

DOCSIS 3.1™ Power Doubler MMIC 45 to 1218 MHz

GENERAL DESCRIPTION

The Analog Devices OTM3228 is a 24V Power Doubler MMIC with configurable gain between 25-32 dB. The device achieves very high RF output using advanced circuit design techniques in a cost-effective technology. Its two stages of amplification provide high gain and high reverse isolation, simplifying the design and manufacture of DOCSIS 3.1™ infrastructure equipment.



FEATURES

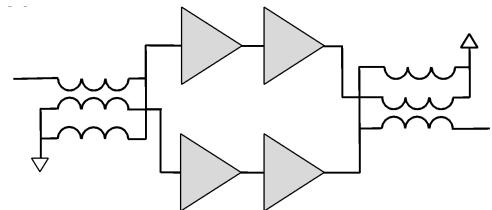
- 25-32 dB Flexible Gain at 1218MHz
- Adjustable Bias Current 440-490mA at 24V_{DC}
- Very High Output
- Excellent Linearity
- Low Distortion
- Superior Reverse Isolation
- Unconditionally Stable
- Excellent Performance Consistency
- QFN 7mm x 7mm Package

APPLICATIONS

- 45MHz to 1218MHz CATV Infrastructure Amplifier System

Absolute Maximum Ratings

Symbol	Parameter	Min	Max	Unit
V _{CC}	DC Supply Over Voltage (5 min)		30	V
RF _{input}	RF Input Voltage (single tone)		75	dBmV
T _{amb}	Operating Ambient Temperature	-30	85	°C
T _s	Storage Temperature	-40	100	°C



Ordering Information OTM3228
Reel with 1k Pieces

Analog Devices, Inc.
One Technology Way,
P.O. Box 9106,
Norwood, MA
02062-9106, U.S.A.

www.analog.com

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Stresses at or above those listed under Absolute Maximum Ratings may cause permanent damage to the product. This is a stress rating only; functional operation of the product at these or any other conditions above those indicated in the operational section of this specification is not implied. Operation beyond the maximum operating conditions for extended periods may affect product reliability

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RoHS (Restriction of Hazardous Substances)
Compliant per EU Directive 2011/65/EU

Caution: ESD Sensitive Device.
Meets Class 2 (2k to 4k HBM)

[Document Feedback](#)

NOMINAL OPERATING PARAMETERS

General Performance		Min	Typ	Max	Unit	Conditions
S ₂₁	Power Gain	26.5		28.0	dB	f = 45MHz
		28.0		29.5	dB	f = 1218MHz
SL ¹	Slope Straight Line		1.0		dB	f = 45MHz to 1218MHz
FL	Flatness of Frequency Response		0.75		dB	f = 45MHz to 1218MHz
S ₁₂	Reverse Isolation		45		dB	f = 45MHz to 1218MHz
S ₁₁	Input Return Loss		20		dB	f = 45MHz to 550MHz
			18		dB	f = 550MHz to 1000MHz
			16		dB	f = 1000MHz to 1218MHz
S ₂₂	Output Return Loss		20		dB	f = 45MHz to 550MHz
			18		dB	f = 550MHz to 1000MHz
			16		dB	f = 1000MHz to 1218MHz
NF	Noise Figure		4.5		dB	f = 45MHz
			5.5		dB	f = 1218MHz
V _{CC}	Supply Voltage		24		V	
I _{CC (tot)}	Total Supply Current (DC)		440	460	mA	
Distortion Data 40MHz to 550MHz						V ₊ = 24V; T _{MB} = 30C; Z _S = Z _L = 75Ω
CTB			-80		dBc	V ₀ = 59 dBmV at 1218MHz, 22dB extrapolated tilt, 79 channels plus 111 digital channels (-6dB offset) ^{[2][4]}
XMOD			-72		dBc	
CSO			-82		dBc	
CIN			58		dB	
Distortion Data 40MHz to 550MHz						V ₊ = 24V; T _{MB} = 30C; Z _S = Z _L = 75Ω
CTB			tbd		dBc	V ₀ = 56 dBmV at 1218MHz, 12dB extrapolated tilt, 79 channels plus 111 digital channels (-6dB offset) ^{[3][4]}
XMOD			tbd		dBc	
CSO			tbd		dBc	
CIN			tbd		dB	

1. The Slope is defined as the delta of the gain at the start frequency and the gain at the stop frequency

2. 79 analog channels, NTSC frequency raster 55.25MHz to 547.25MHz, plus 111 digital channels, -6dB offset to the equivalent analog carrier, 22dB extrapolated tilt.

3. 79 analog channels, NTSC frequency raster 55.25MHz to 547.25MHz, plus 111 digital channels, -6dB offset to the equivalent analog carrier, 12dB extrapolated tilt.

4. Composite Second Order (CSO) - The CSO parameter (sum and difference products) is defined by the NCTA. Composite Triple Beat (CTB) - The CTB is defined by the NCTA. Cross Modulation (XMOD) - Cross Modulation is measured at baseband (selective voltmeter method) referenced to 100% modulation of the carrier being tested. Carrier to Intermodulation Noise (CIN) - The CIN parameter is defined by ANSI/SCTE 17 (Test procedure for carrier to noise).

5. In recommended 28 dB gain application circuit, 470mA typical bias