



M I C R O T U N E ®

RF SILICON AND SYSTEMS SOLUTIONS
FOR BROADBAND COMMUNICATIONS AND AUTOMOTIVE ELECTRONICS

MT2050 SINGLE-CHIP BROADBAND TUNER

PRODUCT BRIEF

The MT2050 is a 5.0V single-chip broadband tuner with an integrated IF variable gain amplifier.



MT2050 Single-Chip Broadband Tuner

The MT2050 is an advanced single-chip broadband tuner that has been optimized for high performance cable modems and digital cable set-top boxes that require low composite distortion and noise under digital cable environments. The MT2050 includes all active circuitry required to implement total RF functionality, making it the world's first complete RF/amplifier silicon front end. It is capable of receiving frequencies in the 48 MHz to 860 MHz range and converting a selected channel to a standard intermediate frequency (IF). Supported IF frequencies include NTSC, PAL, and digital standards including DOCSIS, EuroDOCSIS, DVB-C, and ITU J83, A, B, C.

The MT2050's low close-in phase noise allows it to be used for both digital and analog video signals including video, high speed data, and voice. 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.

APPLICATIONS

- Cable modems / voice-enabled cable modems
- Digital set-top boxes (STB)
- Home gateways

FEATURES

- 48 MHz to 860 MHz input frequency range
- Works seamlessly with all analog and digital demodulators
- Low power dual-conversion architecture
- Minimal external components
- No manually tunable parts required
- Simple interface to external filters
- Integrated IF variable gain amplifier for direct connection to digital demodulators
- Fully compatible with NTSC, PAL, SECAM, DAVIC, DVB-C, DOCSIS 1.0, 1.1 and 2.0, EuroDOCSIS and other standards.

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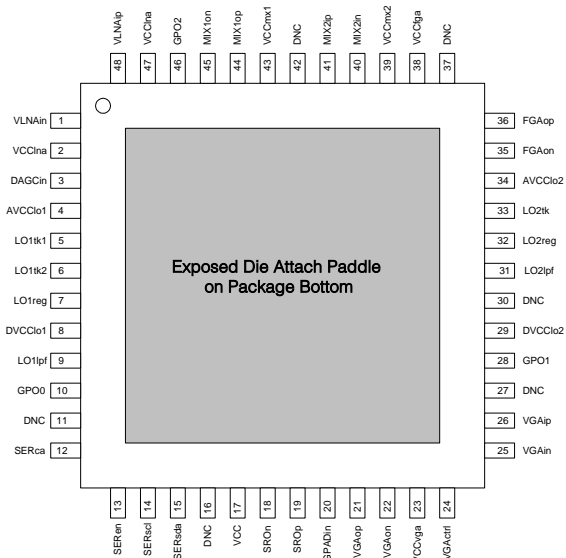
PRODUCT BRIEF

RECOMMENDED OPERATING CONDITIONS

PARAMETER	MIN	TYP	MAX	UNIT
Input frequency range	48		860	MHz
First intermediate center frequency		1220		MHz
Second intermediate center frequency (programmable)	30		60	MHz
Supply voltage	4.75	5	5.25	V
Supply voltage ripple			15	mV
Operating junction temperature			100	°C
VGA output load impedance	300			Ω
Serial control clock			400	kHz

ABSOLUTE MAXIMUM RATINGS

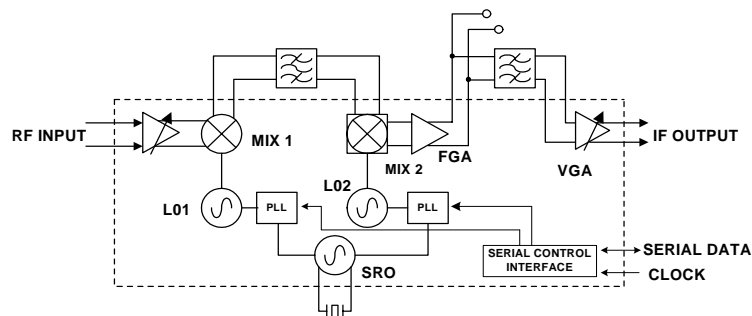
PARAMETER	MIN	MAX	UNIT
Supply voltage		6	V
Storage temperature range	-40	+150	°C
Lead temperature (soldering, 4 seconds)		+245	°C
Lead-free temperature (soldering, 5 seconds)		+260	°C
Input voltage	-0.3	VCC +0.3	V



MT2050 Pin Diagram

ELECTRICAL CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT
Power Supply				
Active current		325		mA
Shut-down current		35		mA
Return loss		10		dB
Noise figure, max gain		7.3		dB
RF AGC range	30			dB
VGA AGC range	30			dB
LO1				
Phase noise (10 kHz)		-86		dBc/Hz
Phase noise (100 kHz)		-109		dBc/Hz
LO2				
Phase noise (10 kHz)		-94		dBc/Hz
Phase noise (100 kHz)		-114		dBc/Hz



MT2050 Block Diagram



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