

## MICROTUNE®

## MT2170 SINGLE-CHIP DOCSIS 3.0 WIDEBAND TUNER PRODUCT BRIEF

The MT2170 is a low-power, single-chip DOCSIS 3.0 wideband tuner with an integrated IF variable gain amplifier.



MT2170 Single-Chip DOCSIS 3.0 Wideband Tuner

RF SILICON AND SUBSYSTEMS SOLUTIONS FOR BROADBAND COMMUNICATIONS AND AUTOMOTIVE ELECTRONICS

The MicroTuner<sup>™</sup> MT2170 is an advanced, low-power single-chip wideband tuner that has been optimized for high-performance DOCSIS 3.0-compliant cable modems and digital cable set-top boxes that require low composite distortion and low noise under digital cable environments.

The MT2170 is capable of receiving frequencies in the 48MHz to 1GHz range and of converting a selected channel to a standard intermediate frequency (IF) between 26MHz and 126MHz.

The MT2170's dualconversion architecture yields the desirable characteristics of DOCSIS 3.0 broadband functionality. Together with the Microtune differential 2<sup>nd</sup> IF Filter, the MT2170 provides an optimized IF signal needed for DOCSIS 3.0 demodulators.

The MT2170 provides excellent in-band flatness as well as very repeatable gain characteristics across the complete reception band.

The MT2170 has a field proven, onboard, fully autonomous AGC which requires only one signal connection between the tuner and the demodulator. This allows signals of poor quality to be adequately conditioned for further processing to deliver extremely low bit error rates.

# APPLICATIONS

- DOCSIS 3.0 Wideband Cable
  Modems
- Video over IP Digital Set-top
  Boxes
- DOCSIS 3.0 VoIP Telephony
  Modem
- PacketCable™ E-MTA's
- Home Gateways
- Multimedia Applications

### **FEATURES**

- 48MHz to 1GHz input frequency range
- 5V & 3.3V power supply
- Works seamlessly with DOCSIS 3.0 digital demodulators
- 1.5W dual-conversion
  architecture
- Single-ended RF input reduces BOM by eliminating input balun
- Minimal external components
- No manually tunable parts required
- Integrated IF variable gain amplifier for direct connection to digital demodulators
- Fully compatible with DOCSIS 3.0, EuroDOCSIS, and other standards

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#### **RECOMMENDED OPERATING CONDITIONS**

Parameter	Min	Түр	Max	Unit
Second intermediate center frequency (programmable)	26		126	MHz
Supply voltage 5V	4.75	5.0	5.25	V
Supply voltage 3.3V	3.15	3.3	3.45	V
Supply voltage ripple			15	mV
Operating junction temperature			125	°C
VGA output load impedance	500			Ω
Serial control clock			400	kHz

#### **ABSOLUTE RATINGS**

PARAMETER	Min	Мах	Unit
Supply voltage 5V		6	V
Supply voltage 3.3V		3.6	V
Storage temperature range	-50	+150	°C
Lead-free temperature (soldering 4 seconds)		+260	°C
Input voltage	-0.3	VCC +0.3	V



#### PARAMETER Min Түр Max Unit Power Supply Active current 5V 250 mA Active current 3.3V 75 mΑ **RF Signal Path** Input frequency range 48 1000 MHz Noise figure 9 dB 42 dB Voltage gain RF AGC range 55 dB Image rejection 70 dBc LO phase noise (10 kHz) 84 dBc/Hz

104

50

30

46

126

1.0

26

dBc/Hz

kHz

MHz

Vp-p

dB

dB

TUNER ELECTRICAL CHARACTERISTICS

LO phase noise (100 kHz)

Maximum output voltage

Maximum voltage gain

LO step size

Frequency range

IF AGC range

IF VGA



MT2170 Block Diagram

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