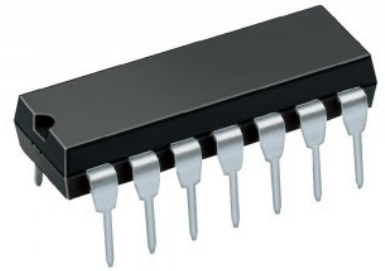




PRODUCT NAME : LM2907 Frequency to Voltage Converter

PRICE : Rs 199.00

SKU : RM1929

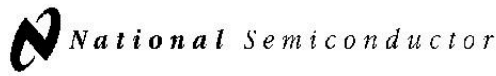


DESCRIPTION

A diode is a two-terminal electronic component with asymmetric conductance; it has low resistance to current in one direction, and high resistance in the other direction.

Features

- Frequency to Voltage Converter with High Gain Op-Amp/Comparator
- Ground Referenced Tachometer Input Interfaces Directly with Magnetic Pickups
- Op Amp/Comparator has Floating Transistor Output
- 50mA Sink or Source Current to Operate Relays
- Frequency Doubling for Low Ripple



February 1995

LM2907/LM2917 Frequency to Voltage Converter

General Description

The LM2907, LM2917 series are monolithic frequency to voltage converters with a high gain op amp/comparator designed to operate a relay, lamp, or other load when the input frequency reaches or exceeds a selected rate. The tachometer uses a charge pump technique and offers frequency doubling for low ripple, full input protection in two versions (LM2907-8, LM2917-8) and its output swings to ground for a zero frequency input.

Advantages

- Output swings to ground for zero frequency input
- Easy to use; $V_{OUT} = f_{IN} \times V_{CC} \times R1 \times C1$
- Only one RC network provides frequency doubling
- Zener regulator on chip allows accurate and stable frequency to voltage or current conversion (LM2917)

Features

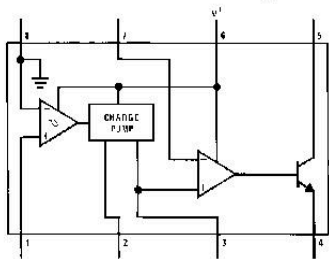
- Ground referenced tachometer input interfaces directly with variable reluctance magnetic pickups
- Op amp/comparator has floating transistor output
- 50 mA sink or source to operate relays, solenoids, meters, or LEDs

- Frequency doubling for low ripple
- Tachometer has built-in hysteresis with either differential input or ground referenced input
- Built-in zener on LM2917
- $\pm 0.3\%$ linearity typical
- Ground referenced tachometer is fully protected from damage due to swings above V_{CC} and below ground

Applications

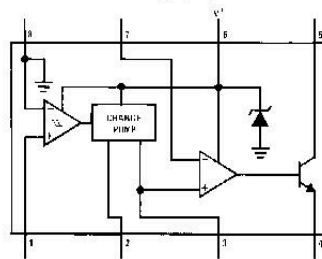
- Over/under speed sensing
- Frequency to voltage conversion (tachometer)
- Speedometers
- Breaker point dwell meters
- Hand-held tachometer
- Speed governors
- Cruise control
- Automotive door lock control
- Clutch control
- Horn control
- Touch or sound switches

Block and Connection Diagrams Dual-In-Line and Small Outline Packages, Top Views



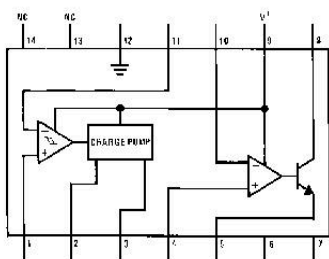
TL/H/7942-1

Order Number LM2907M-8 or LM2907N-8
 See NS Package Number M08A or N08E



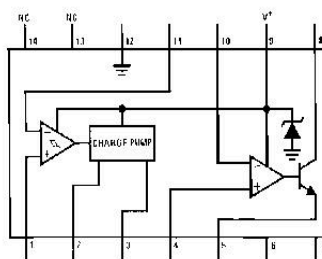
TL/H/7942-2

Order Number LM2917M-8 or LM2917N-8
 See NS Package Number M08A or N08E



TL/H/7942-3

Order Number LM2907N
 See NS Package Number N14A



TL/H/7942-4

Order Number LM2917M or LM2917N
 See NS Package Number M14A or N14A

LM2907/LM2917 Frequency to Voltage Converter

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Absolute Maximum Ratings (Note 1)						
If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.						
Supply Voltage		28V				
Supply Current (Zener Options)		25 mA				
Collector Voltage		28V				
Differential Input Voltage						
Tachometer		28V				
Op Amp/Comparator		28V				
Input Voltage Range						
Tachometer LM2907-8, LM2917-8		± 28V				
LM2907, LM2917		0.0V to + 28V				
Op Amp/Comparator		0.0V to + 28V				
Power Dissipation						
LM2907-8, LM2917-8					1200 mW	
LM2907-14, LM2917-14					1580 mW	
		(See Note 1)				
Operating Temperature Range					-40°C to +85°C	
Storage Temperature Range					-65°C to +150°C	
Soldering Information						
Dual-In-Line Package						
Soldering (10 seconds)						260°C
Small Outline Package						
Vapor Phase (60 seconds)						215°C
Infrared (15 seconds)						220°C
See AN-450 "Surface Mounting Methods and Their Effect on Product Reliability" for other methods of soldering surface mount devices.						
Electrical Characteristics $V_{CC} = 12 V_{DC}$, $T_A = 25^\circ C$, see test circuit						
TACHOMETER						
	Input Thresholds	$V_{IN} = 250 \text{ mVp-p} @ 1 \text{ kHz}$ (Note 2)	± 10	± 25	± 40	mV
	Hysteresis	$V_{IN} = 250 \text{ mVp-p} @ 1 \text{ kHz}$ (Note 2)		30		mV
	Offset Voltage	$V_{IN} = 250 \text{ mVp-p} @ 1 \text{ kHz}$ (Note 2)				
	LM2907/LM2917			3.5	10	mV
	LM2907-8/LM2917-8			5	15	mV
	Input Bias Current	$V_{IN} = \pm 50 \text{ mV}_{DC}$		0.1	1	μA
V_{OH}	Pin 2	$V_{IN} = + 125 \text{ mV}_{DC}$ (Note 3)		8.3		V
V_{OL}	Pin 2	$V_{IN} = - 125 \text{ mV}_{DC}$ (Note 3)		2.3		V
I_2, I_3	Output Current	$V_2 = V_3 = 6.0V$ (Note 4)	140	180	240	μA
I_3	Leakage Current	$I_2 = 0, V_3 = 0$			0.1	μA
K	Gain Constant	(Note 3)	0.9	1.0	1.1	
	Linearity	$f_{IN} = 1 \text{ kHz}, 5 \text{ kHz}, 10 \text{ kHz}$ (Note 5)	-1.0	0.3	+1.0	%
OP/AMP COMPARATOR						
V_{OS}		$V_{IN} = 6.0V$		3	10	mV
I_{BIAS}		$V_{IN} = 6.0V$		50	500	nA
	Input Common-Mode Voltage		0		$V_{CC} - 1.5V$	V
	Voltage Gain			200		V/mV
	Output Sink Current	$V_C = 1.0$	40	50		mA
	Output Source Current	$V_E = V_{CC} - 2.0$		10		mA
	Saturation Voltage	$I_{SINK} = 5 \text{ mA}$		0.1	0.5	V
		$I_{SINK} = 20 \text{ mA}$			1.0	V
		$I_{SINK} = 50 \text{ mA}$		1.0	1.5	V

