

Radar Pulsed Power Pallet
300Wpk, 2.7-2.9GHz, 100µS Pulse, 10% Duty

MAPP-002729-300M00
Preliminary DS2007-01-03

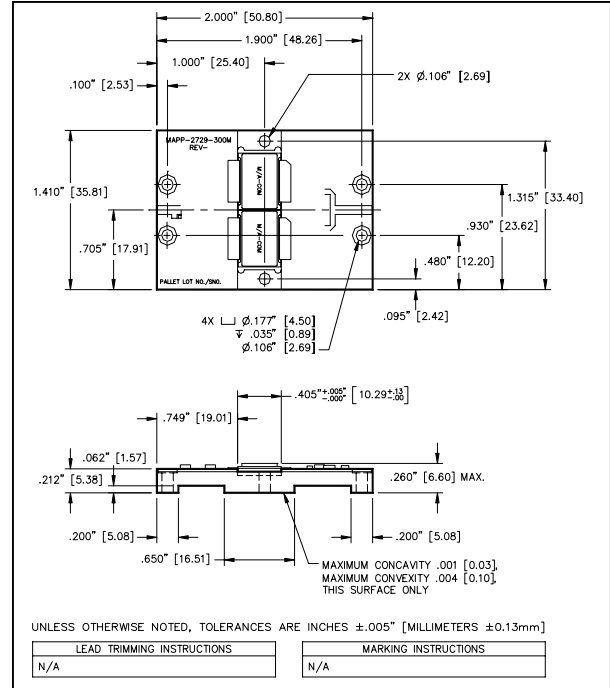
Features

- Input and output matched to 50Ω
- 350W, 46% efficiency; typical RF performance
- 36V_{CC}, 44W nominal input RF drive level
- Includes RC bias filter
- NPN silicon power transistors
- Nickel/Gold plated copper flange
- MTTF>1x10⁶ hrs.@Tflange=45°C

Description

The MAPP-002729-300M00 is a common-base, Class-C, S-band pallet designed to streamline design of pulse power amplifier modules for ATC (Air Traffic Control) applications. The transistors are DC-isolated to optimize current balance and enable individual current monitoring. A wide-trace Wilkinson combiner maximizes consistency and reduces loss. In addition, the wide traces simplify connection to 50Ω circuits on any PCB material. The pallet includes a gain compensation network at the input for ultra-flat gain vs. frequency response.

Outline Drawing



Electrical Specifications: @25°C ±5°C (Room Ambient)

Parameter	Symbol	Min	Max	Units	Test Conditions
Output Power	P _{out}	300	-	Wpk	V _{CC} = 36 V, P _{in} = 44 Wpk, F=2.7, 2.8, 2.9 GHz
Output Power with 1 dB overdrive	P _{out} at 1dB OD	314	-	Wpk	V _{CC} = 36 V, P _{in} = 55 Wpk, F=2.7, 2.8, 2.9 GHz
Delta Pout 1dB OD	P _{comp}	0.2	0.9	dB	V _{CC} = 36 V, P _{in} = 55 Wpk, F=2.7, 2.8, 2.9 GHz Given by 10log(P _{out} 1dB OD / P _{outnom})
Power Gain	G _p	8.3	-	dB	V _{CC} = 36 V, P _{in} = 44 Wpk, F=2.7, 2.8, 2.9 GHz
Collector Efficiency	h _c	40	-	%	V _{CC} = 36 V, P _{in} = 44 Wpk, F=2.7, 2.8, 2.9 GHz
Input Return Loss	RL	10	-	dB	V _{CC} = 36 V, P _{in} = 44 Wpk, F=2.7, 2.8, 2.9 GHz
Pulse Amplitude Droop	Droop	-	0.5	dB	V _{CC} = 36 V, P _{in} = 44 Wpk, F=2.7, 2.8, 2.9 GHz
2nd Harmonic	2fc	-	-20	dBc	V _{CC} = 36 V, P _{in} = 44Wpk, F=2.7, 2.8, 2.9 GHz
Spurious Level	Spurious	-	-60	dBc	V _{CC} = 36 V, P _{in} = 44 Wpk, F=2.7, 2.8, 2.9 GHz
Insertion Phase Deviation	D _j	-14	+14	Degrees	V _{CC} = 36 V, P _{in} = 44 Wpk, F=2.7, 2.8, 2.9 GHz
Rise time	Tr	-	300	nS	V _{CC} = 36 V, P _{in} = 44 Wpk, F=2.7, 2.8, 2.9 GHz
Overdrive stability, all non-harmonically related spurious	OD-S	-	50	dBc	V _{CC} = 36 V, P _{in} = 55.5 Wpk, F=2.7, 2.8, 2.9 GHz
Load Mismatch Stability	VSWR-S	-	1.5:1	-	V _{CC} = 36 V, P _{in} = 44 Wpk, F=2.7, 2.8, 2.9 GHz
Load Mismatch Tolerance	VSWR-T	-	2:1	dB	V _{CC} = 36 V, P _{in} = 44 Wpk, F=2.7, 2.8, 2.9 GHz
Gain Flatness over Frequency	G _p Flat	-	0.8	dB	V _{CC} = 36 V, P _{in} = 44 Wpk, F=2.7, 2.8, 2.9 GHz

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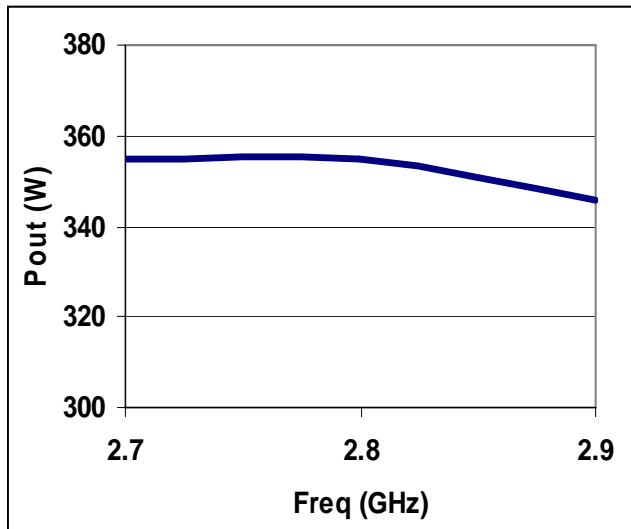
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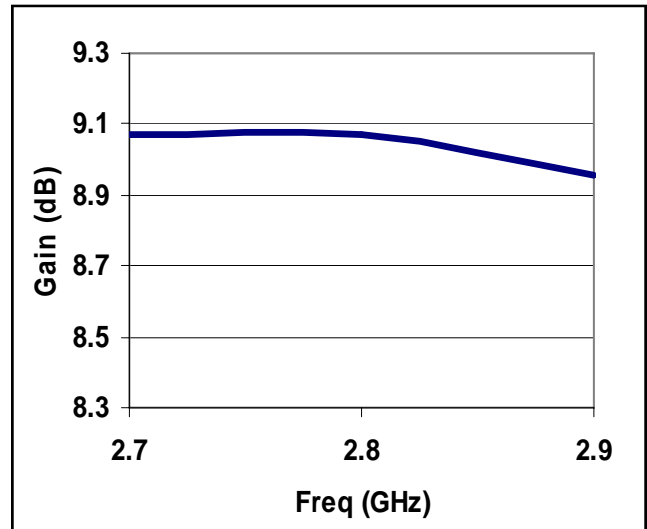
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Typical Performance Curves

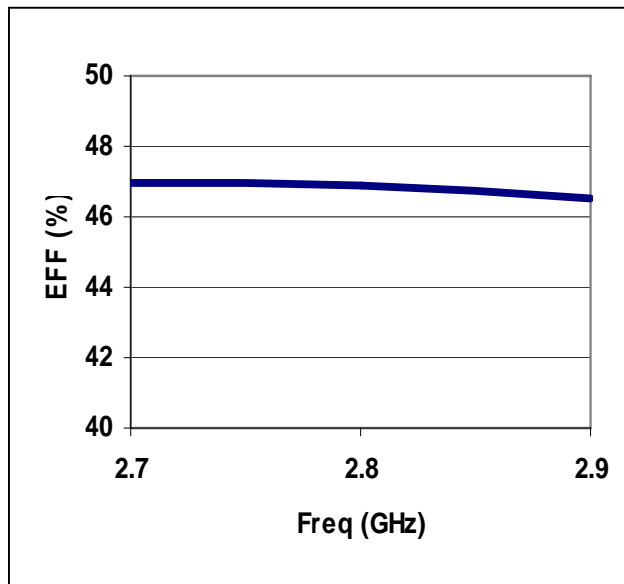
Power Output



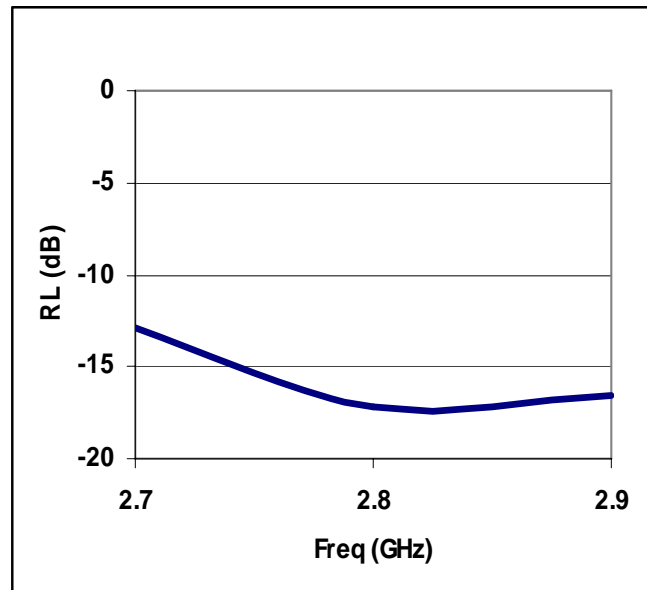
Gain



Efficiency



Return Loss



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