

TCRT-LFSM-Digital

General Description

The TCRT-LFSM–Digital sensor is used as a as a line sensor, but it can be used as a general-purpose proximity or reflectance sensor. The module consist of 5 IR emitter and receiver (phototransistor) pairs Each phototransistor. Theses high performance TCRT sensors IR LEDs emits IR light and phototransistor receive that IR light after reflection. TCRT gives out different analogue voltage for different color and distance. This Analog voltage is given to comparator which compare analogue output with reference voltage set by user.

Then comparator will give digital output that is either Logic "High" Vcc or Logic "Low" GND. 5 sensors mounted in such a way that it can be directly used for line following and grid navigation. On board LED indicator helps user to check status of each sensor with open eyes without using any additional hardware.

TCRT provides day light blocking filter so erratic behaviour is avoided. The module is very compact and it gives directly digital output. The power consumption is low for this module.

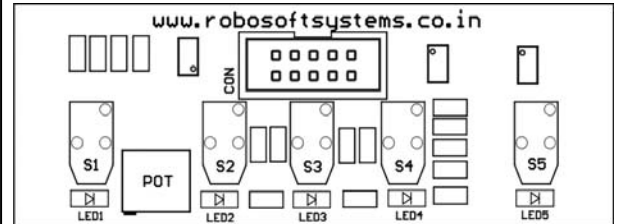
Pin Configuration

If you hold the sensor in your hand with notch of connector facing upward as shown in figure then your pins will be

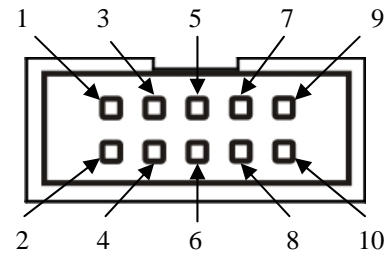
Pin No.	Connection	Pin No.	Connection
1	GND	6	Sensor5
2	VCC	7	Sensor3
3	Sensor1	8	NC
4	Sensor4	9	VCC
5	Sensor2	10	GND

Application Ideas

- Line sensing robots
- maze solving robot
- Position sensor for shaft encoder
- Detection of reflective material such as paper, IBM cards, magnetic tapes etc.
- General purpose - wherever the space is limited

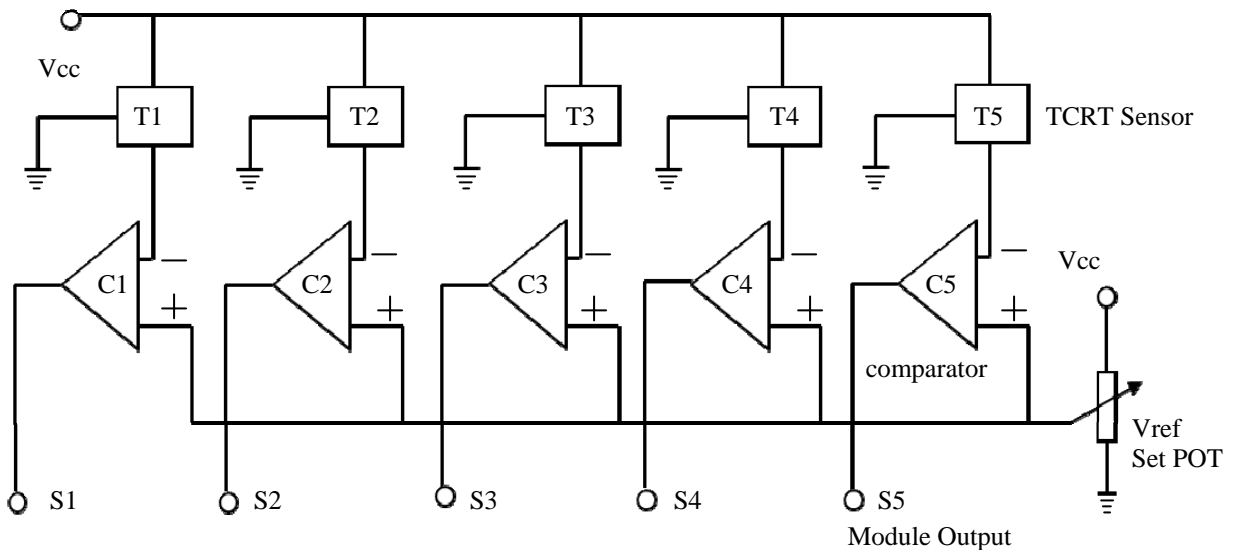


TCRT sensors Module Board



TCRT/LSM/Digital

Functional Block Diagram /Schematic Diagram



Overview of Schematic

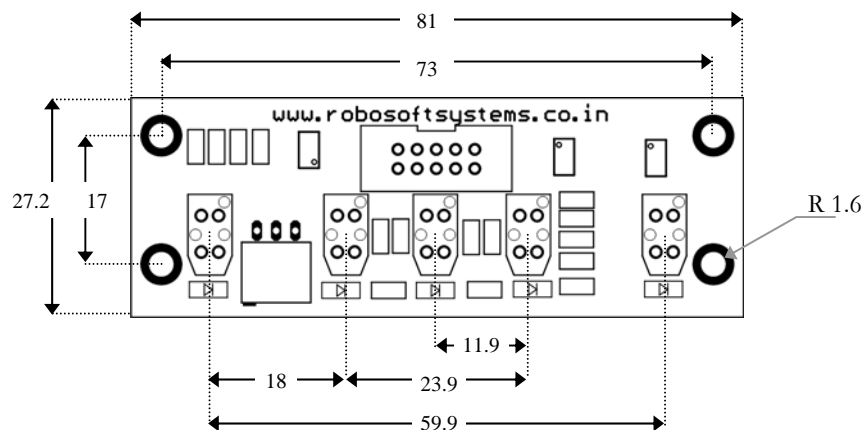
There are 5 TCRT sensors and 5 comparators. output of each sensor is applied to inverting terminal of comparator. The other input to comparator is reference voltage set by user which user can modify by varying POT.

The output of TCRT sensor is compared with the ref voltage generated by the pot. The output is dependent on the difference voltage. When we use black surface we get high output and for white surface the output depends upon the distance between TCRT module and the surface.

Maximum Ratings

Symbol	Quantity	Minimum	Typical	Maximum	Unit
V_{DD}	Operating Voltage	4.5	5	5.5	V
V_{SS}	Ground Reference voltage	-	0	-	V

Pin Out Dimensions



Note : All dimension in mm
Error of $\pm 5\%$ is subjected because of component soldering