

Description

The Model INS2009 is designed for band specific applications. This high power, class AB solid state amplifier utilizes LDMOS power devices to offer excellent efficiency and linearity characteristics from 1500 to 1700MHz. Inspower's ISO9001 quality management system assure consistent performance and highest reliability.

Product Features

- 50Ω RF impedance, Fully Integrated Matching
- 40W Output at P1
- Single Supply Operation : Nominally 24V
- Built-in monitoring functions
- High reliability and ruggedness



Electrical Specifications

Symbol	Parameter	Unit	Min.	Typ.	Max.
BW	Frequency of Operation	MHz	1500		1700
Psat	Pout @ Psat, CW	dBm	47		
P1	Pout @ P1, CW	dBm	46		
PG	Power Gain @ 1600MHz Pout=45dBm	dB	48	49	50
Gain Flatness over Freq.	Over 200MHz, Small Signal	dB		±1.25	±1.5
	Over 200MHz, Pout=P1dB	dB			±1.25
S11/S22	Input & output VSWR				1.5:1
ΔG	Gain variation with temperature	dBc		±1.0	-
OIP3	Output IP3 45dBm/Total@CW 2-tone Channel Spacing 100KHz	dBm		52	
VDC	Operation Voltage	V	23.0	24.0	25.0
ID	Current Consumption @Pout=46dBm	A		5	6

Mechanical Specification

Parameters	Value	Unit
Dimensions (W x D x H)	110 * 95 * 22	mm
RF Connector Input/output	SMA Female	
DC & I/O Connector	D-Sub 9Pin Male	
Weight	0.5	Kg

Environmental Characteristics

Parameters	Specifications	Remark
Operating Temperature Range	-20°C to +60°C Ambient	
Storage Temperature Range	-40°C to +85°C	
Operating Humidity	95% Non-Condensing	
Cooling	External Heat-Sink	
Vibration	Bellcore TR-NWT-000063 (1m/s*s 10~150Hz)/2G	

Protection

Item	Specifications for Activation
Output Protection	Mismatch Protected with Isolator
High VSWR Alarm	<p>Alarm is generated when Output port is open or a mismatch with external output port connector.</p> <p>Though these alarms happen, amplifier should keep the normal operation status over RF. At this time Pin 5 of D-sub 9pin interface connector go to +5V level from normal 0V.</p> <p>*Occurrence: Return loss>3dB @ Reflected Power>43dBm</p> <p>**Alarm rising time: 4sec after Alarm condition occurs</p> <p>*** Recovery: immediately after the alarm condition disappeared.</p>

I/O Interface (D-sub 9pin Male)

Pin No	Pin Description	Specifications
1	Temperature Monitor	$VT = 0.02(V) * T(^{\circ}C) + 1(V)$, $T = \text{Case Temperature} \pm 5^{\circ}C$
2	Power Monitor	Log Slope detector $V_{pin2} = 4 \pm 0.1$ @ CW 46dBm, slope:0.1V/dB $V_{pin2} = 4 - (46 - P_{out}) * 0.1 \pm 0.1V$
3,8	GND	GND
4	Reflect Power Monitor	Linear Slope Detector $V_{pin4} = 1.4 \pm 0.1 V$ when Reflected Power = $45.0 \pm 1.5dBm$
5	VSWR Fail alarm	Pin5 Indicate high 5V TTL at same time High VSWR Alarm occurs. Always recover the normal status when return loss is more than 3dB.
6,7	Vcc	+24V
9	Enable/Disable	Enable: Active Low (GND) Disable: High +5V or Open status *pulled-up @ 5V with 10k ohm

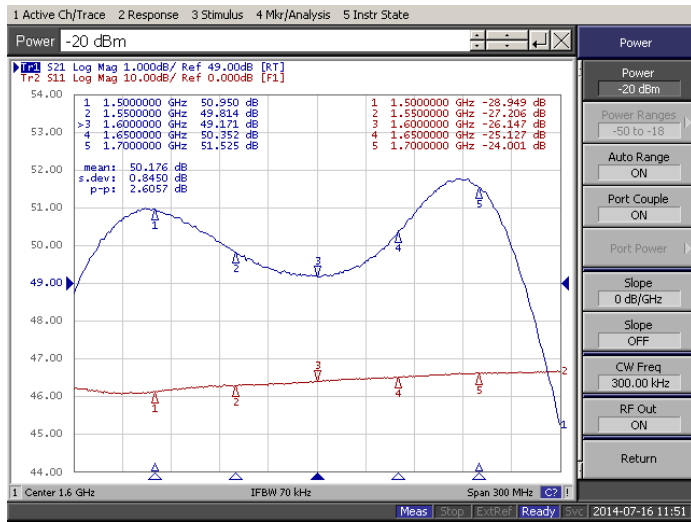
Typical Characteristics

Plot 1

Small Signal Gain @ Pin= -20dBm

Tr1 : Small signal Gain, 1dB/div, Ref 49dB

Tr2 : Input Return Loss, 10dB/div

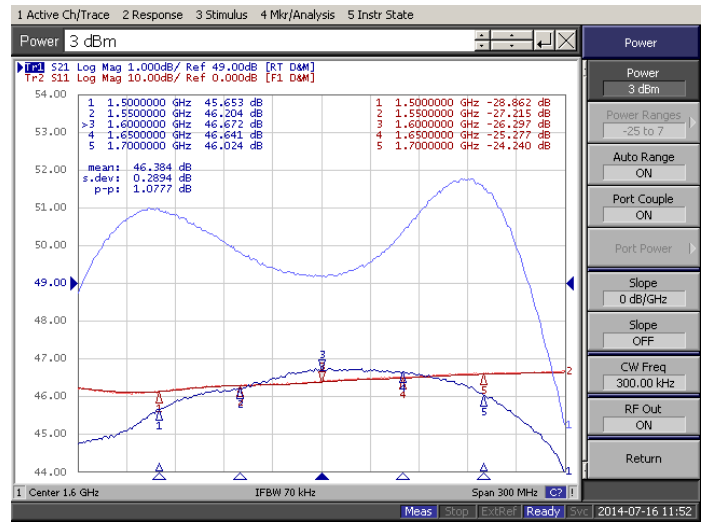


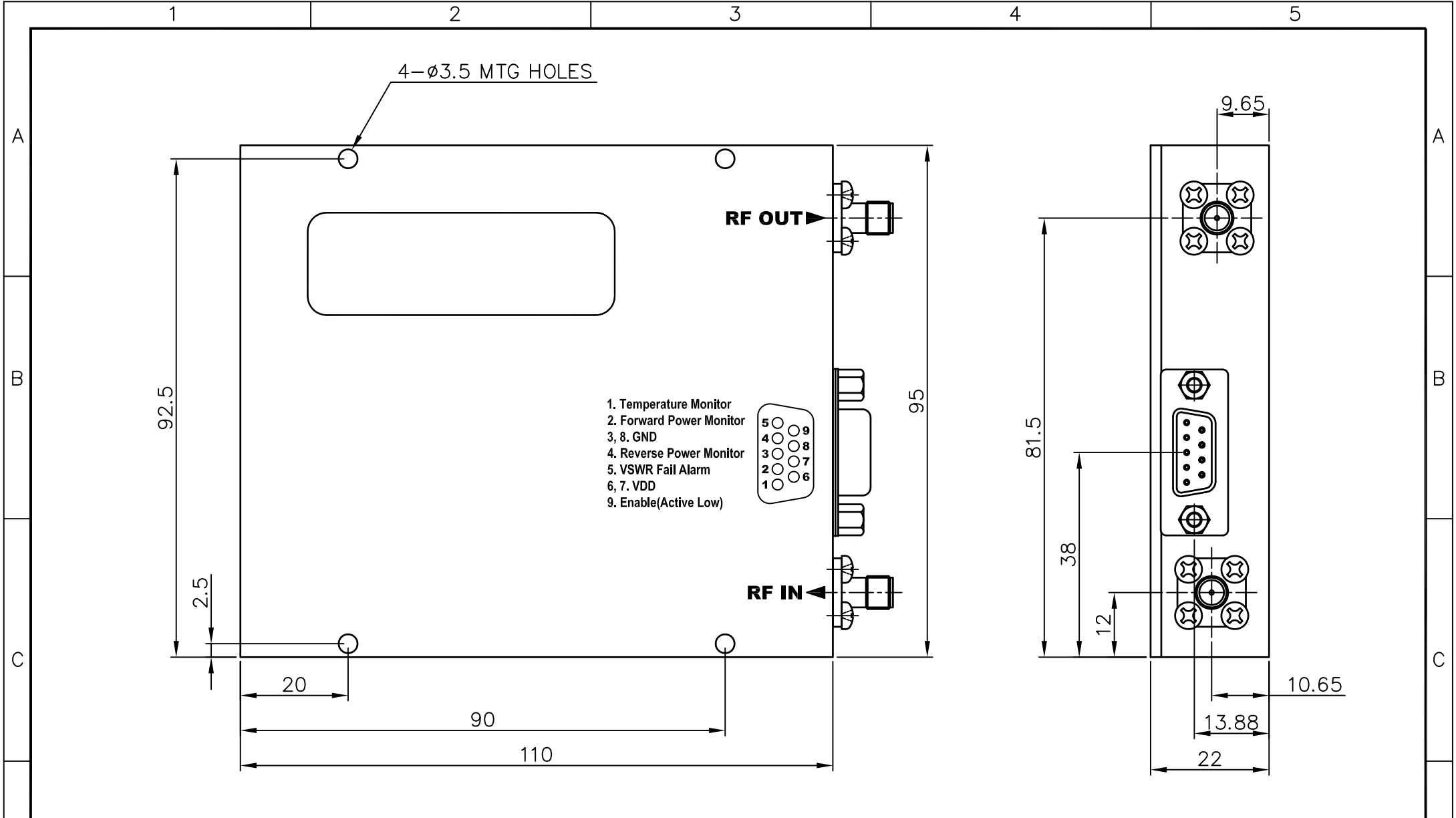
Plot 2

Power Gain @ Pin= 3dBm

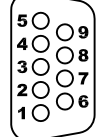
Tr1 : Psat Power Gain, 1dB/div, Ref 49dB

Tr2 : Input Return Loss, 10dB/div





- 1. Temperature Monitor
- 2. Forward Power Monitor
- 3, 8. GND
- 4. Reverse Power Monitor
- 5. VSWR Fail Alarm
- 6, 7. VDD
- 9. Enable(Active Low)



APPROVED	MATERIAL	A6061		PART NAME		OUTSIDE DRAWING	
	FINISH	☆ White-CHROMATE(Cr ³⁺)		DWG NO.	SHEET 1 OF 1		
CHECKED	THIRD ANGLE PROJECTION			SIZE	UNIT: mm		
	DESIGNED	S.K.KIM 2013.10.28		SCALE: CAD=1/1 PLOT=N/S	Q'TY: 1EA/SET		
	MODEL/TITLE	INS i1500-1700-40					