

M/A-COM Radar Pulsed Power Amplifier—190 Watts 2.7—3.1 GHz, 200µs Pulse, 10% Duty

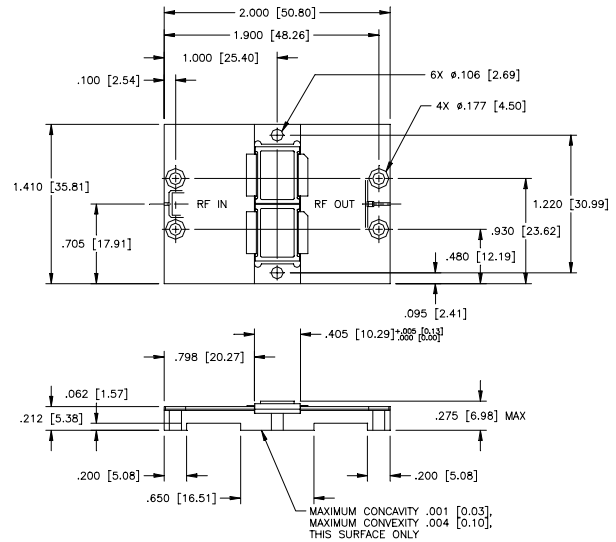
Features

- Input and Output matched to 50Ω
- RC bias circuit included
- Dual NPN Silicon class C power transistors
- Soft substrate $\epsilon_r = 10.5$
- Hermetic Package
- Nickel plated copper flange

Description

M/A-COM's PHA2731-190M is a Class C microwave power amplifier module specifically designed for S-Band radar pulsed power applications where high efficiency and saturated power are required. The module incorporates two in-phase combined common base hybrid power transistors and is input and output matched to 50 Ω for unparalleled ease of PA design. The thick copper base and ceramic transistor packaging technology provides for excellent thermal management, which when combined with M/A-COM's mature transistor fabrication technology results in the highest reliability available.

Outline Drawing¹



Notes: (unless otherwise specified)

1. Tolerances are: inches ± .005" (millimeters ± 0.13mm)

Absolute Maximum Rating at 25°C

Parameter	Symbol	Rating	Units
Collector-Emitter Voltage	V_{CES}	65	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Junction Temperature	T_j	200	°C
Thermal Resistance	θ_{JC}	0.35	°C/W
Operating Flange Temp.	T_C	-10 to +100	°C
Storage Temperature	T_{STG}	-20 to +125	°C

Electrical Specifications at 25°C

Symbol	Parameter	Test Conditions	Units	Min	Typ	Max
P_{out}	Output Power	$V_{CC} = 38V$, $P_{IN} = 34W$, $f = 2.7, 2.9, 3.1$ GHz	W	190	205	
G_p	Power Gain	$V_{CC} = 38V$, $P_{OUT} = 190W$, $f = 2.7, 2.9, 3.1$ GHz	dB	7.5	8	
η_c	Collector Efficiency	$V_{CC} = 38V$, $P_{OUT} = 190W$, $f = 2.7, 2.9, 3.1$ GHz	%	33	35	
RL	Input Return Loss	$V_{CC} = 38V$, $P_{OUT} = 190W$, $f = 2.7, 2.9, 3.1$ GHz	dB	10		
Droop	Pulse Amplitude Droop	$V_{CC} = 38V$, $P_{OUT} = 190W$, $f = 2.7, 2.9, 3.1$ GHz	dB			1
2fc	2 nd Harmonic	$V_{CC} = 38V$, $P_{OUT} = 190W$, $f = 2.7, 2.9, 3.1$ GHz	dBc	-17	-20	
Spurious	Spurious Level	$V_{CC} = 38V$, $P_{OUT} = 190W$, $f = 2.7, 2.9, 3.1$ GHz	dBc			-50
$\Delta\phi$	Insertion Phase Deviation	$V_{CC} = 38V$, $P_{OUT} = 190W$, $f = 2.7, 2.9, 3.1$ GHz	Deg.	-20		+20
VSWR-T	Tolerance and Stability	$V_{CC} = 38V$, $P_{OUT} = 190W$, $f = 2.7, 2.9, 3.1$ GHz	VSWR			1.5:1
OD-STAB	Stability at Overdrive	$P_{IN} = (P_{IN} @ P_{OUT} = 190W) + 1$ dB ¹				
GF	Gain Flatness over Frequency	$V_{CC} = 38V$, $P_{OUT} = 190W$, $f = 2.7, 2.9, 3.1$ GHz	dB		1.0	1.3

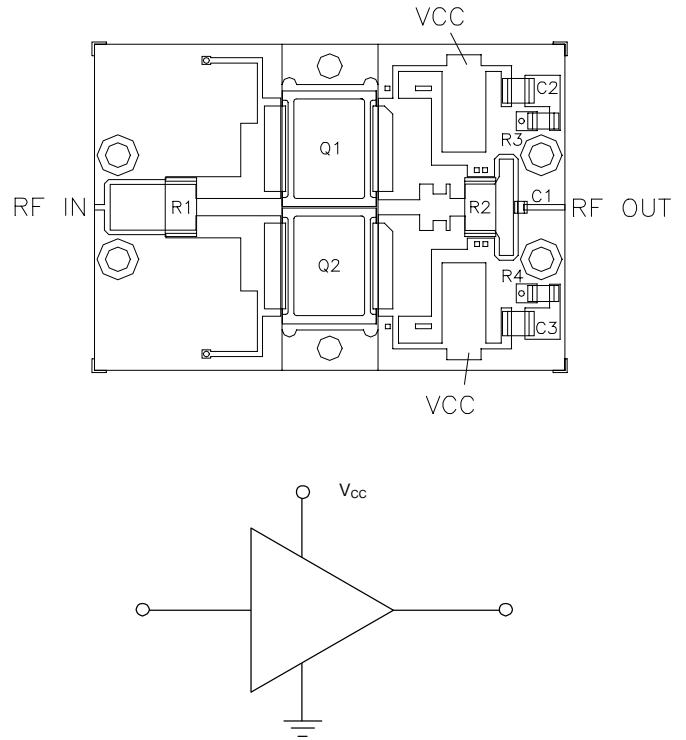
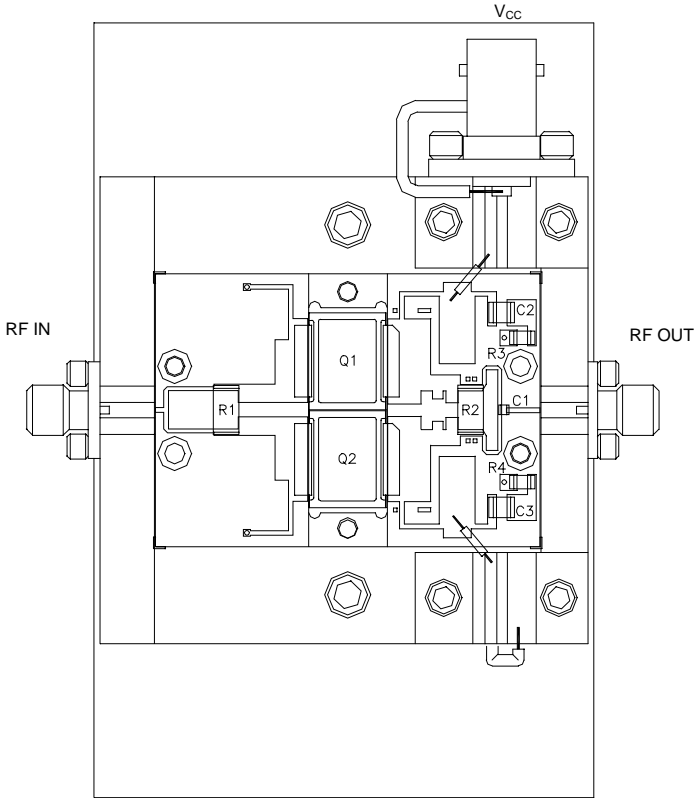
1. No oscillations and no spurs at 1 dB overdrive.

Specifications subject to change without notice.

- **North America:** Tel. (800) 366-2266, Fax (800) 618-8883
- **Asia/Pacific:** Tel. +81-44-844-8296, Fax +81-44-844-8298
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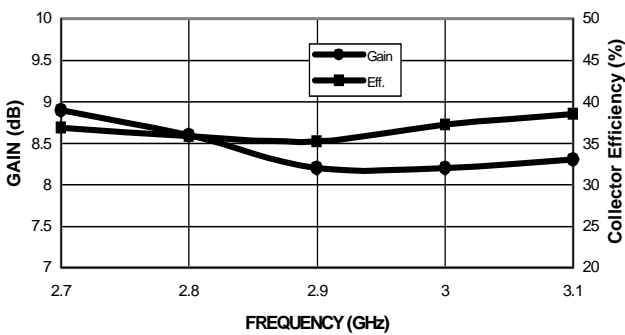
Visit www.macom.com for additional data sheets and product information.

Amplifier in RF Test Fixture

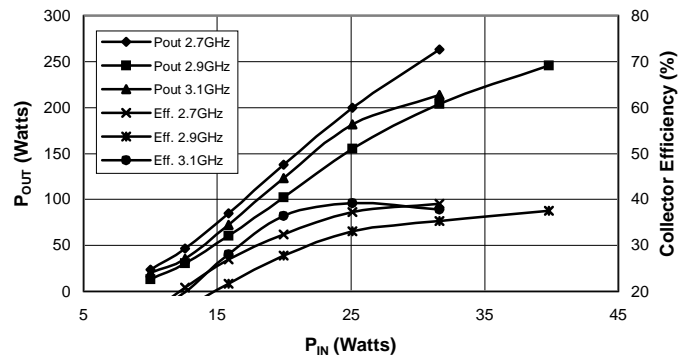


Typical Performance Curves

Performance at 190W P_{OUT}, V_{CC}=38V, 200 µs, 10%



Performance vs. P_{IN}, 38 V_{CC}=38V, 200 µs, 10%



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