

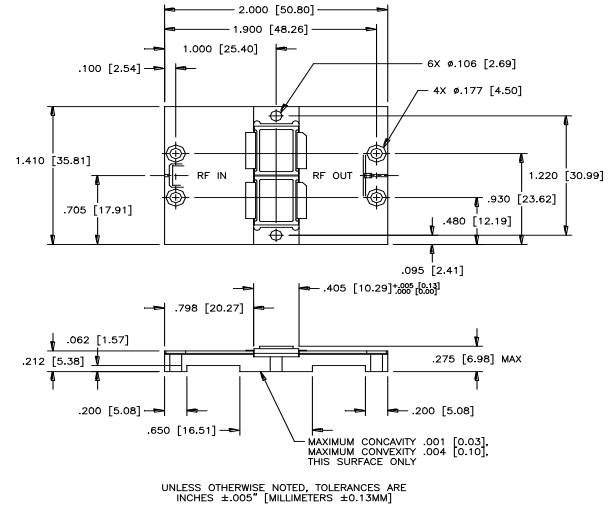
Radar Pulsed Power Module 300W, 2.7-2.9 GHz, 100 μ s Pulse, 10%Duty

Rev. V1

Features

- Includes RC bias circuit
- In-Phase combined pulsed power transistors
- Input and output matched to 50 W
- Soft substrate $\epsilon_R=10.5$ circuit board
- Nickel plated copper flange
- MTTF > 1×10^6 hrs @ $T_{\text{flange}}=45^\circ\text{C}$

Outline Drawing



ABSOLUTE MAXIMUM RATING AT 25°C

| Parameter | Symbol | Rating | Units |
|------------------------|---------------|-------------|--------------------|
| Junction Temperature | T_j | 200 | $^\circ\text{C}$ |
| Thermal Resistance | θ_{JC} | TBD | $^\circ\text{C/W}$ |
| Power Dissipation | P_D | TBD | W |
| Operating Flange Temp. | T_C | -10 to +100 | $^\circ\text{C}$ |
| Storage Temp. | T_{STG} | -40 to +125 | $^\circ\text{C}$ |

ELECTRICAL CHARACTERISTICS AT 25°C

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

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SAMPLE TEST DATA

TEST CONDITIONS: $V_{CC}=38V_{DC}$, PULSE WIDTH: 100 μ S, 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 |