

DATA SHEET

OM5604; OM5606 Multimedia radio tuner

Preliminary specification
Supersedes data of 1995 Aug 31
File under Integrated Circuits, IC01

1995 Oct 10

Multimedia radio tuner

OM5604; OM5606

FEATURES

- Local/DX switching to improve large signal handling on FM when an outdoor antenna or cable network is connected
- Local/DX function provides different search levels which are useful for spectrum analyser functions
- Three extra I/O expander ports are available for general purpose (I²C-bus only)
- RDS-MPX signal available
- The module meets the "FCC regulations"
- The OM5604; OM5606 is in accordance with "CENELEC EN55022" and "CENELEC EN50082-1".



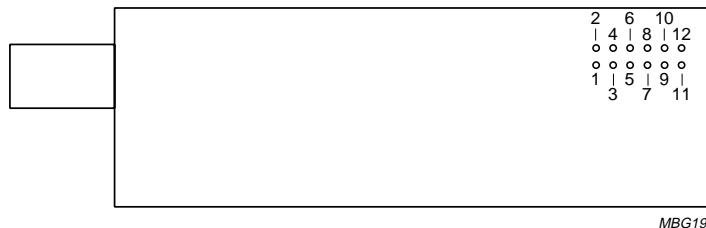
ANTENNA CONNECTOR

RF connector

- OM5604: F-connector (FM input impedance = 75 Ω)
- OM5606: IEC-connector (FM input impedance = 75 Ω).

GENERAL DESCRIPTION

The OM5604; OM5606 is an FM-radio tuner which includes a brand new concept in tuning techniques. The new tuning concept combines the advantages of hand tuning together with electronic facilities and features. The tuner is I²C-bus controlled.



MBG196

Fig.1 OM5604; OM5606 connector.

ORDERING INFORMATION

UNIT	FREQUENCY (MHz)	BUS	RF CONNECTOR
FM I ² C-bus	87.5 to 108	I ² C-bus	F-connector for OM5604
			IEC-connector for OM5606

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PINNING

PIN	DESCRIPTION
1	port 5 PCF8574A (I ² C-bus)
2	port 6 PCF8574A (I ² C-bus)
3	port 7 PCF8574A (I ² C-bus)
4	serial clock input ⁽¹⁾
5	stereo indicator
6	serial data input/output ⁽¹⁾
7	supply voltage (+5 V)
8	supply voltage (+12 V)
9	audio right output
10	ground
11	audio left output
12	MPX signal for RDS demodulation

Note

- See "The I²C-bus and how to use it" (ordering number 9398 393 40011).

LIMITING VALUES

IEC publication 68-1; full specification; EMC behaviour: the module is designed to be FCC friendly (part 15).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
T	temperature		15	35	°C
RH	relative humidity		25	85	%
T _{amb}	operating ambient temperature	functional operation	-10	+60	°C
T _{stg}	storage temperature		-20	+70	°C
V _{esd(pc)}	electrostatic handling for pin connector	note 1	-	2	kV
		note 2	-	300	V
V _{esd(RFc)}	electrostatic handling for RF-connector	note 3	-	4	kV
		note 4	-	500	V

Notes

- Class B: human body model (1.5 kΩ, 100 pF).
- Class B: charge device model (0 Ω, 200 pF).
- Class A: human body model (1.5 kΩ, 100 pF).
- Class A: charge device model (0 Ω, 200 pF).

INTERFACE

- Digital driving: I²C-bus
- Audio output: typical 900 mV RMS (load 600 Ω) for FM Δf = 75 kHz
- Supply: 5 V ±10% current ≤30 mA and 12 V ±1%, ripple ≤1 V, current ≤2 mA
- RDS-MPX: DC coupled (load ≥39 kΩ), amplitude typical 150 mV (Δf = 75 kHz)
- RF input connector (75 Ω)
- 12 pin connector.

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CHARACTERISTICS

Direct coaxial feed to 75 Ω RF-connector; signal generator impedance = 75 Ω ; RF levels are EMF/2; $\Delta f = 75$ kHz; $f_i = 98$ MHz; $f_{mod} = 1$ kHz; left and right audio output; $R_L = 600$ Ω ; audio filter = 22 Hz to 15 kHz; temperature range = 15 to 35 $^{\circ}$ C.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
FM mono						
Φ_{lim}	3 dB limiting sensitivity	$V_{11, 12} = -3$ dB; $V_{11, 12} = 0$ dB at $V_{FMi} > 100$ μ V	–	3.5	5	μ V
Φ_{RF}	RF sensitivity	$(S + N)/N = 26$ dB	–	2.2	4	μ V
S/N	signal-to-noise ratio	$V_{FMi} = 1$ mV	–	71	–	dB
f_L	lower audio frequency bandwidth limit	measured lower limit (-3 dB); $f_{ref} = 1$ kHz; measured with pre-emphasis	–	40	70	Hz
f_H	upper audio frequency bandwidth limit	measured upper limit (-3 dB); $f_{ref} = 1$ kHz; measured with pre-emphasis	12.5	14	–	kHz
α_{AM}	AM suppression	AM modulation $m = 30\%$; $f_{AF} = 1$ kHz	40	58	–	dB
THD	total harmonic distortion		–	1.5	3	%
V_{FMi}	search sensitivity	search stop bits 17 and 16 = 0	–	12	36	μ V
V_{FMi}	large signal handling	DX mode; measured distortion = 10%	–	1000	–	mV
att_{RF}	RF attenuation in local mode		15	20	30	dB
V_{FM}	audio output voltage level	$V_{FMi} = 1$ mV; $\Delta f = 75$ kHz; $f_{AF} = 400$ Hz	700	850	–	mV
FM stereo						
S/N	signal-to-noise ratio	$V_{FMi} = 1$ mV	60	63	–	dB
α_{cs}	channel separation	$f_{AF} = 1$ kHz; $V_{FMi} = 1$ mV	22	28	–	dB
$ \Delta I_O $	channel imbalance	$f_{AF} = 1$ kHz; $V_{FMi} = 1$ mV	–	0.5	3	dB
α_{19}	carrier and harmonic suppression		25	26	–	dB
α_{38}	carrier and harmonic suppression		25	27	–	dB
α	stereo blend function	$V_{FMi} = 100$ μ V	5	10	–	dB
THD	total harmonic distortion		–	–	3	%

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PACKAGE OUTLINES

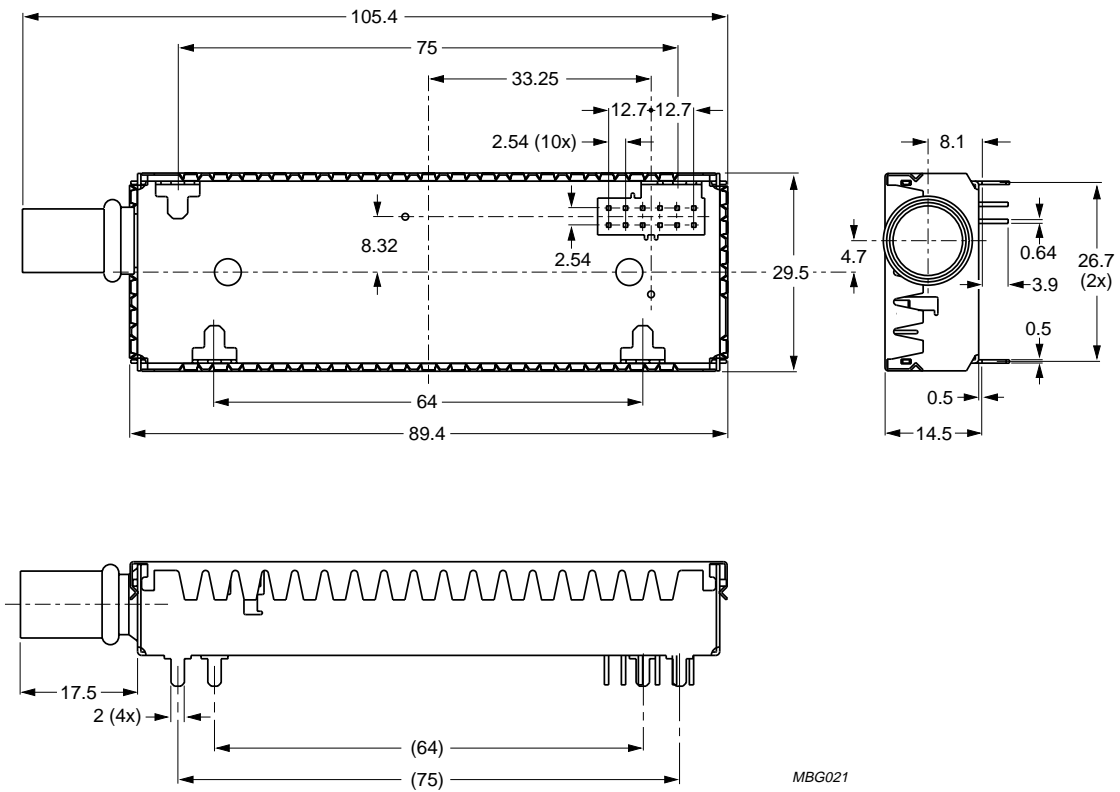


Fig.2 Package outline for OM5604 (F connector).

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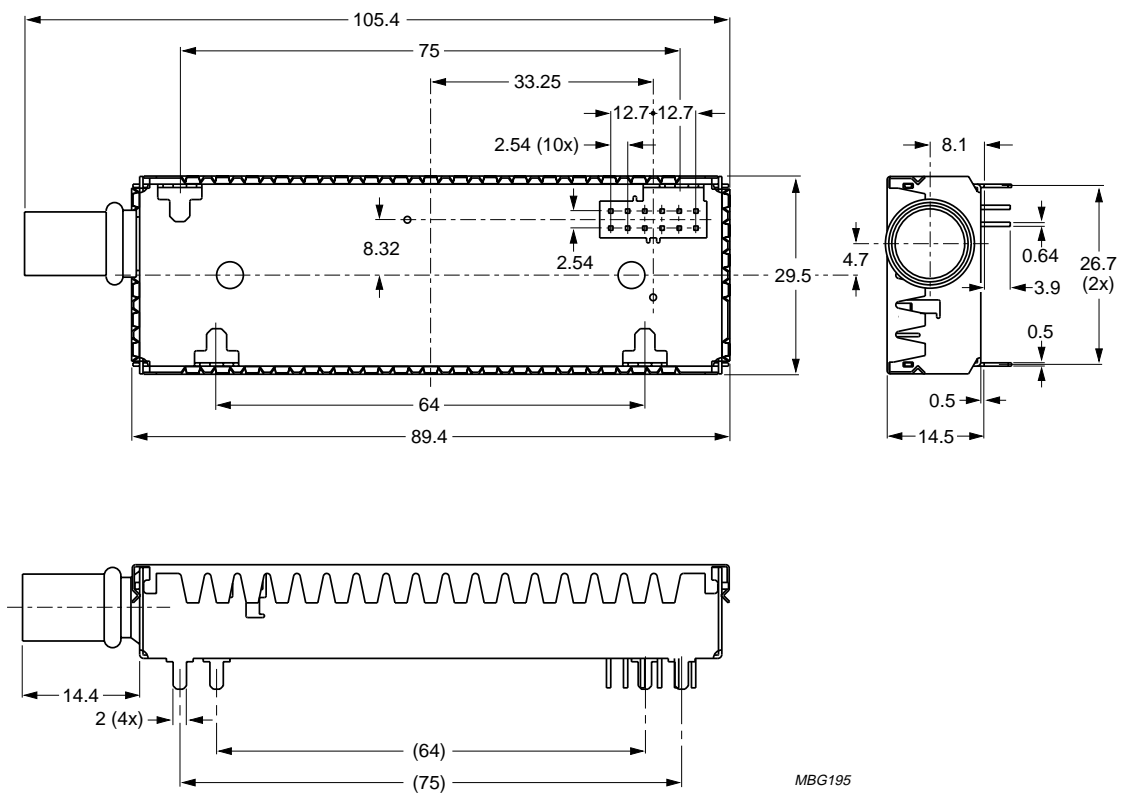


Fig.3 Package outline for OM5606 (IEC connector).

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DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

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Purchase of Philips I²C components conveys a license under the Philips' I²C patent to use the components in the I²C system provided the system conforms to the I²C specification defined by Philips. This specification can be ordered using the code 9398 393 40011.

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