APPENDIX I

CIRCUIT SPECIFICATIONS BHPT

LM 35
The LM35 series are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the Celsius (Centigrade) temperature. The LM35 thus has an advantage over linear temperature sensors calibrated in °Kelvin, as the user is not required to subtract a large constant voltage from its output to obtain convenient Centigrade scaling. The LM35 does not require any external calibration or trimming. The LM35’s low output impedance, linear output, and precise inherent calibration make interfacing to readout or control circuitry especially easy. It can be used with single power supplies, or with plus and minus supplies. As it draws only 60 μA from its supply, it has very low self-heating, less than 0.1°C in still air.

FEATURES
* Calibrated directly in ° Celsius (Centigrade)
* Linear + 10.0 mV/°C scale factor * 0.5°C accuracy guaranteed (at +25°C)
* Rated for full -55° to +150°C range * Suitable for remote applications
* Low cost due to wafer-level trimming
* Operates from 4 to 30 volts
* Less than 60 μA current drain
* Low self-heating, 0.08°C in still air
* Non linearity only ±1/4°C typical
* Low impedance output, 0.1 W for 1 mA load

IC 74573
The 74HC/HCT573 are high-speed Si-gate CMOS devices and are pin compatible with low power Schottky TTL (LSTTL). They are specified in compliance with JEDEC standard no.7A. The 74HC/HCT573 are octal D-type transparent latches featuring separate D-type inputs for each latch and 3-state outputs for bus oriented applications. The “573” consists of eight D-type transparent latches with 3-state true outputs. When LE is HIGH, data at the Dn inputs enter the latches. In this condition the latches are transparent, i.e. a latch output would change state each time it’s corresponding D-input
changes. When LE is LOW the latches store the information that was present at the D-inputs a set-up time preceding the HIGH-to-LOW transition of LE. When OE is LOW, the contents of the 8 latches are available at the outputs. When OE is HIGH, the outputs go to the high impedance OFF-state. Operation of the OE input does not affect the state of the latches.

**Pin Description**

<table>
<thead>
<tr>
<th>PIN NO.</th>
<th>SYMBOL NAME AND FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>2, 3, 4, 5, 6, 7, 8, 9</td>
<td>D0 to D7 data inputs</td>
</tr>
<tr>
<td>11</td>
<td>LE latch enable input (active HIGH)</td>
</tr>
<tr>
<td>1</td>
<td>OE 3-state output enable input (active LOW)</td>
</tr>
<tr>
<td>10</td>
<td>GND ground (0 V)</td>
</tr>
<tr>
<td>19, 18, 17, 16, 15, 14, 13, 12</td>
<td>Q0 to Q7 3-state latch output</td>
</tr>
<tr>
<td>20</td>
<td>VCC positive supply voltage</td>
</tr>
</tbody>
</table>

Inputs and outputs on opposite sides of package allowin

Interface with microprocessors

Useful as input or output port for microprocessors/microcomputers

3-state non-inverting outputs for bus oriented applications

Common 3-state output enables input

Output capability: bus driver.

ICC category: MSI

**IC 7490**

The SN54/74LS90, SN54/74LS92 and SN54/74LS93 are high-speed 4-bit ripple type counters partitioned into two sections. Each counter has a divide-by-two section and either a divide-by-five (LS90), divide-by-six (LS92) or divide-by-eight (LS93) section which are triggered by a HIGH-to-LOW transition on the clock inputs. Each section can be used separately or tied together (Q to CP) to form BCD, bi-quinary, modulo-12, or modulo-16 counters. All of the counters have a 2-input gated Master Reset (Clear), and the LS90 also has a 2-input gated Master Set (Preset 9)

• Low Power Consumption . . . Typically 45 mW

• High Count Rates . . . Typically 42 MHz
IC ADC 0809

General Description

The ADC0809 data acquisition component is a monolithic CMOS device with an 8-bit analog-to-digital converter, 8-channel multiplexer and microprocessor compatible control logic. The 8-bit A/D converter uses successive approximations the conversion technique. The 8-channel multiplexer can directly access any of 8-single-ended analog signals. The device eliminates the need for external zero and full-scale adjustments. Easy interfacing to microprocessor provided by the latched

The ADC0809 offers high speed, high accuracy, minimal temperature dependence, excellent long-term accuracy and repeatability, and consumes minimal power. These features make this device ideally suited to applications from process and machine control to consumer and automotive applications.