

# MAPLST1900-060CF

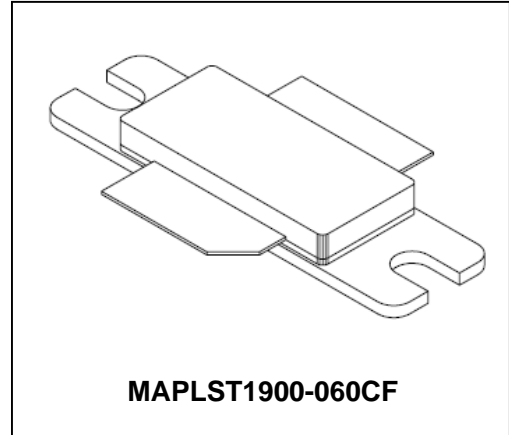


LDMOS RF Line Power FET Transistor  
60 W , 1890-1925 MHz, 26V

M/A-COM Products  
Released - Rev. 07.07

## Product Image

- Designed for personal handy phone (PHS) applications in the 1890-1925 MHz frequency band.
- Typical performance in PHS mode at -65 dBc ACPR (600kHz):  
Average output power: 16W  
Gain: 12.5dB (typ.)  
Efficiency: 26% (typ.)
- 10:1 VSWR ruggedness at 16W, 26V, 1890MHz)



## MAXIMUM RATINGS

Parameter	Symbol	Rating	Units
Drain—Source Voltage	$V_{DS}$	65	$V_{dc}$
Gate—Source Voltage	$V_{GS}$	20	$V_{dc}$
Total Power Dissipation @ $T_C = 25\text{ }^\circ\text{C}$	$P_D$	97	W
Storage Temperature	$T_{STG}$	-40 to +150	$^\circ\text{C}$
Junction Temperature	$T_J$	+200	$^\circ\text{C}$

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.0	$^\circ\text{C/W}$

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
<b>DC CHARACTERISTICS @ 25°C</b>					
Drain-Source Breakdown Voltage ( $V_{GS} = 0$ Vdc, $I_D = 20$ $\mu$ Adc)	$V_{(BR)DSS}$	65	—	—	Vdc
Zero Gate Voltage Drain Leakage Current ( $V_{DS} = 26$ Vdc, $V_{GS} = 0$ )	$I_{DSS}$	—	—	1	$\mu$ Adc
Gate—Source Leakage Current ( $V_{GS} = 5$ Vdc, $V_{DS} = 0$ )	$I_{GSS}$	—	—	1	$\mu$ Adc
Gate Threshold Voltage ( $V_{DS} = 10$ Vdc, $I_D = 1$ mA)	$V_{GS(th)}$	2	—	4	Vdc
Gate Quiescent Voltage ( $V_{DS} = 26$ Vdc, $I_D = 500$ mA)	$V_{DS(Q)}$	2	—	4.5	Vdc
Drain-Source On-Voltage ( $V_{GS} = 10$ Vdc, $I_D = 1$ A)	$V_{DS(on)}$	—	0.2	—	Vdc
Forward Transconductance ( $V_{GS} = 10$ Vdc, $I_D = 1$ A)	Gm	—	2.4	—	S
<b>DYNAMIC CHARACTERISTICS @ 25°C</b>					
Input Capacitance (Including Input Matching Capacitor in Package) ( $V_{DS} = 26$ Vdc, $V_{GS} = 0$ , $f = 1$ MHz)	$C_{iss}$	—	180	—	pF
Output Capacitance ( $V_{DS} = 26$ Vdc, $V_{GS} = 0$ , $f = 1$ MHz)	$C_{oss}$	—	65	—	pF
Reverse Transfer Capacitance ( $V_{DS} = 26$ Vdc, $V_{GS} = 0$ , $f = 1$ MHz)	$C_{rss}$	—	3.0	—	pF

(1) Device specifications obtained on a Production Test Fixture.

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RF FUNCTIONAL TESTS @ 25°C (In M/A-COM Test Fixture)					
PHS Gain ( $V_{DS} = 26$ Vdc, Pi/4 DQPSK, 192 kHz, $P_{OUT} = 16$ W (avg.), $I_{DQ} = 500$ mA, $f_0 = 1920$ MHz)	$G_{ps}$	—	12.5	—	dB
PHS Drain Efficiency ( $V_{DS} = 26$ Vdc, Pi/4 DQPSK, 192 kHz, $P_{OUT} = 16$ W (avg.), $I_{DQ} = 500$ mA, $f_0 = 1920$ MHz)	EFF ( $\eta$ )	—	30	—	%
PHS ACPR @ 600 kHz offset ( $V_{DS} = 26$ Vdc, Pi/4 DQPSK, 192 kHz, $P_{OUT} = 16$ W (avg.), $I_{DQ} = 500$ mA, $f_0 = 1905$ MHz)	ACPR	—	-65	—	dBc
PHS ACPR @ 900 kHz offset ( $V_{DS} = 26$ Vdc, Pi/4 DQPSK, 192 kHz, $P_{OUT} = 16$ W (avg.), $I_{DQ} = 500$ mA, $f_0 = 1905$ MHz)	ACPR	—	-72	—	dBc
PHS Gain ( $V_{DS} = 26$ Vdc, Pi/4 DQPSK, 192 kHz, $P_{OUT} = 16$ W (avg.), $I_{DQ} = 500$ mA, $f_0 = 1890$ MHz)	$G_{ps}$	—	12.5	—	dB
PHS Drain Efficiency ( $V_{DS} = 26$ Vdc, Pi/4 DQPSK, 192 kHz, $P_{OUT} = 16$ W (avg.), $I_{DQ} = 500$ mA, $f_0 = 1890$ MHz)	EFF ( $\eta$ )	—	30	—	%
Input Return Loss ( $V_{DS} = 26$ Vdc, Pi/4 DQPSK, 192 kHz, $P_{OUT} = 16$ W (avg.), $I_{DQ} = 500$ mA, $f_0 = 1920$ MHz)	IRL	—	-12	-9	dB
Output VSWR Tolerance ( $V_{DS} = 26$ Vdc, Pi/4 DQPSK, 192 kHz, $P_{OUT} = 16$ W (avg.), $I_{DQ} = 500$ mA, $f_0 = 1890$ MHz)	$\Psi$	No Degradation In Output Power Before and After Test			

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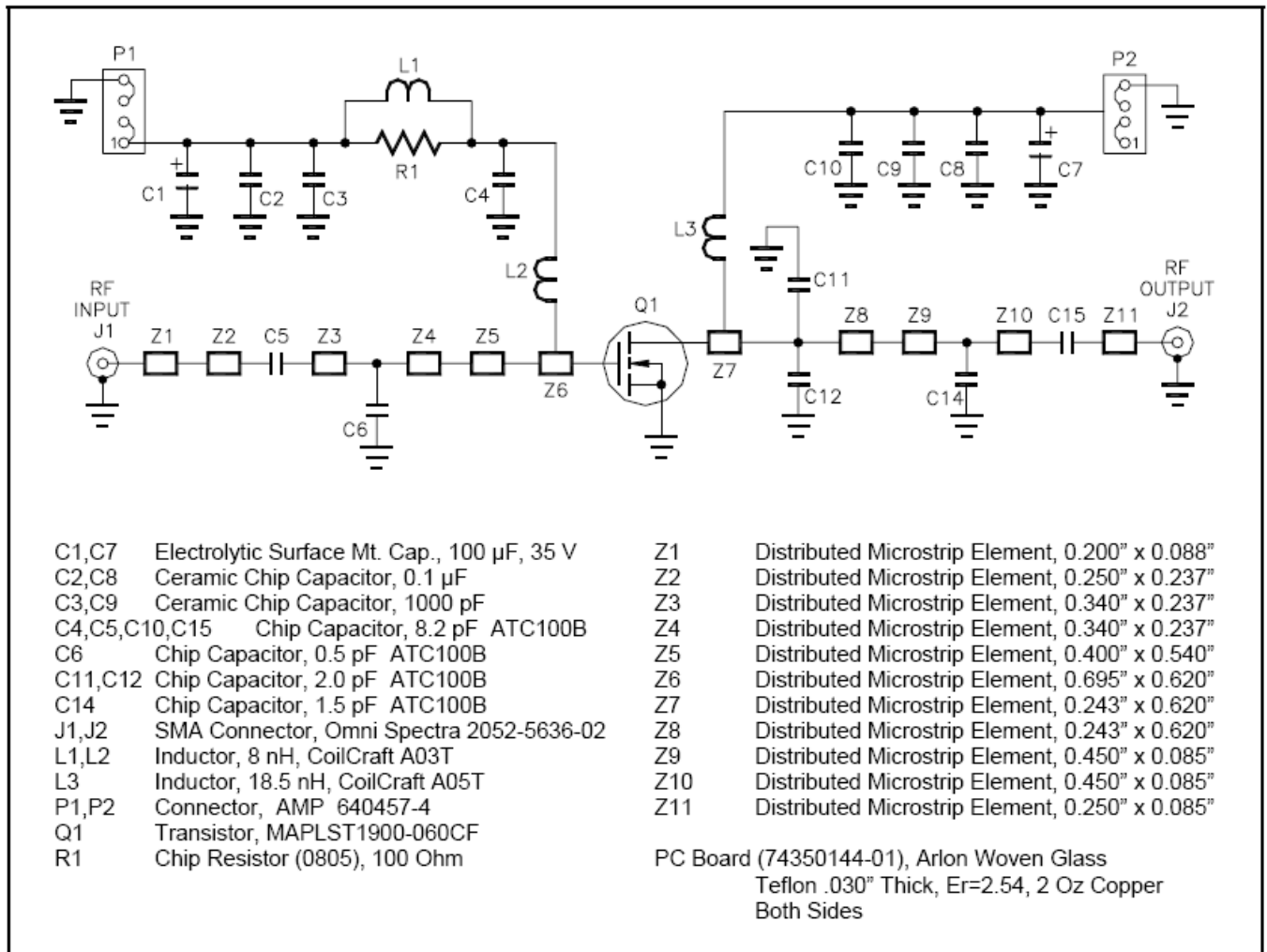


FIGURE 1. 1890—1925 MHz TEST FIXTURE SCHEMATIC

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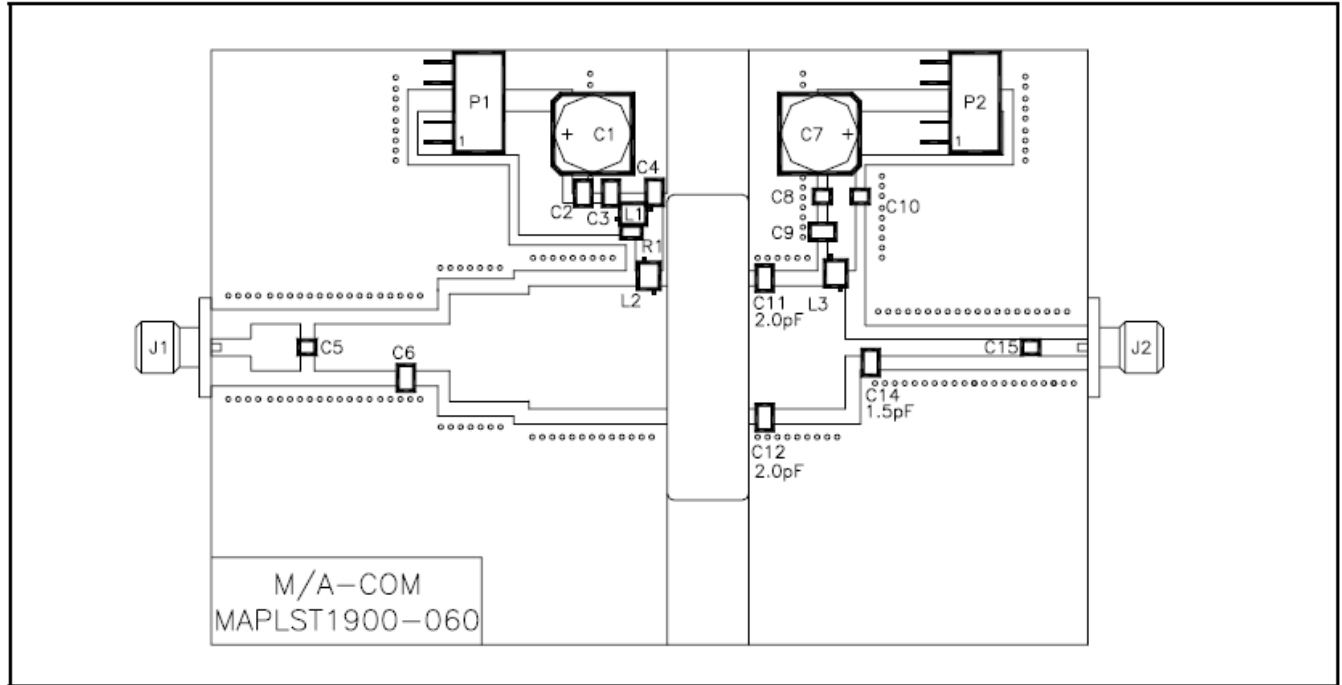
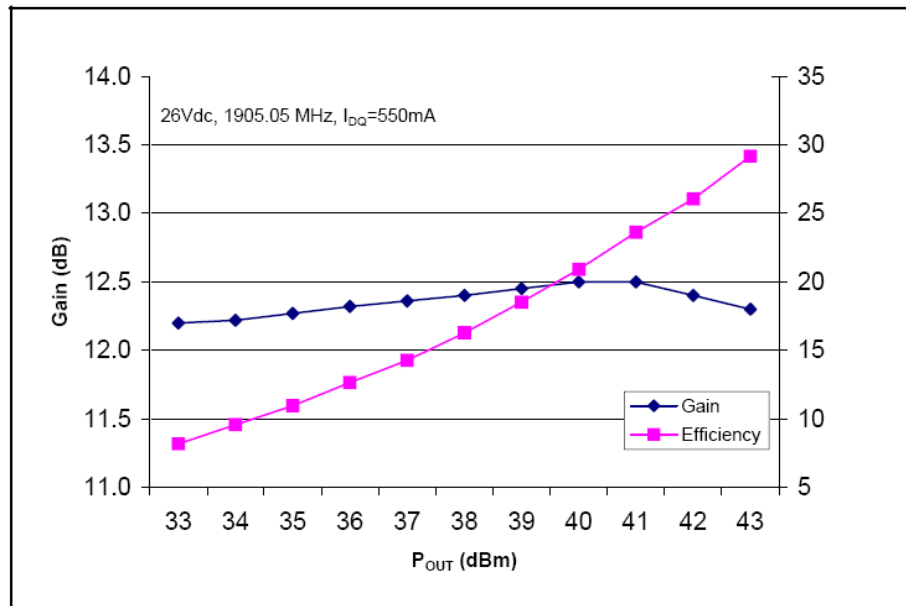


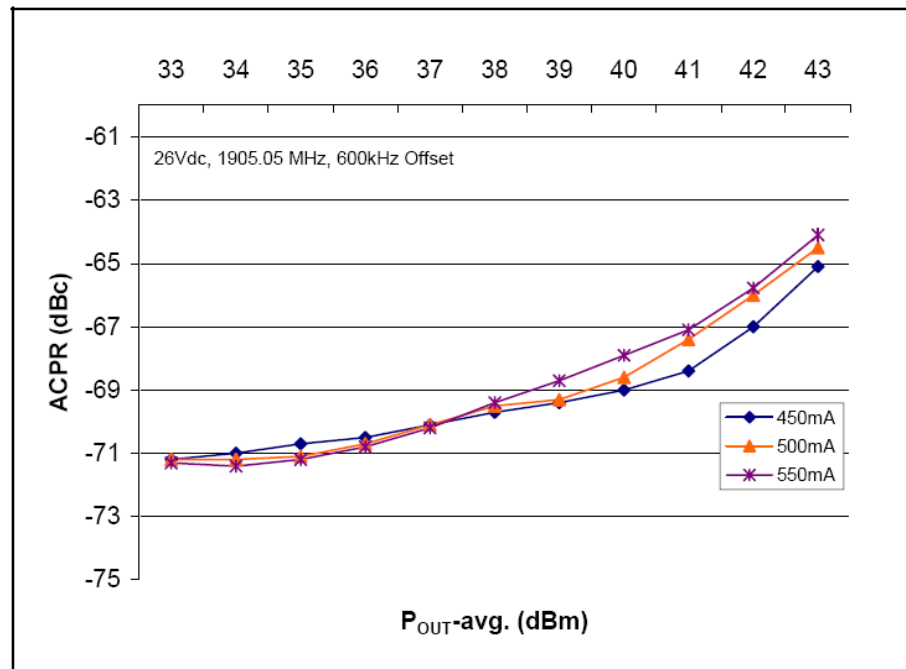
FIGURE 2. 1890—1925 MHz TEST FIXTURE COMPONENT LAYOUT

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GRAPH 1. PHS: POWER GAIN AND DRAIN EFFICIENCY VS. OUTPUT POWER



GRAPH 2. PHS: ADJACENT CHANNEL POWER RATIO VS. OUTPUT POWER

