



M I C R O T U N E ®

RF SILICON AND SUBSYSTEMS SOLUTIONS
FOR BROADBAND COMMUNICATIONS AND AUTOMOTIVE ELECTRONICS

MT2068 SINGLE-CHIP BROADBAND TUNER

PRODUCT BRIEF

The MT2068 is a low-power 3.3 V single-chip broadband tuner with an integrated IF variable-gain amplifier.



MT2068 Single-Chip Broadband Tuner

The MicroTuner™ MT2068 is an advanced, low-power single-chip broadband tuner that has been optimized for high-performance cable modems, DVB-C & DSG STB's and embedded DOCSIS adapters (eDOCSIS) that require low composite distortion and noise under digital cable environments.

The MT2068 is capable of receiving frequencies in the 48 MHz to 1.0 GHz range and of converting a selected channel to a standard intermediate frequency (IF) between 30 MHz and 60 MHz.

The MT2068's low phase noise makes it ideal for use in digital applications such as video, voice and high-speed data. Its dual-conversion architecture, with no requirement for tracking filters, yields the desirable characteristics of traditional cable television tuners: controlled input impedance across the entire input band, low in-band emissions, and outstanding image rejection.

In addition, the MT2068 provides excellent in-band flatness as well as very repeatable gain characteristics across the complete reception band. With minor bill of material (BOM) changes, the MT2068 is capable of supporting multiple output standards.

The MT2068's low power consumption significantly conserves current and can be effectively used in battery backed-up EMTA's, multi-tuner DVB-C (MPEG) and DOCSIS (IP Video) STB applications.

APPLICATIONS

- VoIP Telephony Modems
- Cable Modems
- Multi-tuner All-Digital Set-top Boxes (MPEG or IP Video)
- Digital Set-top Boxes without loop-through

FEATURES

- 48 MHz to 1.0 GHz input frequency range
- 3.3 V power supply
- Works seamlessly with digital demodulators
- Low-power sub-1 Watt dual-conversion architecture
- Integrated first IF filter
- Single-ended RF input reduces BOM by eliminating input balun
- Minimal external components
- No manually tunable parts required
- Integrated IF variable gain amplifier for direct connection to digital demodulators
- Fully compatible with DAVIC, DVB-C, DOCSIS 1.0, 1.1, and 2.0, EuroDOCSIS, and other standards

PRELIMINARY

M I C R O T U N E

RECOMMENDED OPERATING CONDITIONS

PARAMETER	MIN	TYP	MAX	UNIT
Supply voltage	3.15	3.3	3.45	V
Supply voltage ripple			25	mVp-p
Operating junction temperature			100	°C
VGA load impedance	200			Ω
Serial control clock			400	kHz

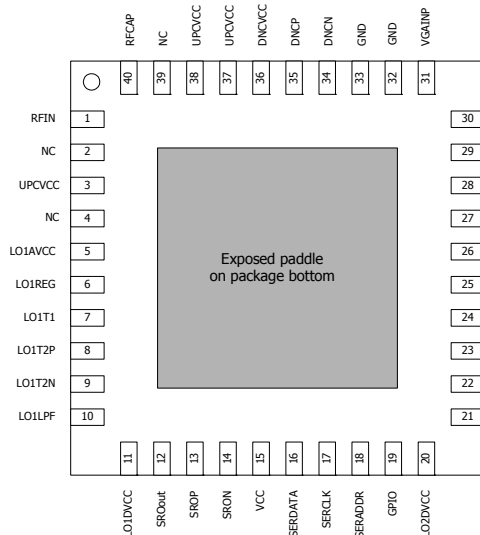
ABSOLUTE MAXIMUM RATINGS

PARAMETER	MIN	MAX	UNIT
Supply voltage		3.6	V
Storage temperature range	-40	150	°C
Lead-free temperature (soldering 5 seconds)		245	°C
Input voltage	-0.3	VCC +0.3	V

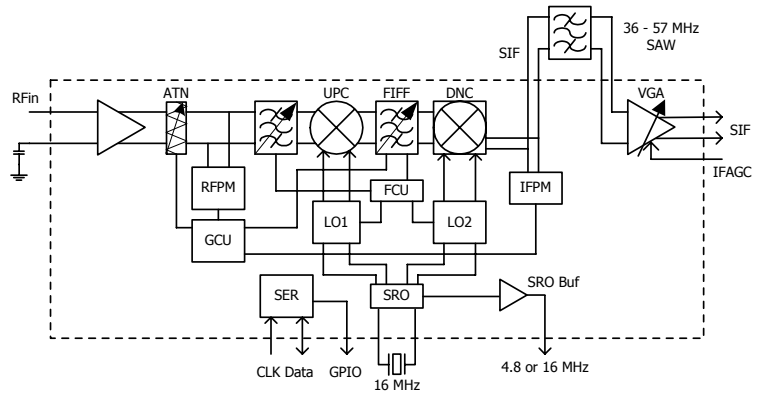
TUNER ELECTRICAL CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT
Power supply				
Active current		257		mA
RF signal path				
Input frequency range	48		1000	MHz
Return loss		8		dB
Noise figure at max gain		9.5		dB
Voltage gain $R_S = 75 \Omega$		42		dB
RF AGC range		29		dB
Image rejection		60		dBc
LO phase noise (10 kHz)		-84		dBc/Hz
LO phase noise (100 kHz)		-106		dBc/Hz
LO step size	50			kHz
IF VGA				
Frequency Range	30		60	MHz
Output voltage			2.0	Vp-p
AGC range		37		dB

PRELIMINARY



MT2068 Pin Diagram



MT2068 Block Diagram



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