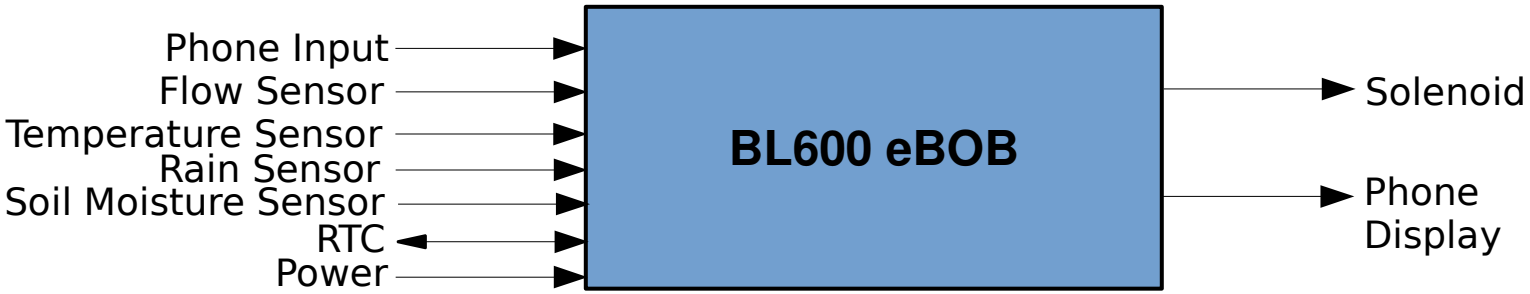
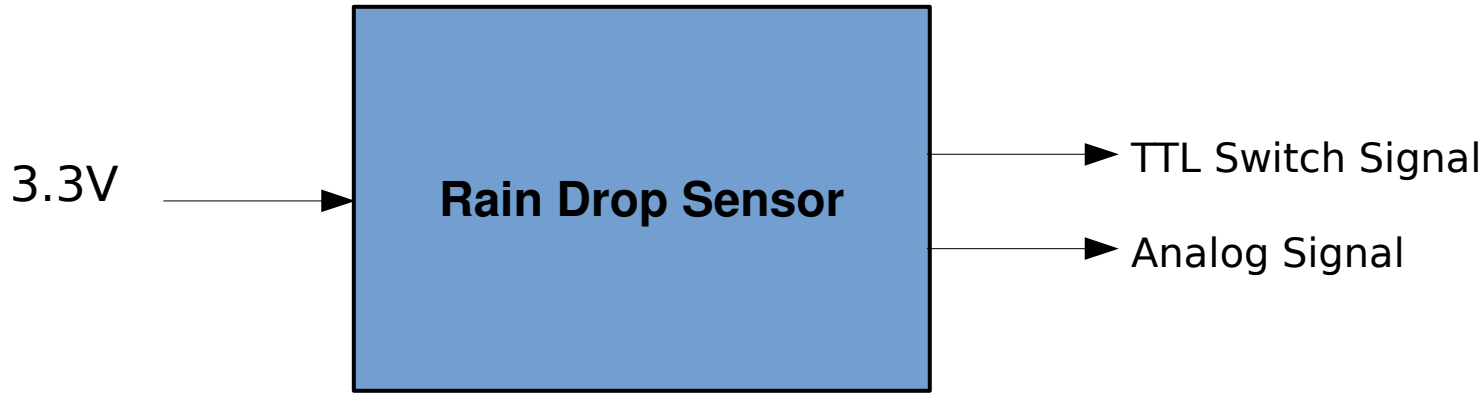
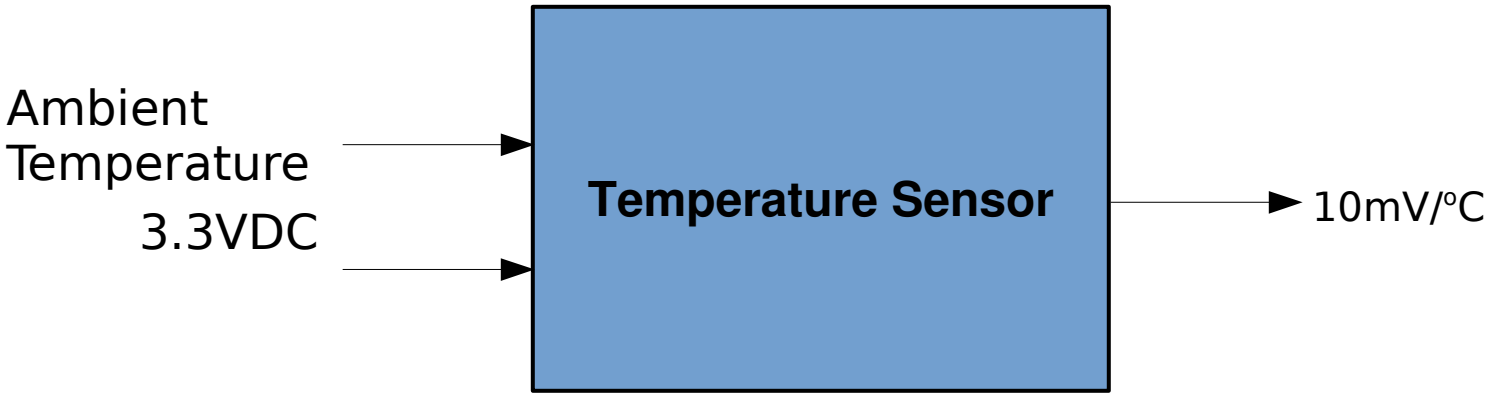


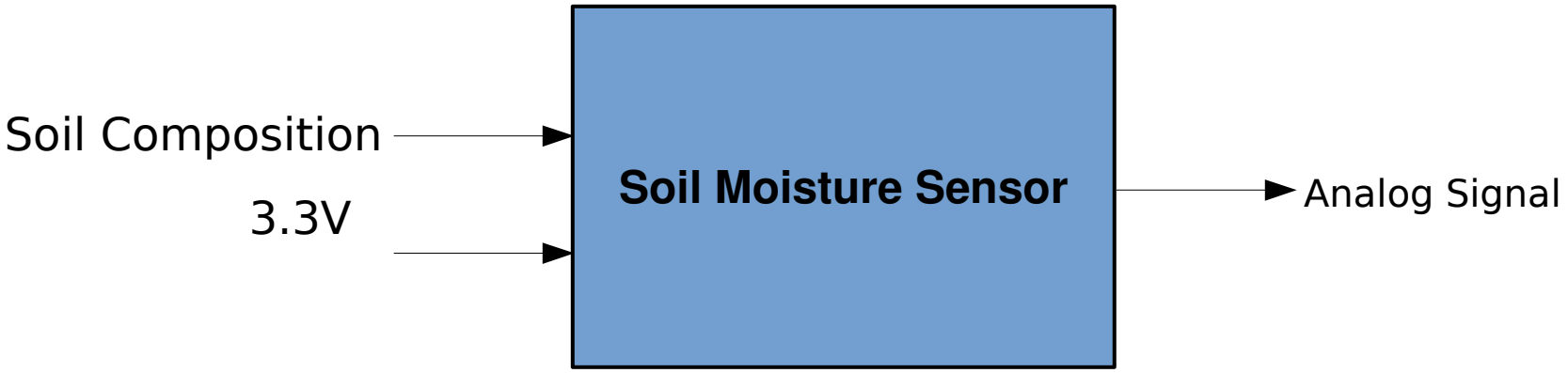
Module	BL600 eBOB
Inputs	**Phone Input –** app on phone sends the values needed for the algorithm over BLE: latitude and calendar day **Flow Sensor –** sensor attached to spigot measures how much water has been distributed and reports back the value **Temperature Sensor –** measures ambient sensor used by moisture algorithm **Rain Sensor –** determines whether it is currently raining; if it's raining, suspend irrigation **Soil Moisture Sensor –** measures actual soil moisture for debugging and verification of algorithm **RTC –** once the phone app provides the calendar day the RTC ensures the algorithm is always provided with the correct day of the year **Power –** 1.8VDC – 3.6VDC
Outputs	**Solenoid –** holds a GPIO output high to turn the solenoid on when water starts flowing and holds a GPIO output low to turn it off **Phone Display –** sends information to app on phone for display
Functionality	Speaks to a phone app over BLE and a spigot actuator. It computes an algorithm using information provided by the phone app (latitude and calendar day) and the sensors (temperature) which provides an estimate of the soil moisture level. When the soil moisture level is low enough it turns on the spigot and keeps it on until the calculated amount of water has flowed into the soil. It reports its sensor information back to the phone app for display. If it rains it suspends water flow.



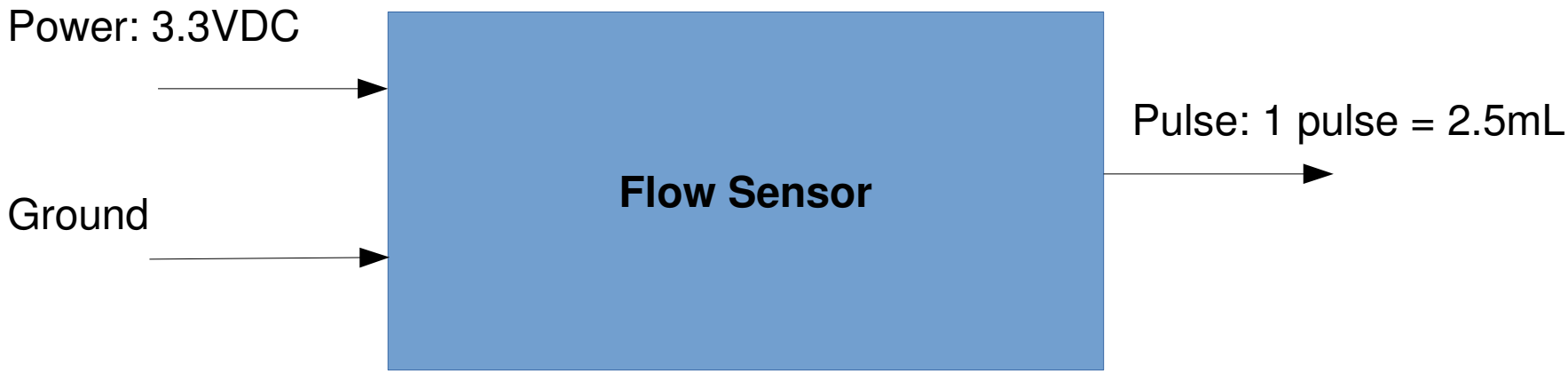
Module	Rain Drop Sensor
Inputs	3.3V DC
Outputs	TTL Switch Signal (Digital High/Low Signal) Analog Signal
Functionality	Detects water on the surface of the rain pad and constantly outputs separate digital and analog signals.



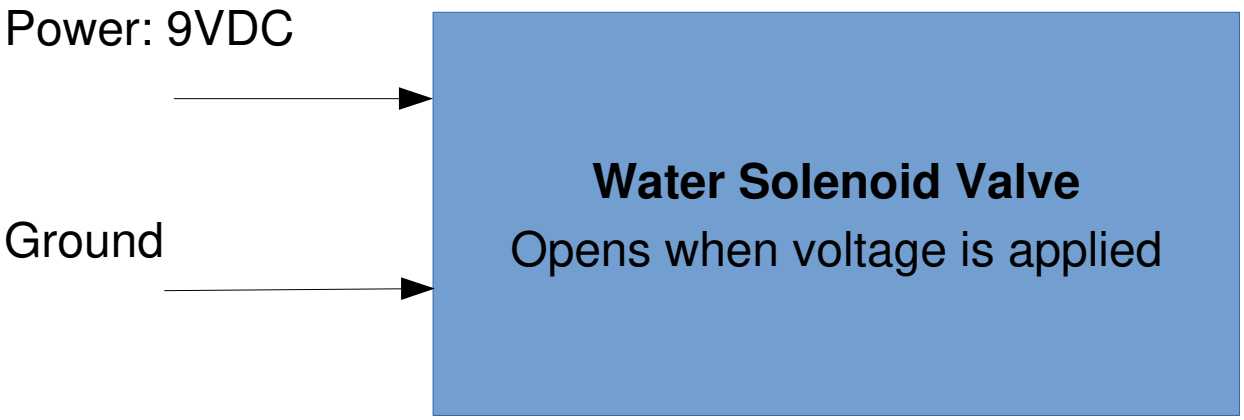
Module	Temperature Sensor
Inputs	Ambient Temperature 2.7V DC to 5.5V DC
Outputs	10mV per degree Celsius
Functionality	Outputs a voltage based on the sensed ambient temperature.



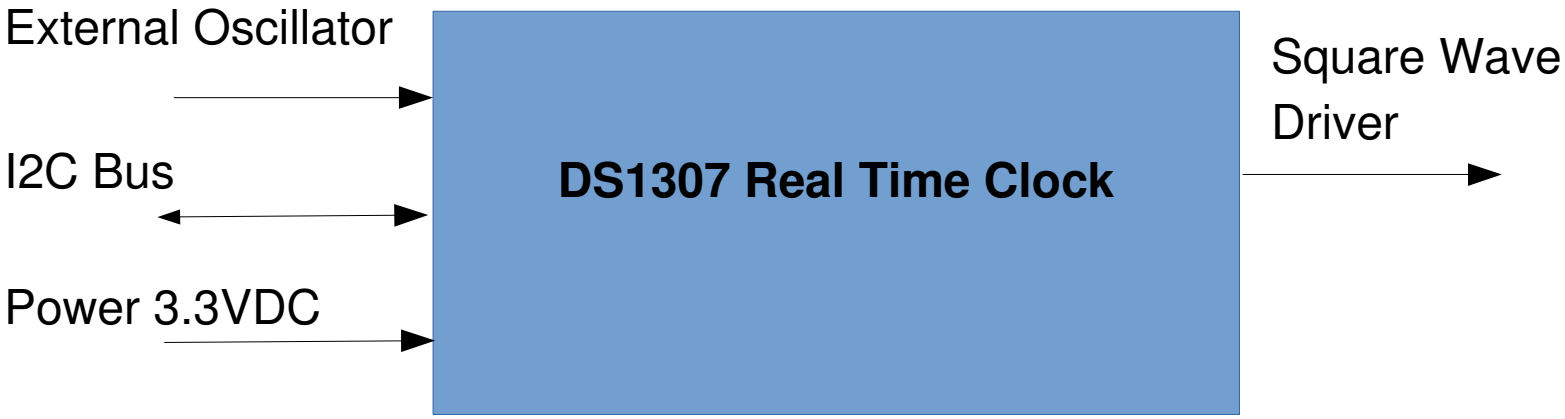
Module	Soil Moisture Sensor
Inputs	Soil Composition 3.3V DC
Outputs	Analog Signal
Functionality	Gives a value for the sensed soil moisture. This value is very dependent on the supplied voltage and the type of soil used. This device will need to be calibrated to detect dry and wet values if used in new areas.



Module	Water Flow Sensor
Inputs	3.3VDC
Outputs	Signal output of pulses where each pulse should correspond to about 2.5mL of fluid dispensed.
Functionality	Outputs a voltage pulse for each 2.5mL of fluid dispensed.

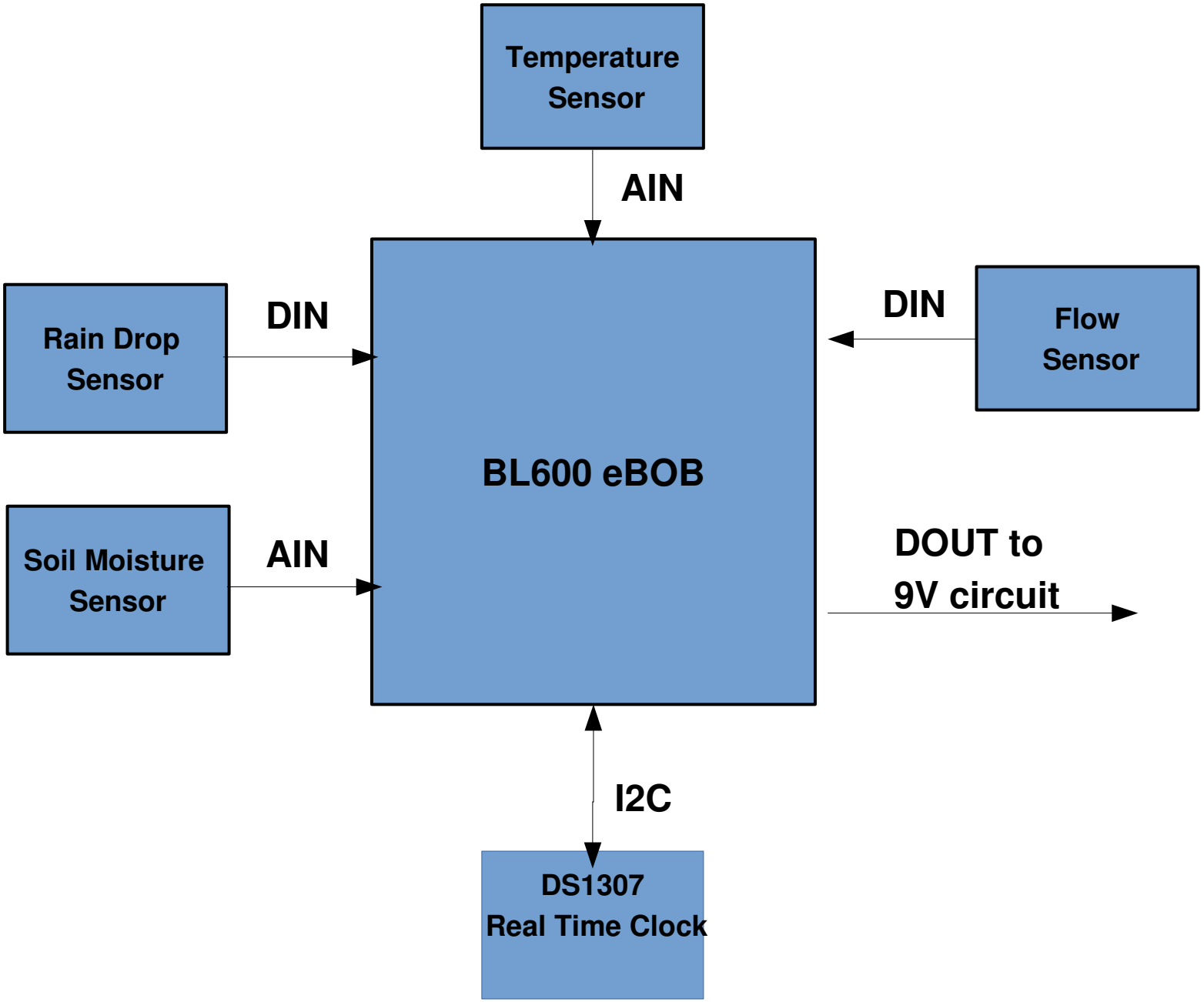


Module	Water Soleniod Valve
Inputs	9VDC
Outputs	None
Functionality	When a voltage is applied, the solenoid pulls open allowing water to flow. The valve is closed when no voltage is applied.

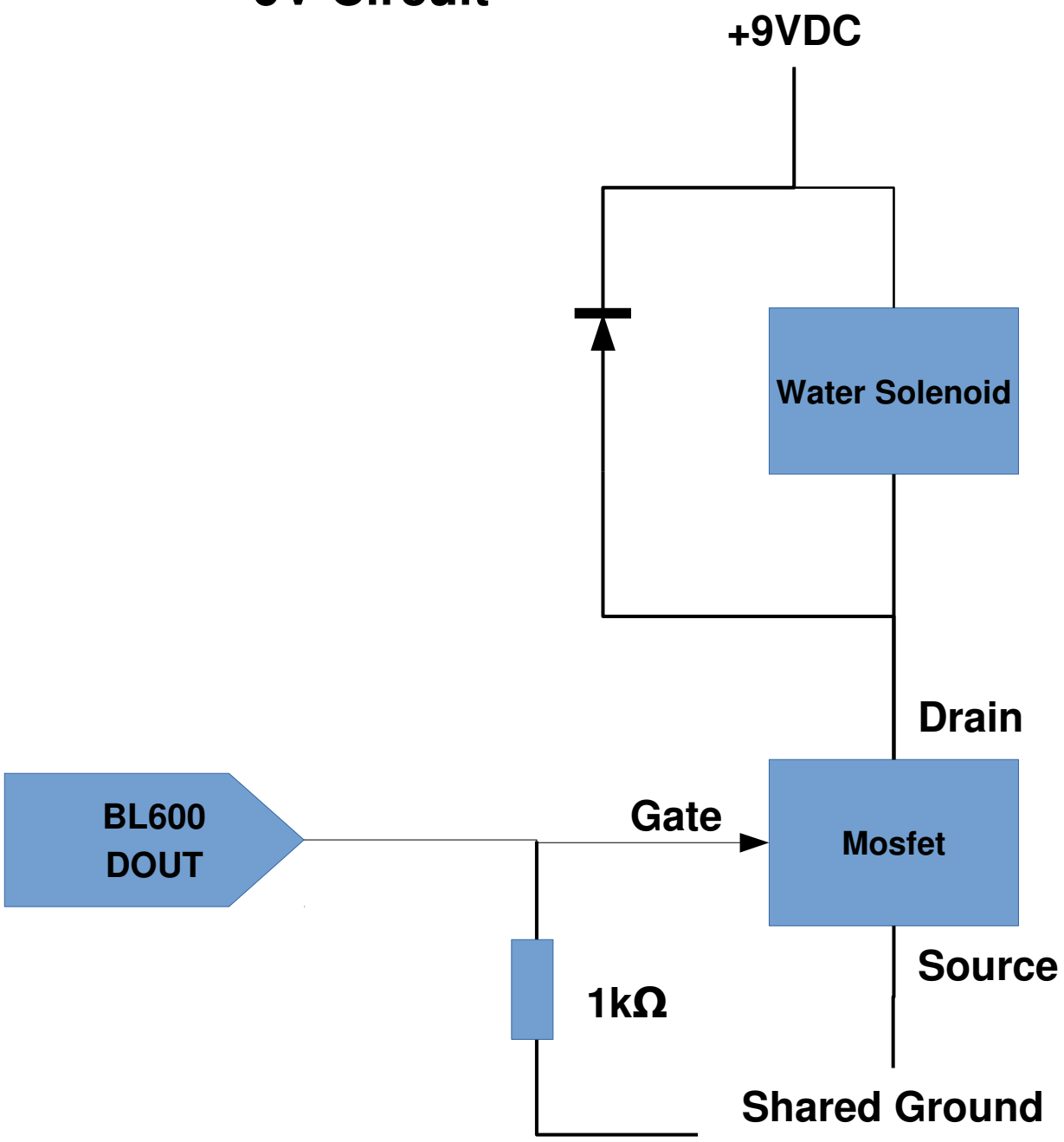


Module	DS1307 Real Time Clock
Inputs	3.3VDC, External Oscillator
Outputs	Square Wave output
Functionality	12 or 24 hour mode real time clock communicates hours:seconds:days over i2C interface.

3.3V Circuit


Temperature Sensor
AIN
Rain Drop Sensor
DIN
DIN
Flow Sensor
BL600 eBOB
Soil Moisture Sensor
AIN
DOUT to 9V circuit
I2C
DS1307 Real Time Clock

9V Circuit


+9VDC
Water Solenoid
Drain
BL600
DOUT
Gate
Mosfet
Source
1kΩ
Shared Ground