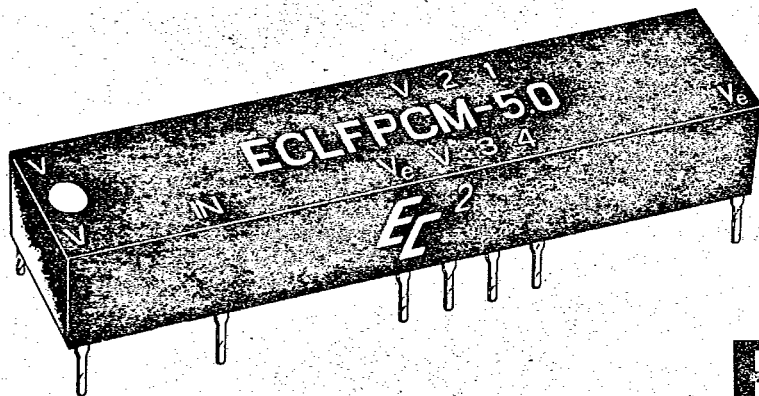


**EC<sup>2</sup>**

*low profile*  
**ECL**  
**COMPATIBLE**  
**FOUR-PHASE**  
**CLOCK MODULE**

- ECL input and outputs
- Output wavetrain synchronized with input square wave
- 32-pin DIP package (.250 high)
- Available in frequencies from 200 KHz to 20 Mhz
- 70 ECL DC fan-out capacity per phase

## design notes

The "DIP Series" Four-Phase Clock Modules developed by Engineered Components Company have been designed to provide precise ECL "10,000 Series" level four-phase, square-wave outputs at frequencies from 200 KHz to 20 Mhz; they are synchronized by single-phase ECL 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 ECL 10K; all outputs are standard ECL 10K open emitter and are capable of driving 70 ECL 10K DC loads per phase.

The ECLFPCM is offered in twenty-seven (27) standard clock frequencies from 200 KHz to 20 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  $\pm 1\text{ns}$  or  $5^\circ$ , whichever is greater. Output phase times are referenced to the  $-1.3\text{V}$  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-217B for a  $50^\circ\text{C}$  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 solder-flux residues for improved reliability.

**EC<sup>2</sup>****engineered components company**

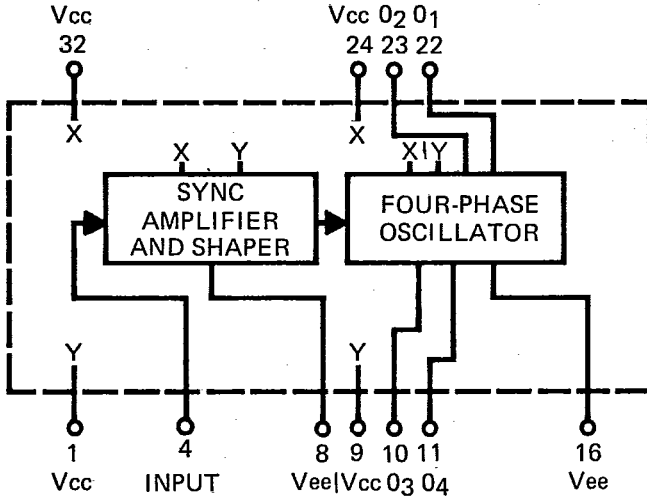
3580 Sacramento Drive, San Luis Obispo, California 93401

Phone: (805) 544-3800

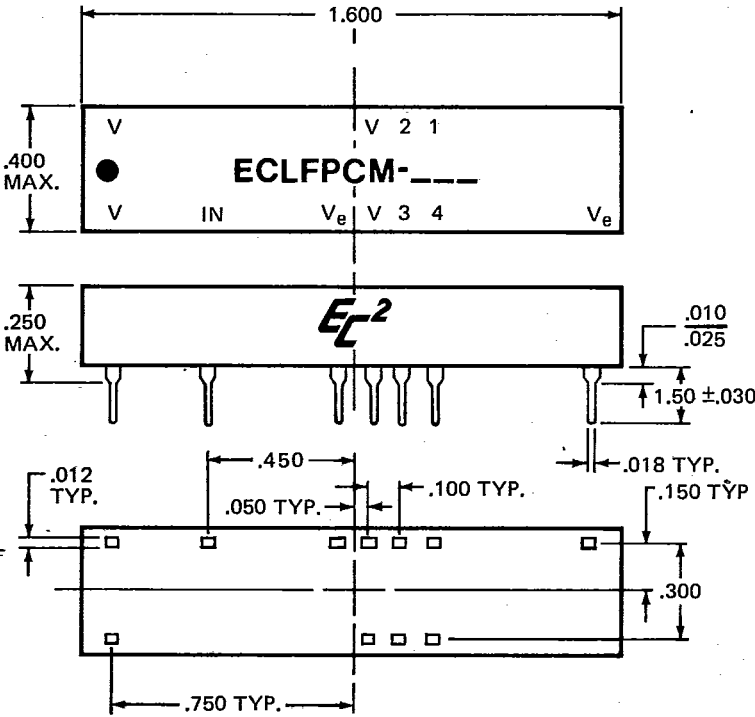
OPERATING SPECIFICATIONS

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. Vee supply voltage is maintained at -5.2V DC.
3. All units are tested using a positive input pulse provided by a standard open emitter ECL 10,000 gate. The input and output utilize a 100 ohm pulldown resistor to -2V; the output is also loaded with one ECL 10,000 gate.
4. The square wave input signal is a single phase ECL with 50% duty cycle.

\*Supply voltage: . . . . . -5.2V ±5% to Vee (can be operated on +5V to Vcc).

Supply current: . . . . . 155ma typical

Logic 1 input at 25°C:

Voltage . . . . . -.98 min.

Current . . . . . 265ua max.

Logic 0 input at 25°C:

Voltage . . . . . -1.63 max.

Current . . . . . .5ua min.

Logic 1 Voltage out at 25°C: . . . . -.96 min.

Logic 0 Voltage out at 25°C: . . . . -1.65 max.

Operating temperature range: . . . . -30 to +85°C

Storage temperature: . . . . . -55 to +125°C

\*Phase error increases approximately 1° for a respective increase or decrease of 5% in supply voltage.

PART NUMBER TABLE

Part Number	Operating Frequency	Part Number	Operating Frequency
ECLFPCM-0.2	200 KHz	ECLFPCM-4.0	4.0 Mhz
ECLFPCM-0.3	300 KHz	ECLFPCM-4.5	4.5 Mhz
ECLFPCM-0.4	400 KHz	ECLFPCM-5.0	5.0 Mhz
ECLFPCM-0.5	500 KHz	ECLFPCM-6.0	6.0 Mhz
ECLFPCM-0.6	600 KHz	ECLFPCM-7.0	7.0 Mhz
ECLFPCM-0.7	700 KHz	ECLFPCM-8.0	8.0 Mhz
ECLFPCM-0.8	800 KHz	ECLFPCM-9.0	9.0 Mhz
ECLFPCM-0.9	900 KHz	ECLFPCM-10.0	10.0 Mhz
ECLFPCM-1.0	1.0 Mhz	ECLFPCM-12.0	12.0 Mhz
ECLFPCM-1.5	1.5 Mhz	ECLFPCM-14.0	14.0 Mhz
ECLFPCM-2.0	2.0 Mhz	ECLFPCM-16.0	16.0 Mhz
ECLFPCM-2.5	2.5 Mhz	ECLFPCM-18.0	18.0 Mhz
ECLFPCM-3.0	3.0 Mhz	ECLFPCM-20.0	20.0 Mhz
ECLFPCM-3.5	3.5 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.