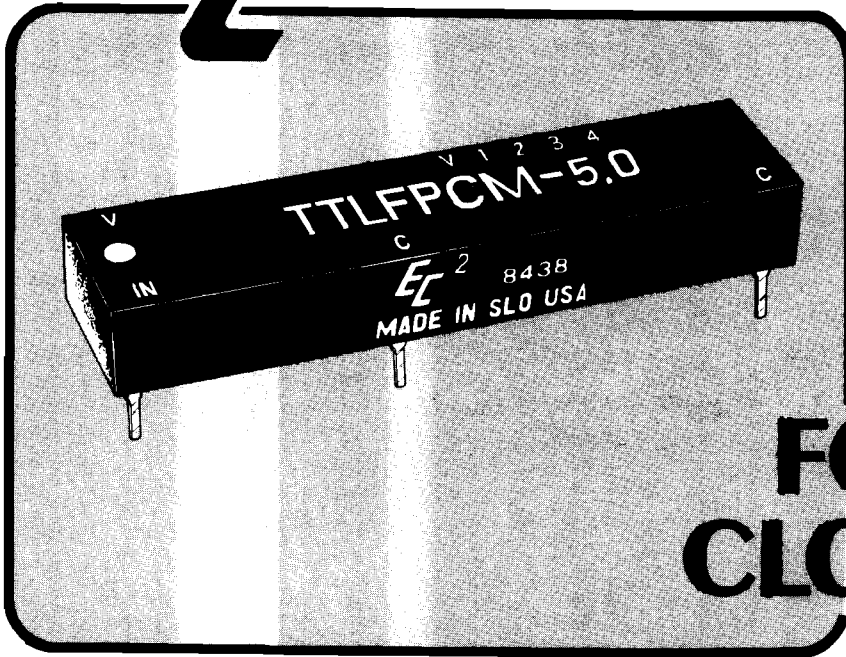


# EC<sup>2</sup>



*low profile*

## T<sup>2</sup>L

# COMPATIBLE FOUR-PHASE CLOCK MODULE

- T<sup>2</sup>L input and outputs
- Output wavetrain synchronized with input square wave
- 32-pin DIP package (.250 high)
- Available in frequencies from 200 KHz to 12 Mhz
- 10 T<sup>2</sup>L fan-out capacity per phase

The TTLFPCM is offered in twenty-four (24) standard clock frequencies from 200 KHz to 12 Mhz. When tested under the "Test Conditions" shown, output frequency is maintained to within  $\pm 0.005\%$  of input frequency; output phase spacing is maintained to an accuracy of  $\pm 5^\circ$ . Output phase times are referenced to the +1.5V level on the rising edge.

These modules are of hybrid construction utilizing the proven technologies of active integrated circuitry and of passive networks utilizing capacitive, inductive and resistive elements. The ICs utilized in these modules are burned-in to Level B of MIL-STD-883 to ensure a high MTBF. The MTBF on these modules, when calculated per MIL-HDBK-217 for a 50°C ground fixed environment is in excess of 1.5 million hours.

These "DIP Series" modules are packaged in a 32-pin DIP housing, molded of flame-proof Diallyl Phthalate per MIL-M-14, Type SDG-F, and are fully encapsulated in epoxy resin. Flat metal leads meet the solderability requirements of MIL-STD-202, Method 208. Leads provide positive standoff from the printed circuit board to permit solder-fillet formation and flush cleaning of solderflux residues for improved reliability.

## design notes

The "DIP Series" Four-Phase Clock Modules developed by Engineered Components Company have been designed to provide precise T<sup>2</sup>L level four-phase, square-wave outputs at frequencies from 200 KHz to 12 Mhz; they are synchronized by single-phase T<sup>2</sup>L level inputs at the selected frequency. The modules will accept inputs with duty cycle from 25% high/75% low to 75% high/25% low with minimal effect on output duty cycle. Module input is a two fan-in Schottky T<sup>2</sup>L; all outputs are toggle-type Schottky T<sup>2</sup>L and capable of driving 10 T<sup>2</sup>L Schottky loads per phase.

# EC<sup>2</sup>

## engineered components company

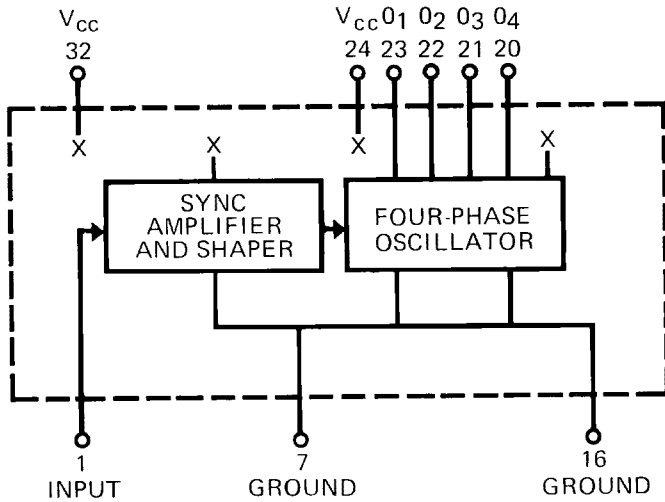
3580 Sacramento Drive, P. O. Box 8121, San Luis Obispo, CA 93403-8121

Phone: (805) 544-3800

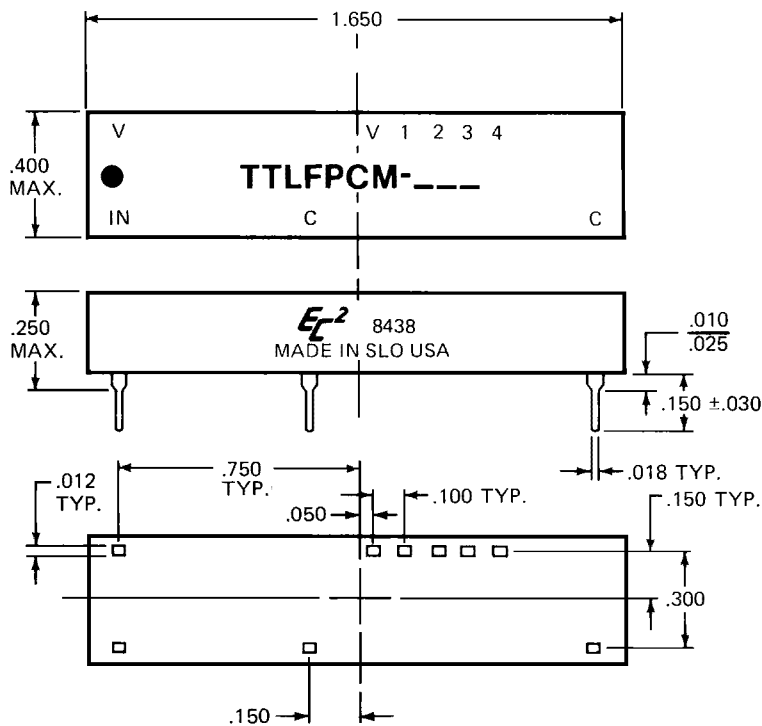
## DESIGN NOTES (continued)

Marking consists of manufacturer's name, logo (EC<sup>2</sup>), part number, terminal identification and date code of manufacture. All marking is applied by silk screen process using white epoxy paint in accordance with MIL-STD-130, to meet the permanency of identification required by MIL-STD-202, Method 215.

### BLOCK DIAGRAM IS SHOWN BELOW



### MECHANICAL DETAIL IS SHOWN BELOW



## TEST CONDITIONS

1. All measurements are made at 25°C.
2. V<sub>CC</sub> supply voltage is maintained at 5.0V DC.
3. All units are tested using a Schottky toggle-type gate as a driving source and with all outputs unloaded.
4. The square-wave input signal is a single-phase T<sup>2</sup>L with 50% duty cycle.

## OPERATING SPECIFICATIONS

- \* V<sub>CC</sub> supply voltage: . . . . . 4.75 to 5.25V DC
- V<sub>CC</sub> supply current: . . . . . 140ma typical
- Logic 1 input:
  - Voltage . . . . . 2V min.; 5.5V max.
  - Current . . . . . 2.4V = 100ua max.
  - 5.5V = 2ma max.
- Logic 0 input:
  - Voltage . . . . . .8V max.
  - Current . . . . . -4ma max.
- Logic 1 Voltage out: . . . . . 2.4V min.
- Logic 0 Voltage out: . . . . . .4V max.
- Operating temperature range: . . . . . 0 to 70°C.
- Storage temperature: . . . . . -55 to +125°C.
- \* Phase error increases approximately 2° for a respective increase or decrease of 5% in supply voltage.

## PART NUMBER TABLE

Part Number	Operating Frequency	Part Number	Operating Frequency
TTLFPCM-0.2	200 KHz	TTLFPCM-3.0	3.0 Mhz
TTLFPCM-0.3	300 KHz	TTLFPCM-3.5	3.5 Mhz
TTLFPCM-0.4	400 KHz	TTLFPCM-4.0	4.0 Mhz
TTLFPCM-0.5	500 KHz	TTLFPCM-4.5	4.5 Mhz
TTLFPCM-0.6	600 KHz	TTLFPCM-5.0	5.0 Mhz
TTLFPCM-0.7	700 KHz	TTLFPCM-6.0	6.0 Mhz
TTLFPCM-0.8	800 KHz	TTLFPCM-7.0	7.0 Mhz
TTLFPCM-0.9	900 KHz	TTLFPCM-8.0	8.0 Mhz
TTLFPCM-1.0	1.0 Mhz	TTLFPCM-9.0	9.0 Mhz
TTLFPCM-1.5	1.5 Mhz	TTLFPCM-10.0	10.0 Mhz
TTLFPCM-2.0	2.0 Mhz	TTLFPCM-11.0	11.0 Mhz
TTLFPCM-2.5	2.5 Mhz	TTLFPCM-12.0	12.0 Mhz

Special modules can be readily manufactured to provide outputs with either 25% or 75% duty cycle, to improve accuracies or to provide customer specified frequencies for specific applications.