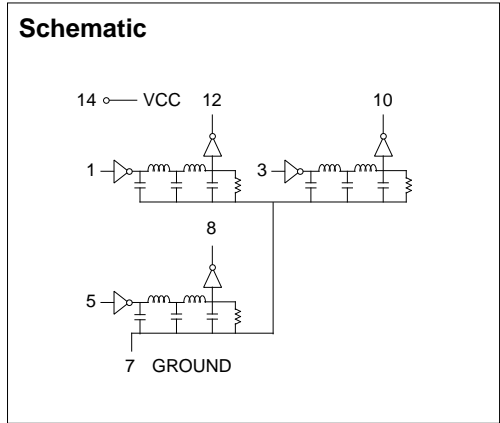


# 8 Pin SIL Triple TTL Compatible Active Delay Lines

DELAY TIME ±5% or ±2 nS†	PART NUMBER	DELAY TIME ±5% or ±2 nS†	PART NUMBER	DELAY TIME ±5% or ±2 nS†	PART NUMBER
5	EP9934-5	19	EP9934-19	65	EP9934-65
6	EP9934-6	20	EP9934-20	70	EP9934-70
7	EP9934-7	21	EP9934-21	75	EP9934-75
8	EP9934-8	22	EP9934-22	80	EP9934-80
9	EP9934-9	23	EP9934-23	85	EP9934-85
10	EP9934-10	24	EP9934-24	90	EP9934-90
11	EP9934-11	25	EP9934-25	95	EP9934-95
12	EP9934-12	30	EP9934-30	100	EP9934-100
13	EP9934-13	35	EP9934-35	125	EP9934-125
14	EP9934-14	40	EP9934-40	150	EP9934-150
15	EP9934-15	45	EP9934-45	175	EP9934-175
16	EP9934-16	50	EP9934-50	200	EP9934-200
17	EP9934-17	55	EP9934-55	225	EP9934-225
18	EP9934-18	60	EP9934-60	250	EP9934-250

† Whichever is greater. Delay Times referenced from input to leading edges at 25°C, 5.0V, with no load.

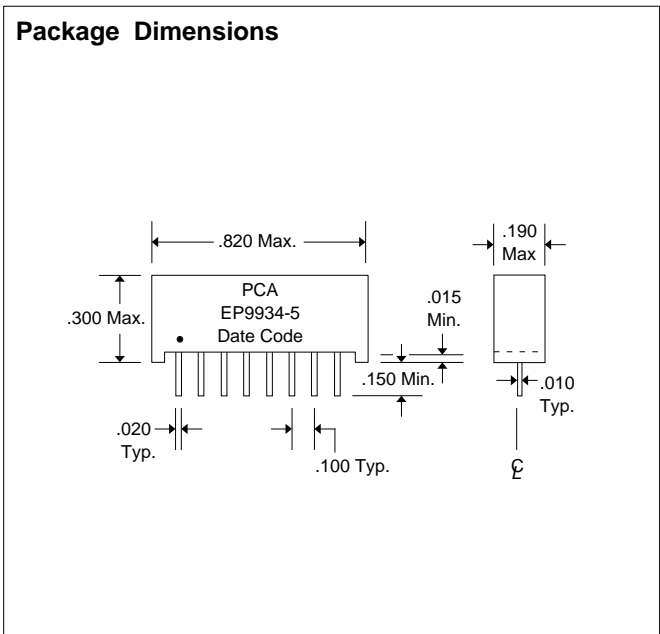
DC Electrical Characteristics					
Parameter	Test Conditions	Min	Max	Unit	
V <sub>OH</sub>	High-Level Output Voltage	V <sub>CC</sub> = min. V <sub>IL</sub> = max. I <sub>OH</sub> = max	2.7		V
V <sub>OL</sub>	Low-Level Output Voltage	V <sub>CC</sub> = min. V <sub>IH</sub> = min. I <sub>OL</sub> = max		0.5	V
V <sub>IK</sub>	Input Clamp Voltage	V <sub>CC</sub> = min. I <sub>I</sub> = I <sub>IK</sub>		-1.2V	V
I <sub>IH</sub>	High-Level Input Current	V <sub>CC</sub> = max. V <sub>IN</sub> = 2.7V		50	µA
		V <sub>CC</sub> = max. V <sub>IN</sub> = 5.25V		1.0	mA
I <sub>IL</sub>	Low-Level Input Current	V <sub>CC</sub> = max. V <sub>IN</sub> = 0.5V		-2	mA
I <sub>OS</sub>	Short Circuit Output Current	V <sub>CC</sub> = max. V <sub>OUT</sub> = 0. (One output at a time)	-40	-100	mA
I <sub>CCH</sub>	High-Level Supply Current	V <sub>CC</sub> = max. V <sub>IN</sub> = OPEN		115	mA
I <sub>CCL</sub>	Low-Level Supply Current	V <sub>CC</sub> = max. V <sub>IN</sub> = 0		115	mA
T <sub>RO</sub>	Output Rise Time	T <sub>d</sub> 500 nS (0.75 to 2.4 Volts)		4	nS
N <sub>H</sub>	Fanout High-Level Output	V <sub>CC</sub> = max. V <sub>OH</sub> = 2.7V		20 TTL LOAD	
N <sub>L</sub>	Fanout Low-Level Output	V <sub>CC</sub> = max. V <sub>OL</sub> = 0.5V		10 TTL LOAD	



Recommended Operating Conditions				
		Min	Max	Unit
V <sub>CC</sub>	Supply Voltage	4.75	5.25	V
V <sub>IH</sub>	High-Level Input Voltage	2.0		V
V <sub>IL</sub>	Low-Level Input Voltage		0.8	V
I <sub>IK</sub>	Input Clamp Current		-18	mA
I <sub>OH</sub>	High-Level Output Current		-1.0	mA
I <sub>OL</sub>	Low-Level Output Current		20	mA
PW*	Pulse Width of Total Delay	40		%
d*	Duty Cycle		40	%
T <sub>A</sub>	Operating Free-Air Temperature	0	+70	°C

\*These two values are inter-dependent.

Input Pulse Test Conditions @ 25° C				Unit
E <sub>IN</sub>	Pulse Input Voltage		3.2	Volts
PW	Pulse Width % of Total Delay		110	%
T <sub>RI</sub>	Pulse Rise Time (0.75 - 2.4 Volts)		2.0	nS
PRR	Pulse Repetition Rate @ T <sub>d</sub> < 200 nS		1.0	MHz
	Pulse Repetition Rate @ T <sub>d</sub> > 200 nS		100	KHz
V <sub>CC</sub>	Supply Voltage		5.0	Volts



DSD9934 Rev. A 2/5/96

QAF-CSO1 Rev. B 8/25/94

Unless Otherwise Noted Dimensions in Inches  
Tolerances:

Fractional = ± 1/32  
.XX = ± .030 .XXX = ± .010



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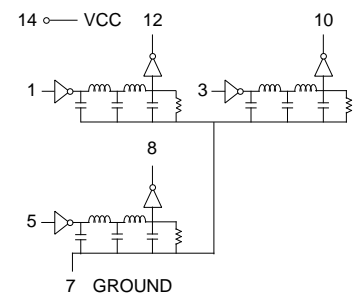
# 14 Pin DIL Triple TTL Compatible Active Delay Lines

DELAY TIME ±5% or 2 nS†	PART NUMBER	DELAY TIME ±5 or 2 nS†	PART NUMBER	DELAY TIME ±5% or 2 nS†	PART NUMBER
5	EPA189-5	19	EPA189-19	65	EPA189-65
6	EPA189-6	20	EPA189-20	70	EPA189-70
7	EPA189-7	21	EPA189-21	75	EPA189-75
8	EPA189-8	22	EPA189-22	80	EPA189-80
9	EPA189-9	23	EPA189-23	85	EPA189-85
10	EPA189-10	24	EPA189-24	90	EPA189-90
11	EPA189-11	25	EPA189-25	95	EPA189-95
12	EPA189-12	30	EPA189-30	100	EPA189-100
13	EPA189-13	35	EPA189-35	125	EPA189-125
14	EPA189-14	40	EPA189-40	150	EPA189-150
15	EPA189-15	45	EPA189-45	175	EPA189-175
16	EPA189-16	50	EPA189-50	200	EPA189-200
17	EPA189-17	55	EPA189-55	225	EPA189-225
18	EPA189-18	60	EPA189-60	250	EPA189-250

† Whichever is greater. Delay Times referenced from input to leading edges at 25°C, 5.0V, with no load.

DC Electrical Characteristics					
Parameter	Test Conditions	Min	Max	Unit	
V <sub>OH</sub>	High-Level Output Voltage	V <sub>CC</sub> = min. V <sub>IL</sub> = max. I <sub>OH</sub> = max	2.7		V
V <sub>OL</sub>	Low-Level Output Voltage	V <sub>CC</sub> = min. V <sub>IH</sub> = min. I <sub>OL</sub> = max		0.5	V
V <sub>IK</sub>	Input Clamp Voltage	V <sub>CC</sub> = min. I <sub>I</sub> = I <sub>IK</sub>		-1.2V	V
I <sub>IH</sub>	High-Level Input Current	V <sub>CC</sub> = max. V <sub>IN</sub> = 2.7V		50	µA
		V <sub>CC</sub> = max. V <sub>IN</sub> = 5.25V		1.0	mA
I <sub>IL</sub>	Low-Level Input Current	V <sub>CC</sub> = max. V <sub>IN</sub> = 0.5V		-2	mA
I <sub>OS</sub>	Short Circuit Output Current	V <sub>CC</sub> = max. V <sub>OUT</sub> = 0.	-40	-100	mA
		(One output at a time)			
I <sub>CCH</sub>	High-Level Supply Current	V <sub>CC</sub> = max. V <sub>IN</sub> = OPEN		115	mA
I <sub>CCL</sub>	Low-Level Supply Current	V <sub>CC</sub> = max. V <sub>IN</sub> = 0		115	mA
T <sub>RO</sub>	Output Rise Time	T <sub>d</sub> 500 nS (0.75 to 2.4 Volts)		4	nS
N <sub>H</sub>	Fanout High-Level Output	V <sub>CC</sub> = max. V <sub>OH</sub> = 2.7V		20	TTL LOAD
N <sub>L</sub>	Fanout Low-Level Output	V <sub>CC</sub> = max. V <sub>OL</sub> = 0.5V		10	TTL LOAD

## Schematic

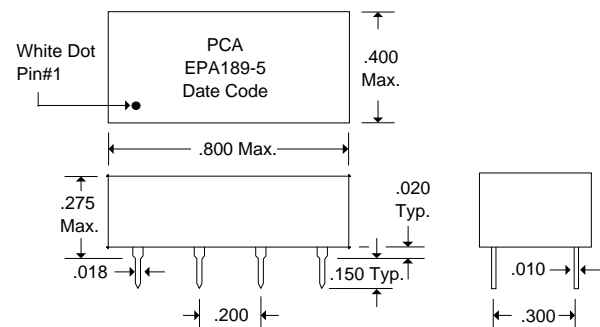


Recommended Operating Conditions				
		Min	Max	Unit
V <sub>CC</sub>	Supply Voltage	4.75	5.25	V
V <sub>IH</sub>	High-Level Input Voltage	2.0		V
V <sub>IL</sub>	Low-Level Input Voltage		0.8	V
I <sub>IK</sub>	Input Clamp Current		-18	mA
I <sub>OH</sub>	High-Level Output Current		-1.0	mA
I <sub>OL</sub>	Low-Level Output Current		20	mA
P <sub>W</sub> *	Pulse Width of Total Delay	40		%
d*	Duty Cycle		40	%
T <sub>A</sub>	Operating Free-Air Temperature	0	+70	°C

\*These two values are inter-dependent.

Input Pulse Test Conditions @ 25° C				Unit
E <sub>IN</sub>	Pulse Input Voltage		3.2	Volts
P <sub>W</sub>	Pulse Width % of Total Delay		110	%
T <sub>RI</sub>	Pulse Rise Time (0.75 - 2.4 Volts)		2.0	nS
P <sub>RR</sub>	Pulse Repetition Rate @ T <sub>d</sub> 200 nS		1.0	MHz
	Pulse Repetition Rate @ T <sub>d</sub> > 200 nS		100	KHz
V <sub>CC</sub>	Supply Voltage		5.0	Volts

## Package Dimensions



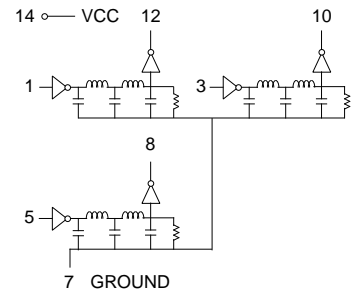
# SMD 14-Pin Triple TTL Compatible Active Delay Lines

DELAY TIME ±5% or ±2 nS†	PART NUMBER	DELAY TIME ±5% or ±2 nS†	PART NUMBER	DELAY TIME ±5% or ±2 nS†	PART NUMBER
5	EPA280-5	19	EPA280-19	65	EPA280-65
6	EPA280-6	20	EPA280-20	70	EPA280-70
7	EPA280-7	21	EPA280-21	75	EPA280-75
8	EPA280-8	22	EPA280-22	80	EPA280-80
9	EPA280-9	23	EPA280-23	85	EPA280-85
10	EPA280-10	24	EPA280-24	90	EPA280-90
11	EPA280-11	25	EPA280-25	95	EPA280-95
12	EPA280-12	30	EPA280-30	100	EPA280-100
13	EPA280-13	35	EPA280-35	125	EPA280-125
14	EPA280-14	40	EPA280-40	150	EPA280-150
15	EPA280-15	45	EPA280-45	175	EPA280-175
16	EPA280-16	50	EPA280-50	200	EPA280-200
17	EPA280-17	55	EPA280-55	225	EPA280-225
18	EPA280-18	60	EPA280-60	250	EPA280-250

† Whichever is greater. Delay Times referenced from input to leading edges at 25°C, 5.0V, with no load.

DC Electrical Characteristics		Test Conditions	Min	Max	Unit
$V_{OH}$	High-Level Output Voltage	$V_{CC} = \text{min. } V_{IL} = \text{max. } I_{OH} = \text{max}$	2.7		V
$V_{OL}$	Low-Level Output Voltage	$V_{CC} = \text{min. } V_{IH} = \text{min. } I_{OL} = \text{max}$		0.5	V
$V_{IK}$	Input Clamp Voltage	$V_{CC} = \text{min. } I_I = I_{IK}$		-1.2V	V
$I_{IH}$	High-Level Input Current	$V_{CC} = \text{max. } V_{IN} = 2.7V$		50	µA
		$V_{CC} = \text{max. } V_{IN} = 5.25V$		1.0	mA
$I_{IL}$	Low-Level Input Current	$V_{CC} = \text{max. } V_{IN} = 0.5V$		-2	mA
$I_{OS}$	Short Circuit Output Current	$V_{CC} = \text{max. } V_{OUT} = 0.$	-40	-100	mA
		(One output at a time)			
$I_{CCH}$	High-Level Supply Current	$V_{CC} = \text{max. } V_{IN} = \text{OPEN}$		115	mA
$I_{CCL}$	Low-Level Supply Current	$V_{CC} = \text{max. } V_{IN} = 0$		115	mA
$T_{RO}$	Output Rise Time	$T_d = 500 \text{ nS (0.75 to 2.4 Volts)}$		4	nS
$N_H$	Fanout High-Level Output	$V_{CC} = \text{max. } V_{OH} = 2.7V$		20 TTL LOAD	
$N_L$	Fanout Low-Level Output	$V_{CC} = \text{max. } V_{OL} = 0.5V$		10 TTL LOAD	

## Schematic

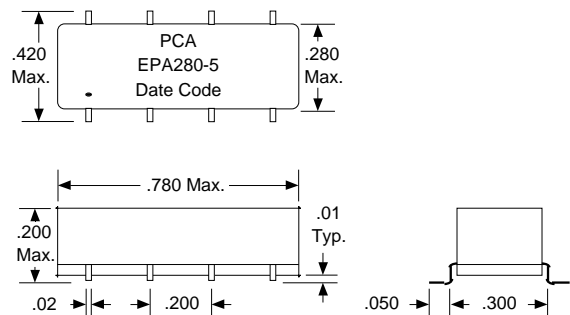


Recommended Operating Conditions		Min	Max	Unit
$V_{CC}$	Supply Voltage	4.75	5.25	V
$V_{IH}$	High-Level Input Voltage	2.0		V
$V_{IL}$	Low-Level Input Voltage		0.8	V
$I_{IK}$	Input Clamp Current		-18	mA
$I_{OH}$	High-Level Output Current		-1.0	mA
$I_{OL}$	Low-Level Output Current		20	mA
$PW^*$	Pulse Width of Total Delay	40		%
$d^*$	Duty Cycle		40	%
$T_A$	Operating Free-Air Temperature	0	+70	°C

\*These two values are inter-dependent.

Input Pulse Test Conditions @ 25° C		Unit
$E_{IN}$	Pulse Input Voltage	3.2 Volts
$PW$	Pulse Width % of Total Delay	110 %
$T_{RI}$	Pulse Rise Time (0.75 - 2.4 Volts)	2.0 nS
$P_{RR}$	Pulse Repetition Rate @ $T_d = 200 \text{ nS}$	1.0 MHz
	Pulse Repetition Rate @ $T_d > 200 \text{ nS}$	100 KHz
$V_{CC}$	Supply Voltage	5.0 Volts

## Package Dimensions



DSA280 Rev. A 2/5/96

Unless Otherwise Noted Dimensions in Inches

Tolerances:

Fractional = ± 1/32

.XX = ± .030 .XXX = ± .010



ELECTRONICS INC.

QAF-CSO1 Rev. B 8/25/94

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