

INS2168(i1600-2020-40)

1600-2020MHz 50W Power Amplifier



Description

The Model INS2168 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 1600 to 2020MHz. Inspower's ISO9001 quality management system assures consistent performance and highest reliability.

Product Features

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

Electrical Specifications @ +24.0VDC, 25°C, 50Ω System

Symbol	Parameter	Unit	Min.	Typ.	Max.
BW	Frequency of Operation	MHz	1600		2020
P _{SAT}	Pout @ Psat, CW	dBm	47		
P _{1dB}	Pout @ P1dB, CW	dBm	46		
PG	Power Gain @ 1800MHz-Pout=45dBm	dB	48	49	50
Gain Flatness over Freq.	Over 420MHz, Small Signal	dB			±1.5
	Over 420MHz, Pout=10W	dB			±1.25
S11	Input Return Loss	dB			-15
S22	Output Return Loss	dB		-10	
ΔG	Gain variation with temperature	dB		±1.0	-
IMD3	Inter Modulation Distortion 40dBm/Total @2-tone, Channel Spacing 100KHz	dBc		-32	
VDC	Operation Voltage with full performance	V	23.0	24.0	28.0
VDC	Operation Voltage without damage	V	20.0	24.0	30.0
VSD	Current Consumption @ Shutdown	A		0.3	
IDQ	Quiescent Current	A		1.0	1.5
ID	Current Consumption @ Pout=46dBm	A		4.5	5.5
ID	Current Consumption @ Pin=6dBm	A		7	9
Ts	Enable / Disable Switching Time	uSec		2	5

INS2168(i1600-2020-40)

1600-2020MHz 50W Power Amplifier

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
Cooling	External Heat-Sink	

Environmental Characteristics (Design to Meet)

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	
Altitude	MIL-STD-810F Method 500.4	0 - 30,000 ft.
Shock	MIL-STD-810F Method 516.5	
Vibration	MIL-STD-810F Method 514.5	

Protection

Item	Specifications for Activation
Output Protection	Mismatch Protected with Isolator
High VSWR Alarm	Alarm: +5V, normal: 0V. Occurrence: Return loss>3dB @ Reflected Power>43dBm Alarm rising time: 4sec after Alarm condition occurs. Recovery: immediately after the alarm condition disappeared.

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

Pin No	Pin Description	Specifications
1	Temperature Monitor	VT= 0.02(V) * T (°C) +1(V), T=Case Temperature ± 5°C
2	Power Monitor	Log Slope detector. Vpin2=4 ±0.1 @ CW 46dBm, slope:0.1V/dB Vpin2= 4 -(46-Pout) *0.1±0.1V
3,8	GND	GND
4	Reflect Power Monitor	Linear Slope Detector Vpin4=1.4 ± 0.1 V when Reflected Power = 45.0±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	VDD	+24V
9	Enable/Disable	Enable: Active Low (GND) Disable: High +5V or Open status *Pulled up @ 5V with 10k ohm

INS2168(i1600-2020-40)

1600-2020MHz 50W Power Amplifier

INSPower
RF Amplifiers

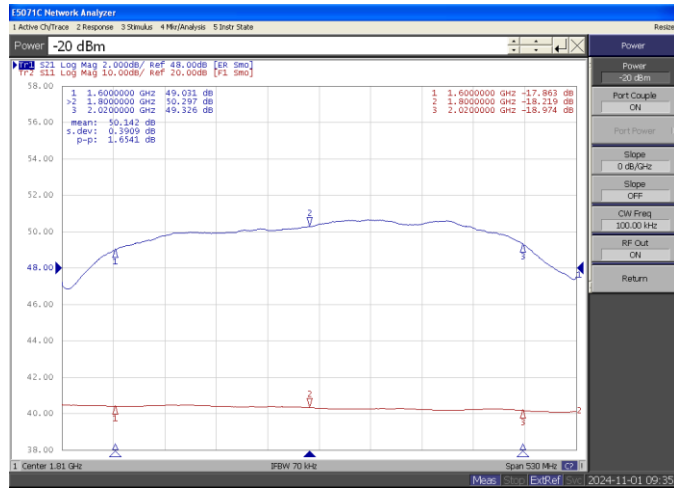
Typical Characteristics

Plot 1

Small Signal Gain @ $P_{IN} = -20\text{dBm}$

Tr1: Small Signal Gain, 1dB/div, Ref 48dB

Tr2: Input Return Loss, 10dB/div

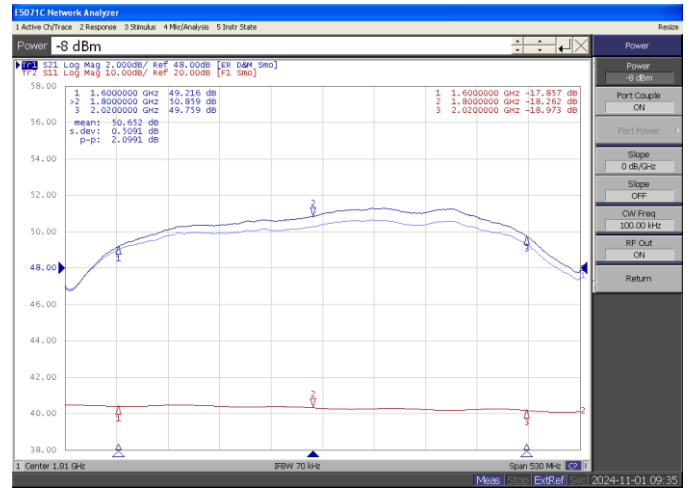


Plot 2

Power Gain @ $P_{IN} = -8\text{dBm}$

Tr1: Power Gain, 1dB/div, Ref 48dB

Tr2: Input Return Loss, 10dB/div



Plot 3

Power Gain @ $P_{IN} = -1\text{dBm}$

Tr1: Power Gain, 1dB/div, Ref 48dB

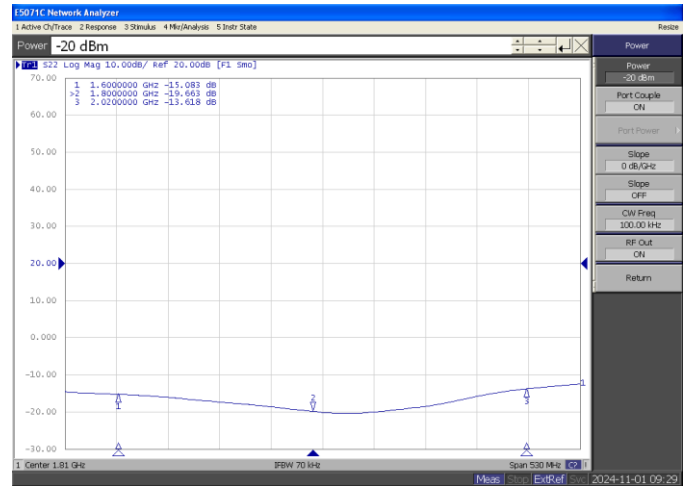
Tr2: Input Return Loss, 10dB/div



Plot 4

Output Return Loss @ $P_{IN} = -20\text{dBm}$

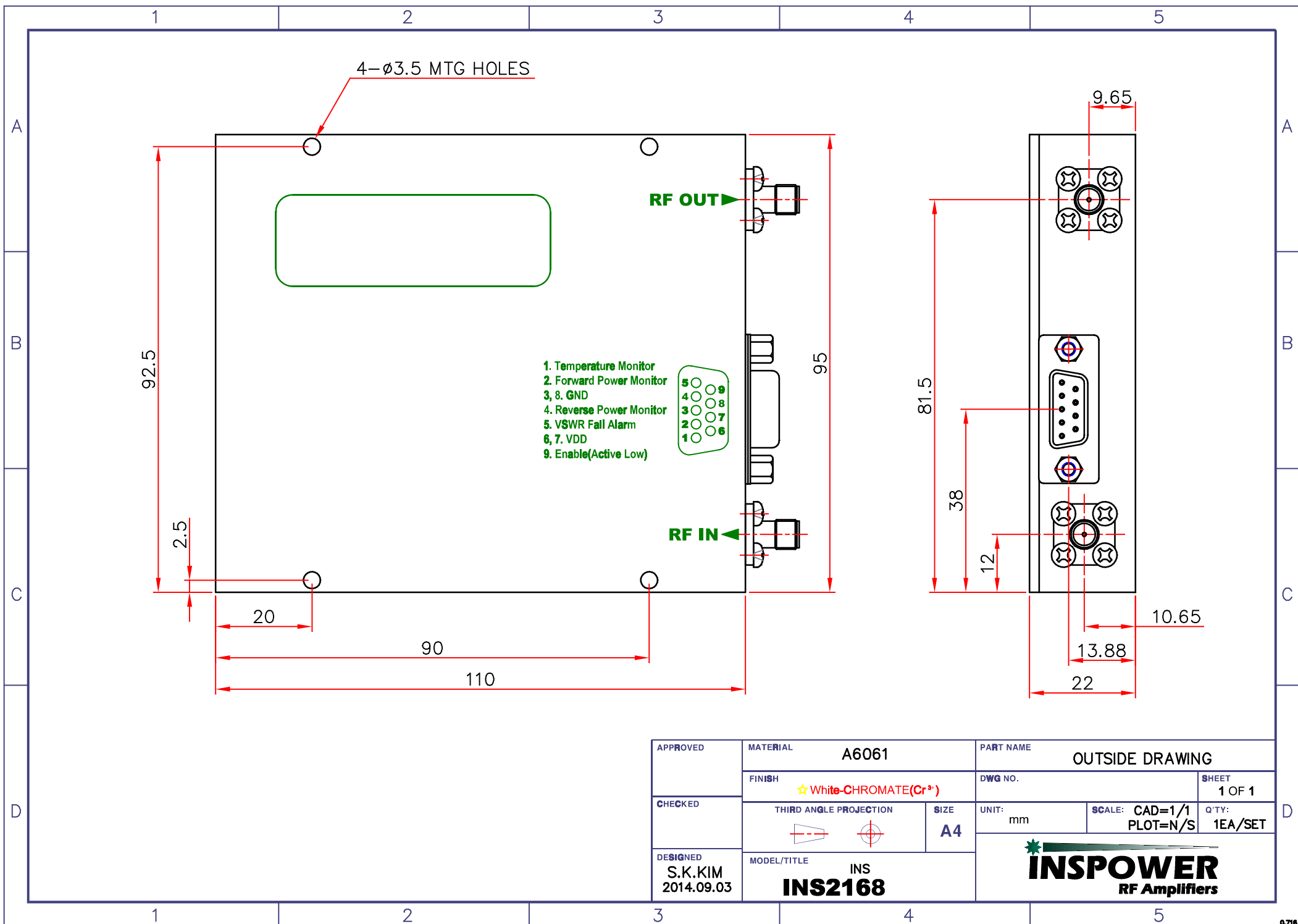
Tr1: Output Return Loss, 10dB/div



INSPower CO., LTD.

Tel: +82-70-4123-7002 Fax: +82-505-509-7005 sales@inspower.co.kr www.inspower.co.kr

Specification Ver 2.0 2024-11-01



APPROVED	MATERIAL A6061		PART NAME OUTSIDE DRAWING			
	FINISH ☆ White-CHROMATE(Cr ³⁺)		DWG NO.		SHEET 1 OF 1	
CHECKED	THIRD ANGLE PROJECTION 		SIZE A4	UNIT: mm	SCALE: CAD=1/1 PLOT=N/S	Q'TY: 1EA/SET
	MODEL/TITLE INS INS2168					
DESIGNED S.K.KIM 2014.09.03						