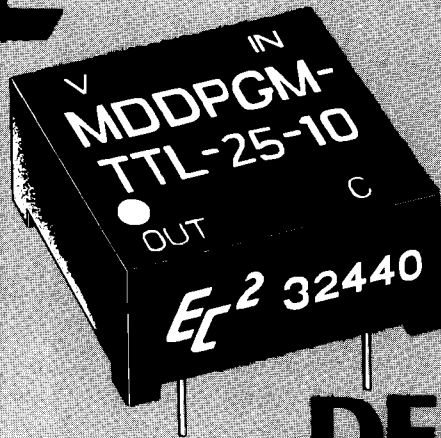


# EC<sup>2</sup>



## low profile T<sup>2</sup>L COMPATIBLE

# Mini DIP DELAYED PULSE GENERATOR MODULE

- T<sup>2</sup>L input and output
- Pulse widths stable and precise
- 8-pin DIP package (.250 high)
- Available in pulse widths from 5 to 100ns
- 10 Schottky T<sup>2</sup>L fan-out capacity

## design notes

The "Mini DIP series" Delayed Pulse Generator Modules developed by Engineered Components Company have been designed to provide precise output pulse widths at specified delay times after input trigger when triggered by variable width inputs. All required driving and output circuitry, as well as timing components, are contained in an 8-pin DIP package. These pulse generator 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 2.5 million hours. These modules are compatible with T<sup>2</sup>L Schottky circuits and require no external components in order to obtain the specified output pulse.

The MDDPGM-TTL is available in 20 pulse widths and 20 time delays from 5 to 100ns. These modules provide a stable T<sup>2</sup>L output pulse of the specified width and at the specified time for each positive input step. It is necessary only that the input step be held positive for at least 10ns in order to obtain the desired output pulse. The duration of the positive input pulse, after this time, has no effect on the output pulse width. No output pulse will occur on the negative input pulse transition. Time between trigger inputs must be a minimum of twice the sum of the delay time and output pulse width specified. Both pulse width and delay time tolerance are maintained as shown in the accompanying Part Number Table, when tested under the "Test Conditions" shown. Pulse width is measured at the +1.5V level on both leading and trailing edge. Rise and fall times are less than 3ns, when measured from .8V to 2.0V. These modules are capable of driving 10 Schottky T<sup>2</sup> loads. Temperature coefficient of delay is approximately +800ppm/°C and of pulse width is approximately -800ppm/°C over the operating temperature range of 0 to +70° C.

These "Mini DIP series" modules are packaged in an 8-pin DIP housing, molded of flame-proof Diallyl Phthalate per MIL-M-14, Type SDG-F, and are fully encapsulated in epoxy resin. Leads meet the solderability requirements of MIL-STD-202, Method 208. Corner standoffs on the housing 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

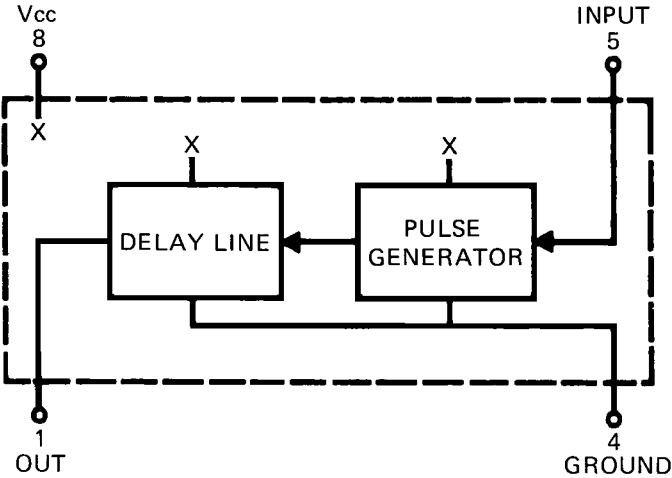
3580 Sacramento Drive, P. O. Box 8121, San Luis Obispo, CA 93403-8121

Phone: (805) 544-3800

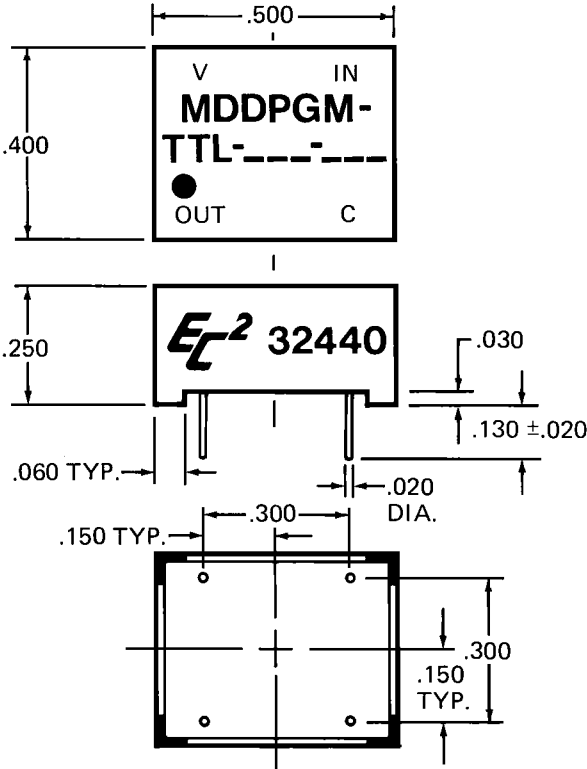
**DESIGN NOTES (continued)**

Marking consists of manufacturer's logo (EC<sup>2</sup>), Federal Supply Code, 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 positive input pulse and one Schottky T<sup>2</sup>L load at the output.
4. Input pulse width used is 10ns for all modules; repetition rate is approximately 200Khz.

**OPERATING SPECIFICATIONS**

- \*V<sub>CC</sub> supply voltage: . . . . . 4.75 to 5.25V DC
- V<sub>CC</sub> supply current:
  - Constant "0" in . . . . . 50ma typical
  - Constant "1" in . . . . . 50ma typical

- Logic 1 input:
  - Voltage . . . . . 2V min.; 5.5V max.
  - Current . . . . . 2.4V = 50ua max.
  - 5.5V = 1ma max.

- Logic 0 input:
  - Voltage . . . . . .8V max.
  - Current . . . . . -2ma max.

- Logic 1 Voltage out: . . . . . 2.4V min.
- Logic 0 Voltage out: . . . . . .5V max.
- Operating temperature range: . . . . . 0 to 70°C.
- Storage temperature: . . . . . -55 to +125°C.

\*Delay increases or decreases approximately 2% for a respective increase or decrease of 5% in supply voltage. Pulse width increases or decreases approximately 2% for a respective decrease or increase of 5% in supply voltage.

**PART NUMBER TABLE**

Part Number	Pulse Width (in ns)
MDDPGM-TTL-----5	5 ±1
MDDPGM-TTL-----6	6 ±1
MDDPGM-TTL-----7	7 ±1
MDDPGM-TTL-----8	8 ±1
MDDPGM-TTL-----9	9 ±1
MDDPGM-TTL-----10	10 ±1
MDDPGM-TTL-----15	15 ±1
MDDPGM-TTL-----20	20 ±1
MDDPGM-TTL-----25	25 ±1
MDDPGM-TTL-----30	30 ±1
MDDPGM-TTL-----35	35 ±1.5
MDDPGM-TTL-----40	40 ±1.5
MDDPGM-TTL-----45	45 ±1.5
MDDPGM-TTL-----50	50 ±1.5
MDDPGM-TTL-----60	60 ±1.5
MDDPGM-TTL-----70	70 ±2
MDDPGM-TTL-----75	75 ±2
MDDPGM-TTL-----80	80 ±2
MDDPGM-TTL-----90	90 ±3
MDDPGM-TTL-----100	100 ±3

Complete part number includes desired delay time (in ns) from input trigger to beginning of output pulse followed by a dash and then the desired pulse width. Delay times are available in the same delays as shown above for pulse widths (from 6 to 100ns), e. g., part number MDDPGM-TTL-25-10 has a delay of 25ns with a 10ns pulse and MDDPGM-TTL-8-30 has a delay of 8ns with a 30ns pulse width.

Special modules can be readily manufactured to improve accuracies and/or provide customer specified random pulse widths for specific applications.