



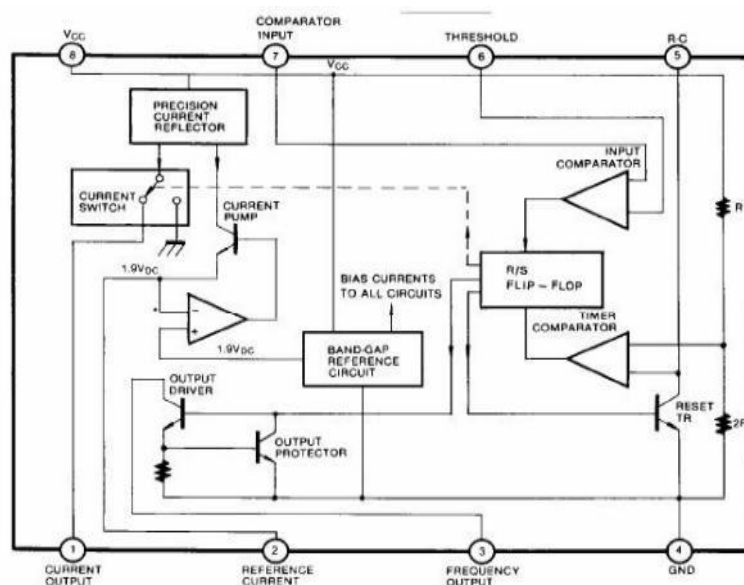
描述

该电压-频率转换器以精确成比例的频率给外加输入电压提供输出脉冲序列。LM331N在低至4V供电时可以将输出频率从1Hz转化到100KHz。它非常适合在简单的低成本电路中使用，用于模数转换、长期集成、线性调频或解调、频率-电压转换和许多其他功能。

特点

- 保证线性: 0.01% (最大)
- 低功耗: 15mW (5V)
- 广泛的全面频率: 1Hz - 100KHz
- 脉冲输出兼容所有的逻辑形式
- 宽动态范围: 100dB

内部结构

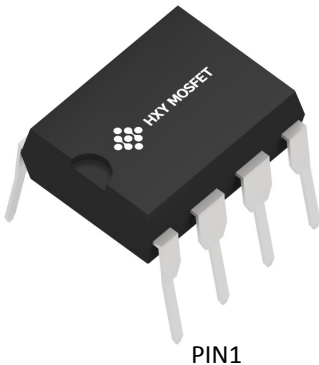
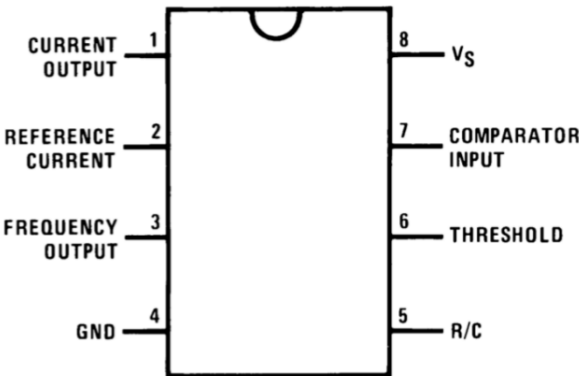


极限出参数 (TA = 25OC)

参数	符号	范围值	单位
工作电压	V _{CC}	40	V
输入电压	V _I	-0.2 ~ + V _{CC}	V
工作温度范围	TOPR	0 ~ +70	℃
功耗	PD	500	mW



引脚功能描述



管脚序号	符号	功能描述	管脚序号	符号	功能描述
1	CUR0	电流输出	5	R/C	定时比较输入
2	REFCUR	参考电流	6	THD	比较器反相输入端
3	F _{OUT}	频率输出	7	COM I	比较器同相输入端
4	GND	地	8	V _s	电源



电气特性

参数	符号	测试条件	最小值	典型值	最大值	单位
VFC非线性	VFCNL	4.5<V _{ac} <20V		±0.003	±0.01	%Full-Scale
转化精度比例因数	ACCUR	V ₁ =-10V, R _s =14KΩ	0.90	1.00	1.10	KHz/V
增益虚拟通道连接	VCCΔG/ VCC	4.5V<V _{cc} <10V		0.01	0.1	%V
		10V<V _{cc} <40V		0.006	0.06	
额定满量程频率	f	V ₁ =-10V	10.0			KHz
输入比较器						
偏移电压	V _{IO}	0°C<T _A <+70°C		±3	±10	mV
偏置电流	I _{BIAS}			80	-300	nA
失调电压	I _O			±8	±100	nA
共模范围	V _{CM}	0°C<T _A <+70°C	0.2		V _{cc} - 2.0	V
定时器(引脚5)						
定时器阈值电压	V _{TH}		0.63	0.667	0.701	
输入偏置电流	I _{ens}	V _{CC} =15V 0V<V ₅ <9.9V		±10	±100	nA
		V ₅ =10V		200	1000	nA
饱和电压	V _{SAT}	I=5mA		0.22	0.5	V
电流源(引脚1)						
输出电流	I _O	R _g =14KΩ, V=N	116	136	156	uA
电压变化量	ΔI _O /ΔV ₁	0V<V ₁ <10V		0.2	1.0	uA
泄露电流源关闭	I _{LKG}			0.02	10.0	nA
参考电压(引脚2)						
参考电压	V _{REF}		1.70	1.89	2.08	VDC
随温度的稳定	S _{TT}			±60		ppm/°c
稳定性随时间, 1000Hours	S _{TT}			±0.1		%
逻辑输出(引脚3)						
饱和电压	V _{SAT}	I=5mA		0.15	0.50	V
		I=3.2mA		0.10	0.40	
关闭泄露	L _{kg}			±0.05	1.0	uA
电源电流						
电源电流	I _{CC}	V _{cc} =5V	1.5	3.0	6.0	mA
		V _{cc} =40V	2.0	4.0		



典型应用

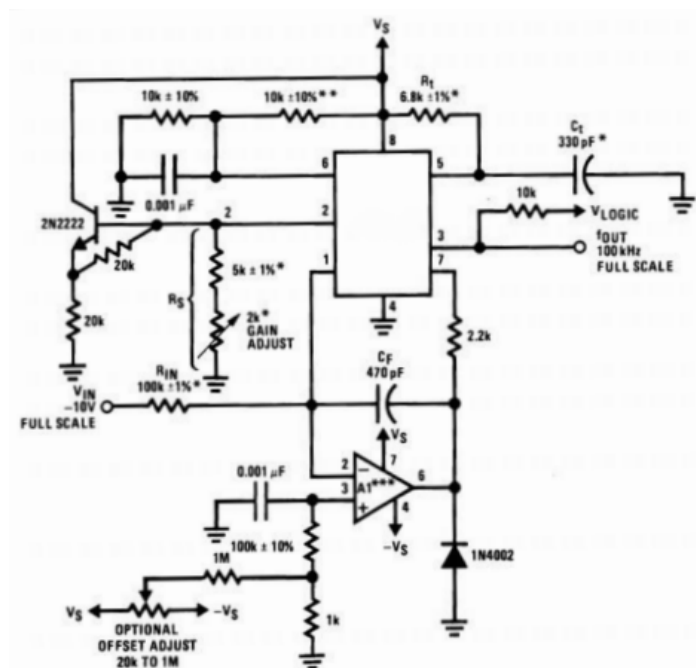


图1 高精度电压频率转换器，100kHz的满量程

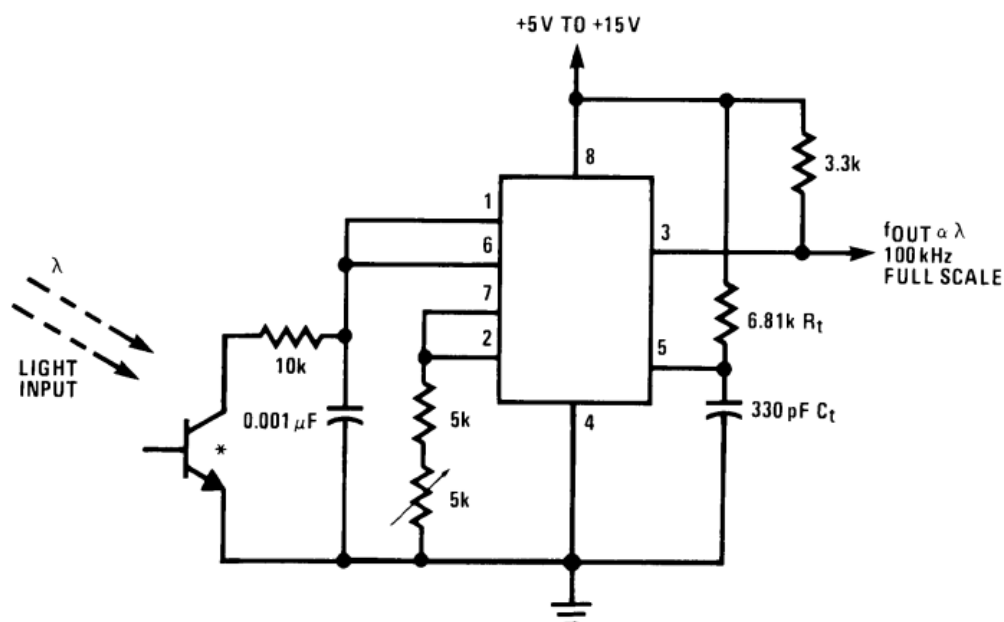


图2 光照强度变换器

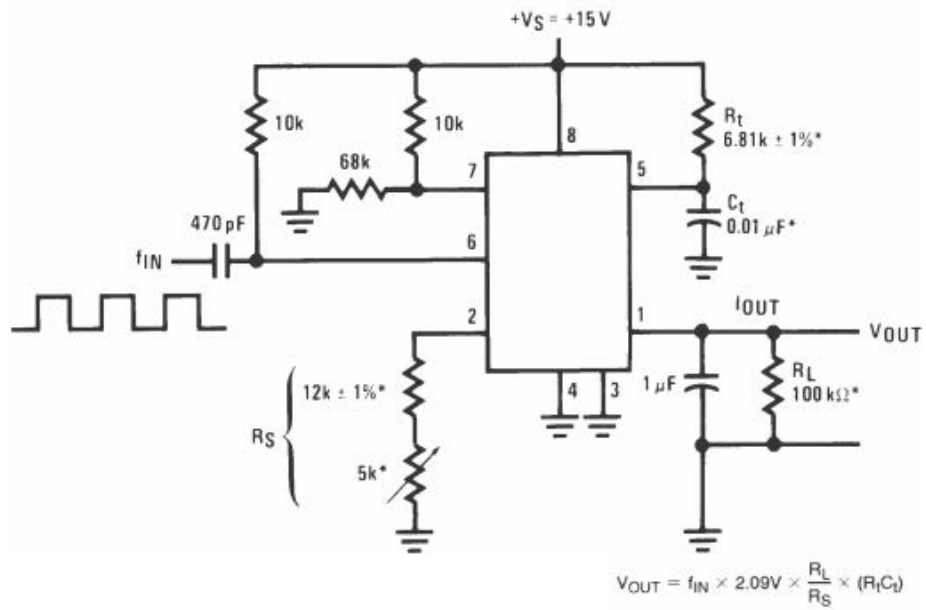
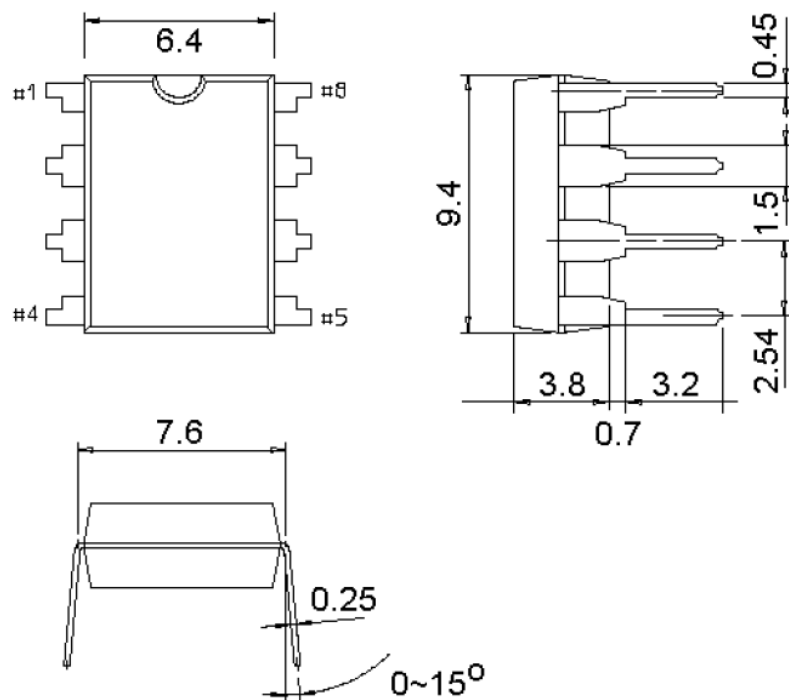


图3简单的频率对电压转换器，10kHz的满量程

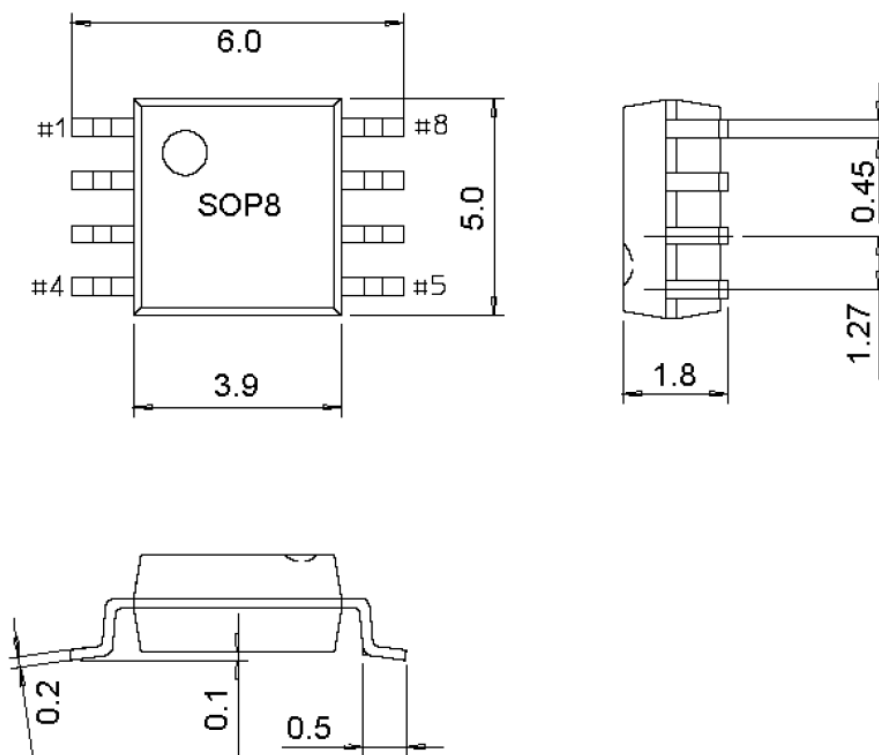


封装信息：

DIP-8



SOP-8





Attention

- Any and all HUA XUAN YANG ELECTRONICS products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your HUA XUAN YANG ELECTRONICS representative nearest you before using any HUA XUAN YANG ELECTRONICS products described or contained herein in such applications.
- HUA XUAN YANG ELECTRONICS assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein.
- Specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- HUA XUAN YANG ELECTRONICS CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all HUA XUAN YANG ELECTRONICS products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of HUA XUAN YANG ELECTRONICS CO.,LTD.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. HUA XUAN YANG ELECTRONICS believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the HUA XUAN YANG ELECTRONICS product that you intend to use.