

INS2140

1100-1300MHz 100W Power Amplifier



Description

The Model INS2140 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 1100 to 1300MHz. Inspower’s ISO9001 quality management system assures consistent performance and the highest reliability.

Product Features

- 50Ω RF impedance, Fully Integrated Matching
- 100W Minimum Saturated Output Power
- Single Supply Operation: Nominally 28V
- Output VSWR Protection, High Temp Protection
- High reliability and ruggedness

Electrical Specifications @ +28.0VDC, 25°C, 50Ω System

Symbol	Parameter	Unit	Min.	Typ.	Max.
BW	Operating Frequency	MHz	1100		1300
P _{SAT}	Power Output Saturated	Watt	100	130	
P _{1dB}	Power Output P1dB	Watt	80		
G _{1dB}	Power Gain	dB	50		
G _{SS}	Small Signal Gain	dB	51-	53	
P _{IN}	Input Power for Rated P _{SAT}	dBm		0	3
ΔG _{SS}	Small Signal Gain Flatness	dB			±1.5
ΔG _P	Power Gain Flatness	dB			±1.0
S11	Input Return Loss	dB			-15
IMD	Third Order Intermodulation Distortion 2-Tone@ 41dBm/Tone, 2MHz Spacing	dBc		-25	-20
H	Harmonics @Pout=100W	dBc			-40
Spur	Spurious Signal	dBc		-70	-60
V _{DC}	Operation Voltage	Volt	26.0	28.0	32.0
I _{DD}	Current Consumption @Pout=100W	Amp		9	10
I _{DQ}	Quiescent Current	Amp		1	1.5
I _{SQ}	Current Consumption @ Shutdown	mA			250
T _{ON/OFF}	Switching Time	usec		2	5

Mechanical Specification

Parameters	Value	Limit	Unit
Dimension (W × D × H)	230 × 95 × 25.4	-	mm
RF Connector Input/output	SMA Female / N Female	-	-
DC Interface Connector	D Sub Hybrid 7W2 @ Male, 4-40 Screw	-	-
Weight	800	Max	gram
Cooling	External Heat-sink required	-	-

Environmental Characteristics

Parameters	Specifications	Remark
Operating Case Temperature Range	-40°C to +80°C	
Storage Temperature	-40°C to +85°C	
Relative Humidity non-condensing	95%	

Protection

Item	Specifications for Activation	Specifications for Recovery
Input RF drive level without damage	+5dBm Max	
VSWR Protection	Isolator included, VSWR = inf	
VSWR Shutdown	3:1 Max (R. L= 6dB)	
VSWR Shutdown Threshold	Threshold 45dBm min	
Thermal Overload	+90 °C ±5 °C Shutdown	+70 °C ±5 °C Auto-recover

DC/ Interface (D-sub, Hybrid 7W2, Male)

Pin No	Pin Description	Specifications
1	Forward Power Monitor	RMS Detector Vout=2V±0.05V@50dBm, Slope: 50mV/dB
2	Reverse Power Monitor	RMS Detector Vout=2V±0.05V@50dBm, Slope: 50mV/dB
3	VSWR Fail Alarm	High +5V TTL Output when VSWR reached 3:1
4	Temperature Monitor	Vout=10mV/°C×Temp+500mV
5	PA Shutdown	Fast Switching Enabled State: TTL Low or Open, Disabled State: TTL High 3.3-5V
A1	VDD	+28VDC
A2	GND	Ground

Typical Characteristics @ +28VDC, 25°C

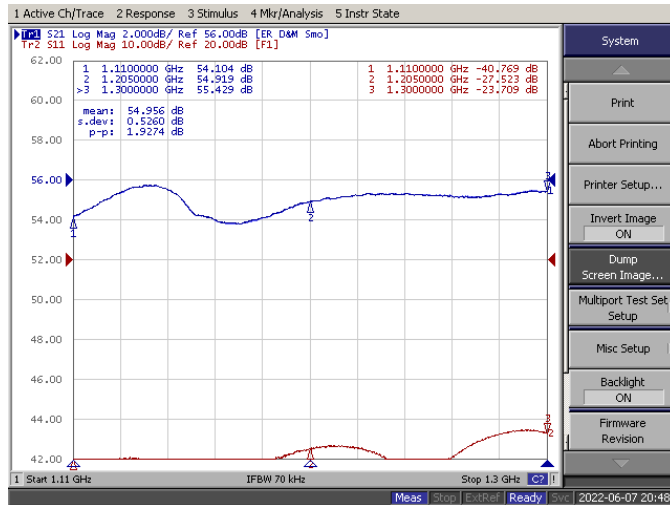
Plot 1: Small Signal Gain

Top Curve: Small Signal Gain @ Pin= -20dBm

Reference: 56dB, 2dB/div

Bottom Curve: Input Return Loss

Reference: 20dB, 10dB/div



Plot 2: Small Signal Gain & P_{SAT}

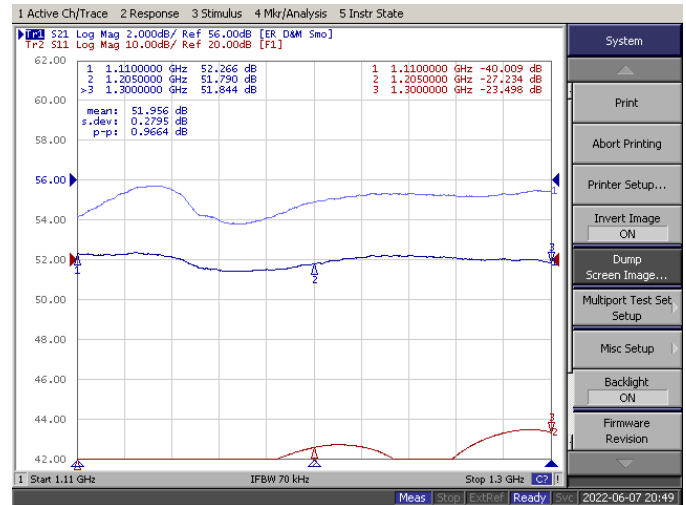
Top Curve: Small Signal Gain @ Pin= -20dBm

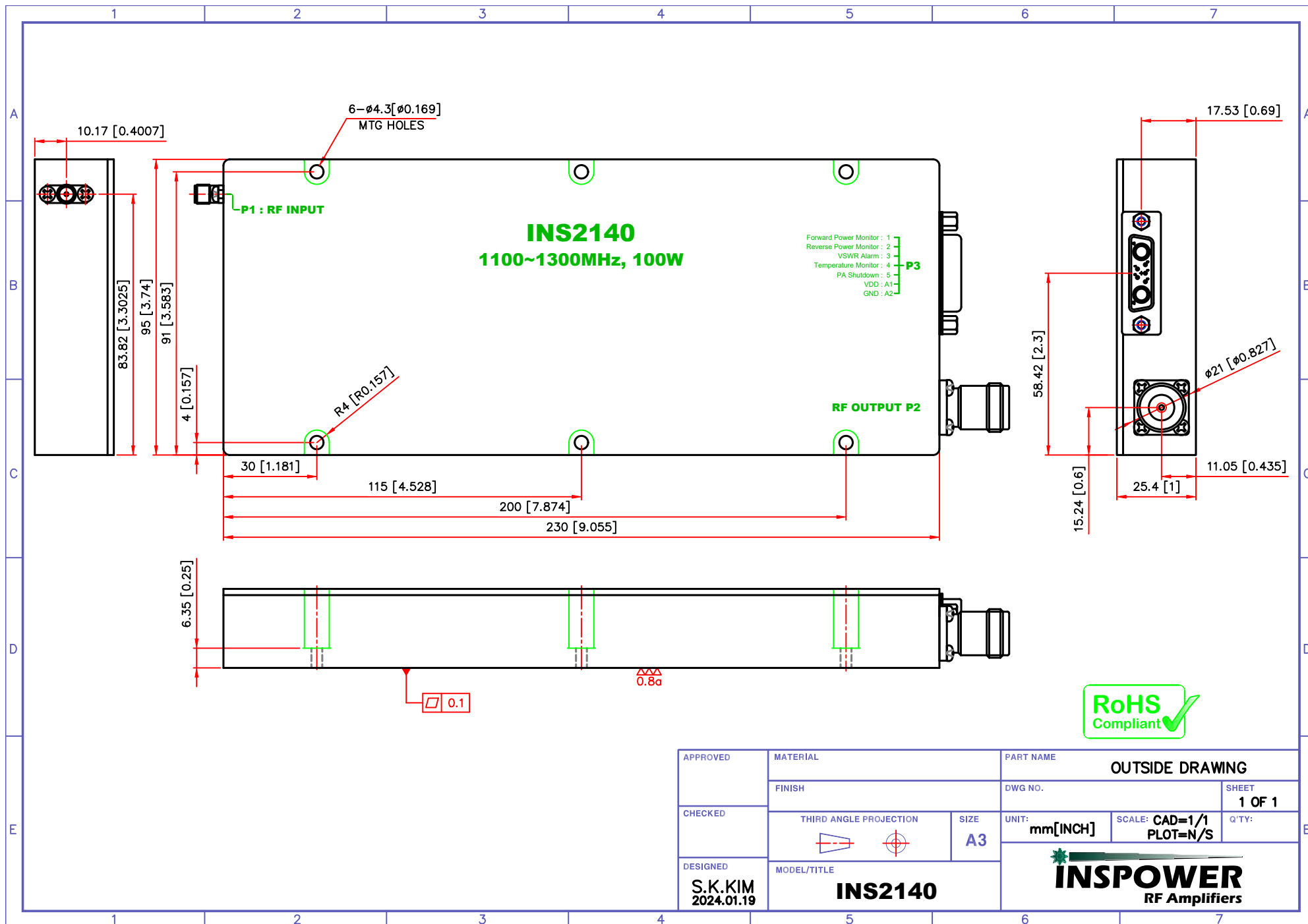
Middle Curve: Power Gain @ P_{SAT}, Pin= 0dBm

Reference: 56dB, 2dB/div

Bottom Curve: Input Return Loss

Reference: 20dB, 10dB/div





APPROVED	MATERIAL		PART NAME	
	FINISH		OUTSIDE DRAWING	
CHECKED	THIRD ANGLE PROJECTION		DWG NO.	SHEET
	SIZE		UNIT: mm[INCH]	1 OF 1
DESIGNED	MODEL/TITLE		SCALE: CAD=1/1 PLOT=N/S	Q'TY:
	INS2140		INSPOWER RF Amplifiers	