LPA Concepts

LINEAR POWER AMPLIFIER	LPA-AH0C-040AB-3800M-4200M-48-00
P3050	

FEATURES

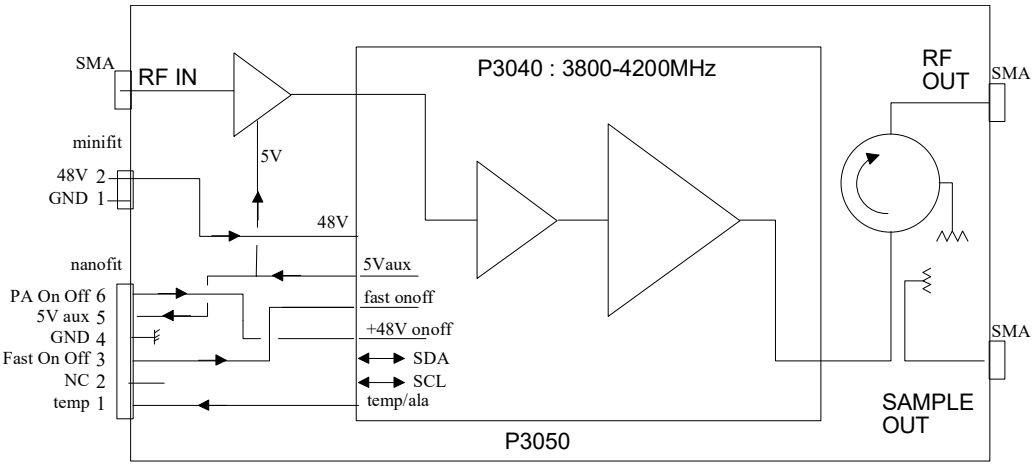
- ♦ 3800-4200MHz
- ♦ Gain : 35 dB
- ♦ 40W P_{-2dB}, Class AB
- ♦ CW or pulse operation
- ♦ +48V / 2.5 A @ 40W CW
- ♦ Protection against reverse voltage, over current and over temperature
- ♦ Fast On/Off switching
- ♦ RoHS compliant

AH0C PACKAGE

APPLICATIONS

- ♦ Instrumentation

BLOCK DIAGRAM



Electrical characteristics: 50 ohms; +48V; -25°C to +80°C (1)

Ref	parameter	conditions	note	min	typ	max	units
1	Bandwidth			3800		4200	MHz
3	Small signal Gain	4000 MHz; 50°C		33	35		dB
4	Ss Gain variation vs temp	-25°C to +80°C	2		5		dB
5	Gain at 30W output	4000MHz ; 50°C	2	32	34		dB
6	Gain variation vs frequency	3800 MHz - 4200 MHz				1	dBpp
7	Sample output	Relative to main output			-30		dB
8	Input return loss	50 ohms				-15	dB
9	Output return loss	50 ohms				-15	dB
10	Multi tones intermodulation	10 tones 1MHz spacing, 40Wp	3		-27	-25	dBc
11	Peak envelope power	2 tones , IMD3 = -27 dBc			50		W
12	Current consumption	48V, idle			0.25		A
13	Current Consumption	48V, 40W CW 4000MHz			2.5		A
14	Fast on/off control	TX ON			0	0.3	V
15	Fast on/off control	TX OFF		2.5	3		V
16	signal rise time	3V to 0V negative edge	4			1	µs
17	Rise time delay		4			3	µs
18	Signal fall time	0V to 3V positive edge	4			1	µs
19	Fall time delay		4			3	µs
20	Gain TX OFF	Tx=3V			-50		dB

1. Unless otherwise specified
2. Hot Spot Temperature
3. Peaked phases
4. Low impedance drive

Maximum ratings

Ref	parameter	conditions	note	min	Nom	max	units
1	Operating temperature	Flange temperature		-40		+90	°C
2	Supply voltage			30	48	50	V
3	Input power	CW				+3	dBm
4	Reverse power					47	dBm
5	Max load VSWR	@ 50W output				∞:1	-

Protections

Ref	parameter	description	remarks
1	Overvoltage	Shut down if supply > 50 V	
2	Under voltage	Shut down if supply < 30 V	
3	Reverse voltage	No current drawn	
4	Overcurrent	Shut down if current > 2.9 A	Lower power and PA On/Off to recover
5	Temperature	Shut down if temp > 80°C	Auto recover at 75°C

Monitoring & control

Ref	characteristic	description	remarks
1	PA On/Off	48V switching (used for reset)	+0V=ON internal pull down
2	Fast On/Off	Gain switching	+0V=ON internal pull down
3	Temperature	Analog output	-40°C to +100°C (TMP20)
4	Alarm		<0.1V for alarm

LPA Concepts

Part numbering:

LPA-AH0C-040AB-3800M-4200M-48-00

Housing

Peak power (W)

Class of operation	
AA	Class A
AB	Class AB
DO	Doherty

Frequency band lower edge

Frequency band upper edge

Supply Voltage	
28	28V Supply
48	48V Supply

Other options

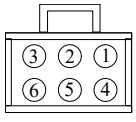
Support material

Ref	Characteristic	Description	Remarks
1	T280	Analog control board	uses 5V aux from amplifier
2	P3090	Analog control & ALC board	uses 5V aux from amplifier
3			

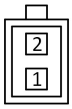
Related products

Ref	Characteristic	Description	Remarks
1			
2			
3			

Communication DC Connector Molex NanoFit 105405-1206

Pin description			PINOUT
Pin 1 : Analog temperature	Pin 4 : Gnd	Mate with 105308-1206	
Pin 2 : NC	Pin 5 : 5V aux		
Pin 3 : Fast on/off	Pin 6 : Power On/Off		

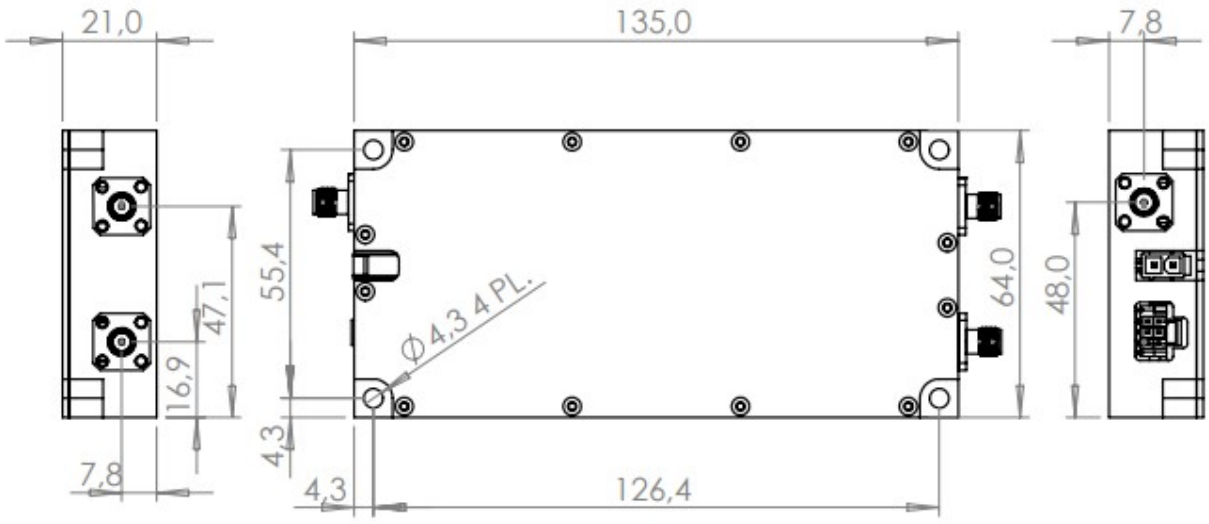
Power Supply DC Connector Molex MiniFit Jr 39-30-1020

Pin description			PINOUT
Pin 2 : Supply +48V		Mate with 39-01-2020 and inserts 39-00-0038	
Pin 1 : Gnd			

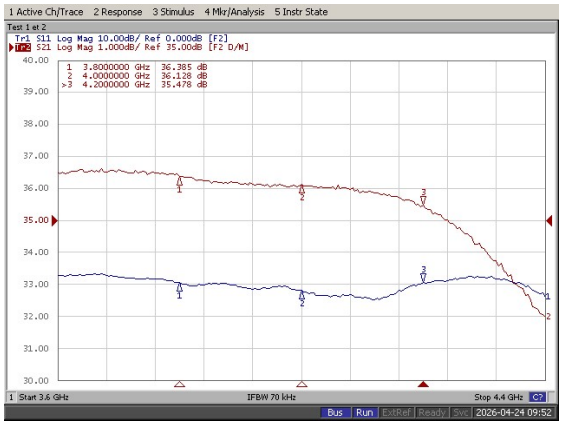
Mechanical characteristics

Ref	characteristic	description	remarks
1	Housing dimensions	135mm x 64mm x 21mm	
2	Housing finish	Electroless nickel (option 00)	Surtec 650 (option 01)
3	Mounting	4 M4 screws	
4	Input/output RF connectors	SMA	
5	DC supply connector	Molex 39-30-1020	Male type
6	DC controls connector	Molex 105405-1206	Male type
7	Weight	400 grams	

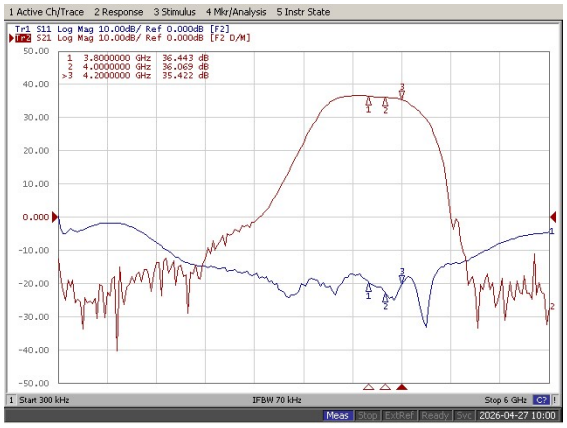
Package outline:



TYPICAL PERFORMANCE

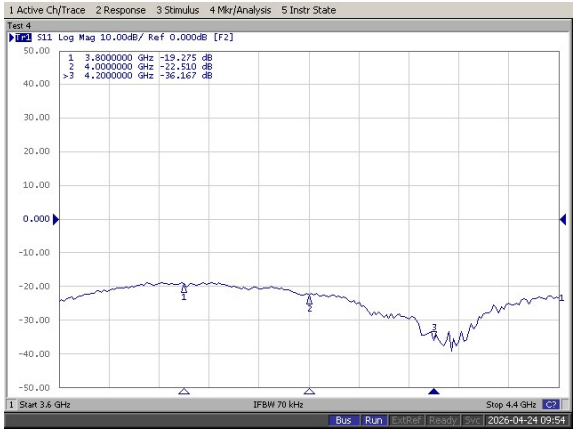


Gain vs frequency

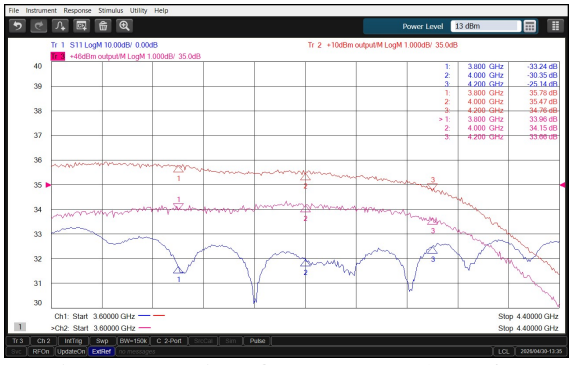


Wideband gain vs frequency

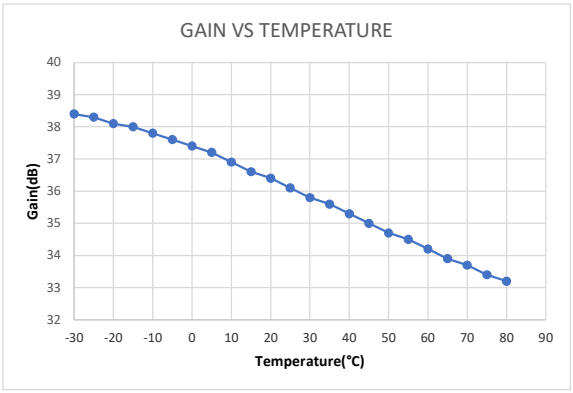
Sample



Output return loss vs frequency

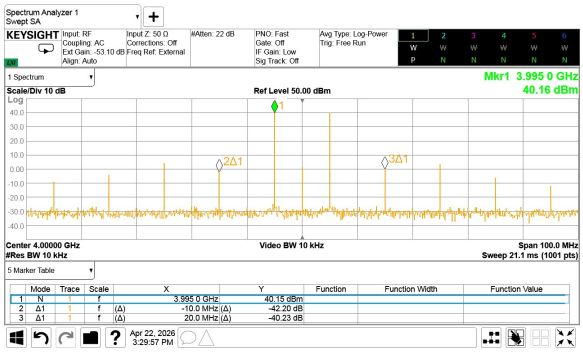


Gain compression @40Woutput (10µs/1ms pulses)

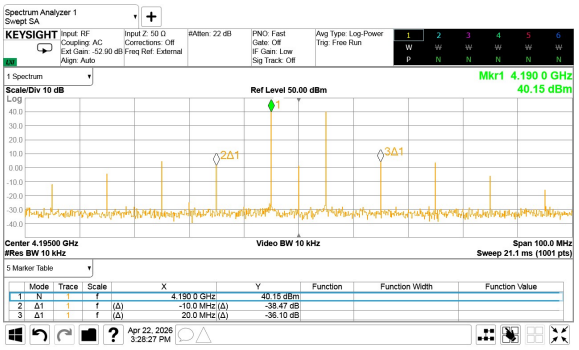


TYPICAL PERFORMANCE (continued)

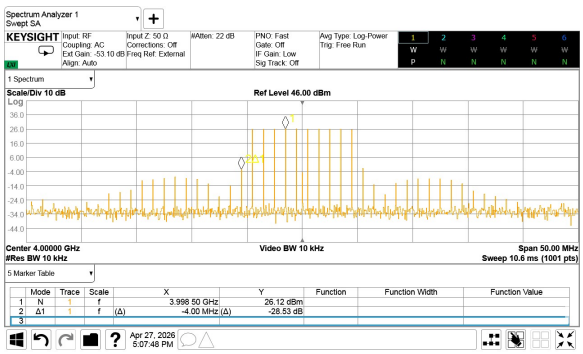
2 tones 20W average 3800MHz 10MHz spacing 48V/1.71A



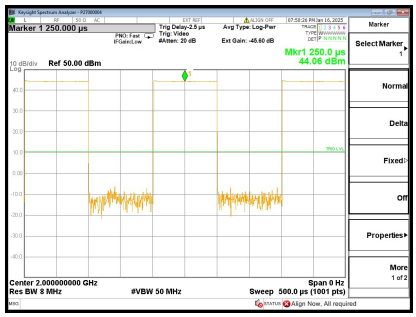
2 tones 20W average 4000MHz 10MHz spacing 48V/1.57A



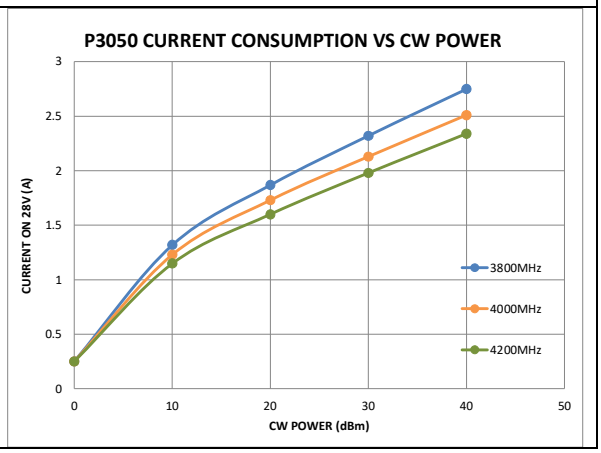
2 tones 20W average 4200MHz 10MHz spacing 48V/1.49A



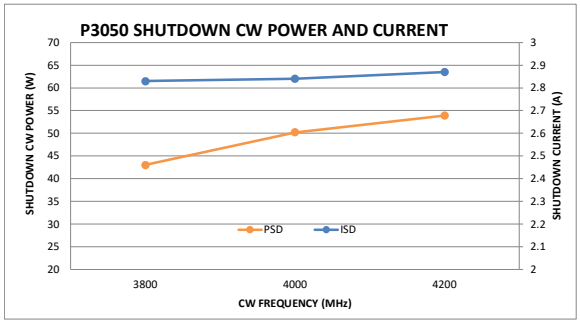
10 tones 1MHz spacing 4W average 4000MHz 48V/0.54A

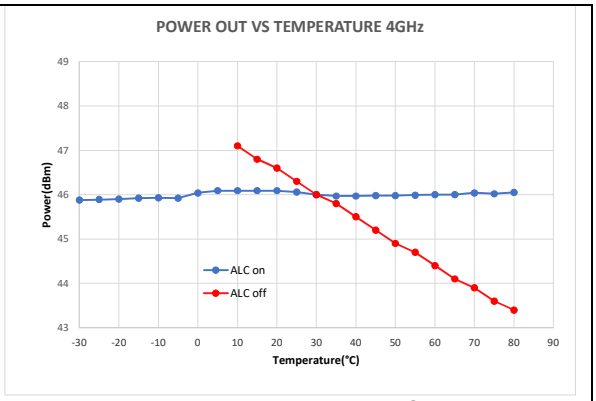


Fast OnOff 100µs On 25W, 100µs Off



TYPICAL PERFORMANCE (continued)





Measurements obtained with an ALC board, set to +46dBm (Output power ALC off: 51dBm)