DMP200

FEATURES

- **EXTREMELY FLAT GAIN AND LINEAR PHASE RESPONSE**
- **LOW INPUT VOLTAGE NOISE:**
- **LOW DISTORTION**
- **FAST 12-BIT SETTLING:**
- **LOW DC VOLTAGE OFFSET**

APPLICATIONS

- **Pulse amplifiers**
- **Base band and video communications**
- **Photodiode – photomultiplier preamps**
- **High Resolution Graphics**
- **Test Instruments**

DESCRIPTION

The DMP200 provides a convenient amplifier with dynamic range for various amplifications. With SMA connections this box provides low distortion and noise for amplifying those lab signals where bandwidth and pulse response is important. The extended range of the DMP200 provides fast settling for connecting to 12 bit ADC. The low dc offset makes this box easy to interface to existing lab equipment without ac coupling the signal.

The DMP products can be order in a variety of gain settings or in some models 300 customize gain operation within the lab.

DMP PRODUCTS

	Small Signal Gain	TYPICAL NOISE FIGURE	-3dB BANDWIDTH PRODUCT (MHz)
100A	20dB	6dB	500
200	20dB	6dB	600
300	28dB	16dB	1200
700	>40dB		700 @ G=2

ABSOLUTE MAXIMUM RATINGS[1]

Power Supply..... $\pm$ 15V_{DC}
Differential Input Voltage..... $\pm$ 1.2
Input Voltage Range..... $\pm$ 3.0
Storage Voltage Range: .....-40°C to +125°

ELECTROSTATIC DISCHARGE SENSITIVITY

This integrated circuit can be damaged by ESD. Its recommended that all boxes be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

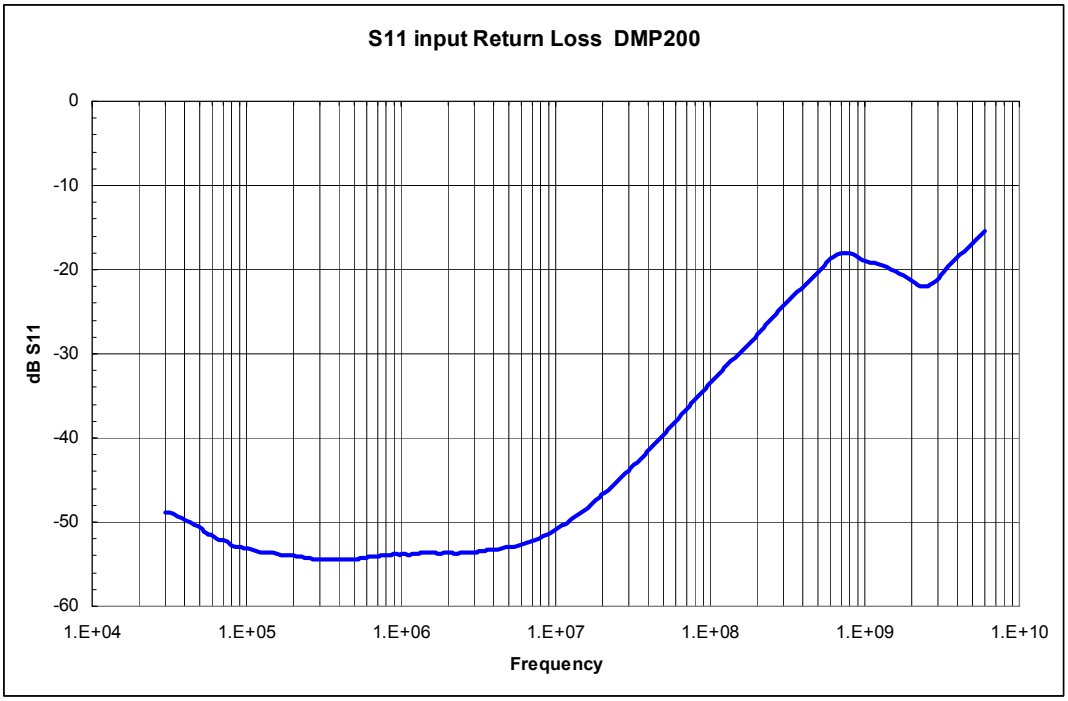
ORDERING INFORMATION

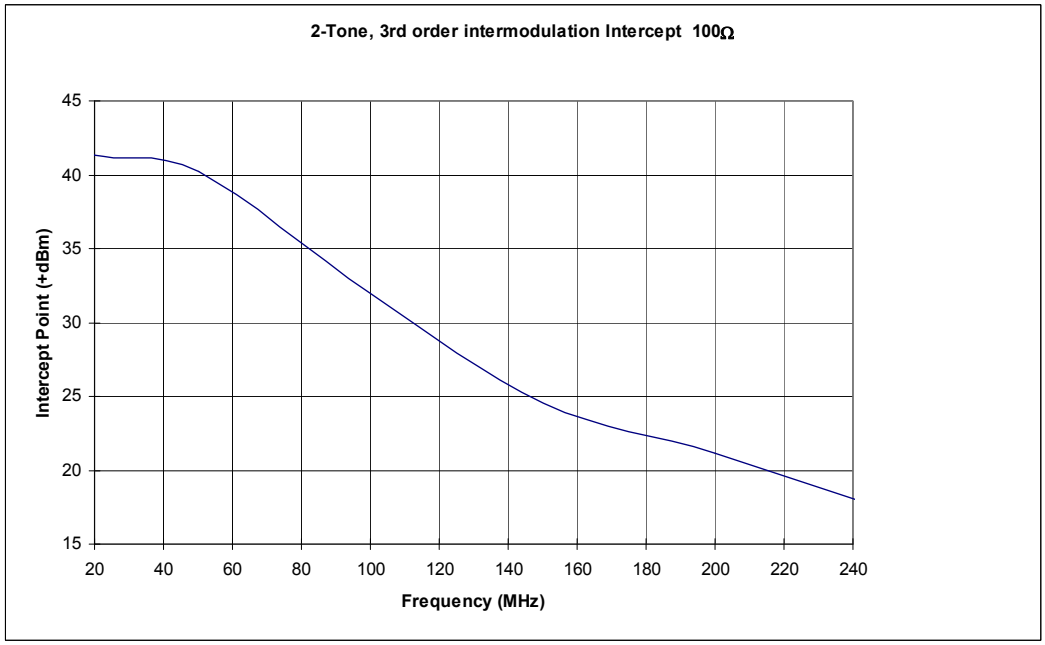
PRODUCT	PACKAGE-LEAD	PACKAGE DESIGNATOR[1]	Gain Setting	ORDERING NUMBER	QUANTITY
DMP200	SMA		20dB		
		"			

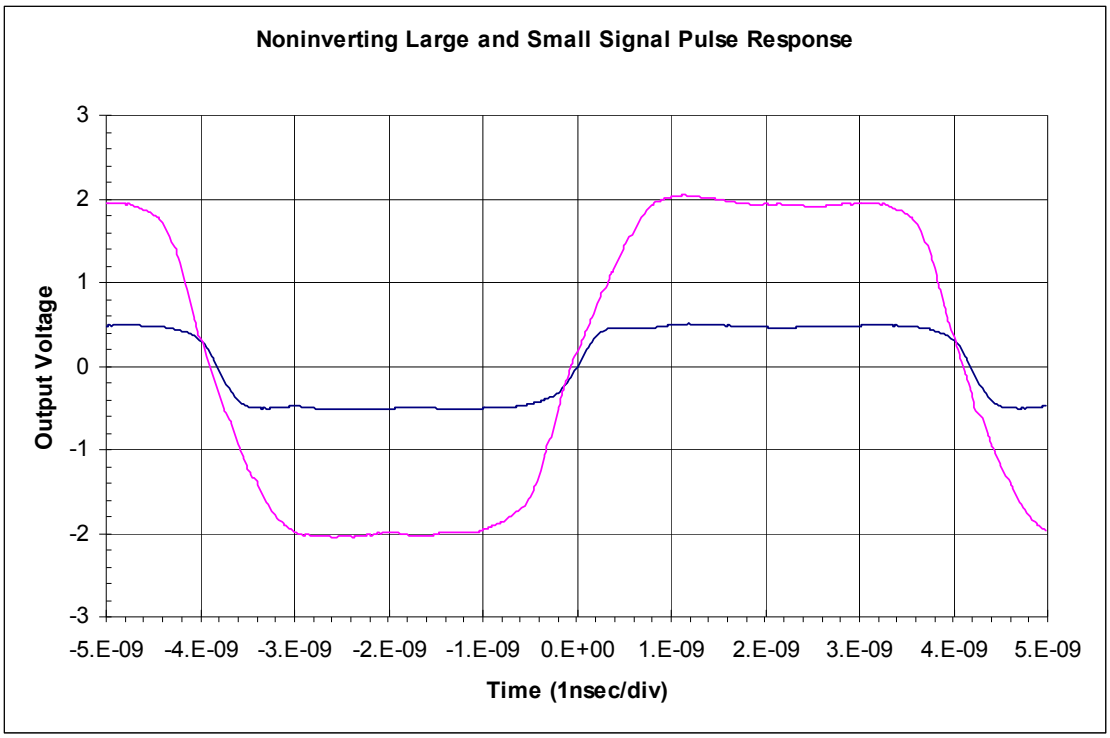
ELECTRICAL CHARACTERISTICS: $V_S = \pm 15V$

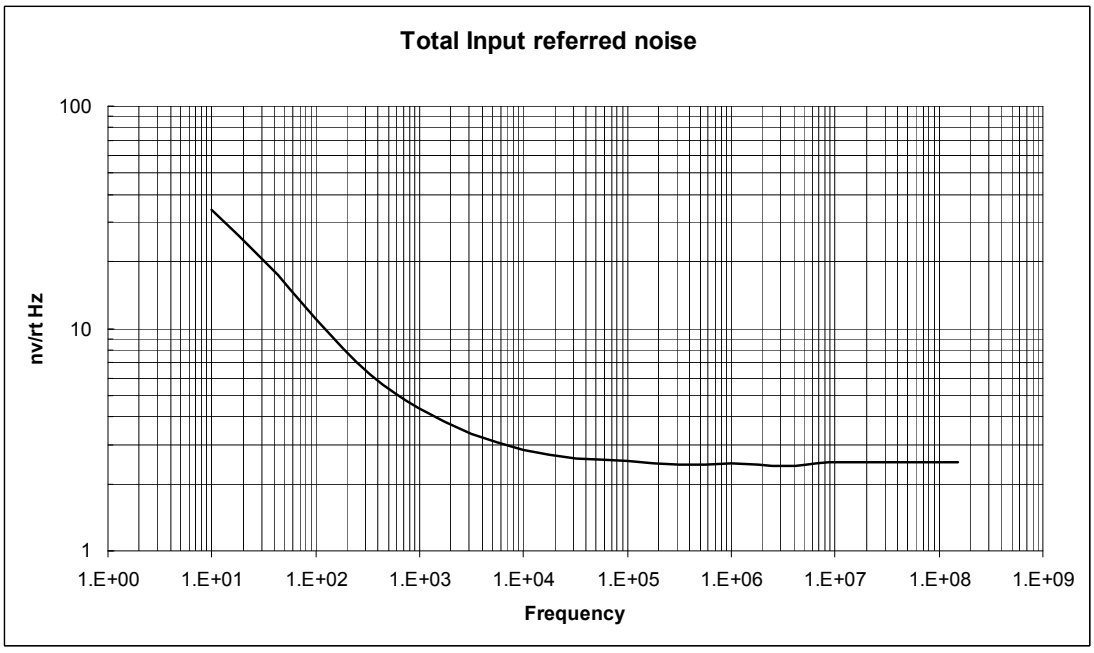
At T_A =+25º C, V_S = ±15V, , R_L = 100Ω,

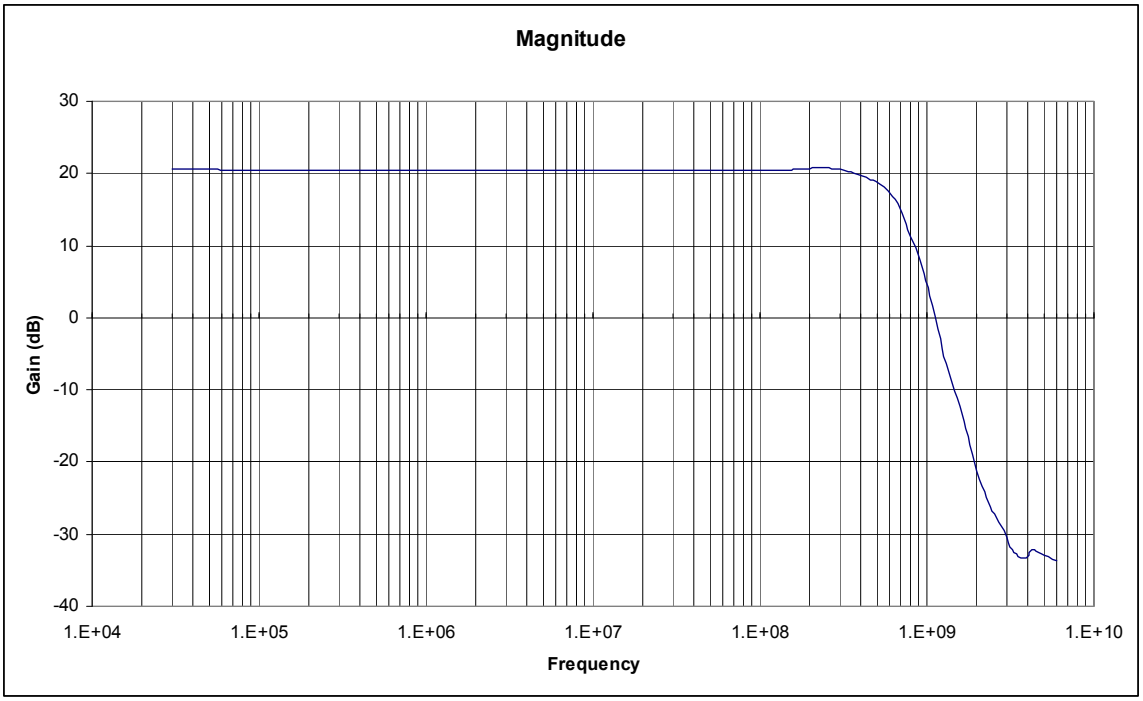
		TYP				
PARAMETER	**CONDITIONS**	**25°C**	**Min**	**Max**	**UNITS**	MIN/MAX
Small-Signal Bandwidth (Vo=0.5Vp-p)	G=20	625	600		MHz	typ
Bandwidth for 0.2dB Gain Flatness	G = +20, R_L = 100Ω, V_O =500mVp-p	420	400		MHz	min
Large Signal Bandwidth	G=+20 Vo=4.0Vp-p	525	500		MHz	typ
Harmonic Distortion	G = +20, f = 10MHz, V_O =2Vp-p					
2nd-Harmonic	R_L = 50Ω	-65	-62		dBc	max
	R_L > 500Ω	-78	-76		dBc	max
3rd-Harmonic	R_L = 50Ω	-86	-84		dBc	max
	R_L = 500Ω	-86	-82		dBc	max
2-Tone, 3rd-Order Intercept	G = 20dB to load, f = 100MHz	33			dBm	min
Total Input Referred Voltage Noise					nV/$\sqrt{Hz}$	max
Noise Figure		6		7	dB	typ
Rise-and-Fall Time	G=+20, Vo=0.5V Step	0.8			ns	max
	G=+20, Vo=4V Step	1.0			ns	max
Slew Rate	G=+20, Vo=4V Step	4300			V/µs	min
Settling Time to 0.02%	2V Step	16			ns	typ
0.1%	2V Step	10			ns	max
DC PERFORMANCE[4]						
Input Offset Voltage	V_{CM} = 0v	±0.001	**±0.01**	±0.025	mV	max
Average Offset Voltage Drift	V_{CM} = 0v			±20	µV/°C	max
INPUT						
Common-Mode Input Range(CMIR)[5]	Infinite Load	±3.2	**±3.0**	±2.9	V	min
Common-Mode Rejection (CMR)	V_{CM} = ±1V, Input Referred	95	**85**	84	dB	min
Input/Output Impedance		50			Ohm	typ
OUTPUT						
Power Output	At -1dB compression	17			dBm	
Current Output, Sourcing	V_O = 0V	±100	**±90**	±85	mA	min
POWER SUPPLY						
Specified Operating Voltage		±15			V	typ
Maximum Operating Voltage		±15			V	max
Minimum Operating Voltage		±9			V	min
Max Quiescent Current	V_S = ±15V				mA	max
+PSRR, -PSRR	ÍV_SÍ = 4.5 to 5.5, Input Referred	100	**90**	88	dB	min

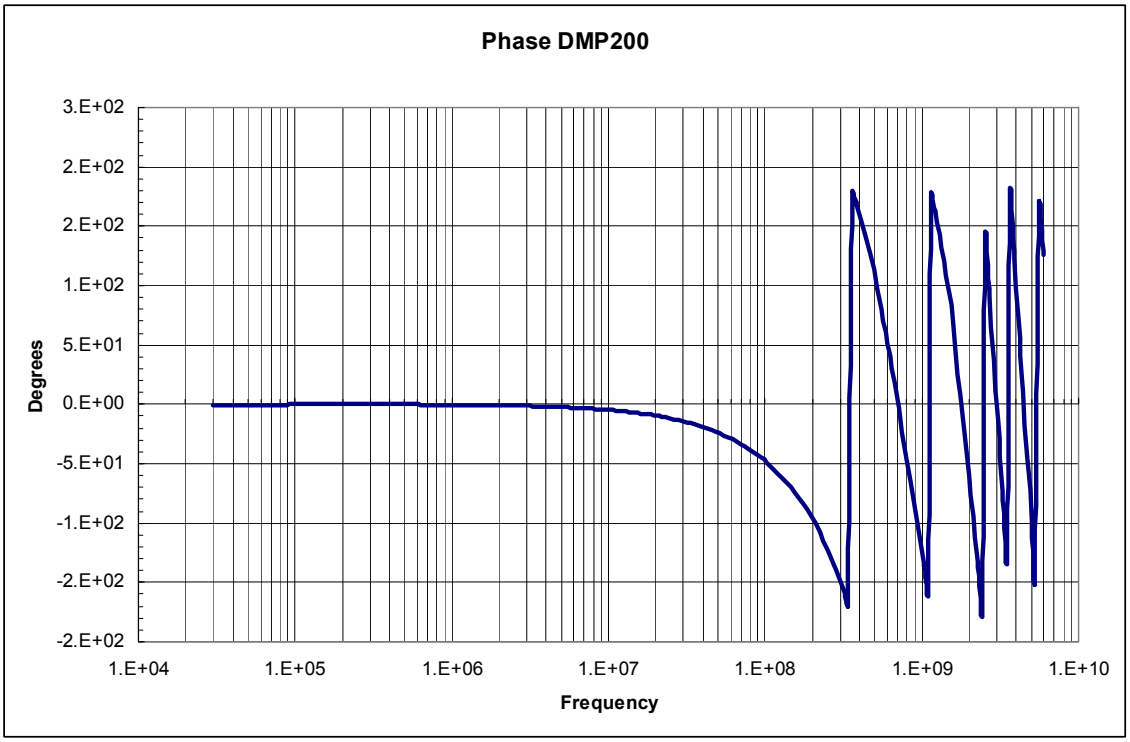

S11 input Return Loss DMP200
0
-10
-20
-30
-40
-50
-60
dB S11
1.E+04
1.E+05
1.E+06
1.E+07
1.E+08
1.E+09
1.E+10
Frequency


2-Tone, 3rd order intermodulation Intercept 100Ω
45
40
35
30
25
20
15
Intercept Point (+dBm)
20
40
60
80
100
120
140
160
180
200
220
240
Frequency (MHz)


Noninverting Large and Small Signal Pulse Response
Output Voltage
3
2
1
0
-1
-2
-3
-5.E-09
-4.E-09
-3.E-09
-2.E-09
-1.E-09
0.E+00
1.E-09
2.E-09
3.E-09
4.E-09
5.E-09
Time (1nsec/div)


Total Input referred noise
nv/rt Hz
100
10
1
1.E+00
1.E+01
1.E+02
1.E+03
1.E+04
1.E+05
1.E+06
1.E+07
1.E+08
1.E+09
Frequency


Magnitude
30
20
10
0
-10
-20
-30
-40
Gain (dB)
1.E+04
1.E+05
1.E+06
1.E+07
1.E+08
1.E+09
1.E+10
Frequency


Phase DMP200
3.E+02
2.E+02
2.E+02
1.E+02
5.E+01
0.E+00
-5.E+01
-1.E+02
-2.E+02
-2.E+02
Degrees
1.E+04
1.E+05
1.E+06
1.E+07
1.E+08
1.E+09
1.E+10
Frequency