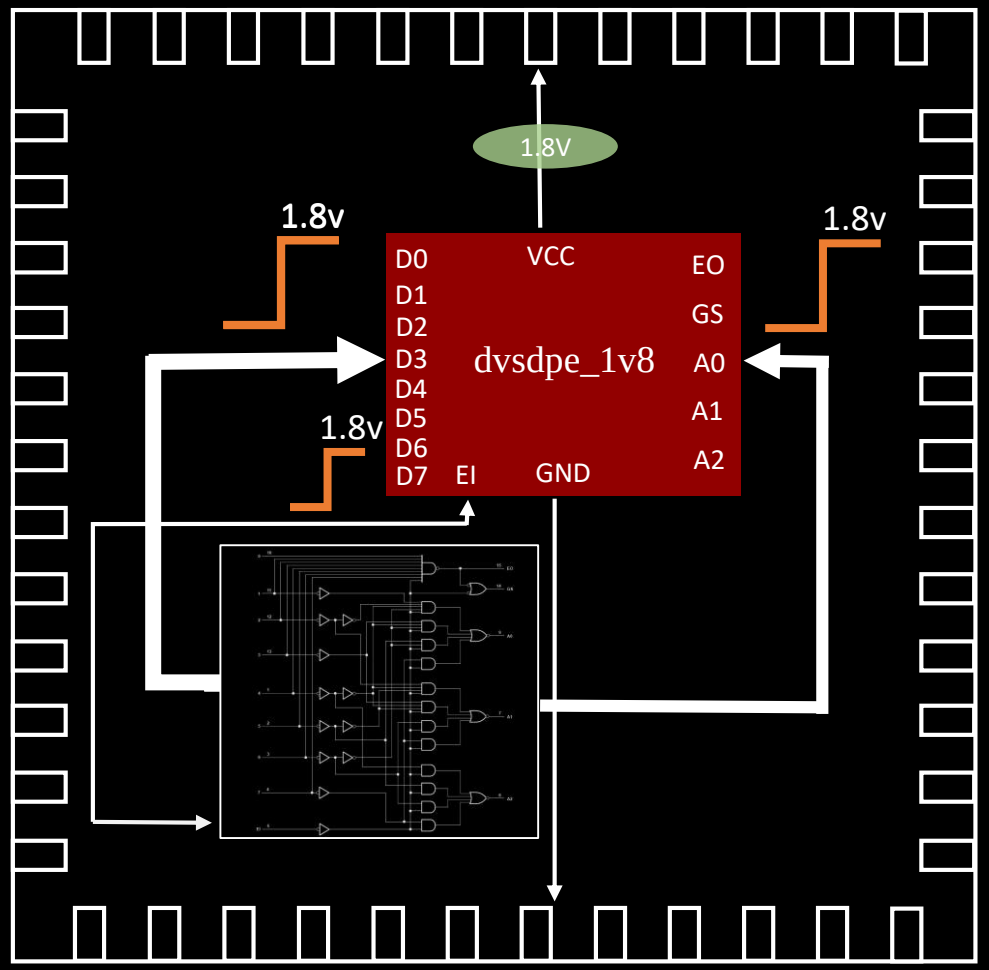
8 bit Priority Encoder (dvsdpe_1v8) spec sheet for 130nm tech node

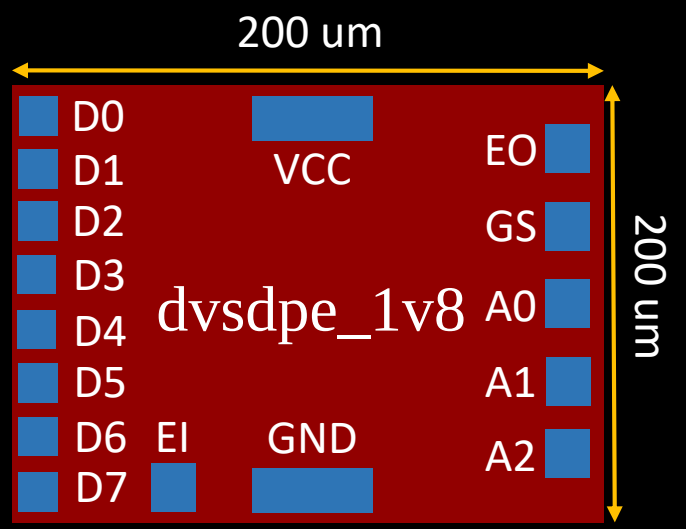
- Specs released under APACHE LICENSE 2.0
- Please contact Kunal at kunalpghosh@gmail.com in case of any doubts.

Application note for 8 bit Priority Encoder (dvsdpe_1v8)



https://www.vlsisystemdesign.com/

dvsdpe_1v8 preferred dimensions, pin locations and metal layers



Design rules for 130 nm node

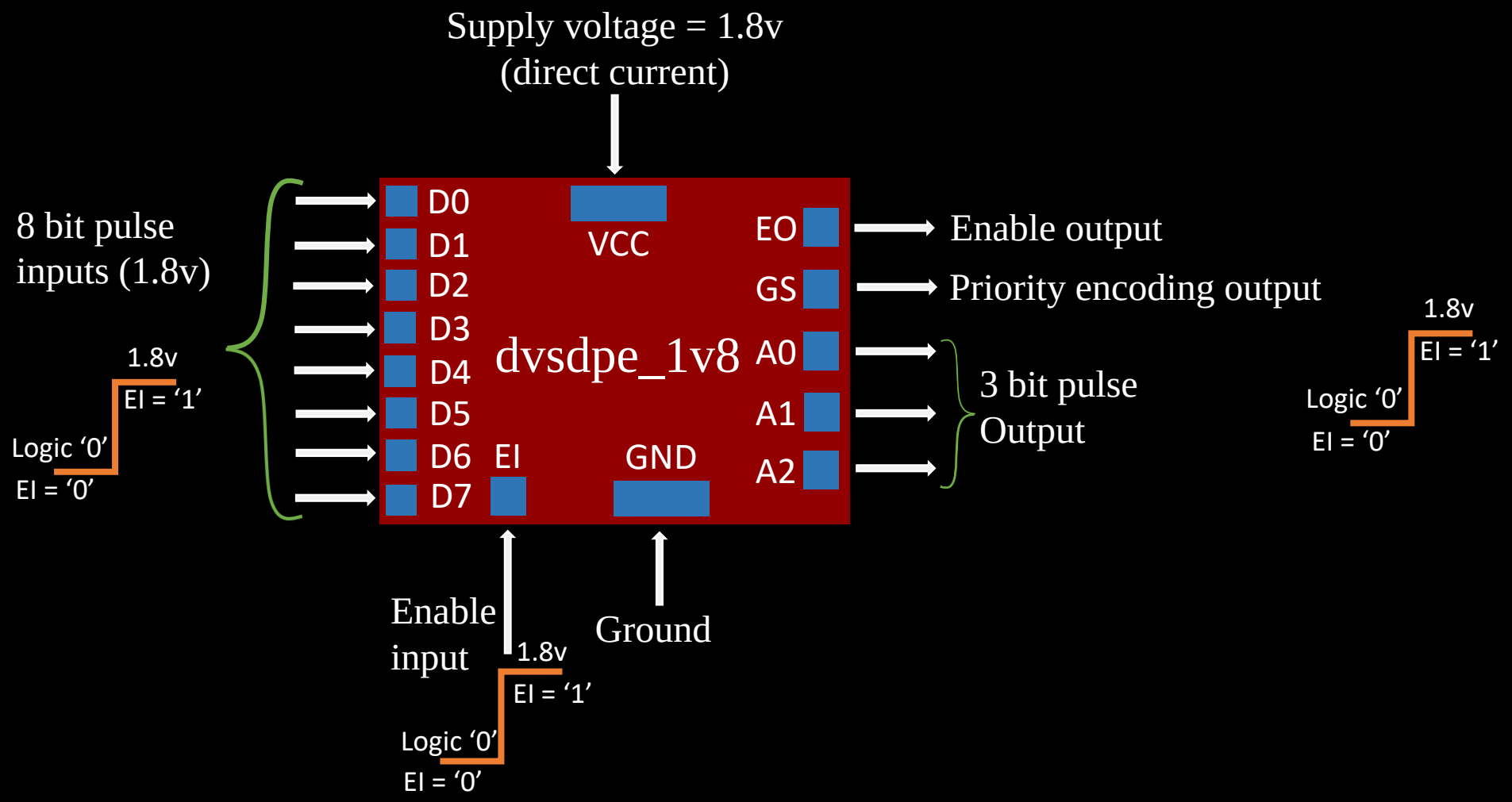
Layer	Pitch	Thick	Aspect Ratio
Isolation	345 nm	450 nm	-
Polysilicon	319 nm	160 nm	-
Metal 1	293 nm	280 nm	1.7
Metal 2	425 nm	360 nm	1.7
Metal 3	425 nm	360 nm	1.7
Metal 4	718 nm	570 nm	1.6
Metal 5	1.064 µm	900 nm	1.7
Metal 6	1.143 µm	1.2 µm	2.1

D7, D6, D5, D4, D3, D2, D1 pins (metal2) – 0.4um x 0.4um

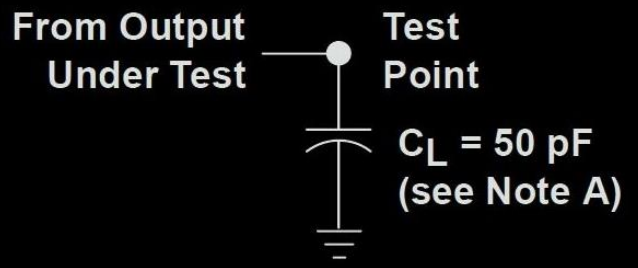
EI, EO, GS, A0, A1, A2 pins (metal2) – 0.4um x 0.4um

VCC, GND pins (metal2) – 1.1um x 0.4um

dvsdpe_1v8 operating modes



dvsdpe_1v8 operating modes



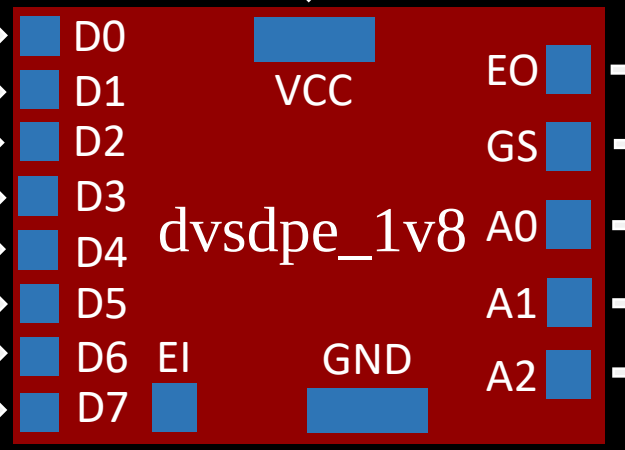
Load circuit

Input pulse
Rise & Fall times

Supply voltage = 1.8v
(direct current)

8 bit pulse
inputs (1.8v)

1.8v
EI = '1'
Logic '0'
EI = '0'



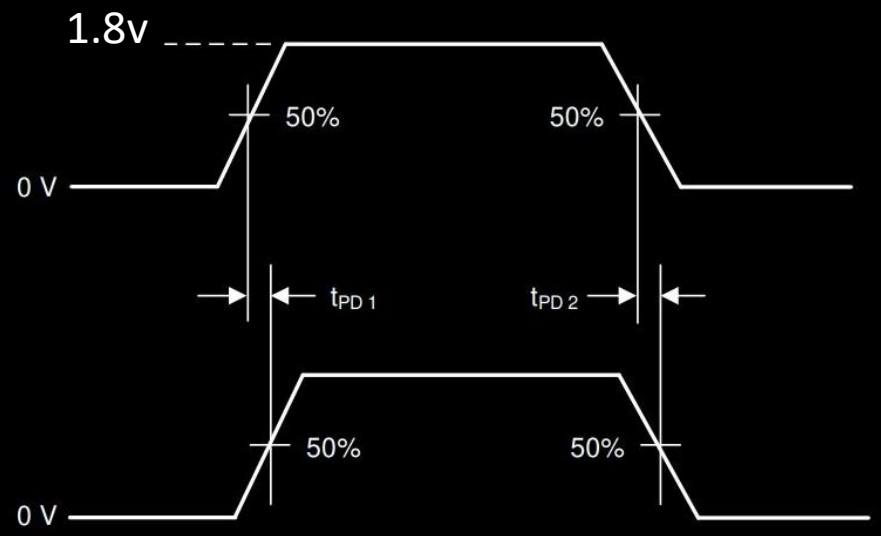
1.8v
Logic '0'
EI = '0'

Enable
input

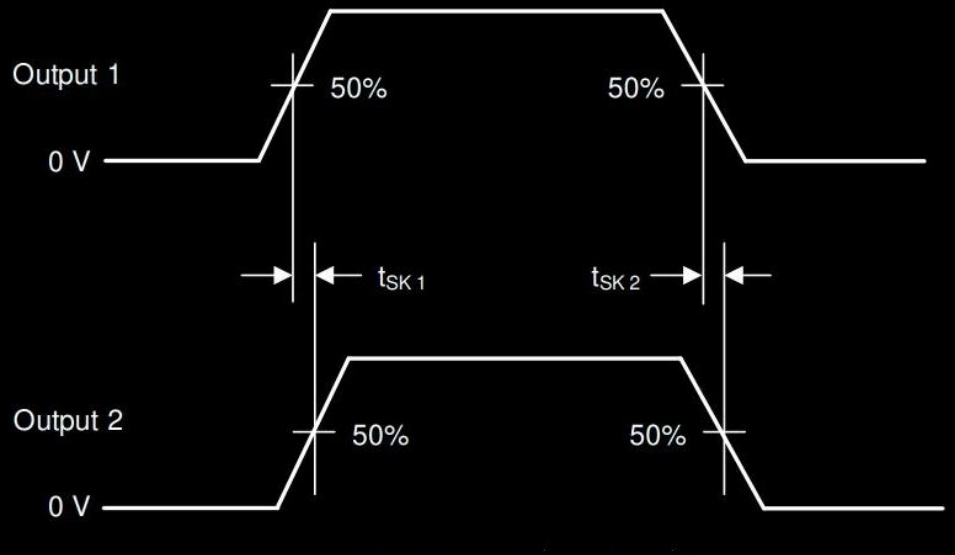
1.8v
EI = '1'
Logic '0'
EI = '0'

Ground

dvsdpe_1v8 operating modes

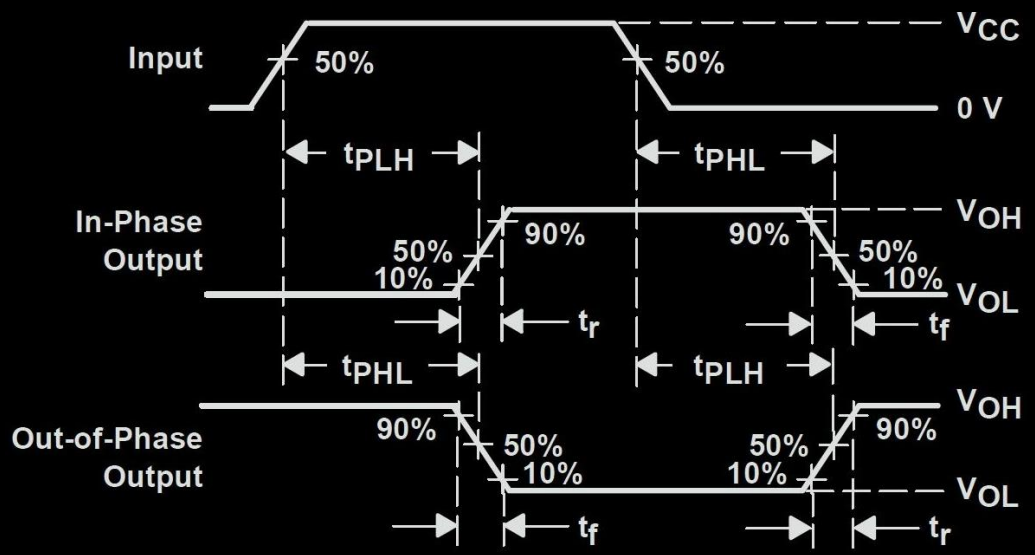


Propagation delay (t_{PD1}, t_{PD2}) = 190ps – 270ps

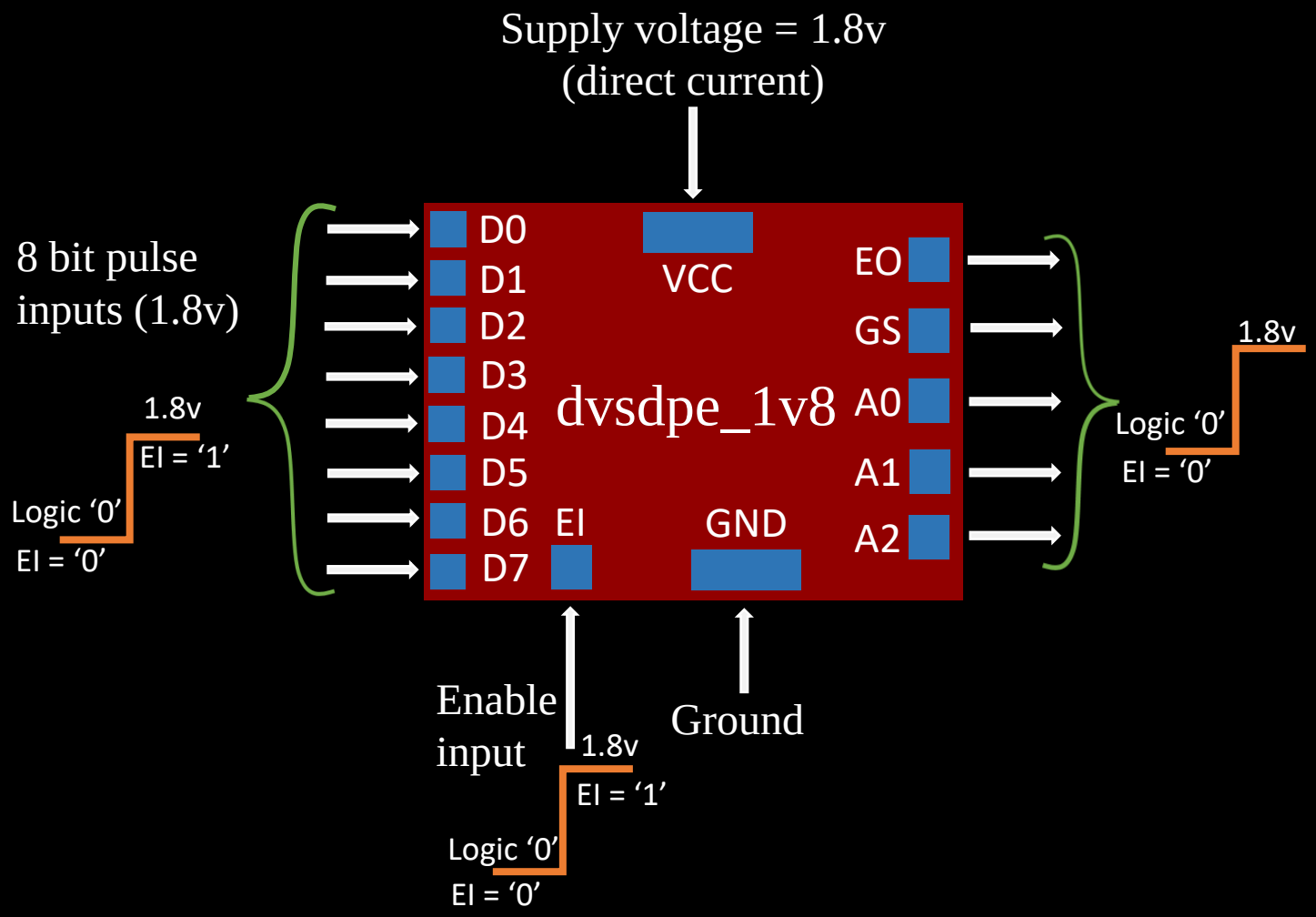


Skew (delay between two outputs)

dvsdpe_1v8 operating mode

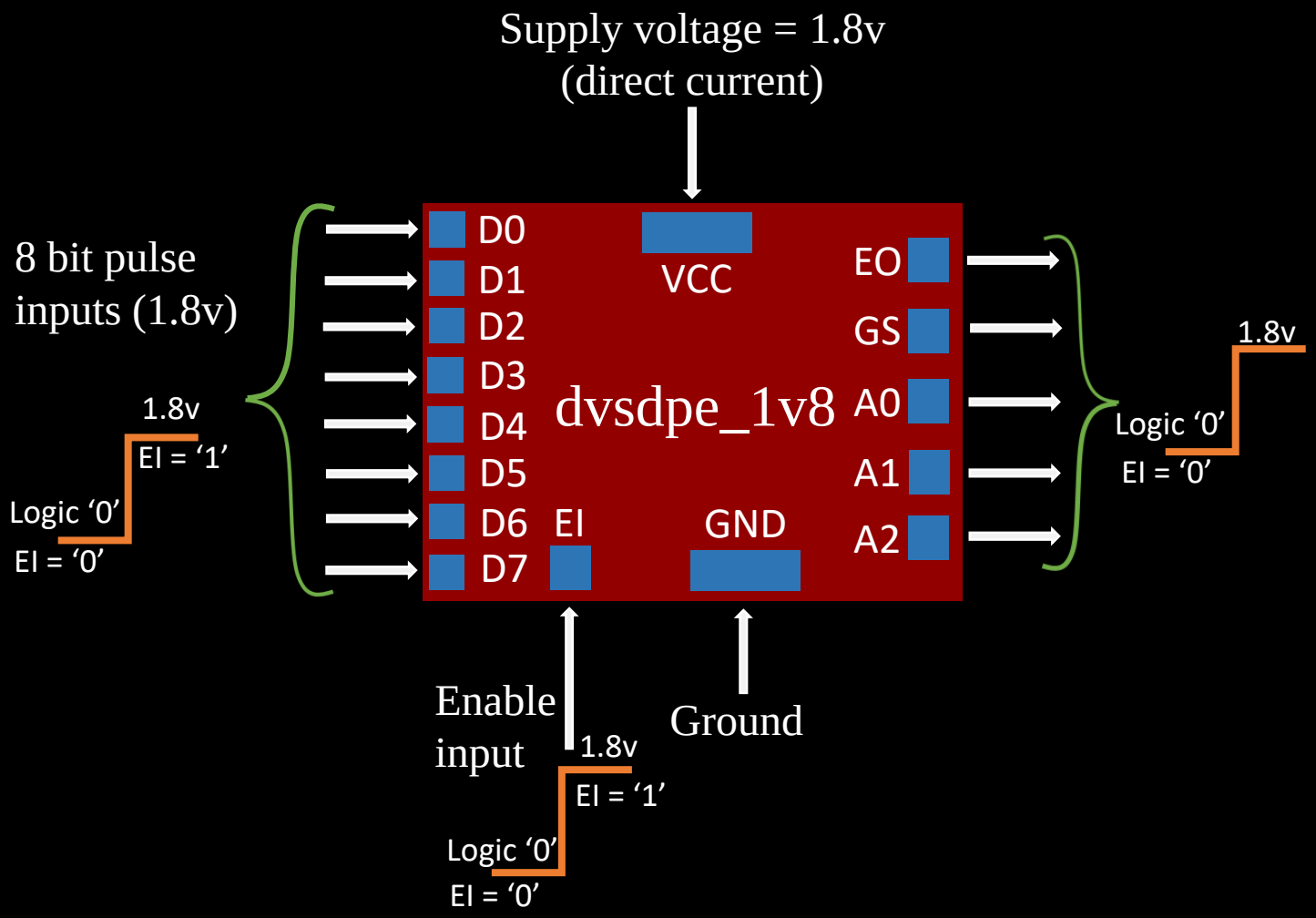


Propagation delay output transition time
(see notes for more details)



dvsdpe_1v8 operating mode (Truth Table)

Inputs									Outputs				
EI	0	1	2	3	4	5	6	7	A2	A1	A0	GS	EO
H	X	X	X	X	X	X	X	X	H	H	H	H	H
L	H	H	H	H	H	H	H	H	H	H	H	H	L
L	X	X	X	X	X	X	X	L	L	L	L	L	H
L	X	X	X	X	X	X	L	H	L	L	H	L	H
L	X	X	X	X	X	L	H	H	L	H	L	L	H
L	X	X	X	X	L	H	H	H	L	H	H	L	H
L	X	X	X	L	H	H	H	H	H	L	L	L	H
L	X	X	L	H	H	H	H	H	H	L	H	L	H
L	X	L	H	H	H	H	H	H	H	H	L	L	H
L	L	H	H	H	H	H	H	H	H	H	H	L	H



dvsdpe_1v8 operating mode (Notes)

- CL includes probe and test-fixture capacitance.
- Phase relationships between waveforms were chosen arbitrarily. All input pulses are supplied by generators having the following characteristics: PRR ≤ 1 MHz, ZO = 50 Ω, tr = 6 ns, tf = 6 ns.
- The outputs are measured one at a time, with one input transition per measurement.

dvsdpe_1v8 absolute rating

- Wide Operating Voltage Range of 1.8v
- Low Power Consumption, 50-μA Max ICC
- Typical Propagation delay, t_{PD}: 190ps – 270ps
- ± 2mA Output Drive at 1.8 V
- Low Input Current of <1 μA Max
- Encode Eight Data Lines to 3-Line Binary (Octal)
- Applications Include: n-Bit Encoding & Code Converters and Generators