



Solid State High Power Amplifiers
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Patented GaN S-Band Pulsed Amplifier Data Sheet

Thermal management has always been a major challenge in transistor based pulsed amplifiers. As heat builds up the noise rises and gain decreases diminishing efficient performance. This problem has been exacerbated due to the availability of higher output devices.

Significant problems with pulsed amplifier designs have included:

1. Waste heat dissipation and its detrimental distortion decreasing overall system efficiency (input power vs output power).
2. Excessive weight and large overall size. Higher power densities generate excessive heat that have required heavy, bulky external thermal transfer methods such as heat sinks, fans, or cooling liquids. Size and weight issues limit applications such as airborne.
3. Requirement of a large high-current DC power supply
4. Loss of amplifier gain and increase in signal noise and distortion as component temperatures rise, possibly resulting in a forced shut down making it unreliable in critical situations.

WDS Radar pulsed amplifier methodologies have eliminated waste heat and improved efficiency by using patented proprietary DC high-speed switching techniques. The result of this high-speed switching significantly reduces energy consumption, eliminates waste heat and its detrimental distortion, and significantly improves power efficiency. The size of the DC power supply can be greatly reduced by a factor of four. These methodologies solve the challenges of thermal management. The elimination of waste heat also eliminates the need for bulky, heavy heat sinks, fans, or cooling liquids. This allows for a crucial and significant reduction in the overall weight and size of the amplifier.

Electrical Specifications S-Band	Min	Max	Unit
Operating Frequency	2700	3100	Mhz
Power Output @ 10% Duty		2800	Watts/dBm
Pin for maximum rated power out	-3.0	-0-	dBm
Duty Cycle Standard		10%	%
Pulse Width Standard	0.5	100µs	µs
PRF	0.1	2	kHz
Pulse Droop at 100 µs	0.2	0.8	dBm
Operating Voltage	48	51	VDC
RF Input Connector		SMA Female	
RF Output Connector		7/16 DIN	
DC Power & Control Connector		7 position Sub D	
DC Power Consumption		125	Watts/typ
VSWR Input/Output		1.5 to 1 typ	
Pre-Amp Not Required			

Mechanical/Single Module	Wide	Deep	High
Dimensions w/Base Plate (inches)	14.125	12.250	2.50
Weight		13.1 lbs	
Material		6061 T-6 Aluminum	
Finish	High temp ceramic coating over electrolysis nickel plate		

Environmental Characteristics	Min	Max
Non-Operating/Storage	-40 C	+80 C
Operating Ambient Temperature	0 C	+75 C
Relative Humidity Non-Condensing	90%	

System Protection

Low/High Voltage Shutdown
 Over Temperature
 Duty Cycle Limit
 VSWR Limit

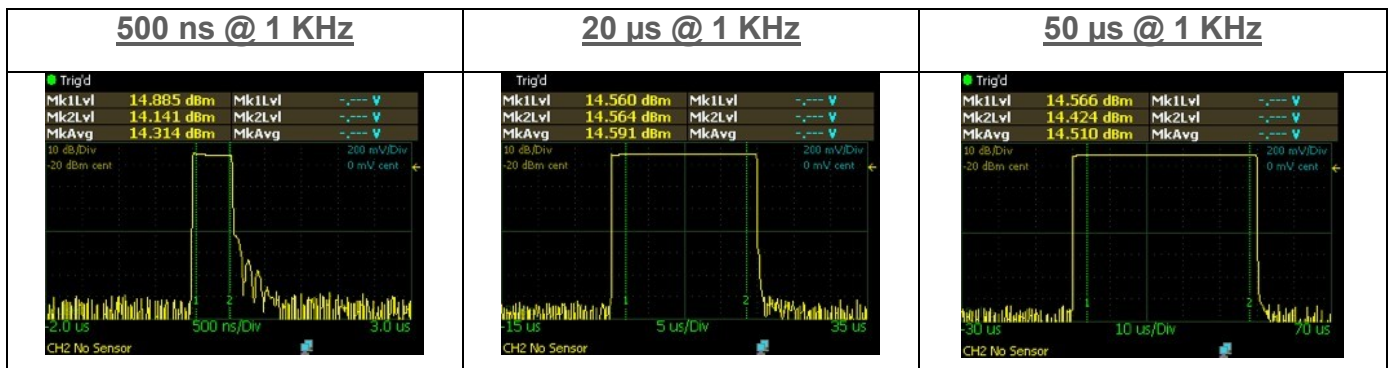
Communication For Status Forward/Faults Forward/Shutdown

On-Board Web Interface via Ethernet
 RJ-45 Connector

Options

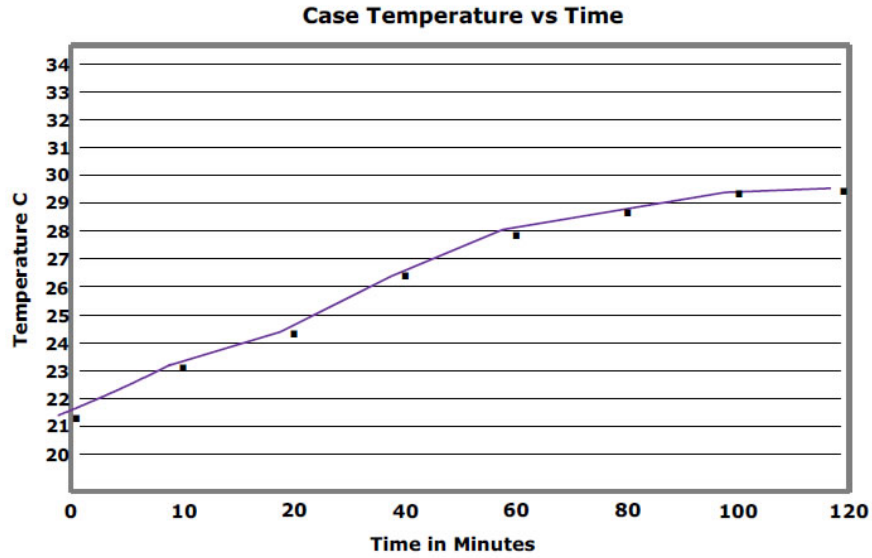
Higher Pulse Width/Duty Cycle
 Primary Power
 Multi-Combined Units
 Circular Military Power Connector
 Military Specifications

Pulse Performance



Temperature Performance Over Time

Note: Tested on lab bench independent of attachments.



*All values listed are typical and are subject to change. Data should be used for general reference only. Other operational parameters are available upon request from WDS Radar.

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