MICROTUNE®

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

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## RECOMMENDED OPERATING CONDITIONS

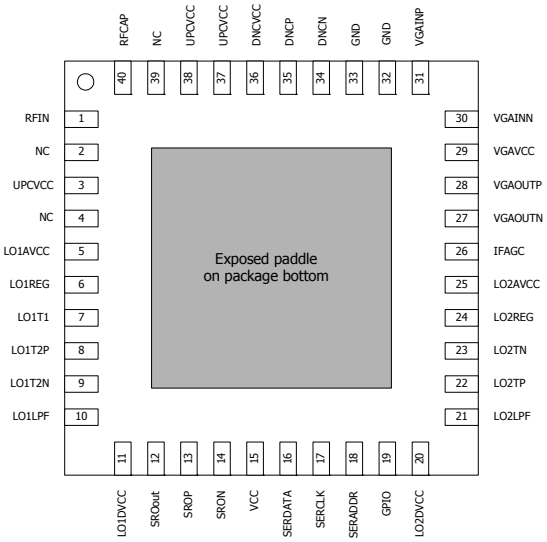
| PARAMETER | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|
| Supply voltage | 3.15 | 3.3 | 3.45 | V |
| Supply voltage ripple | | | 25 | mVp-p |
| Operating junction temperature | | | 100 | °C |
| VGA load impedance | 200 | | | Ω |
| Serial control clock | | | 400 | kHz |

## ABSOLUTE MAXIMUM RATINGS

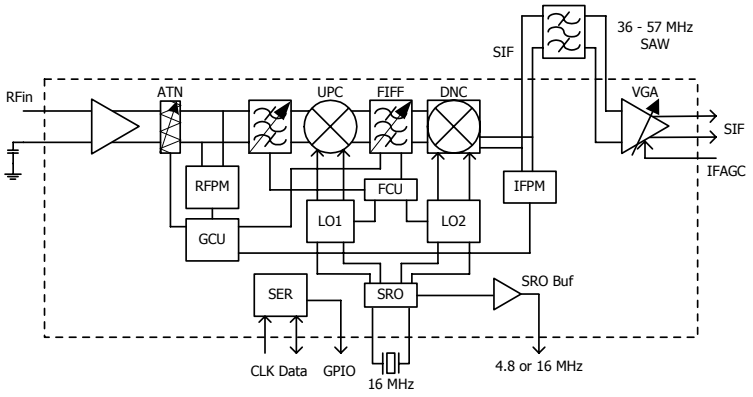
| PARAMETER | MIN | MAX | UNIT |
|---|---|---|---|
| Supply voltage | | 3.6 | V |
| Storage temperature range | -40 | 150 | °C |
| Lead-free temperature (soldering 5 seconds) | | 245 | °C |
| Input voltage | -0.3 | VCC +0.3 | V |

## 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 Ω | | 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 |




*MT2068 Pin Diagram*




*MT2068 Block Diagram*

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