12.0-16.0 GHz GaAs MMIC Power Amplifier

May 2008 - Rev 05-May-08

XP1042-BD

Features

- 21 dB Small Signal Gain
- 25 dBm P1dB Compression Point
- 38 dBm Output IP3 Linearity
- 17 dB Gain Control with Bias Adjust
- 100% RF Testing

General Description

The XP1042-BD is a linear driver amplifier that operates over the 12.0-16.0 GHz frequency band. The device provides 21 dB gain and 38 dBm Output Third Order Intercept Point (OIP3) across the band. The driver amplifier includes on-chip ESD protection structures and DC by-pass capacitors to ease the implementation and volume assembly of the part. The device is manufactured in a high linearity GaAs PHEMT device technology with BCB wafer coating to enhance ruggedness and repeatability of performance. The XP1042-BD is well suited for Point-to-Point Radio, LMDS, SATCOM and VSAT applications.

Absolute Maximum Ratings[1]

Supply Voltage (Vd1,2,3)	+6V
Supply Current (Id1,2,3)	550 mA
Gate Bias Voltage (Vg1,2,3)	-3V
Max Power Dissipation (Pdiss)	3.2W
RF Input Power	15 dBm
Operating Temperature (Ta)	-55 to +85 °C
Storage Temperature (Tstg)	-65 to 150 °C
Channel Temperature (Tch)	-40 to MTTF Graph[2]

(1) Operation of this device above any one of these parameters may cause permanent damage.
(2) Channel temperature directly affects a device's MTTF. Channel temperature should be kept as low as possible to maximize lifetime

Electrical Characteristics (Ambient Temperature T = 25 °C)

Parameter	Units	Min.	Typ.	Max.
Frequency Range (f)	GHz	12.0	-	16.0
Small Signal Gain (S21)	dB	19.0	21.0	
Input Return Loss (S11)	dB		12.0	
Output Return Loss (S22)	dB		10.0	
Reverse Isolation (S12)	dB		50.0	
NF at Max Gain	dB		6.0	8.0
P1dB	dB		25.0	
OIP3 at Pout = 8 dBm per Tone	dBm	36.0	38.0	
Drain Bias Voltage (Vd1,2,3)	VDC		5	
Gate Bias Voltage (Vg1,2,3)	VDC	-2	-1	
Supply Current (Id1)	mA		125	
Supply Current (Id2)	mA		125	
Supply Current (Id3)	mA		250	

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