

MT2122 SINGLE-CHIP BROADBAND TUNER PRODUCT BRIEF

The MT2122 is a fully integrated broadband tuner for analog and digital OpenCable set-top boxes, home gateways, cable modems and HDTV applications.



MT2122 Single-Chip Broadband Tuner

RF SILICON AND SUBSYSTEMS SOLUTIONS FOR BROADBAND COMMUNICATIONS AND AUTOMOTIVE ELECTRONICS

The MicroTuner[™] MT2122 is a fully integrated single-chip tuner, with functional blocks specifically designed to ease implementation of high-performance analog and digital OpenCable[™] set-top boxes. It supports advanced analog/digital set-top boxes (STB) including OpenCable[™], home gateways, cable modems and HDTV applications.

The MT2122 has been developed to give manufacturers design flexibility at low cost without compromising high performance.

The MT2122 receives signal from 48 – 1100 MHz. It features integrated filter components and controls that allow for a simple, alignment-free pre-select filter. This provides excellent end-to-end linearity performance in severely sloped input conditions. MT2122 greatly reduces complexity for the Multimedia over Coax Alliance (MoCA[™]) applications.

Its dual-conversion architecture ensures consistent OpenCable compliant performance with no manual alignment. The on-chip buffer amplifier for Forward Data Channel (FDC) reduces bill of materials (BOM) cost while improving performance compared to solutions using a directional coupler.

The MT2122 includes a PIN diode attenuator linearizer circuit that can drive a PI-network pin diode attenuator in the signal path. The MT2122 also supports multi-tuner front-end implementations and is programmable through a serial bus interface.

APPLICATIONS

- Advanced analog and digital set-top boxes (STB) including OpenCable.
- Home gateways
- Cable modems
- HDTV

FEATURES

- Output fully compatible with demodulators for MoCA, NTSC, PAL, SECAM, DAVIC, DVB-C, DOCSIS®, Euro-DOCSIS™, OpenCable and other standards
- On-chip amplifier for Forward Data Channel (FDC)
- Ease of multi-tuner front-end implementations
- Dual-conversion architecture for consistent OpenCable compliant performance
- Serial control interface
 - One general purpose output controllable via serial control interface
 - On-chip frequency synthesis system integrating PLL, VCOs and varactors.
 - 1.1 GHz bandwidth
- No need for the 28 V to 33 V supplies typically required by traditional cable tuners
- Automatic frequency control (AFC) voltage detector for frequency fine-tuning
- Integrated temperature
 sensor for thermally sensitive
 systems
- 3.3 V and 5 V serial bus compatible
- No tunable parts required
- Simple interface to external filters
- Software shutdown mode
- Small 8 mm x 8 mm 56-pin QFN package

RECOMMENDED OPERATING CONDITIONS

PARAMETER	Min	Түр	Мах	Unit
Input frequency range	48		1100	MHz
First intermediate center frequency		1690		MHz
Second intermediate frequency (programmable)	30		60	MHz
Supply voltage 5 V	4.75	5.0	5.25	V
Supply voltage 3.3 V	3.15	3.3	3.45	V
Supply voltage ripple			15	mV
Operating junction temperature			125	°C
VGA differential output load impedance	300			Ω
Serial control clock			400	kHz
MIX2 differential load impedance	800			Ω



ABSOLUTE RATINGS

PARAMETER	Min	Мах	Unit
Supply voltage, +5 V		6	V
Supply voltage, +3.3 V		3.6	V
Junction temperature		125	°C
Storage temperature	-50	150	°C
Lead-free solder temperature for 5 seconds		260	°C
Relative humidity		95	%
Input voltage	-0.3	VCC +0.3	V

MT2122 Pin Diagram





MT2122 Block Diagram

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