Solid State Power Amplifier 60W 2GHz to 20GHz

Part No.: PA022060V5

The PA022060V5 is a 60W high-performance wideband power amplifier operating across a frequency range of 2 to 20 GHz for CW and Pulse applications.

This amplifier delivers a typical output power of 48 dBm and provides a typical small-signal gain of 55 dB, with a gain variation of ±2 dB. These exceptional performance characteristics are achieved using advanced Gallium Nitride (GaN) technology.

Designed for reliability and precision, the amplifier features an SMA connector for input and an N-Type connector for output. Additionally, it includes a calibration function, allowing users to maintain optimal performance over time and across varying temperature conditions.

The amplifier is designed to operate within a wide temperature range of -40°C to +85°C, ensuring consistent performance in diverse environments. This model is designed for harsh outdoor environments; however, please contact us if you prefer the rack-mounted model.

Product Features:

- Wideband Solid State Power Amplifier
- Small Signal Gain 55dB Typical
- Output Saturation Power 48dBm Typical
- Supply Voltage +48VDC
- 50 Ohm Matched Input/Output
- Overvoltage Protection
- Overcurrent Protection
- Auto Calibration
- Solid State MMIC Reliability
- Instant On (no warm-up)
- **IP68 protection for outdoor use**
- Ultra-low weight (only 10kg)
- Small in size: 320 x 200 x 200 mm
- Monitoring and Control Communication through S232/RS485/RS422/USB/Ethernet (customer selected)

Application:

- Radar Systems
- Satellite communication
- TWTA Replacement
- Research and Development
- Military and Aerospace Applications

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Electrical Specifications (T_A=+25ºC)

Parameter	Typ	Units
Frequency Range	2 – 20	GHz
Small Signal Gain	55	dB
Gain Variance	+/-2	dB
Gain Variation Over Temperature (-40ºC to +70ºC)	+/-3	dB
Input Return Loss	-20	dB
*Output 1dB Compression Point (P1dB)	44	dBm
*Saturated Output Power (Psat)	48	dBm
Supply Current (Vcc = +48VDC)	8.8 (Max 12.5)	A
IM3	-20	dBc
Weight	10	Kg
Size	320x200x200	mm
Impedance	50	Ohms
Input / Output Connectors	SMA/N-Type Female	

Environmental Specifications and Test Standards

Parameter	Description
Operational Temperature	-40ºC to +85ºC (Case Temperature)
Storage Temperature	-55ºC to +125ºC
Thermal Shock	-40ºC → +85ºC (5 Cycles / 10 hours)
**Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High-Temperature Burn-In	Temperature +85ºC for 72 Hours
Shock	1.Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s 2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s 3. Total 18 times (6 directions, 3 repetitions per direction).
Altitude	Standard: 30,000 Ft (Epoxy Sealed Controlled Environment) Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)
IP rating	IP-67
Hermetically Sealed (Optional)	MIL-STD-883 (For Hermetically Sealed Units)

Notes: The maximum RF input power is set to ensure the amplifier's safety. Input power may be increased at your own risk to achieve the amplifier's full power. Please refer to the gain and power curves.

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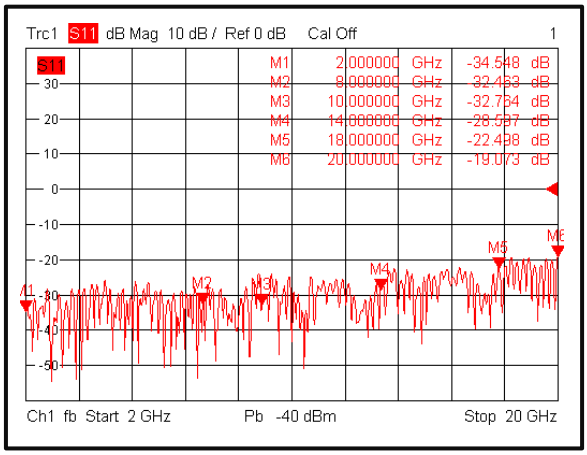
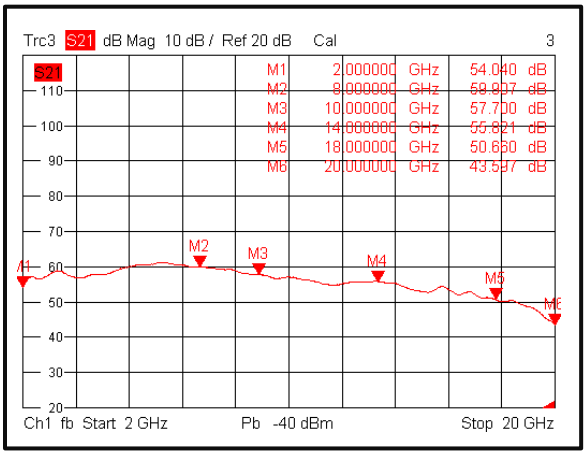
Typical Performance

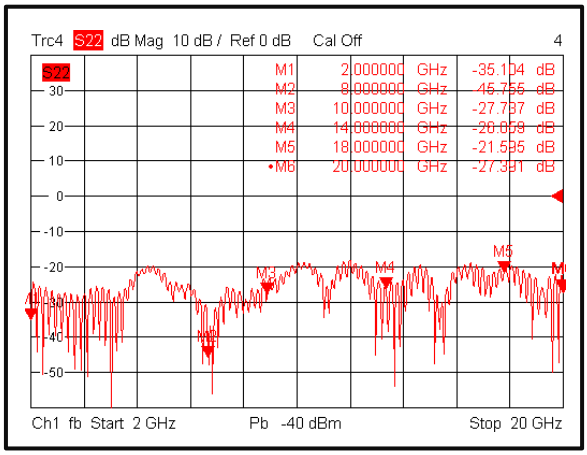
Input Return Loss vs Frequency @+25ºC



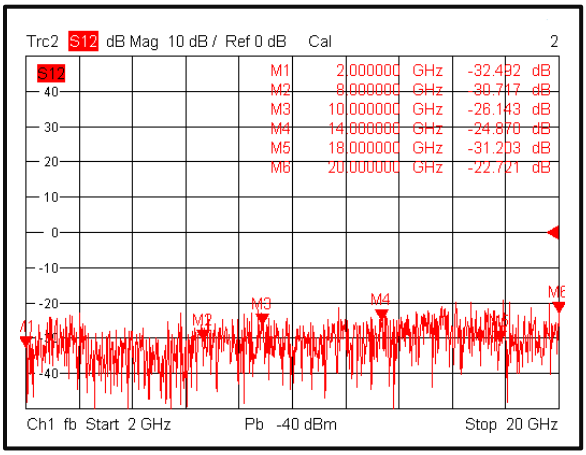
Gain vs Frequency @+25ºC



Output Return Loss vs Frequency @+25ºC



Isolation vs Frequency @+25ºC



Note:

Small signal VNA measurements include attenuators to protect equipment

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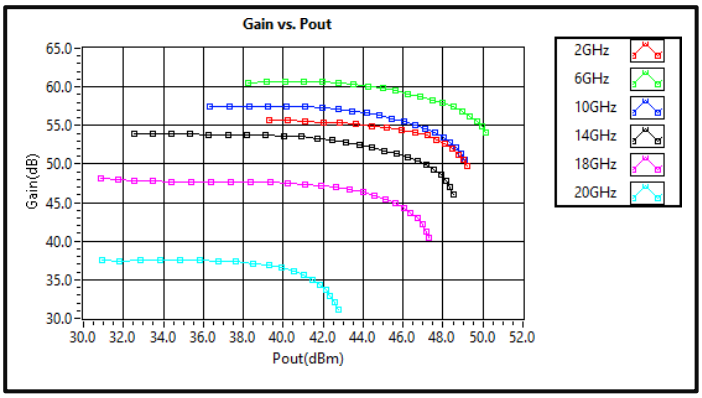
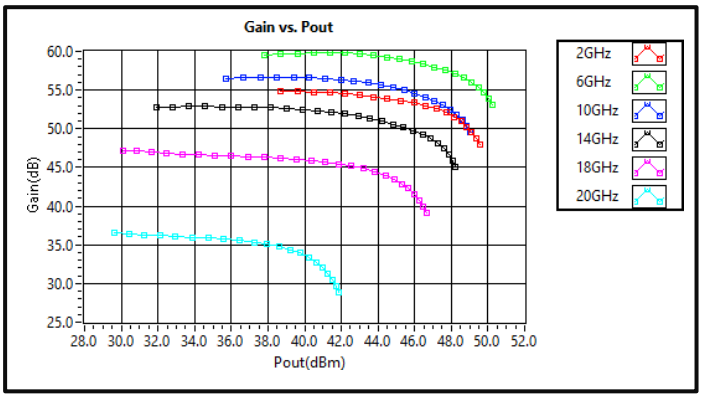
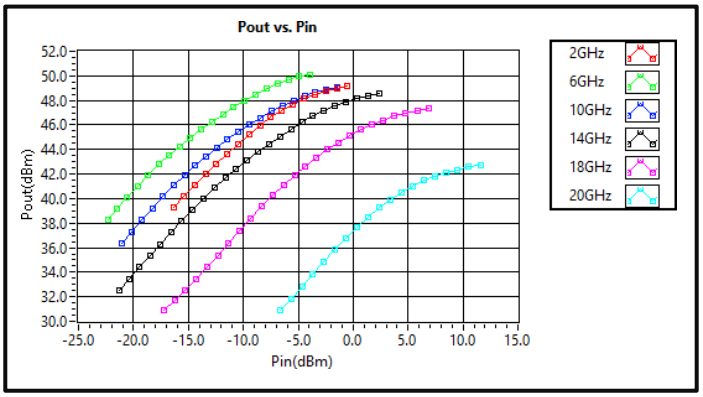
Gain vs Output Power CW



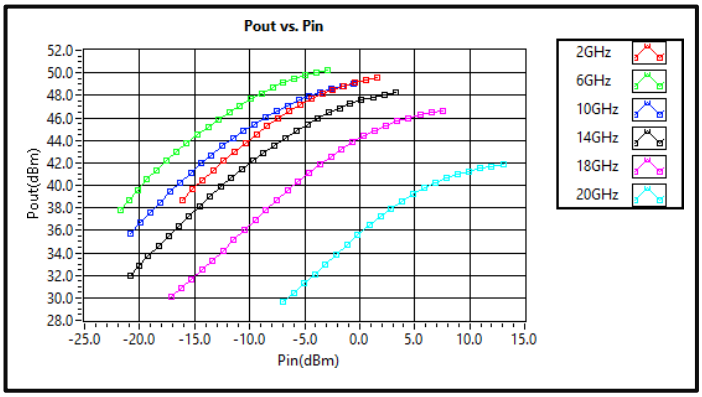
Gain vs Output Power *Pulse



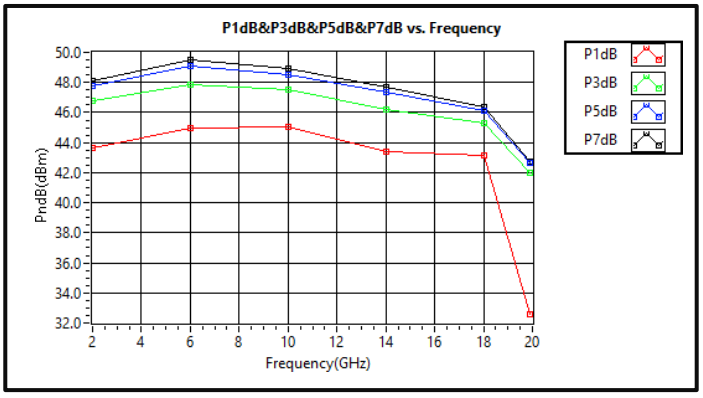
Output vs Input Power CW



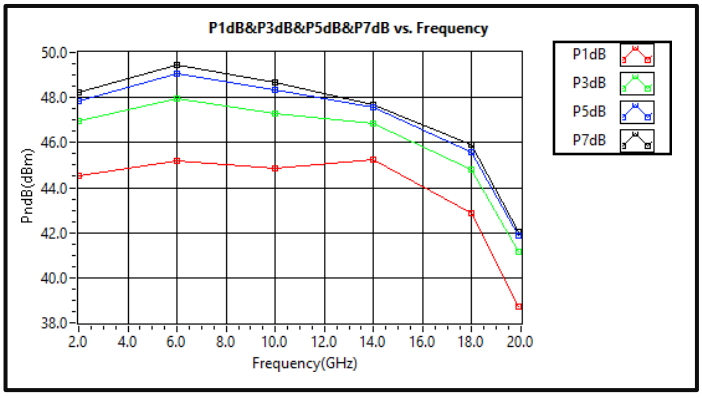
Output vs Input Power *Pulse



PxdB vs Frequency CW



PxdB vs Frequency *Pulse



*Pulse Psat power test signal: 20μs pulse width with 10% duty cycle.

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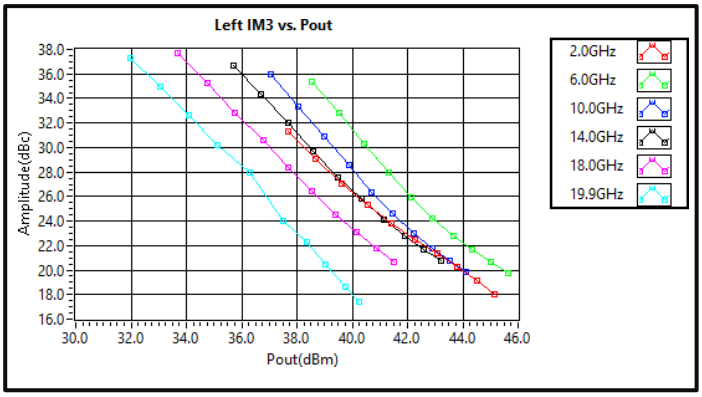
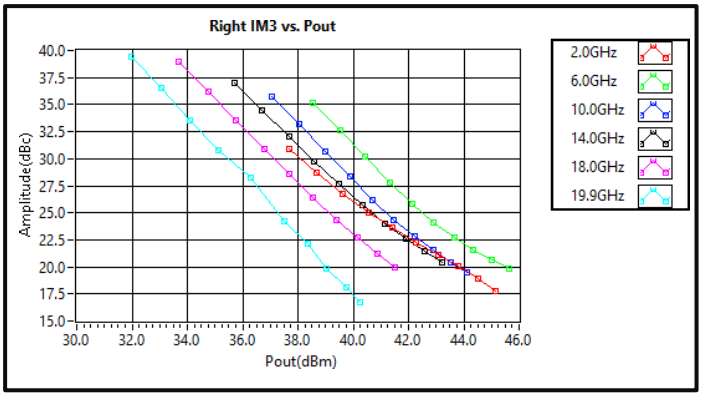
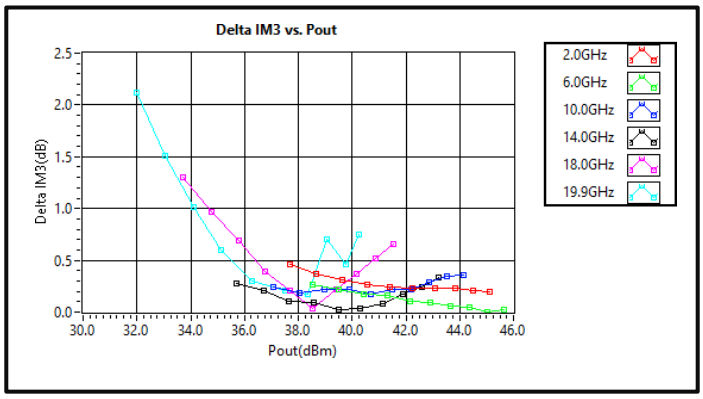
Left IM3 vs Output Power



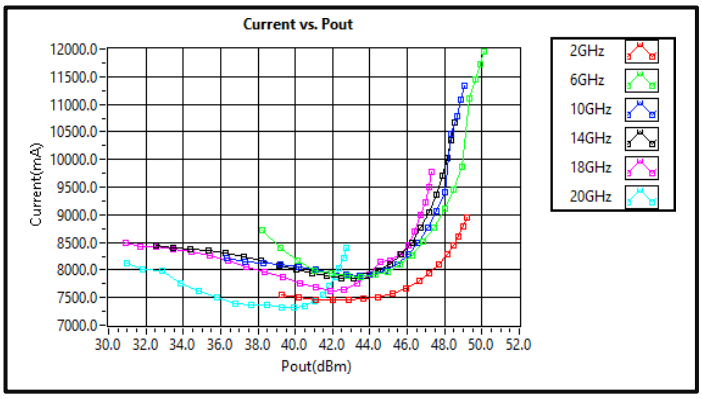
Right IM3 vs Output Power



Delta IM3 vs Output Power



Current vs Output Power (+48VDC)



Note:

- IM3 test performed with 1MHz tone spacing
- timing: 40dBm Output Power (20 us/div)

Notes:

- Matching connector and cable will be shipped with the product.
- If the customer would like to use their own wires, 12 AWG wire is required for high-current applications

Handling Precautions

Caution!
ESD-Sensitive Device

RF VOLTAGE HAZARD: Contact with RF fields at the output connector can cause burns or electric shock. High levels of RF/Microwave energy may be present when the unit is operating.

HIGH DC CURRENT HAZARD: High levels of DC current are present when the unit is operating.

Each amplifier is shipped in a hard and well-protected carry case.

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations:

Web: www.poamelectronics.com

Tel: +44 (0) 161 52 64 551

Email: sales@poamelectronics.com

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