

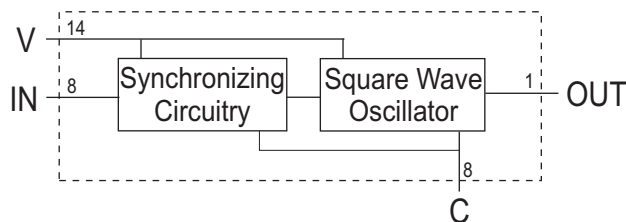
# TTL Military Digital Frequency Multiplier Module (Thinny)

The TTL Military Digital Frequency Multiplier Modules (Thinny) manufactured by Engineered Components Company are designed to provide a square wave output at a given frequency which can be synchronized by square wave inputs at sub-harmonic frequencies. The falling edge of the output waveform is synchronized to the falling edge of the input waveform. If no synchronizing input is present, the unit will free-run producing a continuous output square wave. Phase jitter at the output will increase as higher orders of multiplication are used. An inverted output is also supplied.

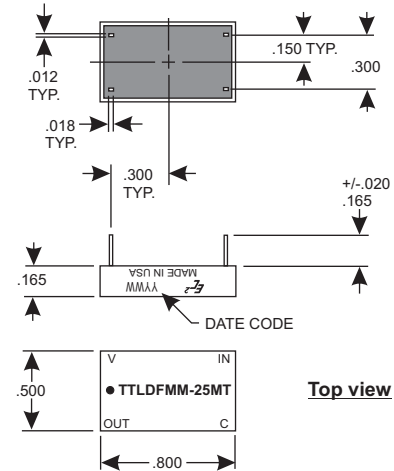
The MTBF on these modules, when calculated per MIL-HDBK-217, for a 50 deg.C ground fixed environment and with 50VDC applied, is in excess of 2 million hours. The temperature coefficient of delay is less than 500 ppm/deg.C over a temperature range of -55 to +100 deg. C. These modules are designed to operate over the full military temperature range of -55 to +125 deg. C.

The module is provided in a 14-pin DIP package, fully encapsulated in epoxy resin and is housed in a Diallyl Phthalate case, red in color. The case marking is applied by silkscreen using white epoxy paint. The 4 copper leads are tin-lead plated and meet the solderability requirements of MIL-STD-202, Method 208.

## BLOCK DIAGRAM



## MECHANICAL DIAGRAM



Product Selection Table

Part Number	Nominal Output Frequency	Output Frequency Tolerance
TTLDFMM-5MT	5.0 MHz	+/-2%
TTLDFMM-6MT	6.0 MHz	+/-2%
TTLDFMM-7MT	7.0 MHz	+/-2%
TTLDFMM-8MT	8.0 MHz	+/-2%
TTLDFMM-9MT	9.0 MHz	+/-2%
TTLDFMM-10MT	10.0 MHz	+/-2%
TTLDFMM-11MT	11.0 MHz	+/-2%
TTLDFMM-12MT	12.0 MHz	+/-2%
TTLDFMM-13MT	13.0 MHz	+/-2%
TTLDFMM-14MT	14.0 MHz	+/-2%
TTLDFMM-15MT	15.0 MHz	+/-2%
TTLDFMM-20MT	20.0 MHz	+/-2%
TTLDFMM-25MT	25.0 MHz	+/-2%
TTLDFMM-30MT	30.0 MHz	+/-2%
TTLDFMM-35MT	35.0 MHz	+/-2%
TTLDFMM-40MT	40.0 MHz	+/-2%
TTLDFMM-45MT	45.0 MHz	+/-2%
TTLDFMM-50MT	50.0 MHz	+/-2%
TTLDFMM-60MT	60.0 MHz	+/-2%
TTLDFMM-70MT	70.0 MHz	+/-2%
TTLDFMM-80MT	80.0 MHz	+/-2%
TTLDFMM-90MT	90.0 MHz	+/-2%
TTLDFMM-100MT	100.0 MHz	+/-2%

Special modules can often be manufactured to provide for customer specific applications.

## Operating Specifications:

All measurements made at 25 deg. C  
 All measurements made with Vcc = +5VDC  
 All measurements made with (1) TTL output load

Operating Temperature: -55 to +125 deg. C  
 Storage Temperature: -55 to +125 deg. C

Vcc Supply Voltage: 4.75 to 5.25VDC

Vcc Supply Current:

Constant "0" in = 45mA typical

Constant "1" in = 30mA typical

Logic "High" Input:

Voltage: 2.0VDC min. ; Vcc max.

Current: 2.4VDC = 100uA max. ; 5.5VDC = 2mA max.

Logic "Low" Input:

Voltage: 0.8 VDC max.

Current: -4.0mA max.

Logic "High" Voltage Out: 2.4VDC min.

Logic "Low" Voltage Out: 0.4VDC max.



**engineered components company**

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