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MOJAVE CYBER RESEARCH

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MOJ

MP C^3T^2I

T-52-33-05

Product Information

Single Chip Process Controller

* Counter	(16 bits)
* Counter Prescale	(8 bits)
* Totalizer	(24 bits)
* Integrator	(16 bits)
* Timer	(16 bits)
* Clock (H:M:S)	(24 bits)
* 8 Event Points	(16 bits)

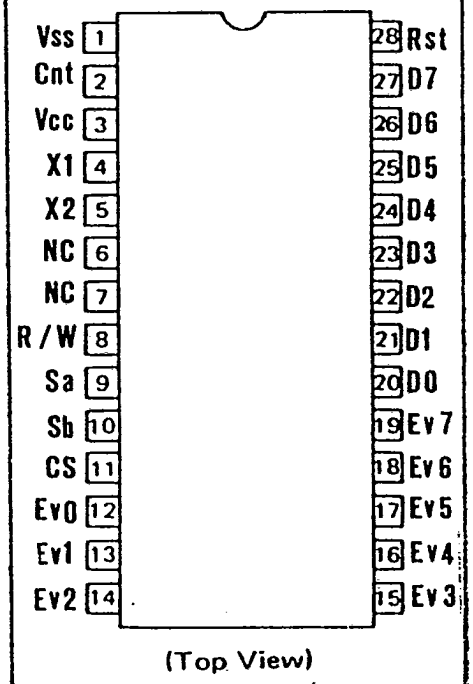
* Counter calibration to +/- 9.9 % *
* Maximum Count Rate of 8Khz *

* Event Points may be connected to Counter, Totalizer, Integrator or Timer

* Event Points may be tested for Greater or Less than or Equal condition

* Event Points may be logically ANDed with any other Set Points

* 8 bit Data path *



(Top View)

Ideal for:

* Process Rate Controller	* Process Watchdog
* Process Rate Metering	* Process Control Sequencer
* Batch Process Controller	* General Process Instrumentation

* Easily interfaced to Microprocessors *

* Handshake Control Logic for Input and Output *

* All Inputs and Outputs TTL compatible *

* Requires only 5 Volts *

C3T2I Specifications

The C3T2I provides a single chip solution to many of the tasks associated with process control.

COUNT/TOTAL

The C3T2I accepts pulses, optionally decrements a Divide by Ten, optionally decrements a user supplied Prescaler, applies a calibration algorithm driven by a user supplied Count Error and presents this Count. Upon command the C3T2I will totalize the current Count into a Total and zero the current Count.

The COUNT is a precision, calibratible counter that has the range of 0 to 65,535. This may be reset to zero with a single command.

The TOTAL is the additive result of COUNT. This register has the range of 0 to 16,777,215. Totalization is performed by a single command and the TOTAL may be reset to zero by a single command.

The COUNT PRESCALER is used to scale the incoming pulses to a desired value. The range of the COUNT PRESCALER is 1 to 256.

The GENERAL PURPOSE register contains the COUNT DIVIDE BY TEN bit. When the COUNT DIVIDE BY TEN bit is set a divide by ten prescaler is activated. This occurs before the count arrives at the COUNT PRESCALER.

CALIBRATION

The calibration range of the Count is +/- 9.9% in steps of .1%. The COUNT ERROR is used in the calibration of the COUNT. The COUNT ERROR is a signed binary number in the range of +/- 99 and is calculated in the following manner:

a) Divide the Value-Read by the Value-Expected giving Error-Ratio.
b) If the Error-Ratio is greater than 1, subtract 1 from the Error-Ratio and ADD to the current COUNT ERROR.
c) If the Error-Ratio is less than 1, SUBTRACT this number from the current COUNT ERROR.

RATE

The RATE is COUNT over time and is integrated at a once per second rate. The range of the Rate is 0 to 65,535.

TIME

The C3T2I provides both a Seconds Count and a Hours, Minutes and Second Clock. This clock is driven by an external 4 Mhz crystal or external clock source.

The SECONDS COUNT is a 0 to 65,535 counter that is incremented at a one second rate. This can be cleared at any time by a single command.

The REAL TIME CLOCK is a Hours, Minutes and Seconds clock.

EVENT POINTS

The C3T2I provides 8 EVENT POINTs that may be used in a greater or less than test with the count, rate, total or seconds count. The result of this test may then be logically ANDed with any other EVENT POINT result.

The EVENT POINT VALUE is used in conjunction with the EVENT POINT CONTROL and EVENT POINT AND registers. The range of the value of the EVENT POINT VALUE is 0 to 65,535.

C3T2I Specifications

The EVENT POINT CONTROL register is used to select either the COUNT, TOTAL, RATE or SECONDS COUNT as the EVENT POINT VALUE comparator. The EVENT POINT CONTROL register also contains the GREATER / LESS THAN test selection. The GREATER/LESS SELECT will make a Greater Than test when this bit is set to a 1 and a Less Than test when this bit is set to 0. In cases in which the EVENT POINT is equal to the comparator, the result of the test in either case will be true. The RESET COMPARATOR TO ZERO will cause the register selected in the COMPARATOR SELECT to be reset to zero if this bit is a 1 and the result of the Test is true. The EVENT POINT ACTIVE bit is set to 1 when this EVENT POINT is eligible for testing.

The EVENT POINT AND register is used to qualify this EVENT POINT with any other EVENT POINTs such that a EVENT POINT will report true only if the other EVENT POINTs selected in this register are also true.

The EVENT POINT STATUS register contains the on / off status of the individual EVENT POINTs.

COMMAND SUMMARY

The C3T2I responds to the following commands:

10	-	Load COUNT with next 2 values.
11	-	Load TOTAL with next 3 values
12	-	Load RATE with next 2 values.
13	-	Load SECONDS COUNT with next value.
14	-	Load REAL TIME CLOCK with next 3 values.
15	-	Load EVENT POINT N VALUE with next 2 values.
16	-	Load EVENT POINT N CONTROL with next value.
17	-	Load EVENT POINT N ANDER with next value.
18	-	Load EVENT POINT STATUS with next value.
19	-	Load COUNT PRESCALE with next value.
1A	-	Load COUNT ERROR with next value.
1B	-	Load GENERAL PURPOSE with next value.
20	-	Dump COUNT.
21	-	Dump TOTAL.
22	-	Dump RATE.
23	-	Dump SECONDS COUNT.
24	-	Dump REAL TIME CLOCK.
25	-	Dump EVENT POINT N VALUE.
26	-	Dump EVENT POINT N CONTROL.
27	-	Dump EVENT POINT N ANDER.
28	-	Dump EVENT POINT STATUS.
29	-	Dump COUNT PRESCALE.
2A	-	Dump COUNT ERROR.
2B	-	Dump GENERAL PURPOSE.
30	-	Freeze
31	-	Run
32	-	Reset TOTAL to Zero
33	-	Reset COUNT to Zero
34	-	Totalize
35	-	Reset SECOND COUNTER to Zero.

C3T2I Specifications

Inputs and outputs for the C3T2I are:

Name	Abv	Bits	C3T2I
Data	D0-D7	8	Bi-directional
Strobe 'A'	SA	1	Sink
Strobe 'B'	SB	1	Source
Chip Select	CS	1	Sink
Read/Write	R/*W	1	Sink
Event Points	Ev0-Ev7	8	Source

The GENERAL PURPOSE register is defined as follows:

```
-----------------
:7:6:5:4:3:2:1:0:
-----------------
: : : : : : : : :
-----------------
 : : : : : : : +----- Not Used
 : : : : : : +------- Not Used
 : : : : : +--------- Not Used
 : : : : +----------- Not Used
 : : : +------------- Not Used
 : : +--------------- Not Used
 : +----------------- Not Used
 +------------------- Count Divide by Ten
```

The EVENT POINT CONTROL register is defined as follows:

```
-----------------
:7:6:5:4:3:2:1:0:
-----------------
: : : : : : : : :
-----------------
 : : : : : : : +-----:
 : : : : : : +-------: Comparator Select
 : : : : : +---------:
 : : : : +-----------  Not Used
 : : : +-------------  Greater/Less Than test selection
 : : +---------------  Reset Comparator to Zero on TRUE
 : +-----------------  Not Used
 +-------------------  Set Point Active
```

The COMPARATOR SELECT is defined as follows:

```
00  -  Count
01  -  Total
02  -  Rate
03  -  Seconds Count
```

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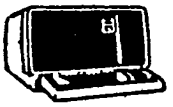

MOJAVE CYBER RESEARCH

Mojave Cyber Research announces the availability of the C3T2I single chip process controller.

The C3T2I provides a calibratible Counter, Totalizer and Integrator along with a Seconds Timer and a Real Time Clock.

The Counter / Totalizer / Integrator provides error correction to plus or minus 9.9% in increments of .1% simply by providing the C3T2I with the percentage of error.

The C3T2I also provides the user with 8 definable Event Points with TTL outputs. These Event Points may be tested in Greater than or Less than comparisons with the Counter, Totalizer, Integrator or the Seconds timer. Each Event Point may further be logically ANDed with any or all of the other Event Points prior to output.

With a maximum count rate of 8 Khz, the C3T2I finds many applications as a Flow Rate monitor / controller, Process Watchdog or Sequencer.

The C3T2I is available off the shelf in quantities of 10 and 1 to 2 weeks for larger volumes. The single unit price for the C3T2I is $39.95.

For more information contact:

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