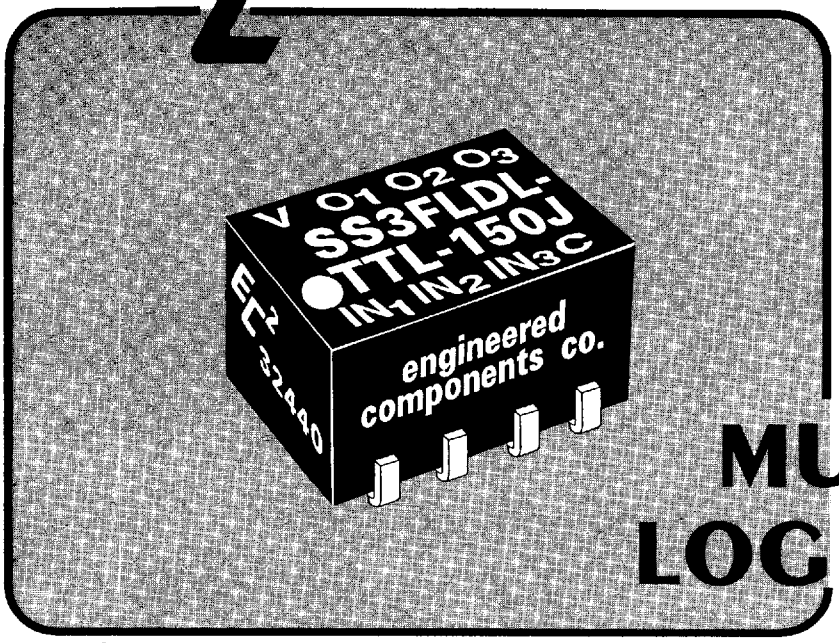
EC²

space saver

T²L COMPATIBLE



MULTI (3) FAST LOGIC DELAY LINE

- **T²L inputs and outputs**
- **Delays stable and precise**
- **8-pin Space Saver package**
- **Leads - thru-hole, J, Gull Wing or Tucked**
- **Available in delays from 5 to 100ns - each isolated and with 10 T²L fan-out capacity**
- **Three (3) separate isolated delay lines**
- **Rise time 4ns maximum**

design notes

The "Space Saver Series" Multiple Logic Delay Lines developed by Engineered Components Company have been designed to provide precise delays with required driving and pick-off circuitry contained in a single 8-pin package compatible with FAST and Schottky T²L circuits. These logic delay lines 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 1.5 million hours. Module design includes compensation for propagation delays and incorporates internal termination at the output; no additional external components are needed to obtain the desired delay.

The SS3FLDL-TTL is offered in 36 delays from 5 to 100ns. Each module includes three (3) separate delay lines, each isolated and fully buffered. Delay tolerances are maintained as shown in the accompanying part number table, when tested under the "Test Conditions" shown. Delay time is measured at the +1.5V level on the leading edge. Rise time for all modules is 4ns maximum when measured from 0.8V to 2.0V. Temperature coefficient of delay is approximately +1200 ppm/°C over the operating temperature range of 0 to +70°C.

These modules accept either logic "1" or logic "0" inputs and reproduce the logic at the output without inversion. The delay modules are intended primarily for use with positive going pulses and are calibrated to the tolerances shown in the table on rising edge delay; where best accuracy is desired in applications using falling edge timing, it is recommended that a special unit be calibrated for the specific application. Each module has the capability of driving up to 20 Schottky T²L loads with a maximum of 10 loads on any one line.

These "Space Saver Series" modules are packaged in an 8-pin housing, molded of flame-proof Diallyl Phthalate per MIL-M-14, Type SDG-F, and are fully encapsulated in epoxy resin. Thru-hole, J, Gull Wing or Tucked Lead configurations are available on these modules (see Part Number Table note to specify). Leads meet the solderability requirements of MIL-STD-202, Method 208. Corner standoffs on the housing of the thru-hole lead version and lead design of the surface mount versions 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 name, logo (EC²), 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.

EC² **engineered components company**

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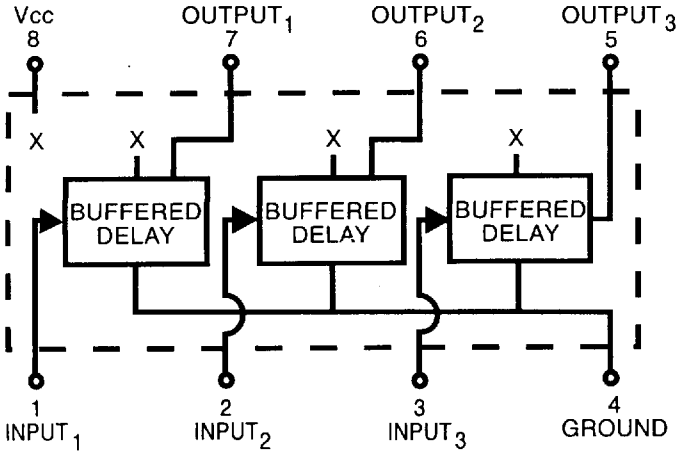
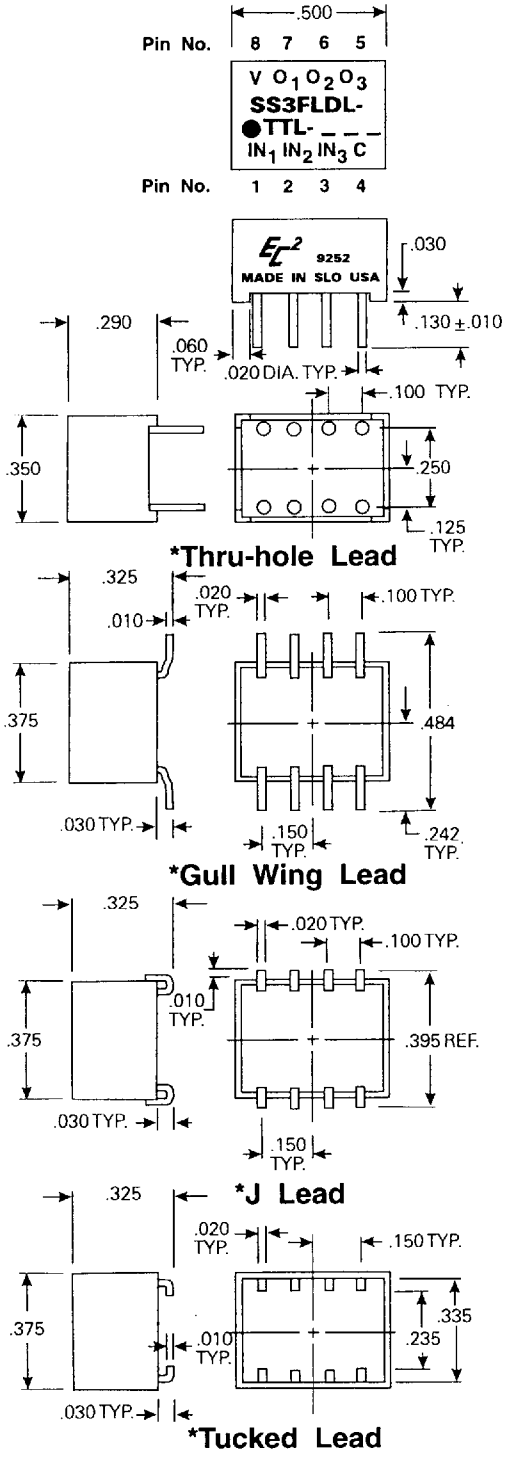
BLOCK DIAGRAM IS SHOWN BELOW



MECHANICAL DETAIL IS SHOWN BELOW



TEST CONDITIONS

1. All measurements are made at 25°C.
2. V_{CC} supply voltage is maintained at 5.0V DC.
3. All units are tested using a Schottky toggle-type positive input pulse and one Schottky load at the output.

Ø4. Input pulse width used is 100% longer than delay of module under test; spacing between pulses (falling edge to rising edge) is three times the pulse width used.

OPERATING SPECIFICATIONS

* V_{CC} supply voltage:	4.75 to 5.25V DC
V_{CC} supply current:	
Constant "0" in	85mA typical
Constant "1" in	55mA typical
Logic 1 Input:	
Voltage	2V min.; V_{CC} max.
Current	2.7V = 20uA max.
	5.5V = 1mA max.
Logic 0 Input:	
Voltage	.8V max.
Current	–.6mA max.
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.

* Delays increase or decrease approximately 2% for a respective increase or decrease of 5% in supply voltage.

PART NUMBER TABLE

***Suffix Part Number with G (for Gull Wing Lead), J (for J Lead), F (for Thru-hole Lead) or T (for Tucked Lead). Examples: SS3FLDL-TTL-10G (Gull Wing), SS3FLDL-TTL-25J (J Lead), SS3FLDL-TTL-70F (Thru-hole Lead) or SS3FLDL-TTL-15T (Tucked Lead).**

Ø DELAYS AND TOLERANCES (in ns)			
PART NO.	OUTPUT	PART NO.	OUTPUT
SS3FLDL-TTL-5	5 ±.5	SS3FLDL-TTL-23	23 ±1
SS3FLDL-TTL-6	6 ±.5	SS3FLDL-TTL-24	24 ±1
SS3FLDL-TTL-7	7 ±.5	SS3FLDL-TTL-25	25 ±1
SS3FLDL-TTL-8	8 ±.5	SS3FLDL-TTL-30	30 ±1.5
SS3FLDL-TTL-9	9 ±.5	SS3FLDL-TTL-35	35 ±1.5
SS3FLDL-TTL-10	10 ±.5	SS3FLDL-TTL-40	40 ±1.5
SS3FLDL-TTL-11	11 ±.75	SS3FLDL-TTL-45	45 ±2
SS3FLDL-TTL-12	12 ±.75	SS3FLDL-TTL-50	50 ±2
SS3FLDL-TTL-13	13 ±.75	SS3FLDL-TTL-55	55 ±2
SS3FLDL-TTL-14	14 ±.75	SS3FLDL-TTL-60	60 ±2
SS3FLDL-TTL-15	15 ±.75	SS3FLDL-TTL-65	65 ±2.5
SS3FLDL-TTL-16	16 ±.75	SS3FLDL-TTL-70	70 ±2.5
SS3FLDL-TTL-17	17 ±.75	SS3FLDL-TTL-75	75 ±2.5
SS3FLDL-TTL-18	18 ±.75	SS3FLDL-TTL-80	80 ±2.5
SS3FLDL-TTL-19	19 ±.75	SS3FLDL-TTL-85	85 ±3
SS3FLDL-TTL-20	20 ±.75	SS3FLDL-TTL-90	90 ±3
SS3FLDL-TTL-21	21 ±1	SS3FLDL-TTL-95	95 ±3
SS3FLDL-TTL-22	22 ±1	SS3FLDL-TTL-100	100 ±3

ØAll modules can be operated with a minimum input pulse width of 100% of full delay and pulse period approaching square wave; since delay accuracies may be somewhat degraded, it is suggested that the module be evaluated under the intended specific operating conditions. Special modules can be readily manufactured to improve accuracies and/or provide customer specified random delay times for specific applications.