

470 ~ 960 MHz Low Noise 10W Power Amplifier¹ 

RPAM0510E is a low noise figure, wideband, and high linearity, power amplifier with class A operation. It offers 40 dBm output P1dB, 0.9 dB noise figure, 50 dB gain, and 52 dBm output IP3 cross the frequency range from 470 MHz to 960 MHz. It can tolerate a mismatched load with output open or short. It is designed to meet the rugged standard of MIL-STD-202.



RPAM0510E is most suitable for UHF digital broadcast, cellular base stations, wireless data communications, tower top receiver amplifiers, last-mile wireless communication systems, and wireless measurement applications.

*** Additional heat sink is required for normal operation.**

RPAM0510E is **RoHS compliant**.

Key Features:

| | |
|---------------------------------|--|
| Broad Frequency Range: | 470 ~ 960 MHz |
| High Gain: | 50 dB |
| High Power (P _{1dB}): | 40 dBm |
| High Linearity (Output IP3): | 52 dBm |
| Unconditionally Stable: | k>1 |
| Maximum Output Load Mismatch: | ∞ :1 |
| Impedance: | 50 Ohm |
| Single DC Supply: | 1.6 A @ +28V |
| Wide Operating Temperature: | -10 ~ +85 °C |
| MTTF ² : | >10 ⁵ Hours |
| Small size: | Pallet format, 3.5" x 1.8" x 0.7" (87.5 x 45.7 x 17.8 mm) |

Absolute Maximum Ratings³:

| Parameters | Symbol | Value | Units |
|---------------------------------|---------------------|------------|-------|
| DC Power Supply Voltage | V _{dd} | 30 | V |
| Drain Current | I _{dd} | 2.0 | A |
| Total Power Dissipation | P _{diss} | 50 | W |
| RF Input Power | P _{In,Max} | 5 | dBm |
| Junction Temperature | T _{jc} | 170 | °C |
| Storage Temperature | T _{STG} | -55 ~ +125 | °C |
| Maximum Operating Temp. | T _{O,MAX} | -40 ~ +85 | °C |
| Thermal Resistance ⁴ | R _{th,jc} | 3.5 | °C/W |

Electrical Specifications: (at +25 °C)

| Testing Item | Symbol | Test Constraints | Min | Nom | Max | Unit |
|-------------------------------|------------------|--|-----|----------|----------|------|
| Gain | S ₂₁ | 470 ~ 960 MHz | | 50 | | dB |
| Gain Variation | ΔG | 470 ~ 960 MHz | | +/- 0.75 | +/- 1.25 | dB |
| Input Return Loss | S ₁₁ | 470 ~ 960 MHz | 16 | 20 | | dB |
| Output Return Loss | S ₂₂ | 470 ~ 960 MHz | 14 | 20 | | dB |
| Reverse Isolation | S ₁₂ | 470 ~ 960 MHz | | 50 | | dB |
| Noise Figure | NF | 470 ~ 960 MHz | | 0.9 | 1.1 | dB |
| Output Power @ 1dB Gain Comp. | P _{1dB} | 470 ~ 960 MHz | 39 | 41 | | dBm |
| Output IP3 | OIP3 | 2-Tone, Pout 33 dBm each, 1 MHz separation | 50 | 52 | | dBm |
| Power Added Efficiency | η | V _{dd} = +28 V, P _o = P _{1dB} | | 30 | | % |
| Current Consumption | I _{dd} | V _{dd} = +28 V | | 1.6 | | A |
| DC Power Supply Voltage | V _{dd} | | +24 | +28 | +30 | V |
| Junction Temperature | T _{jc} | | | | +175 | °C |
| Operating Temperature | T _o | Case temperature | -10 | | +85 | °C |

¹ Specifications are subject to change without notice.
² MTBF: Mean Time Between Failure, Per TR-NWT-000332, ISSUE 3, SEPTEMBER, 1990, T=40 °C
³ Operation of this device above any one of these parameters may cause permanent damage.
⁴ Case to the junction of last stage single power transistor.

Frequency Response

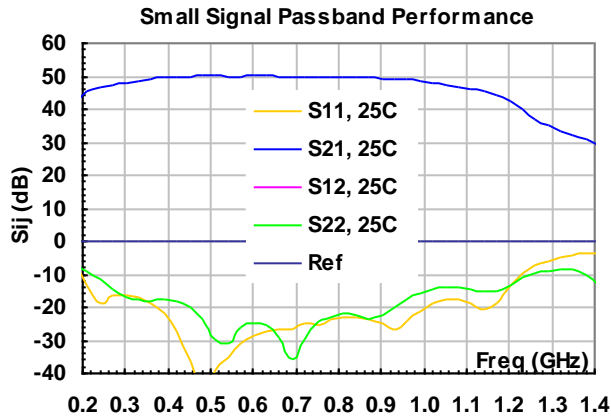


FIG. 1 Small signal performance

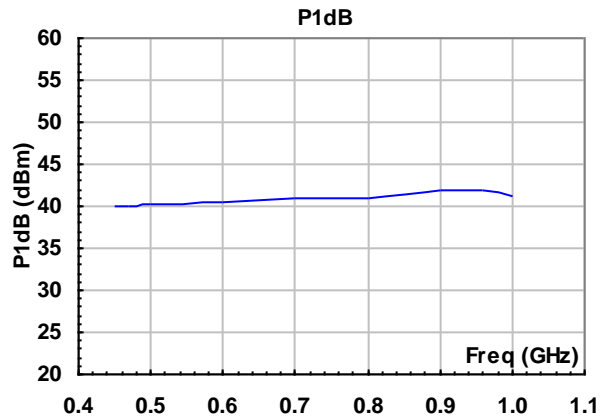


FIG. 2 Output 1-dB compression point

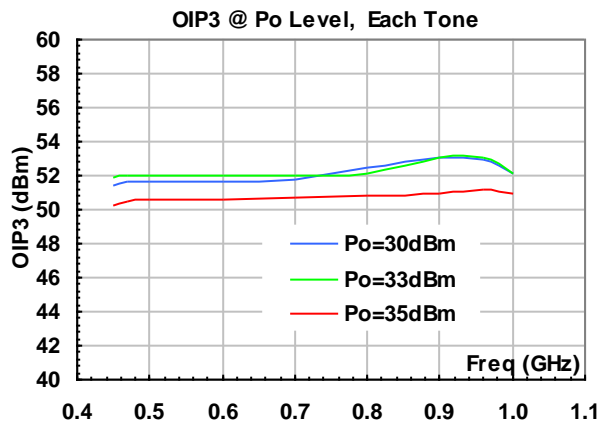


Fig. 3 Output IP₃ vs output power at different frequencies

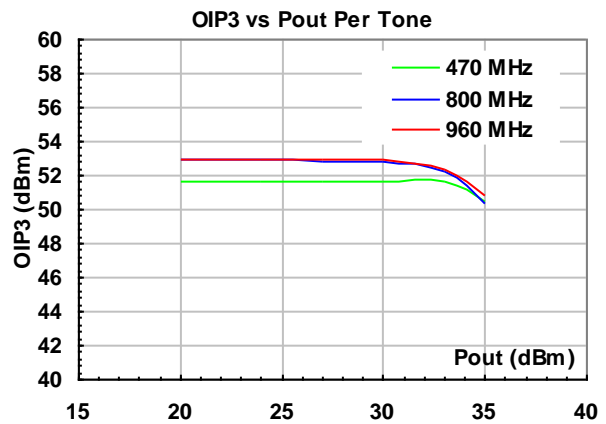


Fig. 4 Output IP₃ at composite output power

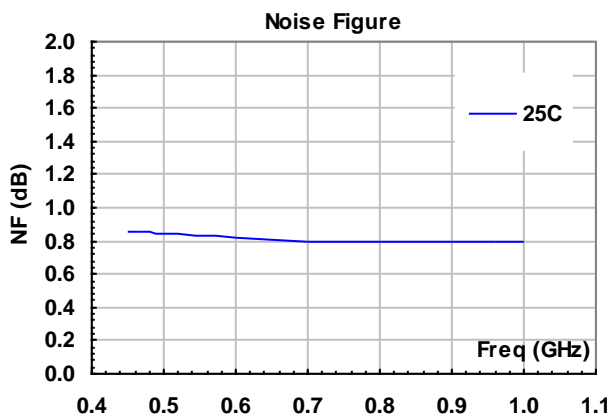


Fig. 5 Noise figure performance

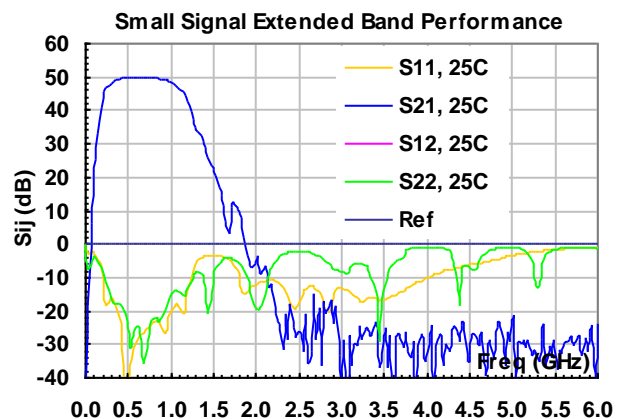


Fig. 6 Performance at the extended frequency

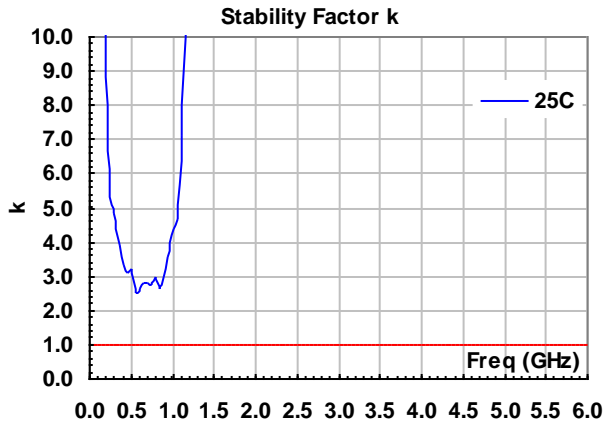


Fig. 7 Stability factor *k*

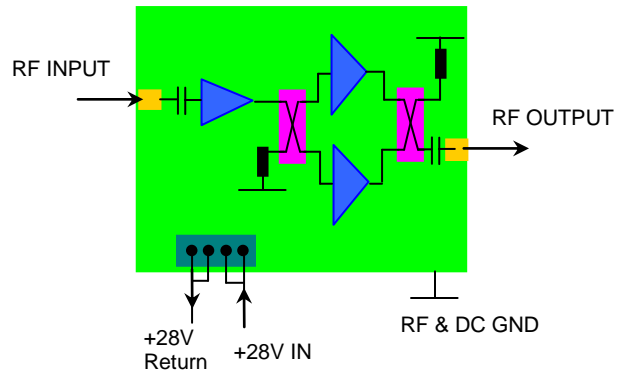
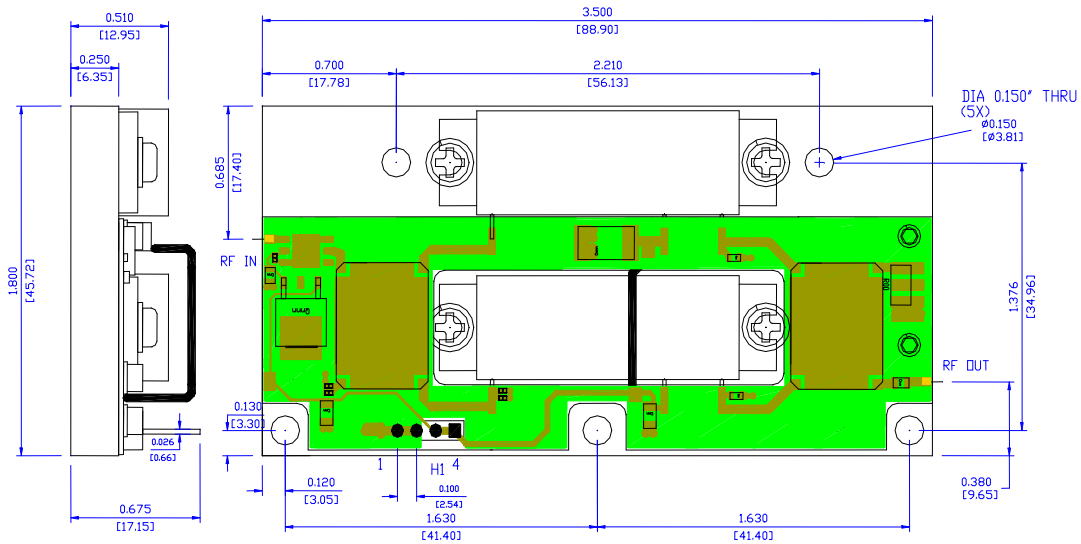


Fig. 8 Block diagram

Mechanical Outline (scale 1:1)



NOTES

1. BASE MATERIAL: ALUMINUM ALLOY 6061
2. TOLERANCE IS NON-ACCUMULATIVE.

| | | |
|----------|-------------|---------|
| PIN | 1, 2 | 3, 4 |
| FUNCTION | +28V Return | +28V IN |

Ordering Information

| | |
|-------------|-----------|
| Part Number | RPAM0510E |
|-------------|-----------|

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