DHA ® QJ/DHA 01.173-2019 **LDA0161**

High precision inductive proximity switch IC

Introduction

LDA0161（analog TDA0161）The monolithic integrated circuits are designed for metallic body detection by detecting the vari┐ ations in high frequency Eddy current losses. With an external tuned circuit they act as oscillators. Output signal level is altered by an approaching metallic object.

Output signal is determined by supply current changes. Independentof supply voltage, this cur┐ rent is high or low according to the presence or the absence of a close metallic object.

Feature

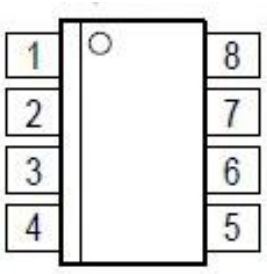
- SUPPLY VOLTAGE : + 4 to + 35 V
- Current consumption: <0.8 mA
- Output current: > 10 mA
- Working temperature: -30 ℃ ~ 70 ℃
- Low external components and high sensitivity

Order information

Package	Remarks
SOP8	Tubed, Reeled, Pb-free

Pin definition

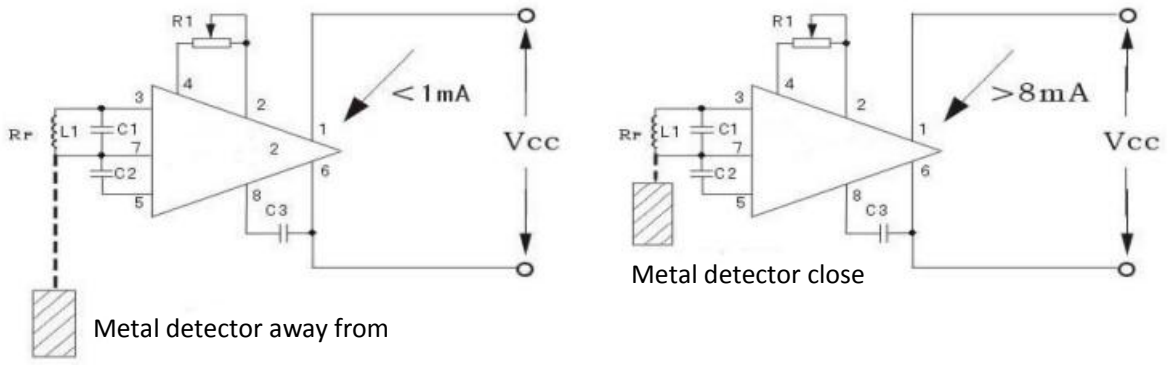
Pin	Symbol	Function
1	Vcc	Power supply
2	Adjust	Adjustment resistance
3	Detector H	Connecting inductance
4	Adjust	Adjustment resistance
5	Filtering	High frequency filter capacitor
6	Output	Output
7	Detector E	Connecting inductance
8	C*	Time adjustment capacitor



Electrical parameters

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Power supply	Vcc		3.75		35	V
Reverse voltage limit		Ic=-100mA		-1		V
Output current (when the metal is far away)	Icc	3.75~35V			1	mA
Output current (when the metal is close)	Icc	3.75~35V	8			mA
Highest oscillation frequency	fmax				10	MHz

Working principle

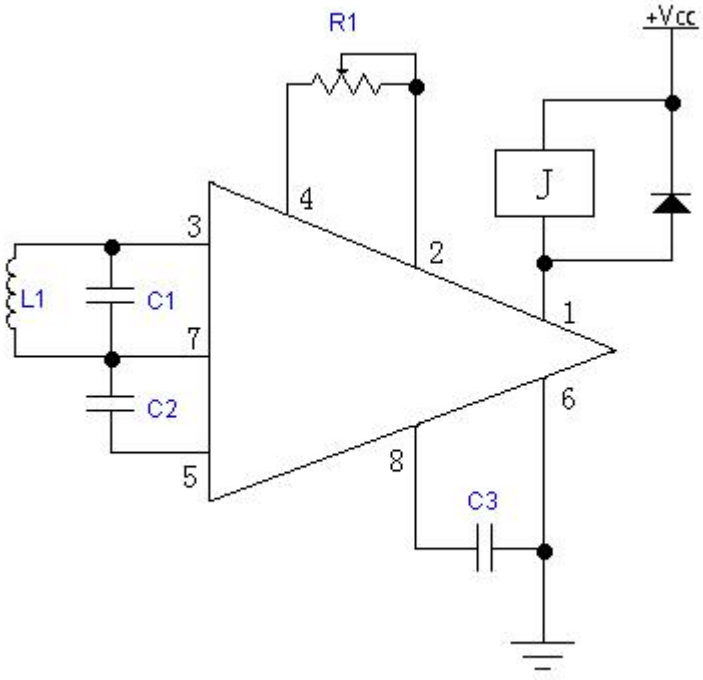


Operating Mode

The integrated circuit between pin 3 and pin 7 is like a negative resistance value, equivalent to the external resistor R1 connected between pin 2 and pin 4. When the tuning current of the loss resistor Rp is less than R1, the oscillator stops, then 1 6-pin input current Icc < 1mA. The coil L1 wound around the ferrite magnet can generate an eddy current to detect the loss of the rated power of the loss resistor Rp.

Typical application circuit diagram

1. Circuit with a drive current less than 10 mA



2. Circuit when driving current is large

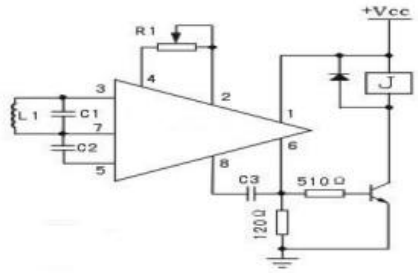


Figure 1. NPN normally open

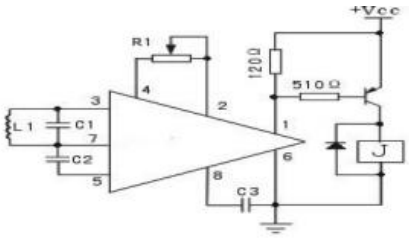


Figure2. PNP normally open

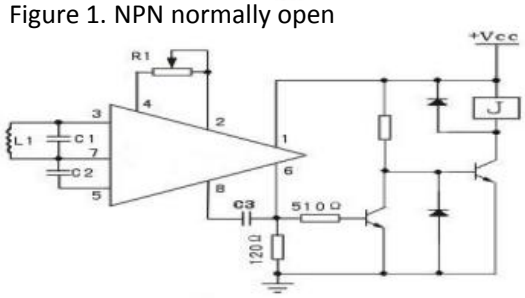


Figure 3. NPN normally closed

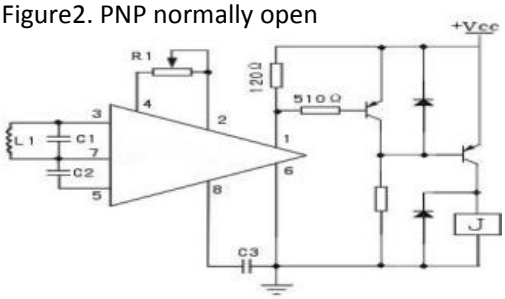


Figure 4. PNP normally closed

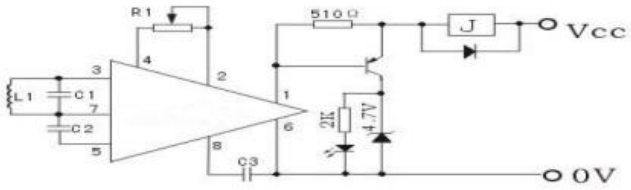


Figure 5. Two-wire system

Recommended parameters for discrete components

	Control distance	f	L1	C1	R1	C2	C3
Unit	mm	KHz	μH	PF	KΩ	PF	
	2	2650	30	120	5~30K	47	About 10P
	5	425	300	470	Need to adjust	470	Need to adjust
	10	50	2160	4700		3300	

The above data is cast iron, the thickness is 4mm, and the size is a cube with the diameter of the magnetic can.

The diameter of the magnetic can is determined according to the detection distance, which is generally 2 times the detection distance.

R1 is a resistor for adjusting the distance, and the size of the resistor can be adjusted according to the detection distance.

Note: Because there are some gaps in the parameters of the magnetic cans of various manufacturers, they should be changed according to the parameters of the magnetic cans during the adjustment.

Package Information

SOP8

Dimensions in mm