Fast Logic

Programmable Pulse Discriminator

SERIES: PPD-56
(6 BIT) TTL Interfaced

data delay devices, inc.

Description:

The Programmable Discriminator Module, PPD-56 series, is a very powerful and versatile unit. It can be used to discriminate high pulse width or low pulse width or a limited range of pulse widths. It can be used as a programmable delay line with 7-Bit programmability. As an added feature it provides STATUS condition for selector A & B. By tying E_A & E_B to ground, the module becomes a programmable delay line and the delayed output signal is given by

$$A_{DELAYED} = 18\ ns + (A_0 - A_5)^* \text{ INCREMENT}$$

$$B_{DELAYED} = A_{DELAYED} + (B_0 - B_5)^* \text{ INCREMENT} + 9\ ns$$

Tying E_B to ground and E_A to positive level, the unit becomes a discriminator passing all pulse widths greater than programmed Selector A in accordance with the formula.

$$PW_{LOWER\ LIMIT} = 8\ ns + (A_0 - A_5)^* \text{ INCREMENT}$$

Tying E_A to ground and E_B to positive level, the unit becomes a discriminator passing all pulse widths less than the programmed Selector B in accordance with the formula.

$$PW_{UPPER\ LIMIT} = PW_{LOWER\ LIMIT} + (B_0 - B_5)^* \text{ INCREMENT} - 3\ ns$$

Tying both E_A and E_B to positive level, the unit becomes a discriminator passing only a range of Pulse Widths defined by the equation:

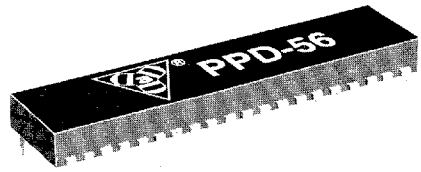
$$PW_{RANGE} = PW_{UPPER\ LIMIT} - PW_{LOWER\ LIMIT}$$

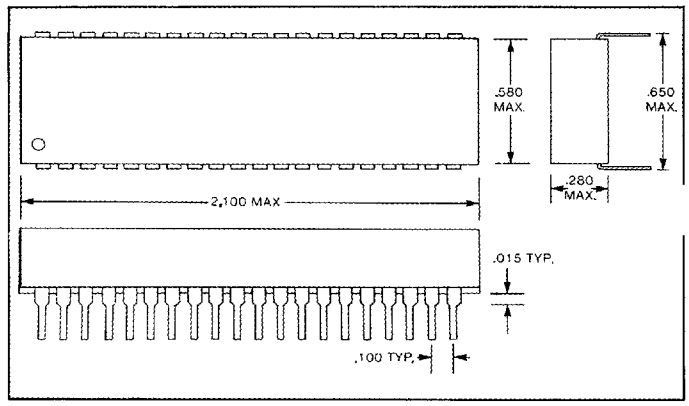
Specifications:

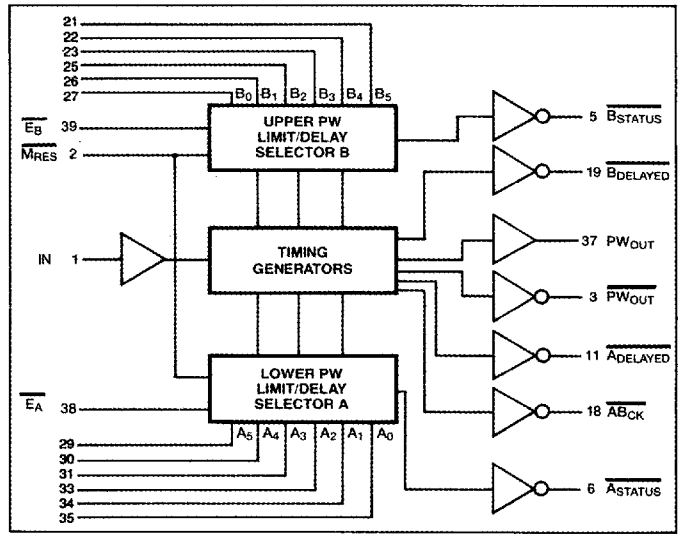
- **Discriminator input signal**
  - Minimum Pulse Width High (PW_H): 11 ns or 1/8 of max. SELECT B, whichever is greater.
  - Minimum Pulse Width Low (PW_L): 11 ns or (SELECT B–SELECT A) + 3 ns or 1/8 of max. SELECT B, whichever is greater.
  - Minimum Period = $PW_H + PW_L$
- **Programmable delay input signal**
  - Minimum Pulse Width High (PW_H): 8 ns or 1/8 of max. SELECT B, whichever is greater.
  - Minimum Period: $2 \times PW_H$
- **Supply voltage:** 5 Vdc ± 5%
- **Supply current:**
  I_{CCL} = 80 ma typ.
  I_{CCH} = 190 ma typ.
- **Operating temperature:** 0°C to 70°C (−55°C to + 125°C on request)*
- **Temperature coefficient:** 100 PPM/°C
- **DC parameters:** See TTL-Fast Schottky Logic Table on Page 6.

*Add "M" after P/N. Ex. PPD-56-5M

Part No.	Incremental Pulse-Width/ Delay (Selector A)(ns)	Total Programmed Pulse-Width/ Delay (Selector A)(ns)	Incremental Pulse-Width/ Delay (Selector B)(ns)	Total Programmed Pulse-Width/ Delay (Selector B)(ns)
PPD-56-.5	.5 ± .3	31.5	.5 ± .3	31.5
PPD-56-1	1 ± .5	63	1 ± .5	63
PPD-56-2	2 ± .5	126	2 ± .5	126
PPD-56-3	3 ± 1.0	189	3 ± 1.0	189
PPD-56-4	4 ± 1.0	252	4 ± 1.0	252
PPD-56-5	5 ± 1.5	315	5 ± 1.5	315
PPD-56-6	6 ± 1.5	376	6 ± 1.5	376
PPD-56-7	7 ± 1.5	441	7 ± 1.5	441
PPD-56-8	8 ± 2.0	504	8 ± 2.0	504
PPD-56-9	9 ± 2.0	567	9 ± 2.0	567
PPD-56-10	10 ± 2.0	630	10 ± 2.0	630







Vcc = 24, 28, 32, 36, 40 GRD = 4, 8, 12, 16, 20

Timing Waveform
(see other side)

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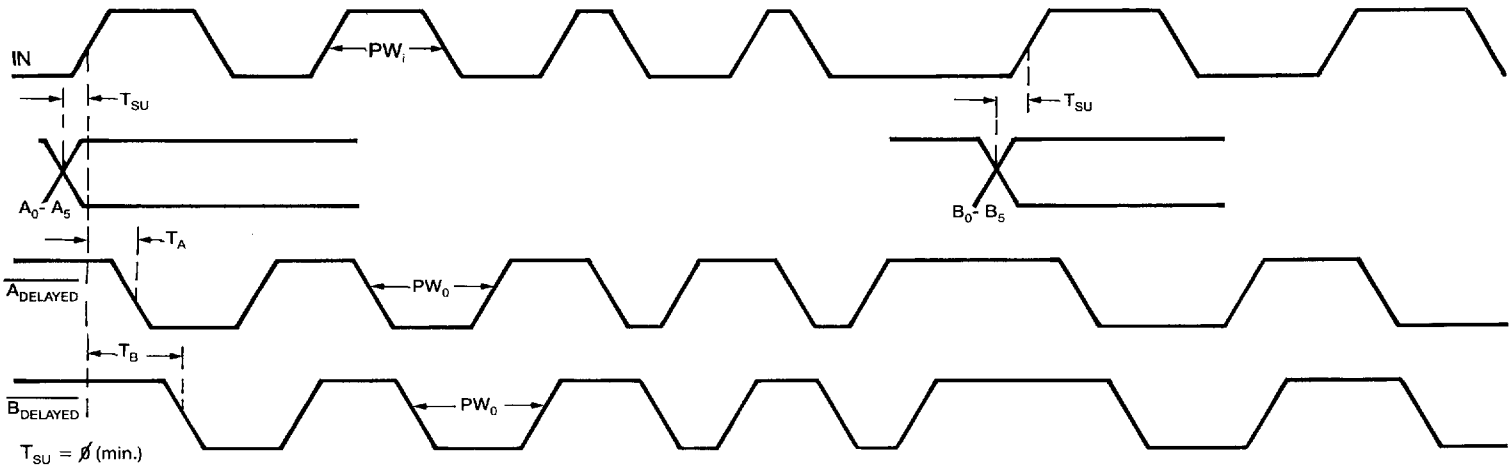
Delay Function

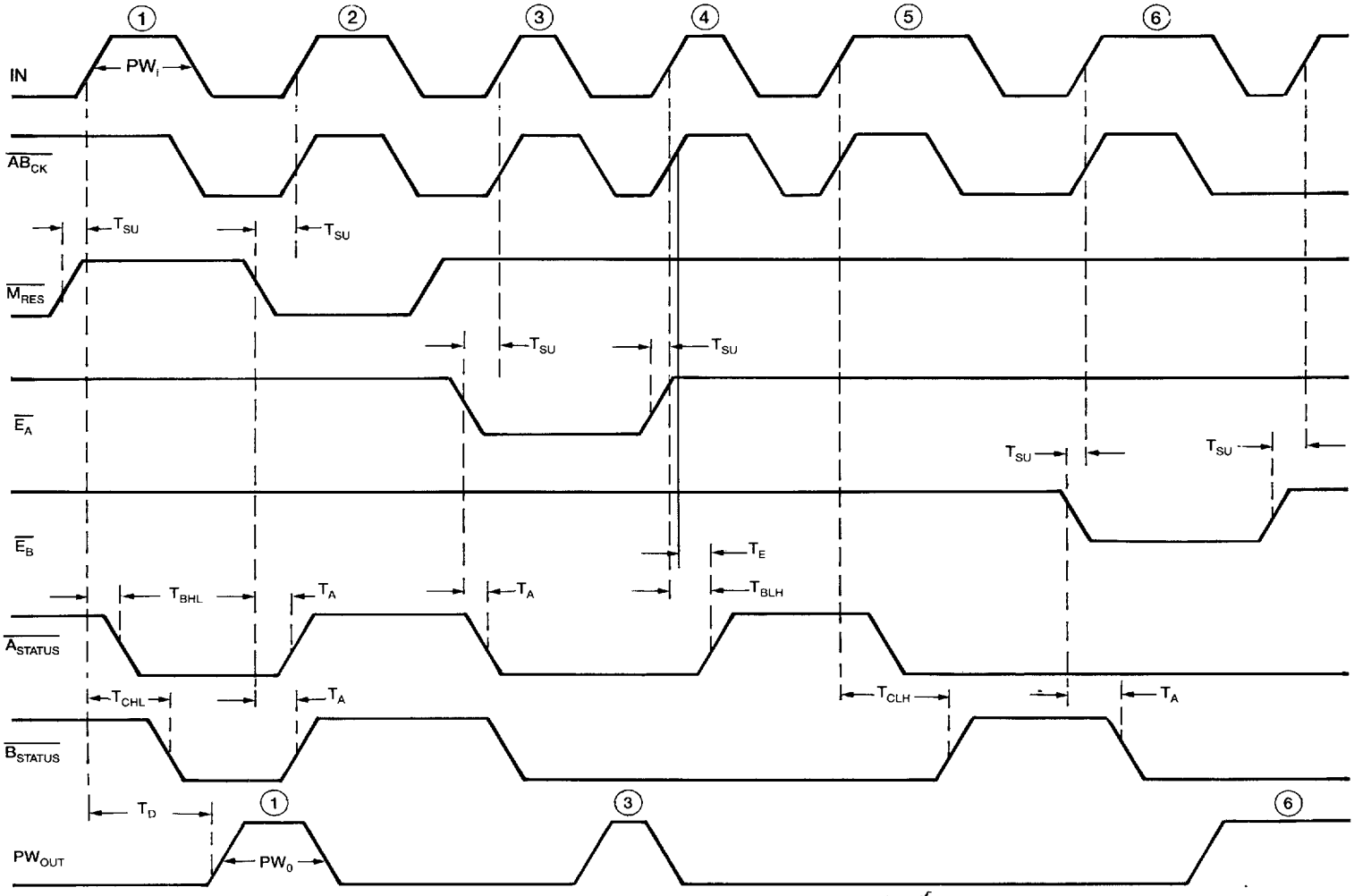


$T_{SU} = \emptyset$ (min.)
$PW_i = PW_0$

$(A_0 - A_5) = \emptyset$ T_A = 18 ns
$(A_0 - A_5) \neq \emptyset$ T_A = 18 ns + $(A_0 - A_5)$* INCREMENT

$A_0 - A_5), (B_0 - B_5) = \emptyset$ T_B = 27 ns
$(A_0 - A_5), (B_0 - B_5) \neq \emptyset$ T_B = 27 ns + $(A_0 - A_5)$* INCREMENT + $(B_0 - B_5)$* INCREMENT

Discriminator Function



$PW_i = PW_0$
$T_U = \emptyset$
T_A = 4 ns typ.
T_E = 15 ns min.

$(A_0 - A_5) = \emptyset$ T_{BHL} = 22 ns
$(A_0 - A_5) \neq \emptyset$ T_{BLH} = 21 ns

$(A_0 - A_5) = \emptyset$ T_{BHL} = 22 + $(A_0 - A_5)$* INCREMENT
$(A_0 - A_5) \neq \emptyset$ T_{BLH} = 21 + $(A_0 - A_5)$* INCREMENT

$(A_0 - A_5), (B_0 - B_5) = \emptyset$ T_{CHL} = 30 ns
T_{CLH} = 29 ns

$(A_0 - A_5), (B_0 - B_5) \neq \emptyset$ T_{CHL} = 30 + $[(A_0 - A_5) + (B_0 - B_5)]$* INCREMENT
T_{CLH} = 29 + $[(A_0 - A_5) + (B_0 - B_5)]$*INCREMENT

$(A_0 - A_5), (B_0 - B_5) = \emptyset$ T_D = 35 ns
$(A_0 - A_5), (B_0 - B_5) \neq \emptyset$ T_D = 35 + $[(A_0 - A_5) + (B_0 - B_5)]$* INCREMENT

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