PHA2729-300M

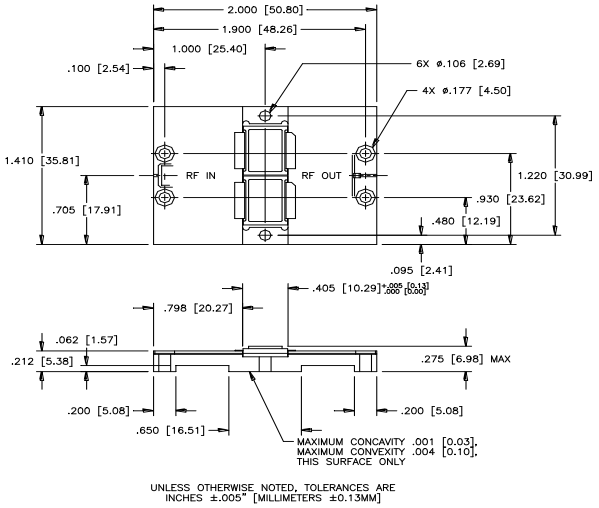
Radar Pulsed Power Module
300W, 2.7-2.9 GHz, 100µs Pulse, 10%Duty

Rev. V1

Features

- Includes RC bias circuit
- In-Phase combined pulsed power transistors
- Input and output matched to 50 W
- Soft substrate ε_R=10.5 circuit board
- Nickel plated copper flange
- MTTF > 1x10^6 hrs @ T_{flange}=45 °C

Outline Drawing



ABSOLUTE MAXIMUM RATING AT 25°C

Parameter	Symbol	Rating	Units
Junction Temparature	T_j	200	°C
Thermal Resistance	θ_{JC}	TBD	°C/W
Power Dissipation	P_D	TBD	W
Operating Flange Temp.	T_C	-10 to +100	°C
Storage Temp.	T_{STG}	-40 to +125	°C

ELECTRICAL CHARACTERISTICS AT 25°C

Parameter	Symbol	Min	Max	Units	Test Conditions
Input Power	P_{IN}	-	53.3	Wpk	V_{CC} = 38V, P_{out} = 300 Wpk, F =2.7, 2.8, 2.9 GHz
Output Power with .5 dB overtime	P_{OUT}	315	-	Wpk	V_{CC} = 38V, P_{IN}=(P_{IN} @Pout = 300 W) + 0.5 dB, F =2.7, 2.8, 2.9 GHz
Power Gain	G_P	7.5	-	dB	V_{CC} = 38V, P_{out} = 300 Wpk, F =2.7, 2.8, 2.9 GHz
Collector Efficiency	η_C	36	-	%	V_{CC} = 38V, P_{out} = 300 Wpk, F =2.7, 2.8, 2.9 GHz
Input Return Loss	R_L	10	-	dB	V_{CC} = 38V, P_{out} = 300 Wpk, F =2.7, 2.8, 2.9 GHz
Pulse Amplitude Droop	D_{ROOP}	-	-	dB	V_{CC} = 38V, P_{out} = 300 Wpk, F =2.7, 2.8, 2.9 GHz
2nd Harmonic	2FC	-	.5	dBc	V_{CC} = 38V, P_{out} = 300 Wpk, F =2.7, 2.8, 2.9 GHz
Spurious Level	Spurious	-	-20	dBc	V_{CC} = 38V, P_{out} = 300 Wpk, F =2.7, 2.8, 2.9 GHz
Insertion Phase Deviation	$\Delta\varphi$	-14	-60	Degrees	V_{CC} = 38V, P_{out} = 300 Wpk, F =2.7, 2.8, 2.9 GHz
Rise time	T_R	-	+14	$_N$S	V_{CC} = 38V, P_{out} = 300 Wpk, F =2.7, 2.8, 2.9 GHz
Load Miss Match Stability	VSWR-S	-	1.5:1	-	V_{CC} = 38V, P_{out} = 300 Wpk, F =2.7, 2.8, 2.9 GHz
Load Miss Tolerance	VSWR-T	-	2:1	dB	V_{CC} = 38V, P_{out} = 300 Wpk, F =2.7, 2.8, 2.9 GHz
Gain Flatness over Frequency	G_P Flat	-	.8	dB	V_{CC} = 38V, P_{out} = 300 Wpk, F =2.7, 2.8, 2.9 GHz

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SAMPLE TEST DATA

TEST CONDITIONS: V_{CC}=38V_{DC}, PULSE WIDTH: 100 µS, DUTY CYCLE : 10%, POUT: 300 W_{PK}, TFLANGE: 50° C

Freg (GHz)	P_{IN} (Wpk)	I_C (A)	R.Loss (dB)	P.Drp. (dB)	G_P (dB)	Nc (%)	Po 1 DB (dB)	Comp. (dB)	G_P 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