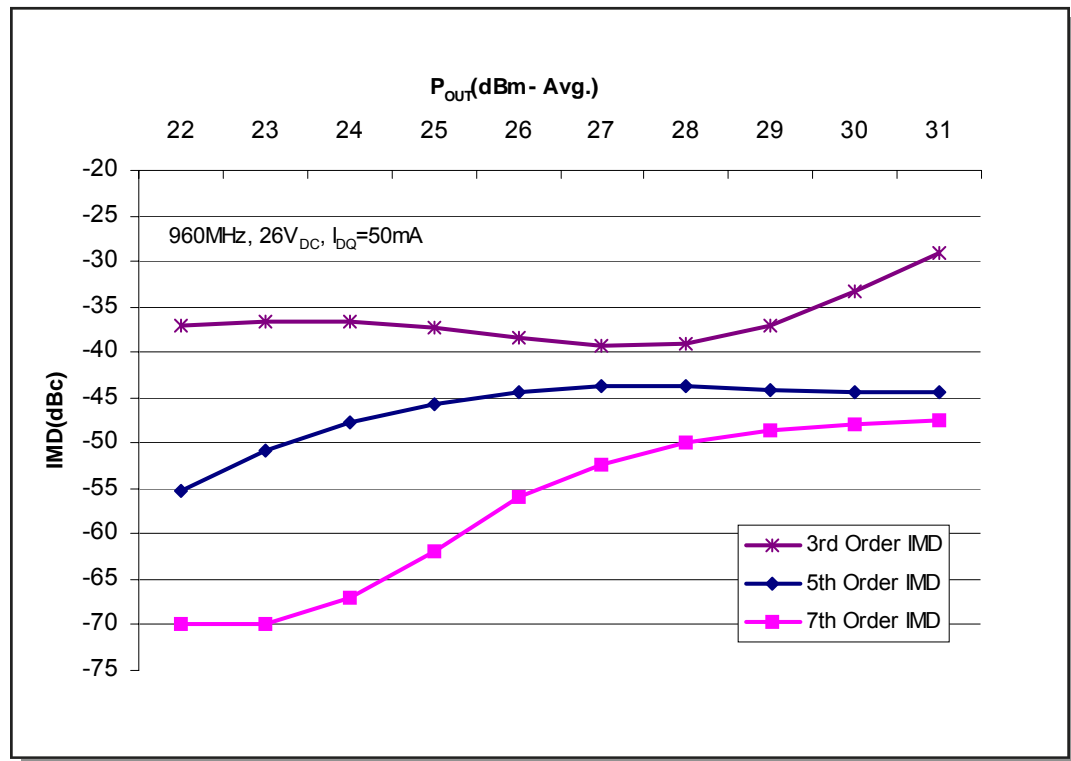
Graph 5. PHS Power Gain and Drain Efficiency vs. Output Power



Graph 6. PHS ACPR vs. Output Power



Graph 7. Power Gain and Drain Efficiency vs. Output Power



Graph 8. Intermodulation Distortion vs. Output Power

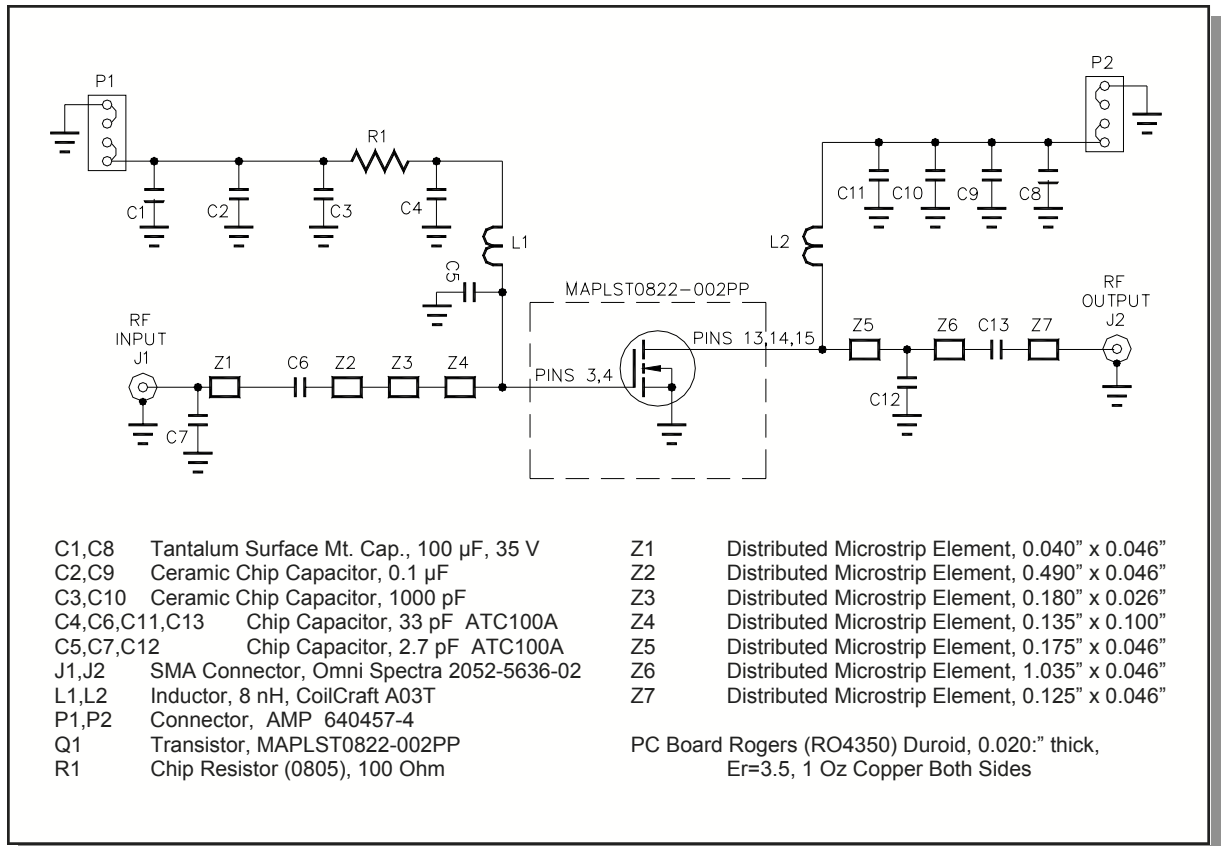


Figure 9. 1880—1920 MHz Test Fixture Schematic

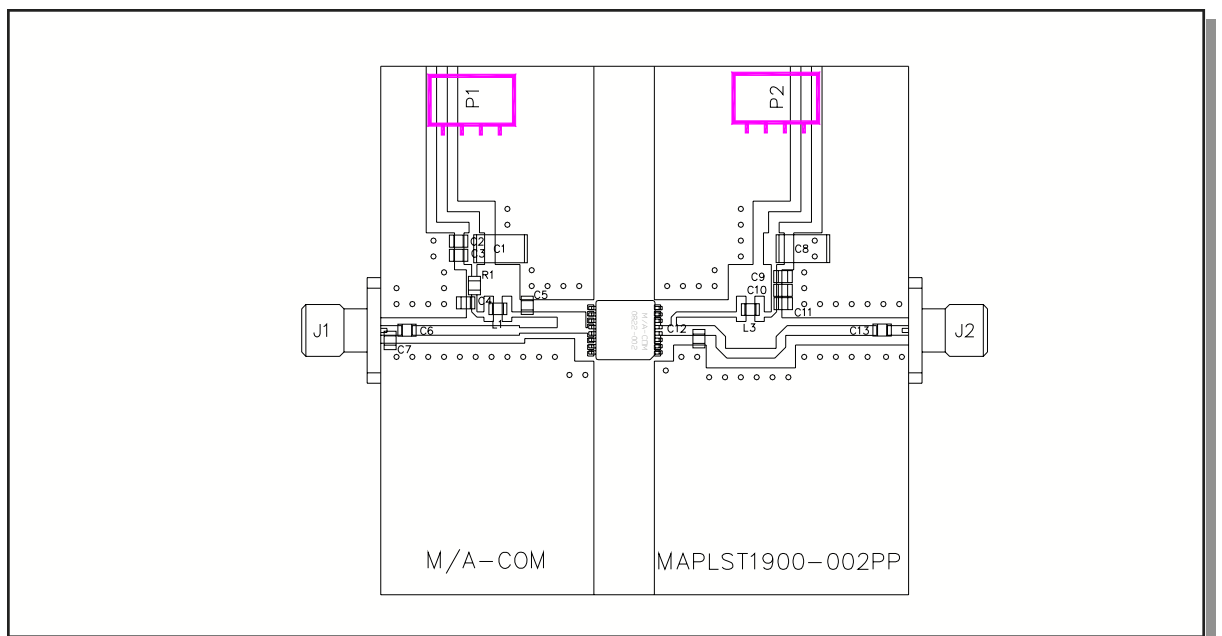


Figure 10. 1880—1920 MHz Test Fixture Component Layout

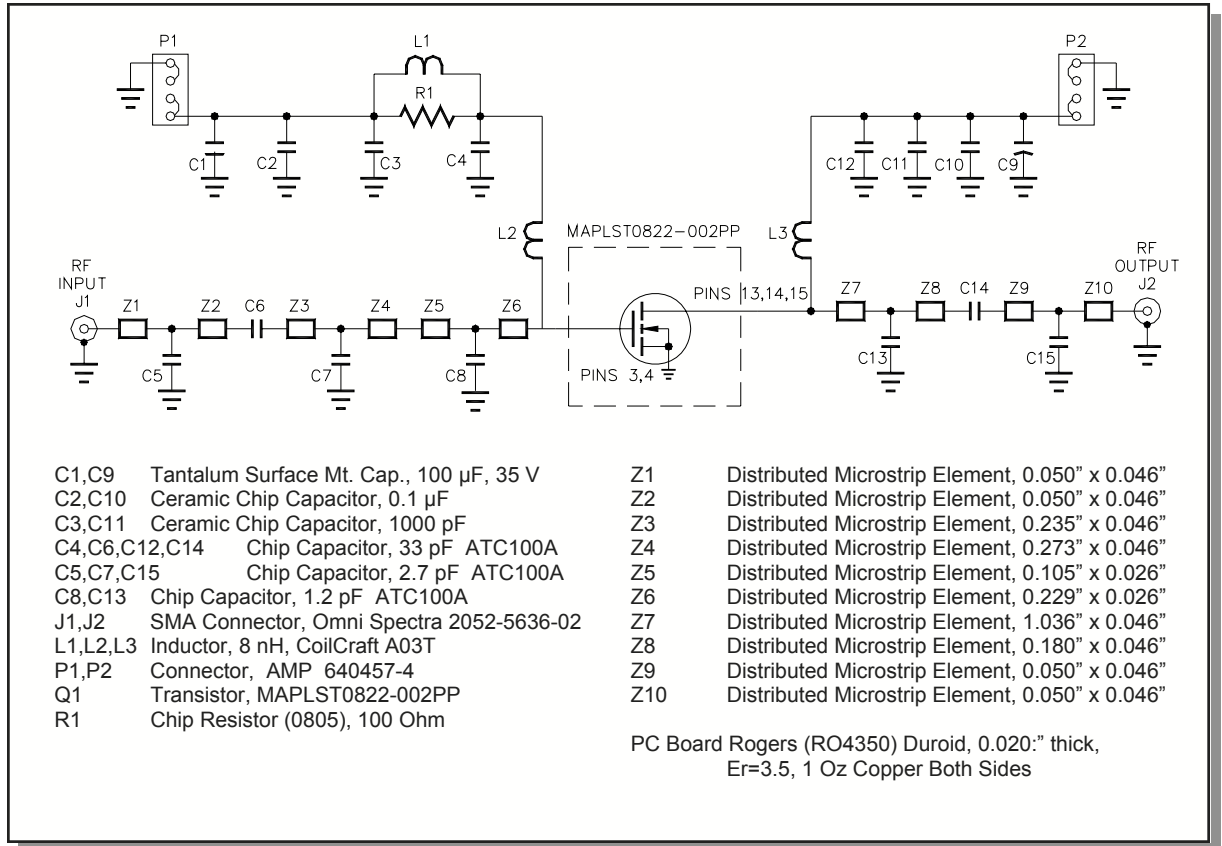


Figure 11. 920—960 MHz Test Fixture Schematic

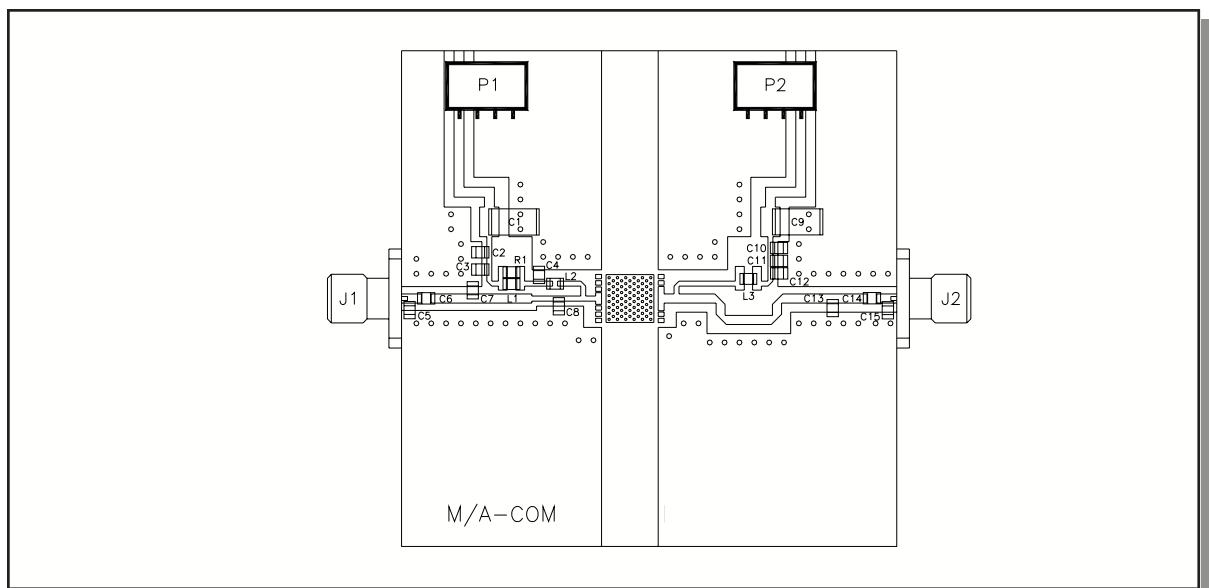


Figure 12. 920—960 MHz Test Fixture Component Layout

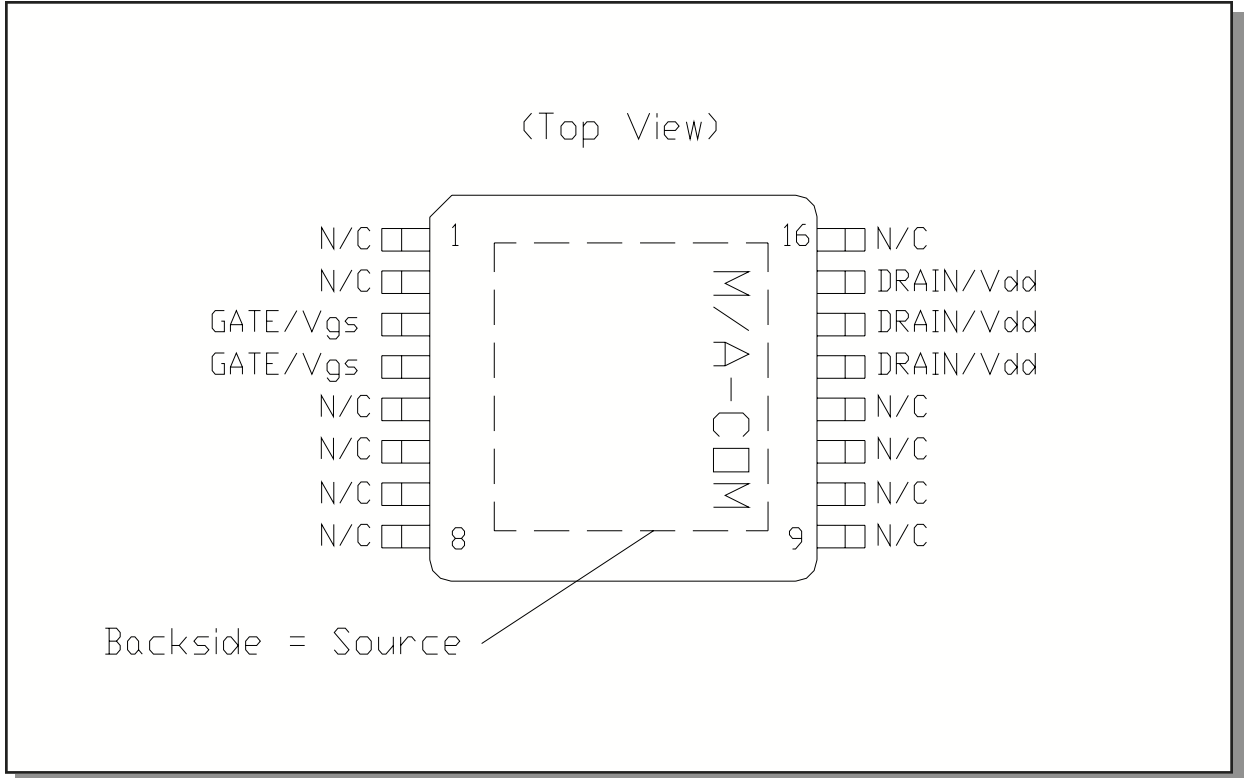
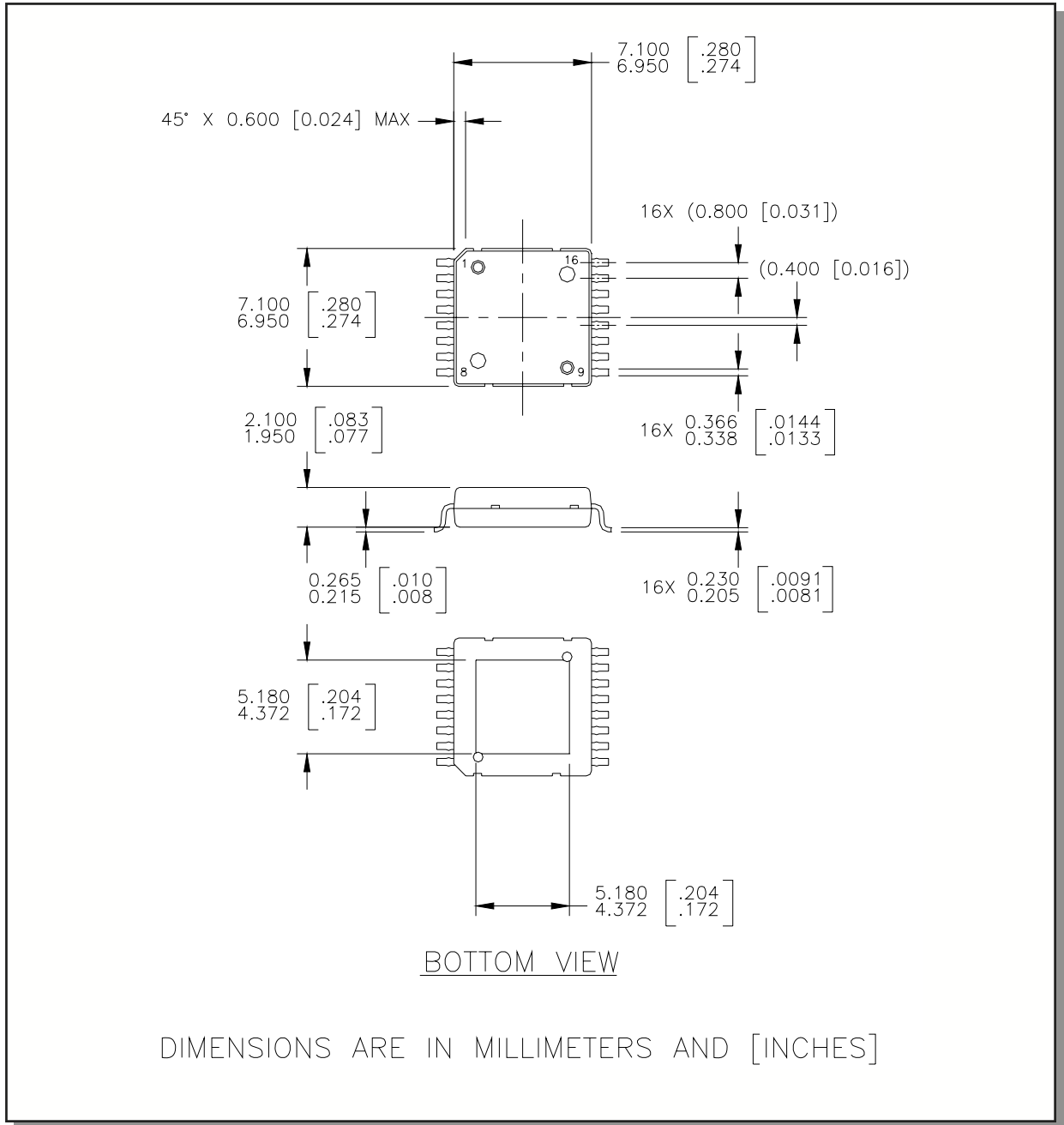


Figure 13. PFP-16 Pin Connections

Package Dimensions



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