

Ka BAND SUBSYSTEMS

“Providing integrated circuit solutions up to 110 GHz”

Your Solution Provider for RF and Microwave Sub-Systems

- * Off-the-shelf MMIC : LNA, MPA, HPA
- * Bare die or SMD packaged components
- * Custom designed products : SiGe, GaAs, GaN
- * From "Design to Performance" to "Design to Cost"
- * ISO 9001 Certified




VWA 0000690 AA
Ka Band 10W, 40dB Gain - Linear SSPA

- * 2 Stages High Power GaN Amplifier
- * Wide band : 29 to 31 GHz
- * High P1dB>+40dBm
- * High adjustable signal gain : 40dB min
- * K Input connector : waveguide Output WR28
- * Power supply : 3A @ +24V
- * SFF size : 60x70 13.7mm (out of waveguide)



Advanced Surface Mount Technologies & Packaging Solutions



VectraWave is a solution provider for integrated electronic in high frequency microwaves and optoelectronic for telecommunications over radio or optical fiber, in the field of civil, security, military market. VectraWave is an independent company, delivering "OEM" and proprietary Integrated Circuits and System In Package or Multi-Chip-Modules improving performances and costs of communication system equipment, by offering components based on SiGe, GaAs, micro-electronics and packaging advanced technologies.

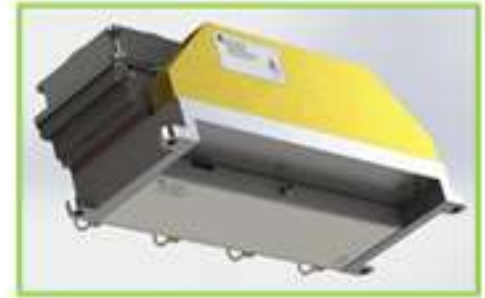
**Smart Amplifiers, Integrated Circuits, Systems
 for Microwave, RF and Lightwave Equipements**





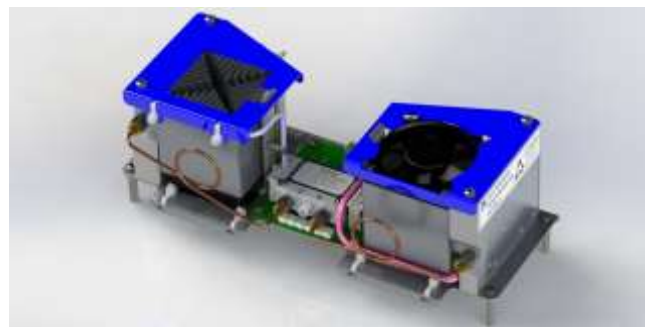
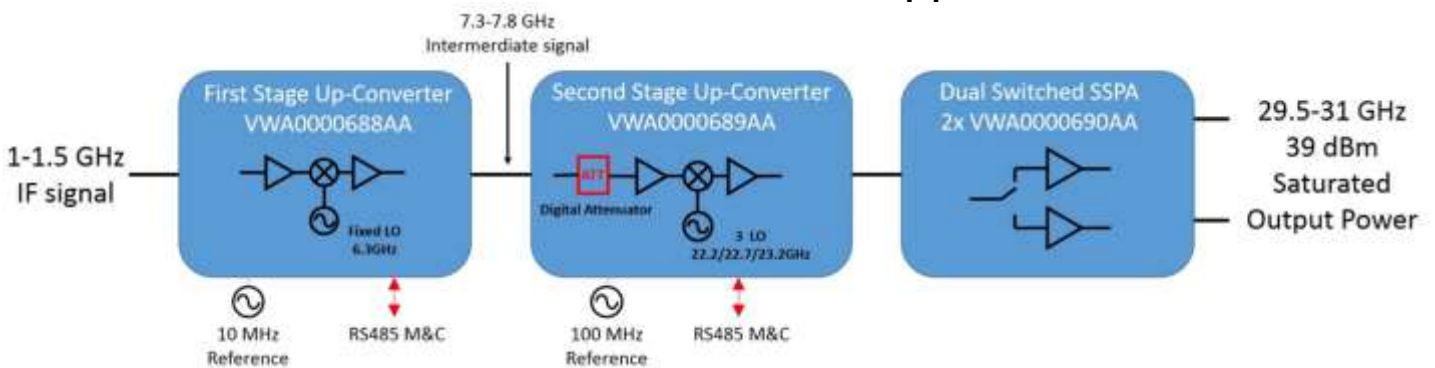
Ka Band SSPA

10W/20W/ 40W



VWA0000687AA – 10W Ka Band Bloc Up Converter

-
- Double Stage Up Converter and dual switched SSPA,
- Transpose an IF signal (1-1.5GHz) to a Ka-band RF signal (29.5-31GHz, 3 x Sub bandwidth of 500MHz),
- 55dB gain max for a Saturated Output Power to 39dBm,
- RS485 Monitoring and Control
- Mobile and Satellite Communications Applications



Smart Amplifiers, Integrated Circuits, Systems for Microwave, RF and Lightwave Equipements



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VWA0000688AA – First stage Up-Converter



VWA0000689AA - Second stage Up-Converter



VWA0000690AA – Solid State Power Amplifier

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VWA0000687AA – 10W Ka Band B.U.C. specification

Parameters		Min	Typ	Max	Units	Comments	
Frequency Range	Input	1		1.5	GHz		
	Output	29.5		31	GHz		
Electrical Specifications	Input Power		-15	-10	dBm		
	Saturated Output power		39		dBm		
	IM3 @Pout=34dBm		-25		dBc	two-tone 5MHz	
	Attenuator Range	0		31.5	dB	0.5dB step	
	External Reference 10MHz	Frequency Input Power	10 0 ± 5dB			MHz dBm	
	External Reference 100MHz	Frequency Input Power	100 2			MHz dBm	
	Output Phase Noise	100Hz 1kHz 10kHz 100kHz 1MHz		-66 -80 -81 -94 -115		dBc/Hz	
	Gain Flatness Full Band				± 3	dB	
	DC Supply	voltage current	22 1.6	24	26 4.5	V A	
	Parameters		Comments				
Interfaces Specifications	Input	K2.92 (f) - Anristsu K102F					
	Output	WR28 Flat - UG599-U					
	Reference 10MHz	SMA (f) - Multicomp 19-49-5-TGC					
	Reference 100MHz	SMA (f) - Multicomp 19-49-5-TGC					
	Supply	Mini-Fit Jr - Molex 39-30-1042					
	M&C connector	DataMate L-Tek HARWIN M80-8420342					
Mechanical	weight	2300 g					
Monitoring and Control communication	RS485	Attenuator, sub-band Local oscillator of second Up-converter, switched SSPA output, temperature monitoring					

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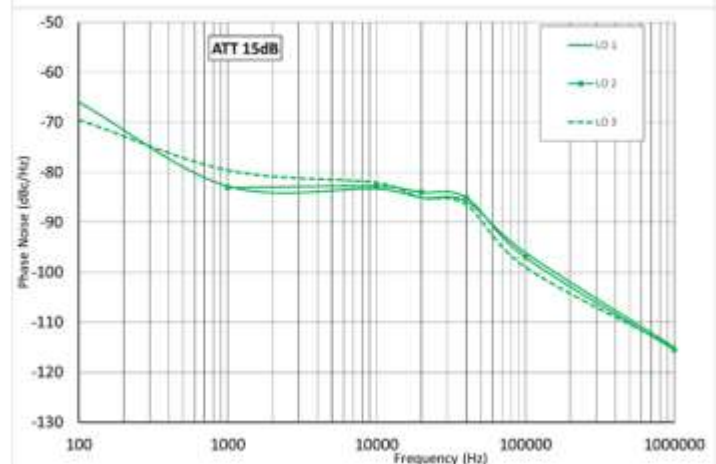
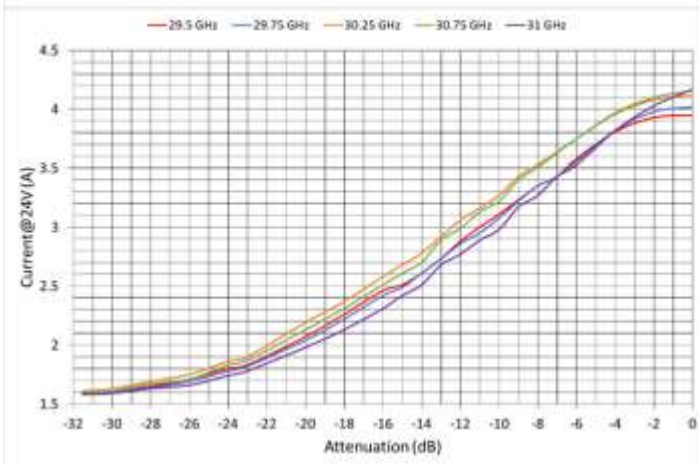
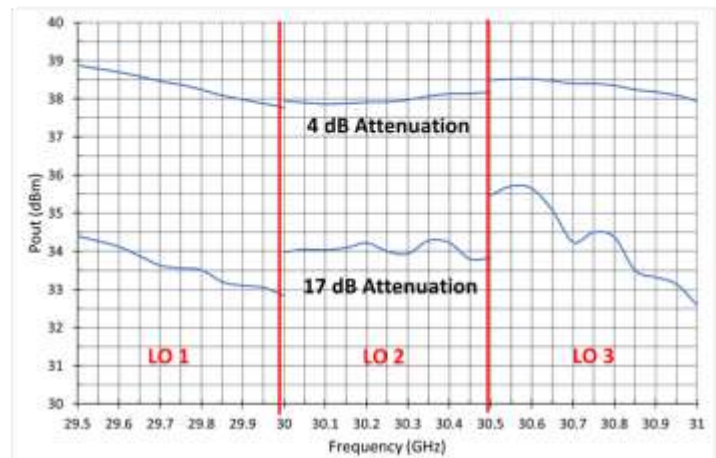
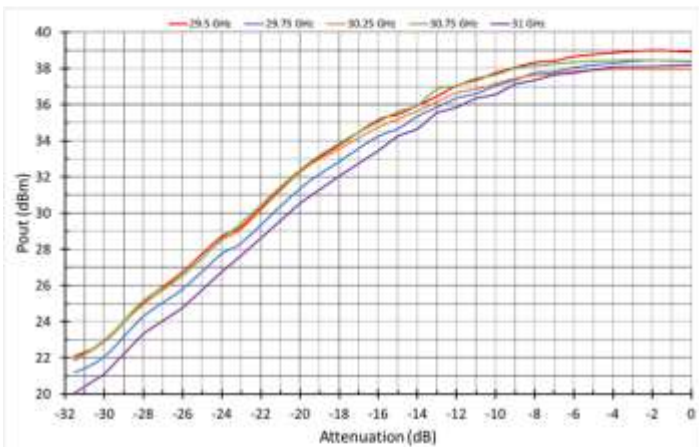
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VWA0000687AA – 10W Ka Band B.U.C. Measurement

Preliminary Measurement @ Tamb = +25°C

Nota : Case Temperature Elevation = +45°C for Pout = Psat (Tcase = +70°C @ Tamb = +25°C)



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VWA-0000690-AA
Ka Band 10W, 40dB Gain Linear SSPA

Description

The **VWA-0000690-AA** is a 10 W Solid State Linear High Power amplifier operating in the frequency range 29 to 31 GHz.

The device is a linear cascaded 2 stages amplifier, using High Power GaN MMIC devices. The mechanical housing include a variable attenuator and an isolator at the output of the power stage, ideal for connecting to an antenna or combining several SSPA together.

The devices is providing more than +40 dBm output power at P 1dB, with than 40dB of large signal gain from 29 to 31 GHz with a minimum flatness. The Design has been optimized to provide high efficiency, supply current is as low as 3 A within 24V, when delivering +40 dBm output power.

S2P file can be provided for system design simulation.

GDSII file is also available for mechanical design.

Typical Characteristics:

Parameter	Symbol	Min	Typ	Max	Unit
Frequency range	F	29		31	GHz
Gain from 8 to 12 GHz	G		40		dB
Output power @ 1dB	P1dB		40,5		dBm
Input/Output Return Loss	IS11I IS22I		12		dB
Supply voltage	VD		24		V
Supply current	ID		3		A

Features

- 2 stages High Power GaN Amplifier
- Wide band : 29 to 31 GHz
- High P1dB > + 40dBm
- High adjustable signal gain: 40dB min
- K Input connector; Waveguide Output WR28
- Power supply: 3 A @ +24 V
- SFF size : 60 X 70 X 13,7 mm (out of Wave guide)

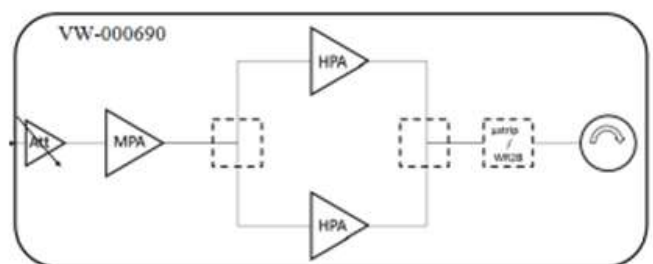
Applications

- SatCom Transmitter
- Broadband communication
- Test and measurement
- Higher output SSPA

Ordering information

Product code
VWA 0000690 AA

Functional Block Diagram



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VWA-0000689-AA

**Ka Band Up-Converter,
20dB Adjustable Gain
Integrated LO**

Description

The **VWA-0000689-AA** is a Ka-Band integrated Up-Converter with 20 dB adjustable of conversion gain.

The device has an internal adjustable local oscillator that require a 100 MHz reference. Its input IF 7.3 to 7.8 GHz is up-converted to Ka-band at a linear output power of 15 dBm. The device is composed of an up-conversion scheme to ensure a low phase noise and high rejection and include a 6-bits attenuator to adjust conversion gain.

An interface board allows a thermal monitoring, gain compensation, frequency local oscillator control with small frequency step and 6-bits gain control trough RS485 bus.

GDS file is also available for mechanical design.

Typical Characteristics:

Parameter	Symbol	Min	Typ	Max	Unit
IF Bandwidth	F _{IF}	7.3		7.8	GHz
RF Bandwidth	F _{RF}	29.5		31	GHz
Adjustable Gain	G			20	dB
Output power @ 1dB	P1dB		15		dBm
Input/Output Return Loss	IS11I IS22I		12		dB
LO Phase Noise	@100Hz @1kHz @10kHz @100kHz @1MHz		-66 -74 -80 -94 -118		dBc/Hz
Supply voltage	VD		24		V
Supply current	ID		0.36		A

Features

- IF Bandwidth : 7.3 to 7.8 GHz
- RF Bandwidth : 29.5 to 31 GHz
- P1dB : 15 dBm
- Digital Gain control : 20 dB max
- 100 MHz reference
- Thermal Monitoring and gain compensation
- 2.9 connectors
- RS485 bus connector
- Power supply: 0.36 A @ +24 V
- SFF size : 180 X 120 X 25 mm

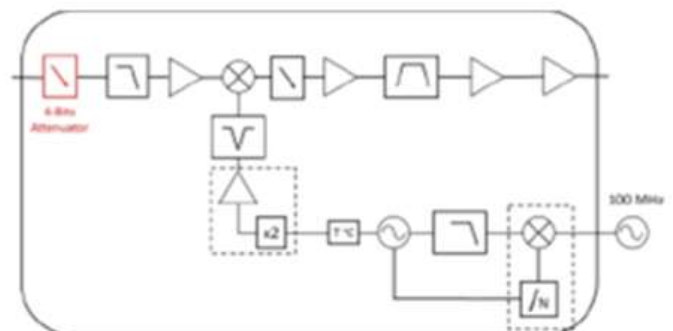
Applications

- SatCom Transmitter
- Broadband communication
- Test and measurement

Ordering information

Product code
VWA 0000689 AA

Functional Block Diagram



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VWA-0000688-AA
**7.3 to 7.8 GHz Up-Converter ,
15dB Conversion Gain
Integrated LO**
Description

The **VWA-0000688-AA** is a C-Band integrated Up-Converter with 15 dB of conversion gain.

The device has an internal local oscillator that require a 10 MHz reference. Its input IF 1.0 to 1.5 GHz is up-converted to 7.3 to 7.8 GHz frequency band at a linear output power of 10 dBm. The device is composed of an up-conversion scheme to ensure a low phase noise and high rejection.

GDSII file is also available for mechanical design.

Features

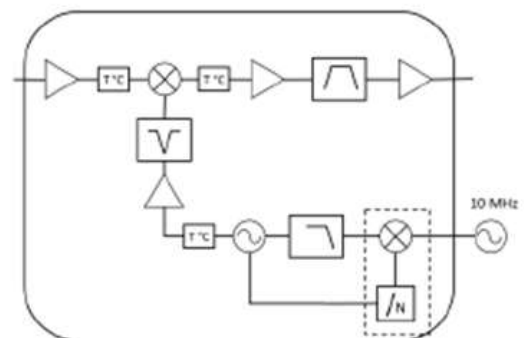
- IF Bandwidth : 1.0 to 1.5 GHz
- RF Bandwidth : 7.3 to 7.8 GHz
- P1dB : 15 dBm
- Gain : 15 dB max
- 10 MHz reference
- Thermal gain compensation
- 2.9 connectors
- RS485 bus connector
- Power supply: 0.18 A @ +24 V
- SFF size : 180 X 120 X 25 mm

Applications

- SatCom Transmitter
- Broadband communication
- Test and measurement

Ordering information

Product code
VWA 0000688 AA

Functional Block Diagram

Typical Characteristics:

Parameter	Symbol	Min	Typ	Max	Unit
IF Bandwidth	F_{IF}	1.0		1.5	GHz
RF Bandwidth	F_{RF}	7.3		7.8	GHz
Gain	G		15		dB
Output power @ 1dB	P1dB		10		dBm
Input/Output Return Loss	IS11I IS22I		12		dB
LO Phase Noise	@100Hz @1kHz @10kHz @100kHz @1MHz		-80 -90 -93 -100 -130		dBc/Hz
Supply voltage	VD		24		V
Supply current	ID		0.18		A

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