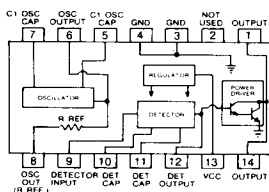


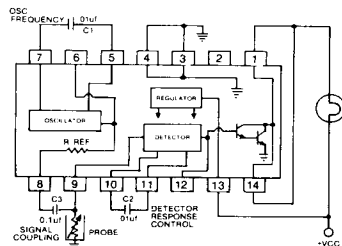
### LIQUID LEVEL DETECTING IC

#### DESCRIPTION

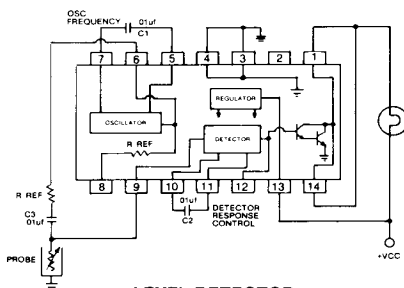
The CS-166 is a monolithic bipolar integrated circuit designed for use in fluid detection systems. The circuit is ideal for detecting the presence, absence or level of water, or other polar liquids. The circuit includes a voltage regulator, an oscillator, a detector, and an output power driver stage. An ac signal from the oscillator is passed through two probes within the fluid. The detector determines the presence or absence of the fluid by comparing the resistance of the fluid between the probes with the resistance internal to the integrated circuit. An ac signal is used to overcome plating problems incurred by using a dc source. A pin is available for connecting an external resistance in cases where the fluid impedance is of a different magnitude than that of the internal resistor. When the probe resistance increases above the preset value, the detected signal turns on the output power transistor. In a typical application, the output can be used to drive a LED, loud speaker, a high current relay, or a high current incandescent lamp.



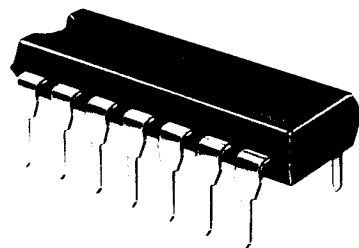
**BLOCK DIAGRAM**



**LEVEL DETECTOR,  
INTERNAL REFERENCE R**



**LEVEL DETECTOR,  
EXTERNAL REFERENCE R**



#### FEATURES

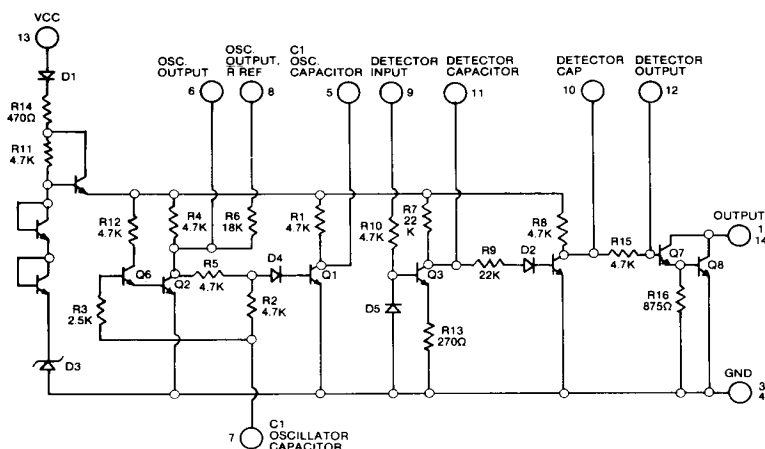
- Low external parts count
- Wide supply operating range
- One side of probe input can be grounded
- Ac coupling to probe to prevent plating
- Internally regulated supply
- Ac or dc output
- Internal reverse battery protection
- Similar to National LM1830

#### APPLICATIONS

- Beverage Dispensers
- Water softeners
- Irrigation
- Sump pumps
- Radiators
- Washing machines
- Reservoirs
- Boilers

#### ABSOLUTE MAXIMUM RATINGS

Supply Voltage..... 28V  
Power Dissipation..... 1 Watt  
Output Sink Current..... 3A (t < 20ms)  
0.6A (Steady State)  
Operating Temperature Range... -40°C to +70°C  
Storage Temperature Range... -40°C to +150°C  
Lead Temperature..... 300°C  
(Soldering, 10 Seconds)



SCHEMATIC DIAGRAM

**ELECTRICAL CHARACTERISTICS (V<sub>CC</sub> = 16V, T<sub>A</sub> = 25°C unless otherwise specified)**

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Supply Current				10	mA
Oscillator Output Voltage	Pin 6				
Low			0.2		V
High			3.5		V
Internal Reference Resistor		13	18	23	kΩ
Detector Threshold Voltage			680		mV
Detector Threshold Resistance		10		30	kΩ
Output Saturation Voltage	I <sub>O</sub> =500mA		0.9	2.0	V
Output Leakage	V <sub>PIN1, 4</sub> =50V			100	μA
Oscillator Frequency	C <sub>1</sub> = .01μF	0.8	2.4	4	kHz

**CHERRY**  
  
**SEMICONDUCTOR**

2000 South County Trail, East Greenwich, Rhode Island 02818  
 (401) 885-3600 Telex WUI 6817157

Our Sales Representative in Your Area is