



LTC1064-4M/883

Low Noise, 8th Order, Clock Sweepable Cauer Lowpass Filter

T-64-05

DESCRIPTION

The LTC1064-4M/883 is an 8th order, clock sweepable Cauer lowpass switched capacitor filter. An external TTL or CMOS clock programs the value of the filter's cutoff frequency. With pin 10 at V^+ , the f_{CUTOFF} ratio is 50:1; the filter has a Cauer response and with compensation the passband ripple is $\leq 0.1\text{dB}$. The stopband attenuation is 80dB at $2 \times f_{\text{CUTOFF}}$. Cutoff frequencies up to 100kHz can be achieved. With pin 10 at V^- , the f_{CLOCK} to $f_{-3\text{dB}}$ ratio is 100:1, the filter has a transitional Butterworth-Cauer response with lower noise and lower delay nonlinearity than the Cauer response. The stopband attenuation at $2.5 \times f_{-3\text{dB}}$ is 92dB. Cutoff frequencies up to 50kHz can be achieved.

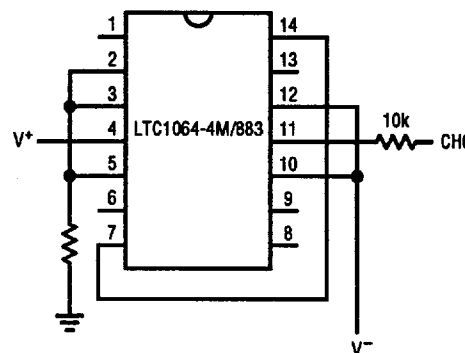
It features low noise and low harmonic distortion even when input voltages up to $3V_{\text{RMS}}$ are applied. Overall performance competes with equivalent multi op amp active realizations. The LTC1064-4M/883 is pin compatible with the LTC1064-1M/883, LTC1064-2M/883, and LTC1064-3M/883. The LTC1064-4/883 is manufactured using Linear Technology's enhanced LTCMOS™ silicon gate process.

The devices are processed to the requirements on MIL-STD-883 Class B to yield circuits usable in precision military applications.

ABSOLUTE MAXIMUM RATINGS

Total Supply Voltage (V^+ to V^-)	16.5V
Power Dissipation	400mW
Operating Temperature Range	-55°C to 125°C
Storage Temperature Range	-65°C to 150°C
Lead Temperature (Soldering, 10 sec.)	300°C

BURN-IN CIRCUIT



NOTES:

THE POWER SUPPLIES SHOULD BE BYPASSED BY A 0.1 μF OR LARGER CAPACITOR CLOSE TO THE PACKAGE. THE CONNECTION BETWEEN PINS 7 AND 14 SHOULD BE MADE UNDER THE I.C. PACKAGE.

$V^+ = 7.5\text{V TO } 8.0\text{V}$

$V^- = -7.5\text{V TO } -8.0\text{V}$

CH6 = SQUARE WAVE, AMPLITUDE = 7.5V TO 8.0V AND FREQUENCY = 1KHZ $\pm 10\%$

1064-4M B

PACKAGE/ORDER INFORMATION

<p>J PACKAGE 14-LEAD CERAMIC DIP</p> <p>1064-4M PO</p>	<p>ORDER PART NUMBER</p> <p>LTC1064-4MJ/883</p> <p>PART MARKINGS†</p> <p>LTC1064-4MJ/883C</p>	<p>L PACKAGE 20-PIN LCC</p> <p>1064-4M LCC</p>	<p>ORDER PART NUMBER</p> <p>LTC1064-4ML/883</p> <p>PART MARKINGS†</p> <p>LTC1064-4ML/883C</p>
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† The suffix letter "C" of the part mark indicates compliance per MIL-STD 883, para 1.2.1.1.



Information furnished by Linear Technology Corporation is believed to be accurate and reliable. However, no responsibility is assumed for its use. Linear Technology Corporation makes no representation that the interconnection of circuits as described herein will not infringe on existing patent rights.

LTC1064-4M/883

TABLE 1: ELECTRICAL CHARACTERISTICS

T-64-05

 $V_S = \pm 7.5V$, $f_{CLK} = 1MHz$, $f_c = 20kHz$, $R_L = 10k\Omega$, TTL clock input, level unless otherwise specified.

PARAMETER	CONDITIONS	$T_A = 25^\circ C$			SUB-GROUP	$-55^\circ C \leq T_A \leq 125^\circ C$			SUB-GROUP	UNITS
		MIN	TYP	MAX		MIN	TYP	MAX		
Passband Gain	Referenced to 0dB, 1Hz to 1kHz	-0.5	0.1		1	-0.5	0.1		2,3	dB
Gain at -3dB Frequency	Referenced to Passband Gain	-0.4	0.7		1	-0.4	0.7		2,3	dB
Passband Ripple	$0.1f_c$ to $0.95f_c$ Referenced to Passband Gain	0	0.75		1	0	0.75		2,3	dB
Stopband Attenuation	At $1.7f_{CUTOFF}$	-56			1	-56			2,3	dB
Output Voltage Swing and Operating Input Voltage Range	$V_S = \pm 2.37V$	± 1.1			4	± 1.1			5,6	V
	$V_S = \pm 5.0V$	± 3.1			4	± 3.1			5,6	V
	$V_S = \pm 7.5V$	± 5.0			4	± 5.0			5,6	V
Output DC Offset	$V_S = \pm 7.5V$		± 160		1					mV
Input Impedance		9			1					k Ω
Power Supply Current	$V_S = \pm 2.37V$, $F_{CLK} = 1MHz$		22		1		22		2,3	mA
	$V_S = \pm 5.0V$, $F_{CLK} = 1MHz$		23		1		26		2,3	mA
	$V_S = \pm 8.0V$, $F_{CLK} = 1MHz$		28		1		32		2,3	mA
Power Supply Voltage Range		± 2.37	± 7.5		1	± 2.37	± 7.5		2,3	V

TABLE 2: ELECTRICAL TEST REQUIREMENTS

MIL-STD-883 TEST REQUIREMENTS	SUBGROUP
Final Electrical Test Requirements (Method 5004)	1*, 2, 3, 4, 5, 6
Group A Test Requirements (Method 5005)	1, 2, 3, 4, 5, 6
Group C and D End Point Electrical Parameters (Method 5005)	1*

* PDA Applies to subgroup 1. See PDA Test Notes.

PDA Test Notes

The PDA is specified as 5% based on failures from group A, subgroup 1, tests after cooldown as the final electrical test in accordance with method 5004 of MIL-STD-883 Class B. The verified failures of group A, subgroup 1, after burn-in divided by the total number of devices submitted for burn-in in that lot shall be used to determine the percent for the lot.

Linear Technology Corporation reserves the right to test to tighter limits than those given.

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