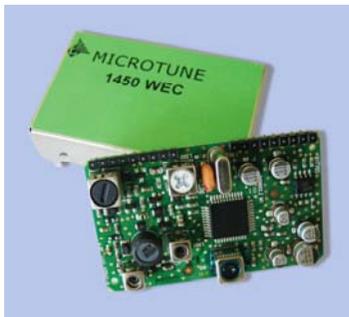




MT145X SERIES AM/FM TUNER MODULES

PRODUCT BRIEF

The MT145x series tuner modules, supporting world standards, are designed for high-end automotive radios with digital IF.



MT145x Series Tuner Module

The MT145x Series AM/FM Tuner Modules are designed specifically for high-end automotive radio and mobile entertainment systems. They are optimized to meet the performance, market and pricing demands of automotive OEM customers.

Supporting the various AM/FM frequency allocations in the US, Europe and Asia (including Japan) the tuner modules offer worldwide functionality. The 10.7 MHz IF output interfaces with a dedicated DSP (e.g. STMicroelectronics TDA7580 or TDA7581) to form a DSP-based digital AM/FM radio. New broadcasting standards like HD-Radio™ or DRM are supported as an option. In addition, a FM-only version of the tuner is available in order to add highly sophisticated features like FM phase diversity to the system. MT145x modules also incorporate a high-performance fast PLL for inaudible checking of alternative frequencies within RDS networks.

For FM mode, a keyed AGC function is implemented to prevent receiver desensitization due to erroneous AGC response while in AM mode, a narrow band filter improves selectivity. Superb sensitivity is also provided for MW/LW/SW reception. Moreover the modules feature an automatic alignment for the tracking filter and the image rejection filters. All alignment data is stored on an on-board EEPROM which can be accessed by a serial bus interface like all the other tuner functions.

The MT145x series modules were qualified under typical automotive operating conditions and fully comply with RoHS requirements. Modules are available in a shielded horizontal (optional vertical) housing.

APPLICATIONS

- High-end automotive entertainment system featuring AM/FM, HD Radio™ or DRM

FEATURES

FM

- Down conversion
- High-performance fast PLL for inaudible RDS updating
- Programmable controlled IF-gain stage
- Passive FM stage with prefilter
- Adjustable image rejection mixer
- Ceramic 10.7 MHz IF filtering
- Automatic alignment
- Keyed AGC selectable

AM

- Up conversion
- IF-crystal filter for high selectivity
- AM Dual AGC (Cascode and PIN)
- Keyed AGC selectable
- DRM upon request

GENERAL

- All functions controlled via serial bus.
- World standard functionality
- High integration and shielded housing
- On-board EEPROM.
- Variable IF output gain
- Lead-free and RoHS compliant
- Single power supply

RECOMMENDED OPERATING CONDITIONS

PARAMETER	MIN	TYP	MAX	UNIT
8.5 V Power Supply				
Current AM mode		80		mA
Current FM mode		75		mA
Voltage		8.5		V
Operating Temperature				
Parametric temperature range	-40		85	°C
Storage temperature	-40		105	°C

INPUT/OUTPUT CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT
Antenna Input				
Input Capacitance, AGC inactive		50		pF
Input Conductance, AGC inactive		1		mS
Input Impedance, AGC inactive		50		Ω
VSWR, AGC inactive		1.7		VSWR
Keyed AGC Input				V
SDA	SDA and SCL HIGH and LOW levels are specified according to a 3.3V serial-Bus. The bus pins also tolerate thresholds of a 5V bus.			
SCL				
Intermediate Frequency Output				
Output Frequency		10.7		MHz
Output impedance		60		Ω
Reference Input Frequency		100		KHz

DIMENSIONS*

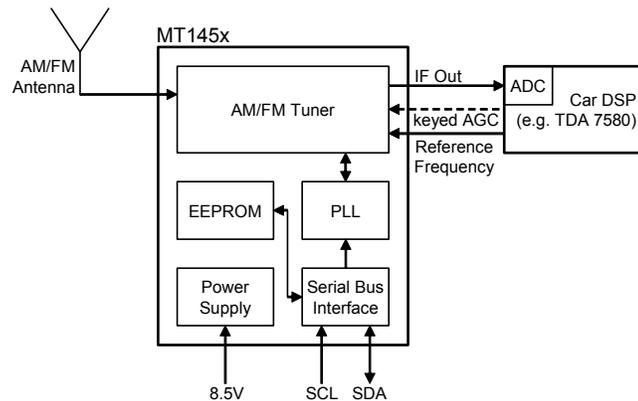
PARAMETER	MEASUREMENT	UNIT
Length	63.0	mm
Width	39.0	mm
Height	15.7	mm

*All inputs/outputs via pins; number of pins is 2x9; pin grid is 2.54 mm

ELECTRICAL CHARACTERISTICS*

PARAMETER	MIN	TYP	MAX	UNIT
Receiving frequency range (depends on version)				
AM Mode USA	520		1720	KHz
FM Mode USA	87.7		107.9	MHz
AM LW Mode Europe	144		279	KHz
AM MW Mode Europe	531		1620	KHz
AM SW Mode Europe	5735		6290	KHz
FM Mode Europe	87.5		108	MHz
FM Mode Japan	76		90	MHz
AM MW Mode Japan	520		1720	KHz
AM SW Mode Japan	5730		6295	KHz
AM Parameters				
Sensitivity: RF level for 20dB SINAD		15		dBμV
S+N/N at RF input = 60dBμV		62		dB
Selectivity ± 10 KHz		44		dB
Image rejection IF1 = tuned frequency + 21.4MHz		88		dB
IF rejection (10.7MHz)		82		dB
THD+N at RF input = 100dBμV, m = 80%		-50		dB
FM Parameters (EU/USA)				
Sensitivity: RF level for 30dB SINAD; 75 KHz FM; 1KHz audio		6.3		dBμV
S+N/N (Mono) at RF input = 60dBμV		70		dB
Selectivity ± 300 KHz		65		dB
THD+N at RF input = 100dBμV		-51		dB
Image rejection IF1 = tuned frequency + 21.4 MHz		90		dB
IF rejection (10.7MHz)		100		dB

* The electrical characteristics are on standard flat settings of the demodulator/DSP and do not incorporate weak signal processing, dynamic bandwidth processing and de-emphasis filtering



MT145x Block Diagram



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