

1383 SERIES AM/FM TUNER MODULES

AUTOMOTIVE APPLICATIONS

APPLICATIONS

- High-end car radios

FEATURES

AM

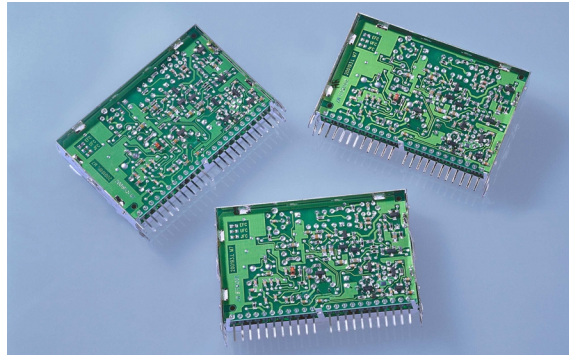
- Up/down conversion
- Excellent sensitivity
- Superior selectivity due to highly sophisticated filter technology
- High AGC dynamic range
- 450 kHz IF Output supports AM stereo capability
- Software-controlled functions (AGC threshold)

FM

- Double down-conversion
- Superior sensitivity
- Selective prefilter circuit
- Image reject circuit
- Keyed AGC
- Outstanding selectivity due to fixed and variable IF filters
- 10.7 MHz IF Output supports common antenna diversity systems
- Receiving condition analyzer for field strength, multipath, adjacent channel, and deviation
- Multipath noise blanker
- Many software-controlled functions (soft mute, IF filter bandwidth, AGC threshold)

GENERAL

- Available for US, European, and Japanese markets
- Three-wire bus controlled
- Very fast PLL
- Stop signal output for AM and FM
- Two switching outputs (open drain) and one DAC (3 bit) output



1383 AM/FM Tuner Module UFC, EFC, and JFC Versions

The 1383 Series AM/FM Tuner Modules are high-end custom and semi-custom products specifically designed to meet the demanding performance, market, and pricing targets of automotive customers.

These tuner modules are designed for different standards in the US, Europe, and Japan, giving them "world" tuner functionality.

The AM section contains an up/down conversion system with an active prestage and an audio output. Software can control the basic parameters such as AGC threshold. Features such as the highly sophisticated filter technology at both intermediate frequencies and the complex AGC functionality help ensure that the 1383 series tuners provide high-end AM performance.

The FM section contains a double down-conversion system with an active prestage and an MPX signal output. Using appropriate external signal processing, the stereo signal and the RDS/RBDS data can be derived from the MPX signal. The

receiving condition analyzer for output field strength, adjacent channel, multipath, and deviation, allows continuous evaluation of the received signal. This feature, together with the ability to change parameters such as IF bandwidth (50 kHz to 200 kHz), IF amplifier gain, or AGC threshold via an external microprocessor, provides ease of system integration and helps ensure optimum performance in almost every situation. These capabilities, coupled with the integrated multipath noise blanker, produce clear sound with minimal noise and interference even in the most critical receiving situations.

The very short response time of the PLL and of the outputs of the receiving condition analyzer support RDS applications in such a way that evaluations of alternative frequencies can proceed very quickly with no audible interference.

A three-wire bus controls band selection, tuning, and the multiple tuner functions.



OPERATING CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT
Power supply voltage				
Supply voltage	9.2	9.5	10	V
Supply current		120	160	mA
Operating temperature				
Operating temperature in slowly moving air	-40		+85	°C
Parametric temperature range	-30		+70	°C
Storage temperature	-40		+85	°C

INPUT/OUTPUT CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT
AM Antenna input				
Impedance		470		k Ω
FM Antenna input				
Impedance		50		Ω
Three-wire bus inputs (enable/data/clock)				
Low voltage			1.0	V
High voltage	2.0			V
Clock frequency			1.0	MHz
Receiving condition analyzer outputs (field strength/adjacent/multipath/deviation)				
Voltage	0		5	V
Stop signal output				
Stop low			0.5	V
Stop high	3.0			V
MPX/AM Audio output				
Impedance		65		Ω
IF1 Output (10.7 MHz)				
Impedance		50		Ω
IF2 Output (450 kHz)				
Impedance		50		Ω
DAC Output (3 bit)				
Voltage	0.25		6	V
Switching output 1 (open drain)				
Low voltage (I = 1mA)			400	mV
Switching output 2 (open drain)				
Low voltage (I = 1mA)			400	mV

AM ELECTRICAL CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT
Receiving frequency range				
AM Mode USA (1383UFC)	520		1720	kHz
AM Mode Europe (1383EFC)	153		1620	kHz
AM Mode Japan (1383JFC)	522		1629	kHz
Sensitivity for S/N=10dB		3.0		μ V
S + N/N at high RF input		52.5		dB
4 kHz Audio roll-off		6.0		dB
THD				
Normal condition		0.35		%
RF Input = 105 dB μ V		0.4		%
Image rejection		75		dB
IF Rejection		88		dB
Selectivity		9.0		kHz
Cross modulation		103		dB μ V
In-band mixing		68		dB μ V
Wideband AGC		88		dB μ V
Fieldstrength output (RF In = 35 dB μ V)		1.65		V
Stop output bandwidth		4.6		kHz

FM ELECTRICAL CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT
Receiving frequency range				
FM Mode USA (1383UFC)	87.5		108.1	MHz
FM Mode Europe (1383EFC)	87.5		108	MHz
FM Mode Japan (1383JFC)	76		90	MHz
Sensitivity for S/N = 30 dB		1.4		μ V
S + N/N (Deviation = 75 kHz)		74		dB
THD				
Deviation = 75 kHz		0.15		%
RF Input = 4 μ V, deviation = 75 kHz		0.8		%
Image rejection		66		dB
IF Rejection		100		dB
Channel selectivity (\pm 100 kHz)		35		dB
Channel selectivity (\pm 200 kHz)		68		dB
Three-signal intermodulation		62		dB
AM Suppression		60		dB
Field strength output (RF In = 35 dB μ V)		2.3		V
Adjacent output (\pm 200 kHz, +50 dB)		2.1		V
Multipath output (AM = 90%, 15 kHz)		3.9		V
Deviation output (dev = 100 kHz)		2.8		V
Stop output bandwidth		80		kHz

MECHANICAL CHARACTERISTICS

PARAMETER	MEASUREMENT	UNIT
Length	64.8	mm
Width	16.0	mm
Height	42.0	mm

World Headquarters • Microtune, Inc., 2201 Tenth Street, Plano, TX 75074 • Tel: 972-673-1600, Fax: 972-673-1602, E-mail: sales@microtune.com, Web site: www.microtune.com

European Headquarters • Microtune GmbH and Co. KG, Marie Curie Strasse 1, 85055 Ingolstadt / Germany • Tel: +49-841-9378-011, Fax: +49-841-9378-010, Sales Tel: +49-841-9378-020, Sales Fax: +49-841-9378-024

Pan-Asian Headquarters • Microtune, Inc. - Hong Kong, Silvercord Tower 1, Room 503, 30 Canton Road, Kowloon, Hong Kong • Tel: +852-2378-8128, Fax: +852-2302-0756

For a detailed list of current sales representatives, visit our Web site at www.microtune.com.

The information in this document is believed to be accurate and reliable. Microtune assumes no responsibility for any consequences arising from the use of this information, nor from any infringement of patents or the rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or other rights of Microtune. The information in this publication replaces and supersedes all information previously supplied, and is subject to change without notice. The customer is responsible for assuring that proper design and operating safeguards are observed to minimize inherent and procedural hazards. Microtune assumes no responsibility for applications assistance or customer product design.

The devices described in this document are not authorized for use in medical, life-support equipment, or any other application involving a potential risk of severe property or environmental damage, personal injury, or death without prior express written approval of Microtune. Any such use is understood to be entirely at the user's risk.

Microtune, MicroTuner, MicroModule, and the Microtune logo are trademarks of Microtune, Inc. All other trademarks belong to their respective companies.

Microtune's products are protected by one or more of the following U.S. patents: 5,625,325; 5,648,744; 5,717,730; 5,737,035; 5,739,730; 5,805,988; 5,847,612; 6,100,761; 6,104,242; 6,144,402; 6,163,684; 6,169,569; 6,177,964; and additional patents pending or filed.

Entire contents Copyright © 2001 Microtune, Inc.

