

# Broadband High Power Amplifier

Product Name : RCA002053H50G, Code Name :

Doc. Name : General Spec.

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<p style="text-align: center;"><b>General Specification</b> for <b>RCA002053H50G</b></p>
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Created	Printed	Document Number	Revision	Manufacturer
2014/6/24	2014/7/9		A	<b>RFcore co.,Ltd</b>
File : RCA002053H50G General Spec.docx				

*The Specifications is subject to change before finalization*

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# Broadband High Power Amplifier

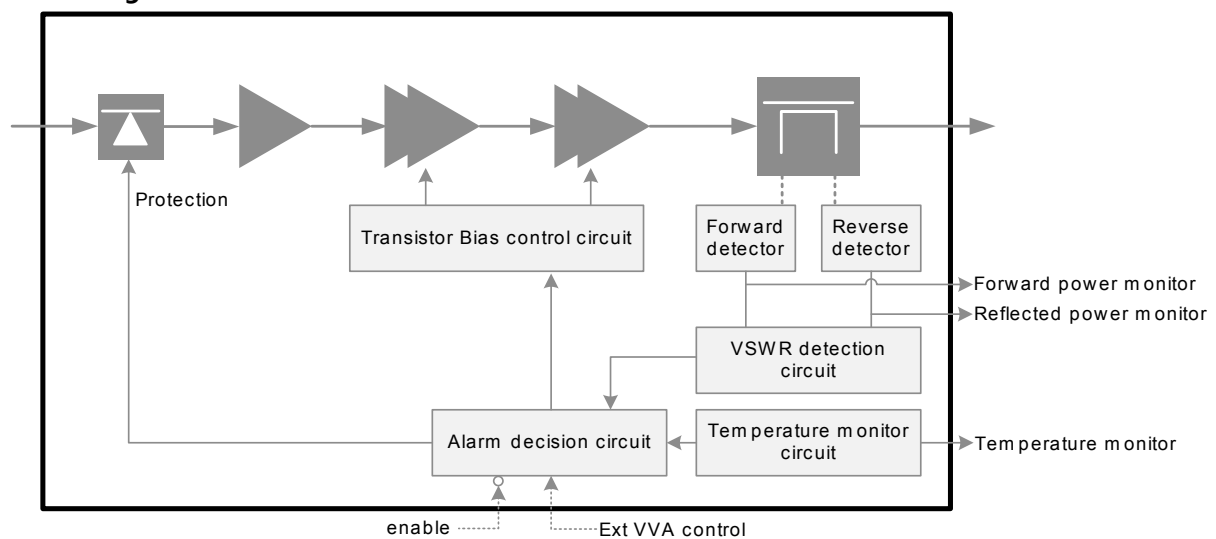
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ELECTRICAL SPECIFICATIONS		@ 50 Ohms load, 28Vdc, Tc = 35 °C
Parameter	Specification	Remark
Frequency Range	20 ~ 530 MHz	
Saturated Output Power	20-530MHz : 50 dBm min	@ CW, 50 ohm load
Output Power at 1dB Compression Point	47 dBm min.	@ CW
Small Signal Gain	50dB min	@ Input = -15dBm
Gain Flatness	± 1.5 dB	@ Input = 0dBm
Input Power for no damage on DC ON	10dBm max	@ 50 ohm load
Harmonics output@ Pout = 100W	2 <sup>nd</sup> : Min 13dBc 3 <sup>rd</sup> : Min 11dBc	
Spurious Signals	70dBc typ, 60dBc min.	
Input VSWR	Less than 1.5 : 1	
Maximum Output Load Condition for survival	Infinite VSWR	
On/Off Switching Time	2 usec typ.	Typical off -> on : 1.5 usec on -> off : 0.6 usec
DC Input Voltage	+28V	Working with degraded performance down to 20V
Current Consumption	8A typ. , 9.0A max	Efficiency > 40% @ 100W @50 Ohm load
RF Input Signal Format	CW, FM, AM, pulse etc.	

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## Block diagram



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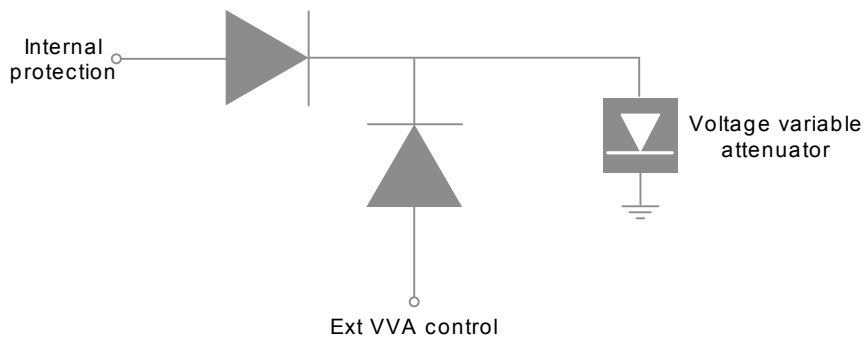
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I/O Interface		
Parameter	Specification	Remark
I/O Map (D-SUB HD)	1. GND	
	2. External VVA Control	Refer to Figure 1.
	3. VSWR Fail Alarm	TTL HIGH(5V)
	4. Temperature Monitor	$V_T = 0.01 V \times T_c(^{\circ}C) + 0.5V$ $T = \text{Case Temperature} \pm 5^{\circ}C$
	5. Do not connect	
	6. Shutdown	TTL Logic "High" : Amp. Disable TTL Logic "Low" or pin is opened : Amp. Enable (Internally pulled-down)
	7. Do not connect	
	8. Forward Power Monitor	Logarithmic Detector(0.05V/dB)
	9. Reflected Power Monitor	Logarithmic Detector(0.05V/dB)
	10. Vdc	
	11. Vdc	
	12. Vdc	
	13. GND	
	14. GND	
	15. GND	

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**\* Typical attenuation performance with using Ext. VVA control pin**



**Figure 1. External VVA control pin block diagram**

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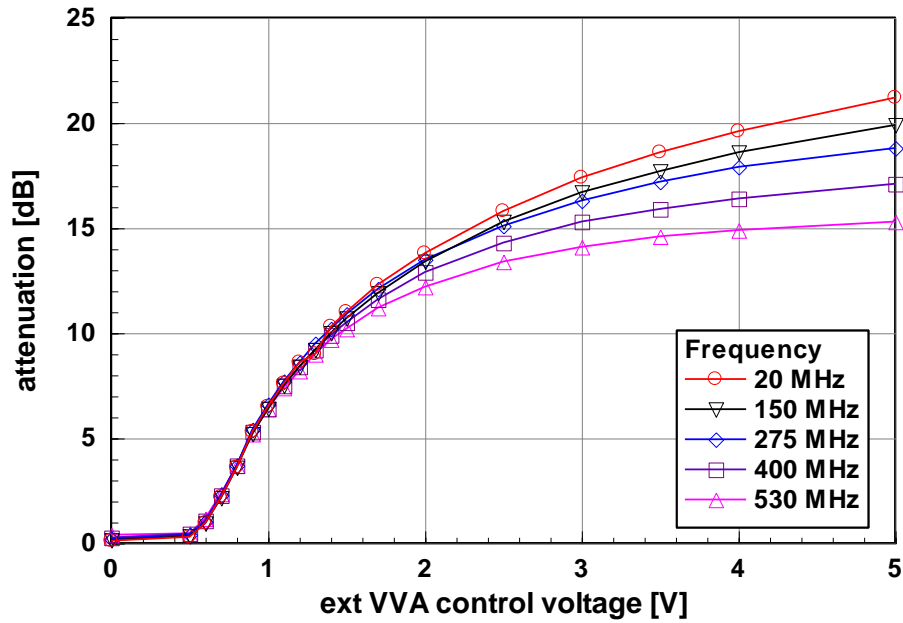


Figure 2. Ext. VVA control pin VS Attenuation (Typical)

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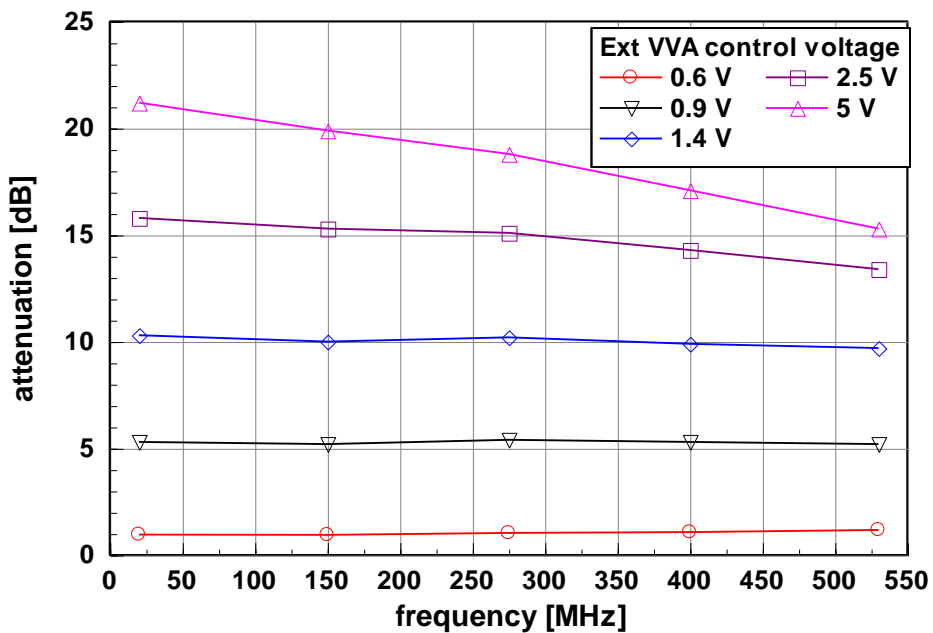


Figure 3. Frequency VS Attenuation (Typical)

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## \*\* Typical detector performance

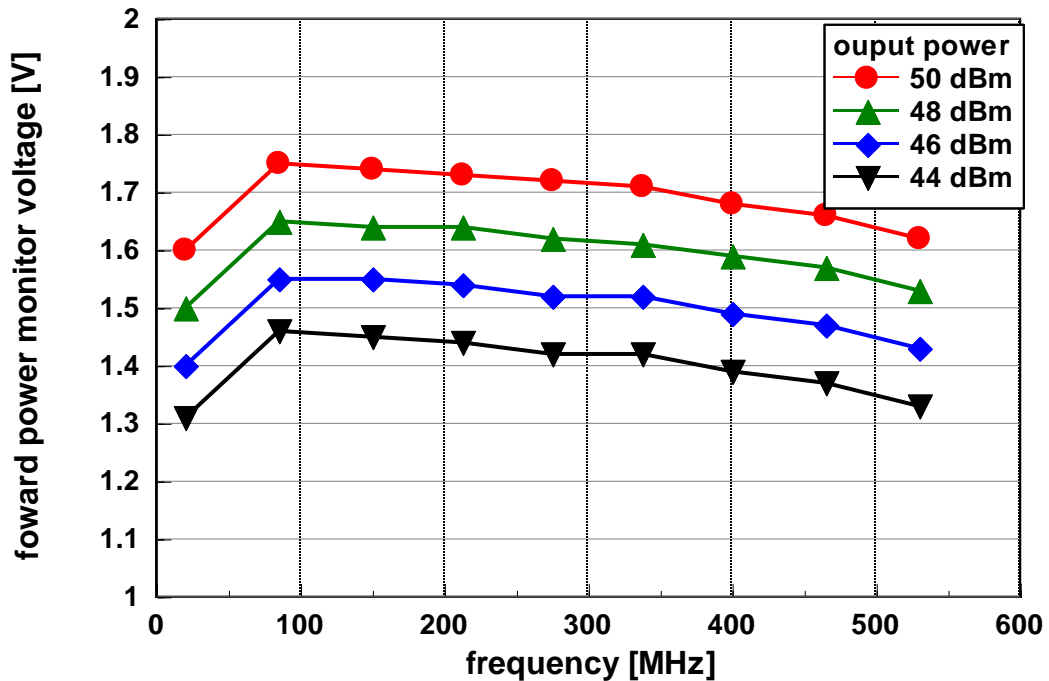


Figure 4. frequency VS forward power monitor voltage (typical)

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Detector voltage = 0.05V/dB, detector flatness  $\leq 3$ dB.

Detector stability : TBD (has temperature deviation)

\*\* Internal protection

The VSWR fail protection activates when the output is connected VSWR >5:1 load :

- Typical 10dB back-off

The Over temp protection :

- The PA is disable state when temperature becomes around 85°C, then, The PA is enable state when it becomes around 65°C.

ENVIRONMENTAL SPECIFICATIONS		(Design to meet)		
Parameter	Specification	Remark		
Operating Case Temperature	-20 ~ +80 °C			
Storage Temperature	-30 ~ +85 °C			
Vibration	MIL-STD-810F – Method 514.5 – Proc I Category 13	Airborne		
Shock	MIL-STD-810F – Method 516.5 – Proc I	Airborne		
Relative Humidity (Non-Condensing)	MIL-STD-810F – Method 507.4			
Altitude	MIL-STD-810F – Method 500.4 – Proc II			
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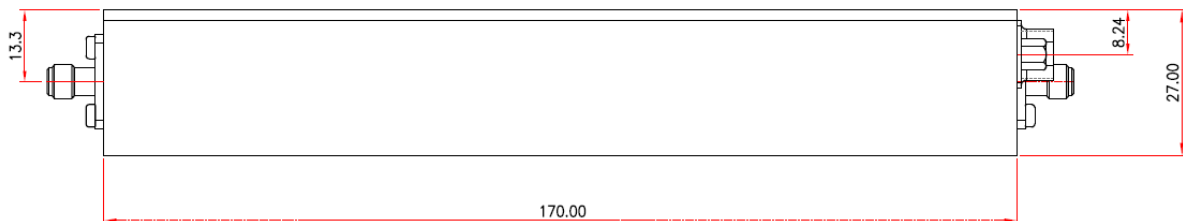
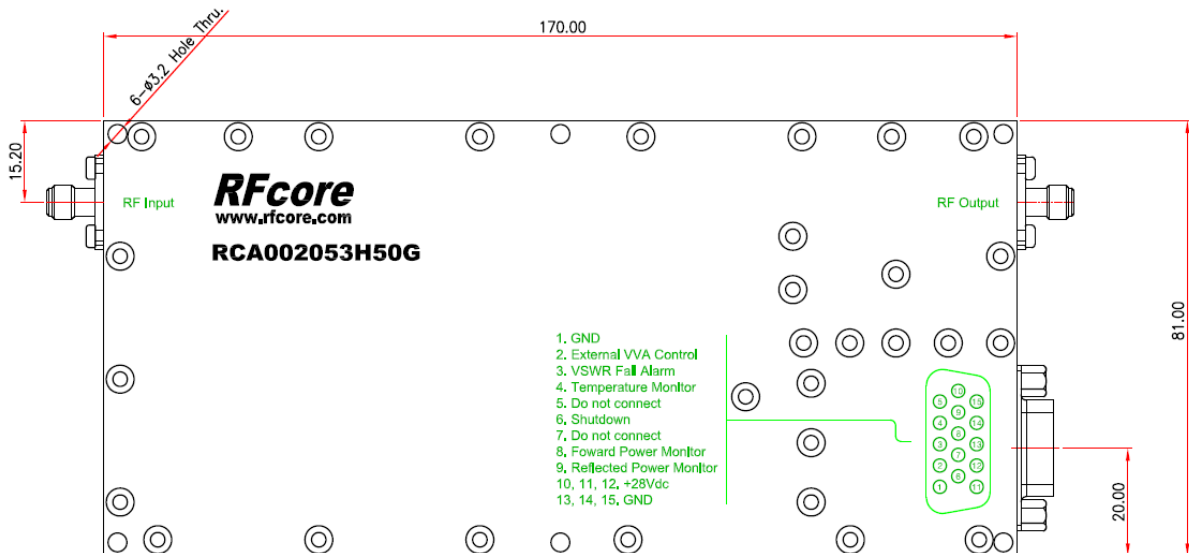
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## MECHANICAL SPECIFICATIONS

Parameter	Specification	Remark
Dimension	170 X 81 X 27 mm	
RF Input Connector	SMA – Female	
RF Output Connector	SMA – Female	
DC & Interface Connector	D-Sub(HD) 15Pin Male	
Cooling	Adequate Heat-sink required	

## MECHANICAL DRAWING



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