



模数转换芯片

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。LM331MX/NOPB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。

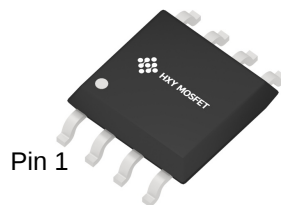
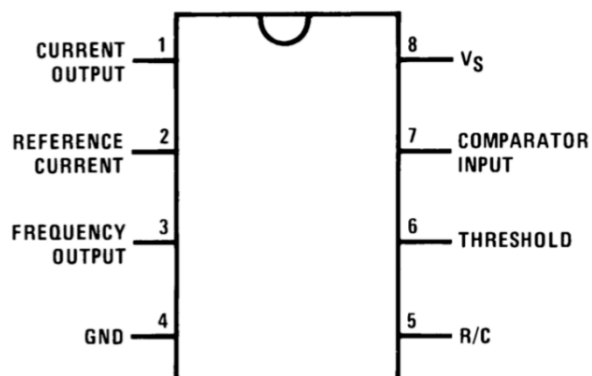
- 保证线性: 0.01% (最大)
- 低功耗: 15mW (5V)
- 广泛的全面频率: 1Hz - 100KHz
- 脉冲输出兼容所有的逻辑形式
- 宽动态范围: 100dB

The block diagram illustrates the internal architecture of the AD654 precision centesimal divider. It features a central **BAND-GAP REFERENCE CIRCUIT** which provides **BIAS CURRENTS TO ALL CIRCUITS**. This reference circuit is connected to a **PRECISION CURRENT REFLECTOR** and a **CURRENT PUMP**. The **CURRENT PUMP** is controlled by a **CURRENT SWITCH** and provides a **1.9V_{DC}** signal to an **OUTPUT DRIVER**. The **OUTPUT DRIVER** is also connected to an **OUTPUT PROTECTOR**. The circuit includes two comparators: an **INPUT COMPARATOR** and a **TIMER COMPARATOR**. The **INPUT COMPARATOR** is connected to the **PRECISION CURRENT REFLECTOR** and the **BAND-GAP REFERENCE CIRCUIT**. The **TIMER COMPARATOR** is connected to the **BAND-GAP REFERENCE CIRCUIT** and the **OUTPUT DRIVER**. The output of the **TIMER COMPARATOR** is connected to an **R/S FLIP-FLOP**, which in turn controls the **CURRENT SWITCH**. The circuit is powered by **V_{CC}** and **GND**, with a **THRESHOLD** input and a **RESET TR** input. The output is labeled **CURRENT OUTPUT**.

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

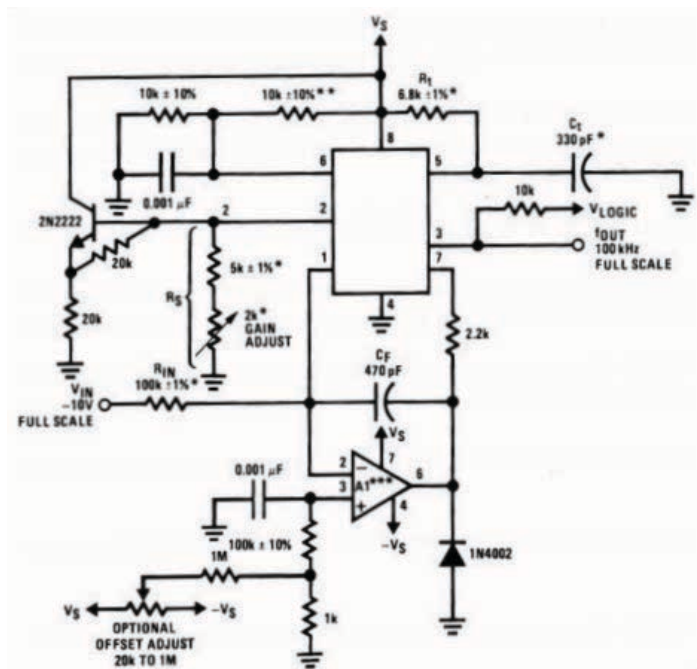


图1 高精度电压频率转换器，100kHz的满量程

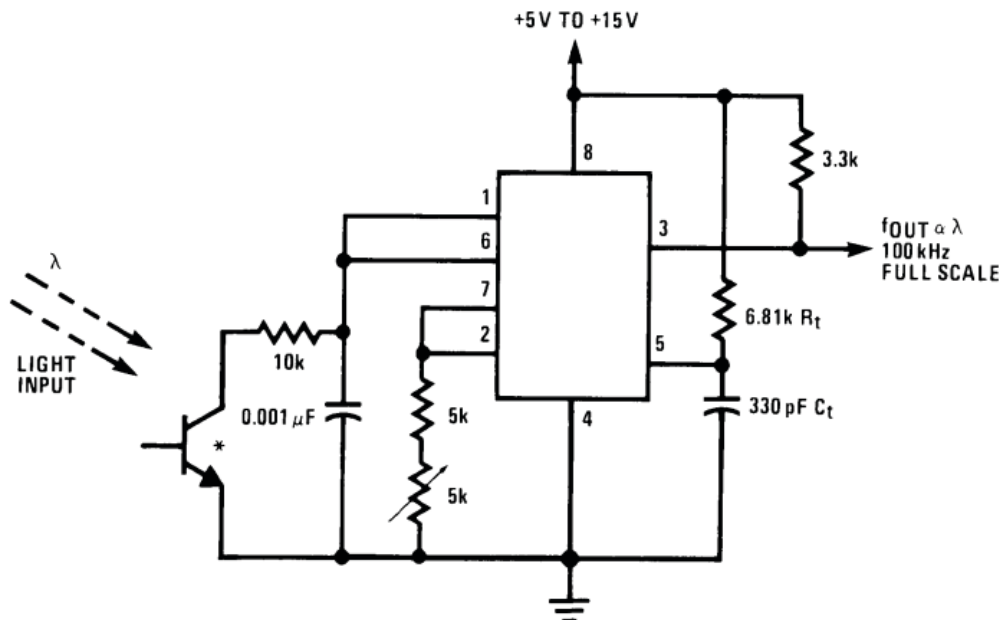


图2 光照强度变换器

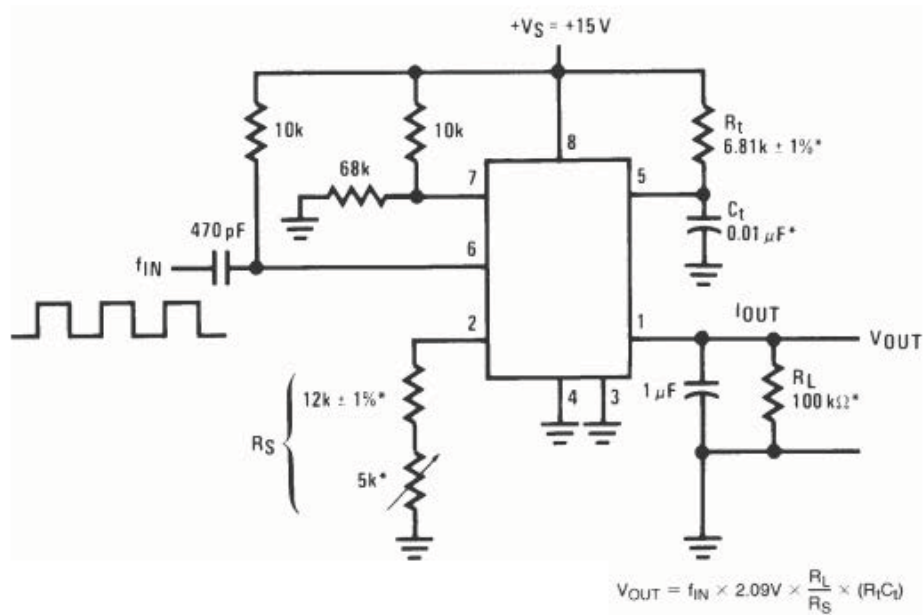
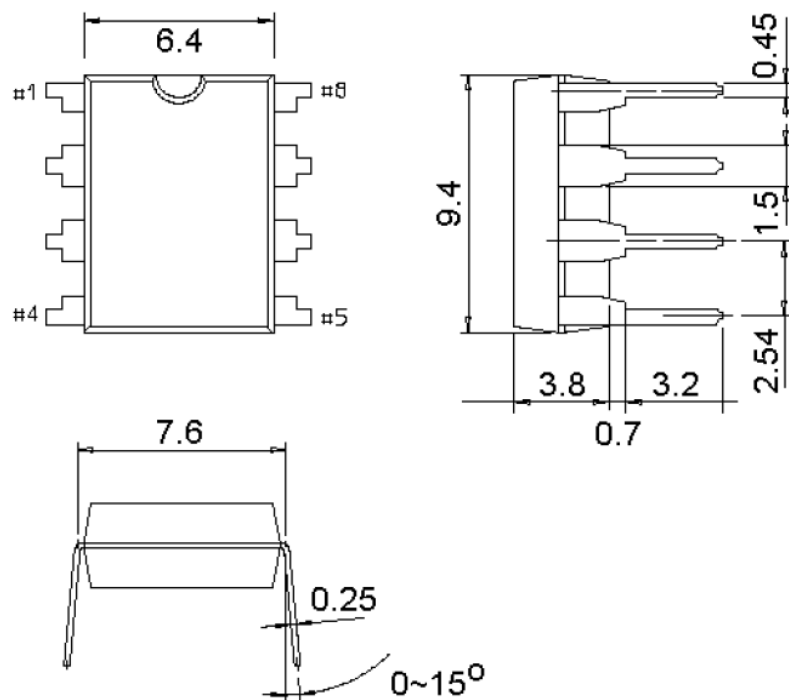


图3简单的频率对电压转换器，10kHz的满量程

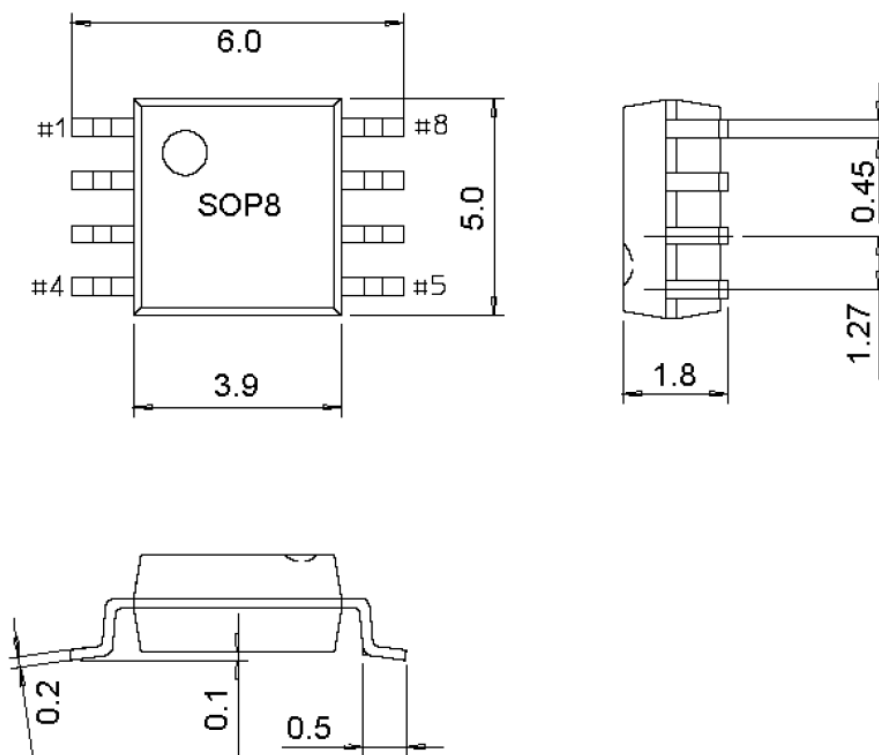


封装信息：

DIP-8



SOP-8





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