Radar Pulsed Power Module, 300 Watts, 2.7-2.9 GHz, 100 mS Pulse, 10% Duty

PHA2729-300M

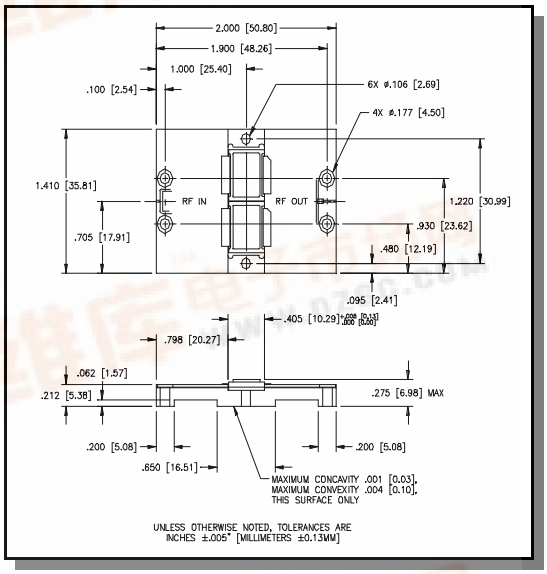
05/15/01

Preliminary

Features

- Includes RC bias circuit
- In-Phase Combined Pulsed Power Transistors
- Input and Output Matched to 50 Ω
- Soft Substrate ε_R=10.5 Circuit Board
- Nickel Plated Copper Flange
- MTTF > 1x10^6 Hrs @ Tflange=45 °C

Outline Drawing



Electrical Characteristics @ 25 ± 5 °C (Room Ambient)

Parameter	Symbol	Min.	Max.	Units	Test Conditions
Input Power	Pin	-	53.3	Wpk	V_{CC}=38 V, Pout= 300 Wpk, F=2.7, 2.8, 2.9 GHz
Output Power with .5 dB overdrive	Pout	315		Wpk	V_{CC}=38 V, P_{IN}=(P_{IN} @ P_{OUT}=300 W) + 0.5 dB, F=2.7, 2.8, 2.9 GHz
Power Gain	Gp	7.5	-	dB	V_{CC}=38 V, P_{OUT}=300 Wpk, F=2.7, 2.8, 2.9 GHz
Collector Efficiency	η_C	36	-	%	V_{CC}=38 V, P_{OUT}=300 Wpk, F=2.7, 2.8, 2.9 GHz
Input Return Loss	RL	10	-	dB	V_{CC}=38 V, P_{OUT}=300 Wpk, F=2.7, 2.8, 2.9 GHz
Pulse Amplitude Droop	Droop	-	.5	dB	V_{CC}=38 V, P_{OUT}=300 Wpk, F=2.7, 2.8, 2.9 GHz
2nd Harmonic	2fc	-	-20	dBc	V_{CC}=38 V, P_{OUT}=300 Wpk, F=2.7, 2.8, 2.9 GHz
Spurious Level	Spurious	-	-60	dBc	V_{CC}=38 V, P_{OUT}=300 Wpk, F=2.7, 2.8, 2.9 GHz
Insertion Phase Deviation	Δφ	-14	+14	Degrees	V_{CC}=38 V, P_{OUT}=300 Wpk, F=2.7, 2.8, 2.9 GHz
Rise time	Tr	-	200	nS	V_{CC}=38 V, P_{OUT}=300 Wpk, F=2.7, 2.8, 2.9 GHz
Load Mismatch Stability	VSWR-S	-	1.5:1	-	V_{CC}=38 V, P_{OUT}=300 Wpk, F=2.7, 2.8, 2.9 GHz
Load Mismatch Tolerance	VSWR-T	-	2:1	dB	V_{CC}=38 V, P_{OUT}=300 Wpk, F=2.7, 2.8, 2.9 GHz
Gain Flatness over Frequency	Gp Flat	-	.8	dB	V_{CC}=38 V, P_{OUT}=300 Wpk, F=2.7, 2.8, 2.9 GHz

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PHA2729-300M Sample Test Data

Test Conditions: Vcc= 38Vdc, Pulse Width: 100μS, Duty Cycle: 10%, Pout: 300 Wpk, Tflange: 50 °C

Freq. (GHz)	PIN (Wpk)	Ic (A)	R. Loss (dB)	P. Drp. (dB)	Gp (dB)	Nc (%)	Po 1 DB OD (Wpk)	Comp. (dB)	Gp Flat (dB)	1.5:1 VSWR (S,D,L,B)	2.0:1 VSWR (P,F)
2.7	36.4	16.43	16.9	0.0	9.16	48.1	351	0.68	0.73	S	P
2.8	39.4	16.95	18.2	0.0	8.82	46.6	359	0.78		S	P
2.9	43.1	17.33	14.5	0.0	8.43	45.6	337	0.51		S	P

Absolute Maximum Ratings

Parameter	Symbol	Rating	Units
Junction Temperature	Tj	200	°C
Thermal Resistance @ 25 °C	θ_{JC}	TBD	°C/W
Power Dissipation Total @ 25 °C	P_D	TBD	W
Operating Case Temperature**	T_C	-40 to +100	°C
Storage Temperature	T_{STG}	-40 to +125	°C

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