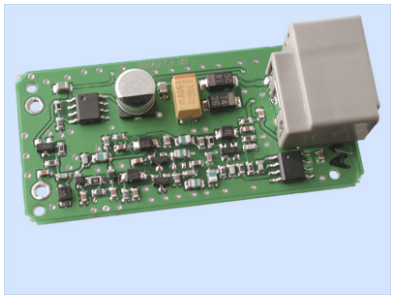
MICROTUNE

RF SILICON AND SYSTEMS SOLUTIONS
FOR BROADBAND COMMUNICATIONS, AND AUTOMOTIVE ELECTRONICS

MT141X AM/FM ANTENNA AMPLIFIER SERIES

PRODUCT BRIEF

The MT141X modules are optimized to work with in-glass antennas. The amplifiers are customized to meet the specific housing, connector and electrical matching requirements of varied car platforms that deploy different antennas, radios, and mechanics.



MT141X AM/FM Antenna Amplifier Module

The Microtune MT141X AM/FM antenna amplifiers are designed for use in automobiles with state-of-the-art in-glass antenna systems.

Since in-glass antennas need high performance amplifiers to supply a clean signal to the radio, the MT141X modules are ideal for this demanding environment. As most in-glass antennas employ multiple FM antennas, but use only one AM antenna to add a diversity function for FM, the MT141X amplifiers are available in an AM/FM version and an FM-only version.

They are engineered to deliver high linearity and low noise, critical features of an automotive AM/FM receiving system. A low noise figure enables high system sensitivity to receive clear sound in rural areas, while high linearity permits robust performance in dense, urban signal environments. The implemented AGC circuit for FM provides additional improvement of signal handling capability.

The MT141X amplifiers also permit designers to adjust key parameters, including gain, AGC threshold, or input/output impedance, providing the flexibility to optimize performance and integration of entire AM/FM receiver system. Features such as phantom power supply (power is supplied from the car radio via the antenna cable) are additionally offered as an option. The power supply circuit includes reverse voltage protection and the antenna input provides ESD protection. The amplifiers support the frequency ranges of Japan, Europe and the United States.

APPLICATIONS

- Car radio applications
- Automotive in-glass-antenna systems with or without diversity

AM FEATURES

- World standard frequency range: 150 kHz to 6290 kHz
- Very high input impedance
- Very low input capacitance
- Low output impedance
- Low IM2 distortion
- Input protection

FM FEATURES

- World standard frequency range: 76 MHz to 108 MHz
- Integrated AGC circuit
- Low IM3 distortion
- Low noise figure
- Input protection
- Suitable for antenna diversity applications

GENERAL FEATURES

- High performance voltage stabilizer on board
- Reverse voltage protection
- Low power consumption
- High stability over temperature
- Optional phantom power supply
- Customizable key parameters, frequency range, housing, and connectors
- Compact customized size of around 13 cm^2
- Meets automotive quality standards

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OPERATING CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT
POWER SUPPLY VOLTAGE				
Power supply voltage		12		V
Current consumption FM version		27		mA
Current consumption AM/FM version		50		mA
TEMPERATURE				
Operating temperature	-40		+85	°C
Parametric temperature range	-30		+75	°C
Storage temperature	-40		+85	°C

INPUT AND OUTPUT CHARACTERISTICS

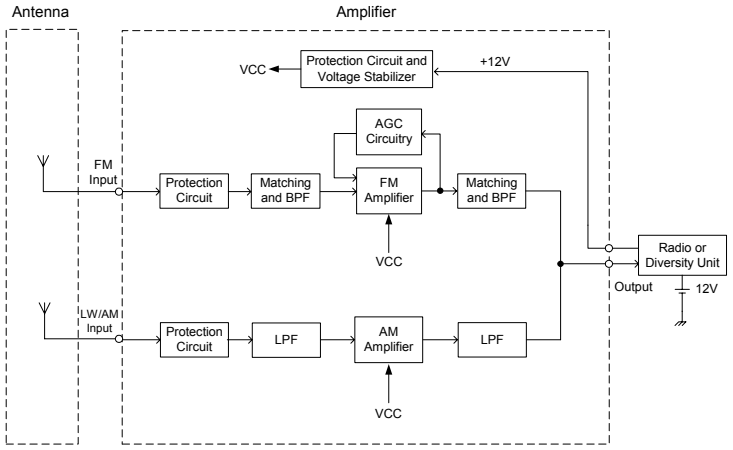
PARAMETER	MIN	TYP	MAX	UNIT
AMPLIFIER INPUT IMPEDANCE				
AM section		>10		kΩ
FM section		75		Ω
AMPLIFIER OUTPUT				
AM impedance		100		Ω
FM impedance		75		Ω
CONNECTORS				
Output connector type		customized		
Input connector type		customized		

FM ELECTRICAL CHARACTERISTICS

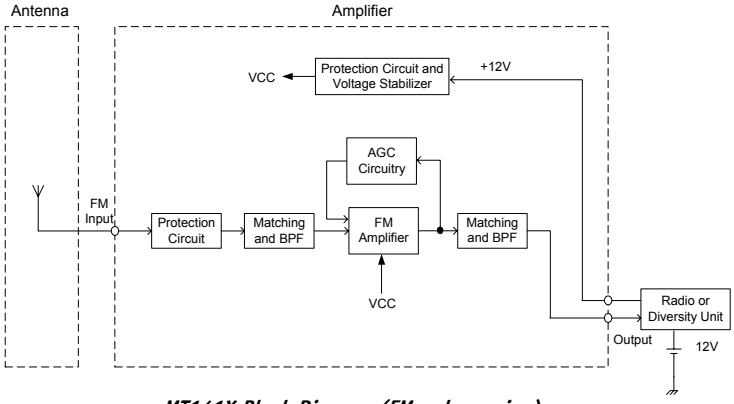
PARAMETER	MIN	TYP	MAX	UNIT
FM bandwidth	76		108	MHz
Gain (adjustable)		8		dB
Second order distortion (Input: 2x100dBµV at f_1 = 98MHz and f_2 = 98.8MHz, Output: measured frequency = f_2-f_1 = 800 kHz)		10		dBµV
Third order distortion (Input: 2x100dBµV at f_1 = 98 MHz and f_2 = 99 MHz, Output: measured frequency = 2xf_1-f_2 = 97 MHz)		35		dBµV
AGC attack point (adjustable)		95		dBµV
AGC dynamic range		35		dB
Noise figure		5		dB

AM ELECTRICAL CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT
Long wave (LW) band (optional)	150		280	kHz
Mid wave (MW) band	522		1629	kHz
Short wave (SW) band (optional)	5735		6290	kHz
Gain (adjustable)		5		dB



MT141X Block Diagram (AM/FM version)



MT141X Block Diagram (FM-only version)

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