



M I C R O T U N E ®

RF SILICON AND SUBSYSTEMS SOLUTIONS
FOR BROADBAND COMMUNICATIONS AND AUTOMOTIVE ELECTRONICS

MT1502EDC DAB/DMB TUNER PRODUCT BRIEF

The MT1502EDC is a high-end automotive tuner module with an integrated analog to digital converter for terrestrial digital audio (DAB) or video services (DMB).



MT1502EDC DAB/DMB Tuner

PRELIMINARY

The MT1502EDC is a tuner module for reception in VHF Band III and L-Band, compliant to the DAB EUREKA 147 standard. It performs a down conversion and filtering of the RF signal before it is provided into an integrated 12 bit analog to digital converter (ADC). The output signal is a digital intermediate frequency (IF) suitable for further signal processing with a generic or an application-specific DSP.

In order to minimize interferences and distortion caused by undesired signals in adjacent channels, the tuner section of the module features digitally aligned tracking filters and an integrated IF SAW filter. Moreover an automatic gain control (AGC) is implemented which attenuates large RF input signals in order to keep distortion at very low levels. A WAGC pin provides the possibility to freeze this AGC during the null symbol of the DAB signal to prevent the tuner from overamplifying as the transmission re-continues.

For clock synchronization between the analog to digital converter (ADC) and the DAB backend (DSP) the MT1502EDC offers a clock output. Incorrect samples which may result from a distorted input signal are indicated at the OTR pin. Through another pin connector the ADC can be shut down completely to save energy.

The MT1502EDC has been optimized to meet the specific requirements of automotive applications and provides reliable performance even under harsh environmental conditions like temperatures from -40°C to +85°C. Active antenna systems as commonly used for automotive applications can be fed with 12V_{DC} phantom power which is routed

from a pin connector to the antenna input. The module is lead free and fully compliant with RoHS requirements of the European Union.

APPLICATIONS

- High-end automotive infotainment systems featuring digital audio (DAB) or video services (DMB) according to the EUREKA 147 standard

FEATURES TUNER SECTION

- Double down-conversion for L-Band, Single down-conversion for VHF Band III reception
- 50 Ω antenna input matching
- Integrated AGCs for RF and IF
- Gain controlled LNAs for both bands
- Selectable RF and IF AGC threshold levels
- Tunable preselection filter
- IF SAW filter

FEATURES ADC

- 12 bit sampling
- Parallel data output
- Out-of-range indicator (OTR)
- Power down function
- Clock output for DAB backend (DSP)

OVERALL FEATURES

- Compact form factor
- Shielded metal housing
- SPI bus interface for control functions
- Integrated EEPROM to store alignment and traceability data
- Extended parametric temperature range of -40° to +85°C
- Single input for Band III and L-Band antenna
- 12 V phantom power feeding for an active antenna
- Lead free and RoHS compliant
- Qualified according to automotive requirements

M I C R O T U N E

OPERATING CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT
3.3 V Power Supply Voltage				
Current VHF Band III Mode		170		mA
Current L-Band Mode		205		mA
12 V Power Supply Voltage (Phantom Feeding)				
Current			130	mA
Temperature Characteristics				
Parametric Temperature range	-40		+85	°C
Storage temperature	-40		+95	°C

ELECTRICAL CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT
VHF Band III characteristics:				
Receiving frequency range	174		240	MHz
Maximal input level		0		dBm
Sensitivity at 25°C		-98		dBm
Selectivity		38		dB
Far off Selectivity		48		dB
L-Band characteristics:				
Receiving frequency range	1452		1492	MHz
Maximal input level		0		dBm
Sensitivity at 25°C		-96		dBm
Selectivity		38		dB
Far off Selectivity		48		dB

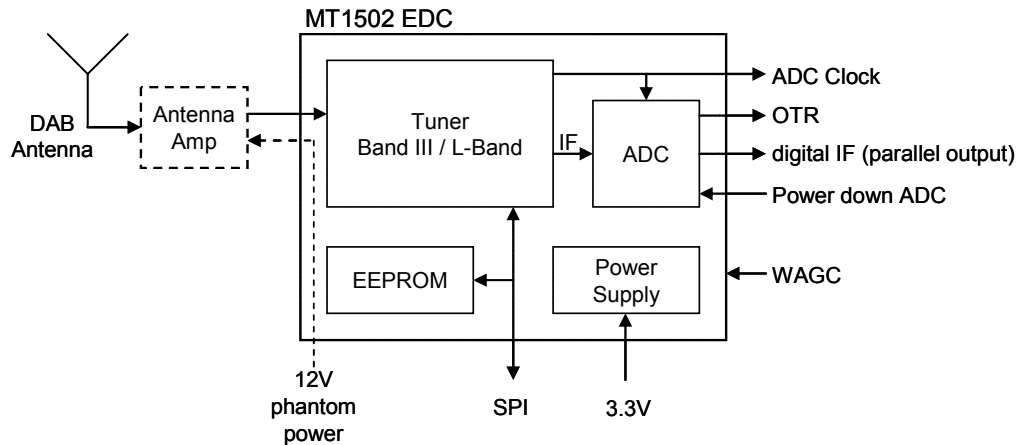
INPUT/OUTPUT CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT
Antenna Input 50 Ω (AGC not active)			4	VSWR
WAGC logical voltage high		3.3		V
WAGC logical voltage low		0		V
Analog to digital converter				
Clock output voltage high		3.3		V
Clock output voltage low		0		V
Clock frequency		8.192		MHz
Data lines logical voltage high		3.3		V
Data lines logical voltage low		0		V
Power down enabled		3.3		V
Power down disabled		0		V
SPI bus				
Bus voltage high		3.3		V
Bus voltage low		0		V
Clock frequency	0		2	MHz
Chip select: Logical Voltage High		3.3		V
Chip select: Logical Voltage Low		0		V

DIMENSIONS

PARAMETER	VERTICAL VERSION	HORIZONTAL VERSION	UNIT
Length	56	56	mm
Width	37	36	mm
Height	12	9	mm
Number of Pins	26	26	

PRELIMINARY



MT1502EDC Block Diagram



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