



Model Number: A 100670

Intech microwaves s.r.l.

Sede Legale e Operativa: Via Giacomo Peroni 400, 00131 Roma (RM) – Italy

Cap. Soc. € 80.000,00 – P.IVA 12934711008 – REA RM1411466

Tel: +39 06 4568 3104 - Email : info@intech-mw.com PEC: intech.microwaves@pec.it

0.5 Kw Solid State Pulsed Power Amplifier

X-Band Microwave Power Module using GaN Technology



Features

- 0.5 Kw Peak Output Power
- Typical frequency range of 8.5 to 9.5 GHz
- Efficiencies as high as 20%
- Up to 100 µsec pulse width, 20% duty cycle
- Targeted for TWT Amplifier Replacement
- Military and Commercial Radar Applications

IMW Model A100670 is a 0.5 Kw peak output power, solid state amplifier designed as a replacement for traveling wave tube modules over the 8.5 to 9.5 GHz frequency range. Operating by a +50VDC isolated supply, the Model A100670 has 50 dB minimum gain with performance up to 100 µsec pulse widths at 20% duty cycle. Amplitude droop across a pulse of this duration is less than 1 dB. Phase distortion is minimized by gating the discrete power supply OFF during pulsed RF operation. Additional advantages of the GaN power module over a traveling wave tube counterpart include increased MTBF, soft fail vs. catastrophic fail, and lower long term replacement/repair cost. An integrated controller provides customer interface and fault monitoring options.

Technical Specifications @ 25°C ⁽¹⁾

Parameter	Specification
Frequency	8.5÷9.5 GHz
Output Power	+57 dBm Peak (min)
Input Power	+10 to +15 dBm
RF Pulse Width	0.15 to 100 µsec
Duty Cycle	20% (max)
Rise / Fall Time	300 nsec (max)
Efficiency ⁽²⁾	15% (min)
P _{OUT} On/Off Ratio	80 dB (min) @ 0.5 Kw
2 nd Harmonic	-40 dBc (max) @ 0.5 Kw
3 rd Harmonic	-45 dBc (max) @ 0.5 Kw
Spurious (non-harmonic)	-70 dBc (max) @ 0.5 Kw
Noise Power Density ⁽³⁾	-34 dBm/MHz (max)
Input / Output Impedance	50 Ω (nominal)
Input / Output VSWR	1.5 :1
DC Prime Power ⁽⁴⁾	+50 VDC

Mechanical Specifications

Parameter	Specification
Case Dimensions	250mm(L) x 178mm (W)x75 mm (H)
Material	Aluminum Alloy
Finish	TIN Plate
Connectors	
RF Input	SMA Female
RF Output ⁽⁵⁾	WR 90 Waveguide
DC Power	Male 15 Pin Filtered D-Sub Standard Density
Control / Interface	21 Pin Micro D-Sub
Weight	4 Kg (max)
Grounding	Chassis
Outline Drawing	

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Environmental Specifications

Ambient Operating Temperature	-40°C to +70°C	—
Absolute Max Baseplate Temperature	+90°C	—
Storage Temperature	-55°C to +100°C	—
Cooling	Adequate Heat Sink Required	Conduction
Relative Humidity	0 to 95%	Non-condensing

Miscellaneous

Control / Interface Signals	Standby/Operate, Pre-trigger, Remote On/Off, Synchronization	TTL Logic
Maximum Load VSWR	Open / Short (All Phase Angles)	No Damage
MTBF	21,500 hrs. @ +50°C Baseplate Temperature	MIL-HDBK-217

Notes

1. Specification ratings are based on measurements in a 50 ohm system.
2. Total efficiency of +28 VDC power supply integrated with solid state amplifier.
3. Measured at the RF output with the RF input terminated into a 50 ohm load.
4. Alternate DC power supply voltages available as a custom solution.
5. RF output configuration transitions from WR-90 to a TNC connector. Package can be modified to support a direct WR-90 launch