Simple Moisture Alarm

This device will not stop the rain, but at least it will help the lady of the house to get the washing dry — by sounding a strident alarm when the rain starts. Besides acting as a rain alarm, the device could be used as a bed-wetting alarm, an excessive condensation indicator, a pool splash alarm, a novel form of doorbell system or as an indicator that the bath water is at its correct level. The applications for a reliable moisture detector are many and varied.

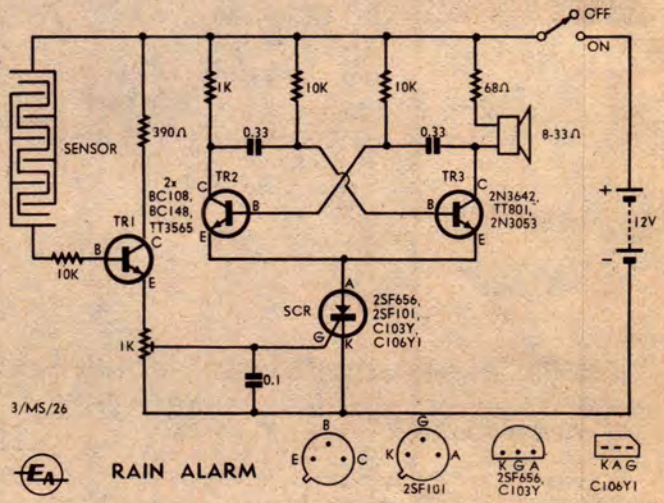
Basically, the unit consists of a moisture sensing element, an NPN silicon transistor which conducts in proportion to the amount of moisture on the sensor element, and an SCR which is triggered when the current through the transistor rises above a set value. When the SCR conducts, it applies power to a two-transistor multivibrator which has a loudspeaker as part of the collector load of one of the transistors.

Once the SCR has triggered, the alarm will continue to sound until it is turned off.

Our sensor was made from Veroboard. For those not familiar with the product, it is a phenolic composition board with parallel copper strips bonded to one side, small holes being punched at regular intervals along the copper strips.

What we have done is to connect alternate copper strips to form interlocking grids. There are actually three grids on the board, with no connection between. One grid is connected to the positive supply, one grid connected via a resistor to the base of the transistor, and the third is left "floating".

By having three "grids" on the sensor, the unit becomes more reliable as a rain indicator. With a simple sensor one raindrop could reduce the open-circuit resistance and allow



Here are the transistor specifications:

Type	Case	Polarity	Vce	Vcb	Ic (mA)	Hfe	Ft (MHz)	Power (mW)	Equivalent
BC237	TO-92	NPN	45	45	100	120-220	250	220	BC107
BC238	TO-92	NPN	20	20	100	120-220	250	220	BC108
BC307	TO-92	PNP	45	50	100	75 min	150	300	BC157
BC558	TO-92	PNP	25	30	100	180 min	150	500	BC158

the alarm to be triggered. This would mean that on overcast days when there is sometimes light intermittent "sprinkling" the unit could be triggered by just one drop, constituting a "false alarm". By having three grids, a minimum of two raindrops is required to trigger the unit — the two raindrops have to "bridge" appropriate copper strips for triggering to occur. This feature, in combination with the sensitivity control, allows the unit's sensitivity to be set for reliable triggering on anything from a light shower to quite a heavy downpour.

Follow this diagram when wiring transistors into circuit

Make sure that you solder the transistors into circuit with the correct lead configuration. An incorrectly wired transistor will not only refuse to function, but may be damaged as well. The above diagram shows the lead configuration of the offer transistors as viewed from below.