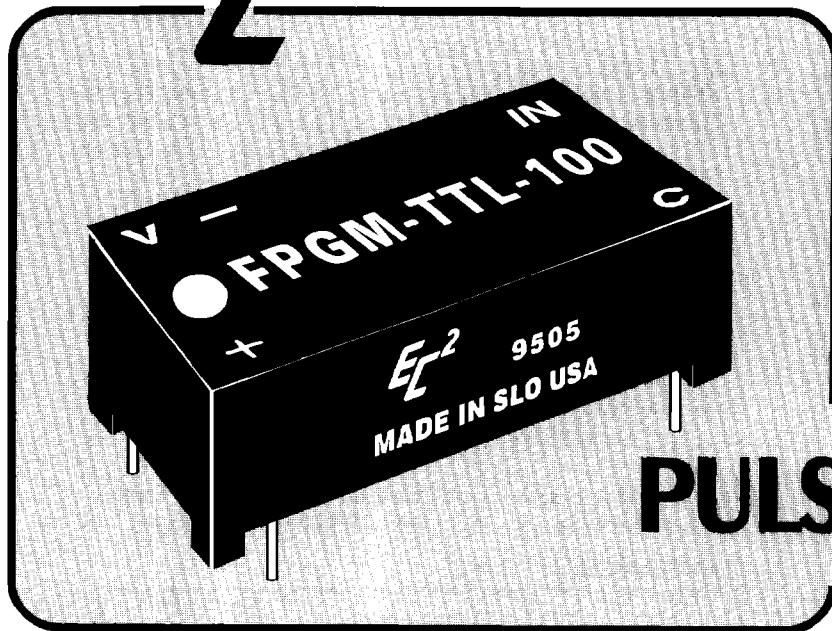


# EC<sup>2</sup>



*low profile*  
**T<sup>2</sup>L**  
**COMPATIBLE**  
**FAST**  
**PULSE GENERATOR**  
**MODULE**

- T<sup>2</sup>L FAST input and output
- Pulse widths stable and precise
- High output duty cycles
- 14-pin DIP package
- Available in pulse widths from 10 to 1000ns
- 10 T<sup>2</sup>L fan-out capacity

## design notes

The "Dip Series" Pulse Generator Modules developed by Engineered Components Company have been designed to provide precise output pulse widths when triggered by variable width inputs. All required driving and output circuitry, as well as timing components, are contained in an 14-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 MTBF on these modules, when calculated per MIL-HDBK-217 for a 50°C ground fixed environment, is in excess of 3 million hours. These modules are compatible with T<sup>2</sup>L FAST circuits and require no external components in order to obtain the specified output pulse.

The FPGM-TTL is available in 38 pulse widths from 10ns to

1000ns. These modules provide a stable T<sup>2</sup>L output pulse of the specified width for each positive input step. The generated pulse is inverted internally to provide a negative pulse as an additional output. It is necessary only that the input be held low for at least 10ns, then high for at least 10ns to obtain the desired output pulse. The duration of the positive input, after this time, has no effect on output pulse width. No output pulse will occur on the negative input pulse transition. Pulse width tolerance is 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 4ns, when measured from .8V to 2.0V. These modules are capable of driving 10 FAST T<sup>2</sup>L loads. Temperature coefficient of pulse width for the majority of this product line is approximately ±100ppm/°C over the operating temperature range of 0 to 70°C.

These "DIP Series" modules are packaged in a 14-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.

Marking consists of manufacturer's logo (EC<sup>2</sup>), Federal Supply Code, part number, pin one (1) 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.

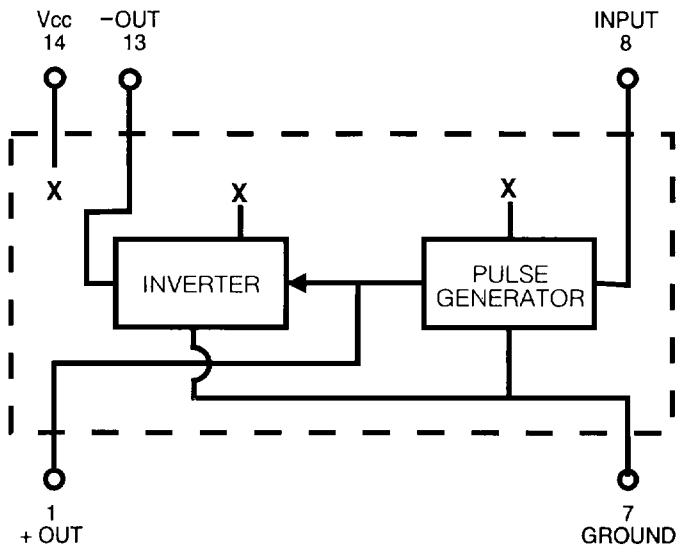
\*ECCOS155\*

# EC<sup>2</sup>

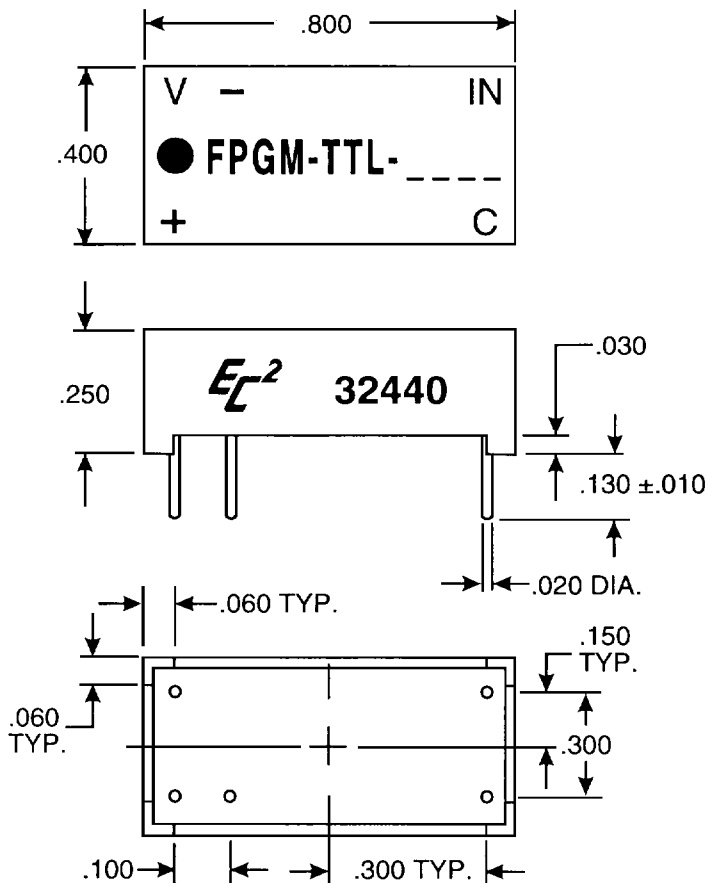
## engineered components company

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**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 FAST toggle-type positive input pulse and one FAST T<sup>2</sup>L load at the output.
4. Input pulse width used is 10ns for all modules; repetition rate is approximately 200 kHz.

**OPERATING SPECIFICATIONS**

- \* V<sub>cc</sub> supply voltage: . . . . . 4.75 to 5.25V DC
- V<sub>cc</sub> supply current:
- Constant "0" in . . . . . 40mA typical
- Constant "1" in . . . . . 40mA typical

- Logic 1 Input:
- Voltage . . . . . 2V min.; V<sub>cc</sub> max.
- Current . . . . . 2.7V = 20uA max.
- . . . . . 5.5V = 1mA max.

- Logic 0 Input:
- Voltage . . . . . .8V max.
- Current . . . . . -6mA max.
- . . . . . @ V<sub>I</sub> = .5V

- Logic 1 Voltage out: . . . . . 2.7V min.
- Logic 0 Voltage out: . . . . . .5V max.
- Operating temperature range: . . . . . 0 to 70°C.
- Storage temperature: . . . . . -55 to +125°C.

\* Pulse width increases or decreases approximately 1% for a respective decrease or increase of 5% in supply voltage.

**PART NUMBER TABLE**

PART NUMBER	PULSE WIDTH (in ns)	MAXIMUM REP. RATE (in MHz)
FPGM-TTL-10	10±1	60.0
FPGM-TTL-11	11±1	56.0
FPGM-TTL-12	12±1	53.0
FPGM-TTL-13	13±1	51.0
FPGM-TTL-14	14±1	48.0
FPGM-TTL-15	15±1	46.0
FPGM-TTL-16	16±1	44.0
FPGM-TTL-17	17±1	42.0
FPGM-TTL-18	18±1	40.0
FPGM-TTL-19	19±1	38.0
FPGM-TTL-20	20±1	37.0
FPGM-TTL-21	21±1	35.0
FPGM-TTL-22	22±1	34.0
FPGM-TTL-23	23±1	33.0
FPGM-TTL-24	24±1	32.0
FPGM-TTL-25	25±1	31.0
FPGM-TTL-30	30±1	26.0
FPGM-TTL-35	35±1.5	23.0
FPGM-TTL-40	40±1.5	20.0
FPGM-TTL-45	45±1.5	18.0
FPGM-TTL-50	50±1.5	17.0
FPGM-TTL-60	60±1.5	14.5
FPGM-TTL-70	70±2	12.5
FPGM-TTL-75	75±2	11.5
FPGM-TTL-80	80±2	11.0
FPGM-TTL-90	90±3	9.5
FPGM-TTL-100	100±3	8.5
FPGM-TTL-150	150±4	6.0
FPGM-TTL-200	200±6	4.5
FPGM-TTL-250	250±7	3.5
FPGM-TTL-300	300±9	3.0
FPGM-TTL-400	400±10	2.2
FPGM-TTL-500	500±10	1.8
FPGM-TTL-600	600±14	1.5
FPGM-TTL-700	700±16	1.3
FPGM-TTL-800	800±18	1.1
FPGM-TTL-900	900±20	1.0
FPGM-TTL-1000	1000±22	0.9

All modules can be operated up to the maximum pulse rate specified in the Part Number Table with pulse widths as low as 10ns and pulse spacing as low as 10ns. Since pulse width accuracies may be somewhat degraded at high pulse rates, it is suggested that the module be evaluated under the specific operating conditions. Special modules can be readily manufactured to improve accuracies and/or provide customer specified pulse widths for specific applications.