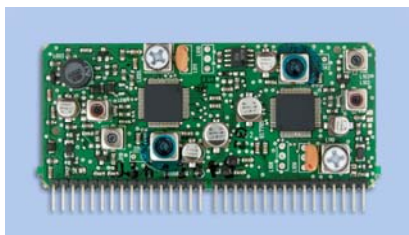




MT1468 AM/FM DOUBLE TUNER MODULE

PRODUCT BRIEF

The MT1468 tuner module is designed for high-end automobile radios and entertainment system.



MT1468 Tuner Module

The MT1468 AM/FM Double Tuner Module is specifically designed to meet the performance, quality and pricing demands of automotive customers.

To maximize sensitivity and minimize dropouts due to multipath interference, the MT1468 module incorporates one AM tuner and two independent FM tuner sections to support a high-performance phase diversity function. The 10.7 MHz IF output can interface readily with a dedicated DSP (e.g. Philips SAF 7730) to form a DSP-based digital AM/FM radio system.

While both FM tuners receive the same frequency in “phase diversity” mode, the FM tuners can also be set to different frequencies to receive a RDS channel in the background while listening to another station. An AF sample-and-hold interface for the external DSP enables inaudible checking of alternative frequencies within the RDS network.

The MT1468 module provides an RF AGC with a closed loop control and adjustable thresholds while the IF AGC is controlled by the external DSP. A keyed AGC function is implemented to prevent receiver desensitization due to erroneous AGC response. Furthermore the module features automatic alignment for the tracking filters and the image rejection filters. All tuner functions and parameters can be controlled via a serial bus interface.

HD-Radio™ (IBOC) and DRM capability with a reception of up to 26 MHz is optional. Versions for special AM (LW/MW/SW) and FM bands (Europe, USA, Japan) are also available. The MT1468 module was designed to withstand typical automotive operating conditions and fully complies with RoHS requirements.

APPLICATIONS

- High-end automotive entertainment system requiring digital IF
- HD radio

FEATURES

FM

- High and low side injection to avoid VCO interference
- Passive FM pre-stage with auto aligned tracking filter
- Radio tuning state engine to support inaudible RDS updating
- Image reject mixers
- Keyed AGC selectable

AM

- 10.7 MHz Up-conversion
- AM Dual AGC (Cascode and PIN)
- 1st stage ceramic filtering

GENERAL

- All functions controlled by serial bus
- Balanced IF outputs
- High integration and fully shielded housing
- On-board EEPROM
- Variable IF output gain
- Lead-free and RoHS compliant

RECOMMENDED OPERATING CONDITIONS

PARAMETER	MIN	TYP	MAX	UNIT
8.5 V Power Supply				
Current AM mode		130		mA
Current FM mode		100		mA
Voltage		8.5		V
Operating temperature range	-40		85	°C
Storage temperature	-40		95	°C

INPUT/OUTPUT CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT
Antenna Input AM mode				
Input Capacitance, AGC inactive		60		pF
Input Conductance, AGC inactive		1		mS
Input Conductance, AGC active			3.3	mS
Antenna Input FM mode				
Input Impedance, AGC inactive		50		Ω
VSWR, AGC inactive			4	
Input Resistance, AGC active	10			Ω
Keyed AGC Inputs	0.4		1.4	V
SDA	SDA and SCL HIGH and LOW levels are specified according to a 3.3V I ² C-Bus. The bus pins also tolerate thresholds of a 5 V bus.			
SCL				
Intermediate Frequency Output		10.7		MHz
Max. balanced output Voltage		1.4		V
Output resistance		500		Ω
AF Sample Output *		1.2		mA
AF Hold Output *		1.2		mA
Reference Frequency Inputs				
External Frequency		100		KHz
External input current		500		μA
Input Resistance		5		Ω
IF AGC LSB/MSB				
LOW-level input voltage	-0.3		1	V
HIGH-level input voltage	2		5.3	V

* Open collector output with maximum sink current; no internal pull up resistor

DIMENSIONS*

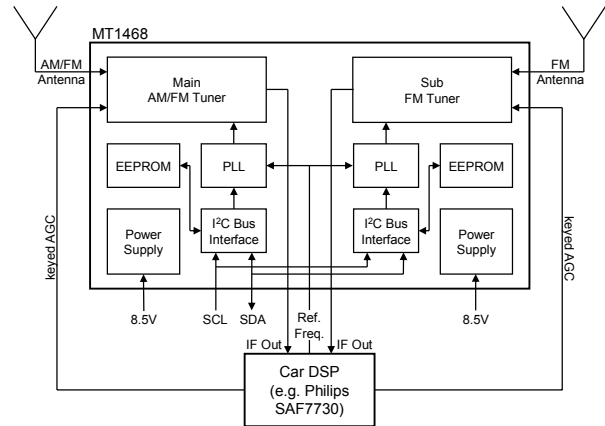
PARAMETER	MEASUREMENT	UNIT
Length	90	mm
Width	46	mm
Height	13	mm

*All inputs/outputs via pins; number of pins is 2x16; pin grid is 2.54 mm

ELECTRICAL CHARACTERISTICS*

PARAMETER	MIN	TYP	MAX	UNIT
Receiving frequency range (depends on version)				
FM mode Japan	76		91	MHz
FM mode Europe/USA	87.5		108	MHz
AM LW mode	144		288	KHz
AM MW mode	520		1720	KHz
AM SW mode	5,730		6,295	KHz
DRM (optional)	144		26,100	KHz
AM Parameters				
Sensitivity: RF level for S+N/N = 26dB		22		dBμV
S+N/N at RF input = 60dBμV		60		dB
IF rejection (10.7MHz)		96		dB
Image rejection IF1 = tuned frequency + 21.4MHz		85		dB
Selectivity ± 9 KHz		70		dB
FM Parameters				
Sensitivity: RF level for S+N/N = 26dB		4.5		dBμV
S+N/N (Mono) at RF input = 54dBμV		60		dB
IF rejection (10.7MHz)		100		dB
Image rejection IF1 = tuned frequency + 21.4 MHz		60		dB
AM suppression		76		dB
Distortion at RF level = 100dBμV		0.1		%
Selectivity ± 100 kHz		65		dB

*Electrical characteristics measured with Philips backend DSP SAF7730 and antenna dummy causing a loss of 6 dB



MT1468 Block Diagram



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