Signal	Value/Waveform
num_nonces	16
clk	
reset_n	
start	
message_addr	0000
output_addr	03e8
done	
mem_clk	
mem_we	
mem_addr	0000 0001 0002 0003 0004 0005 0006 0007 0008 0009 000a 000b
mem_write_data	
mem_read_data	01234567 02468ace 048d159c 091a2b38 12345670 2468ace0 48d159c0 91a2b380 23456701 468ace02 8d159c04
state	IDLE READ
message	xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
message_tail	
result_phase1	xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
result_phase2	
cur_we	
cur_addr	0000
cur_write_data	
offset	0 1 2 3 4 5 6 7 8 9 10 11
rstn_phase1	
rstn_phase2	1111111111111111 0000000000000000
start_phase1	
start_phase2	0000000000000000
done_phase1	
done_phase2	0000000000000000

0.00 ns   0.05 ns   0.1 ns   0.15 ns   0.2 ns   0.25 ns   0.3 ns   0.35
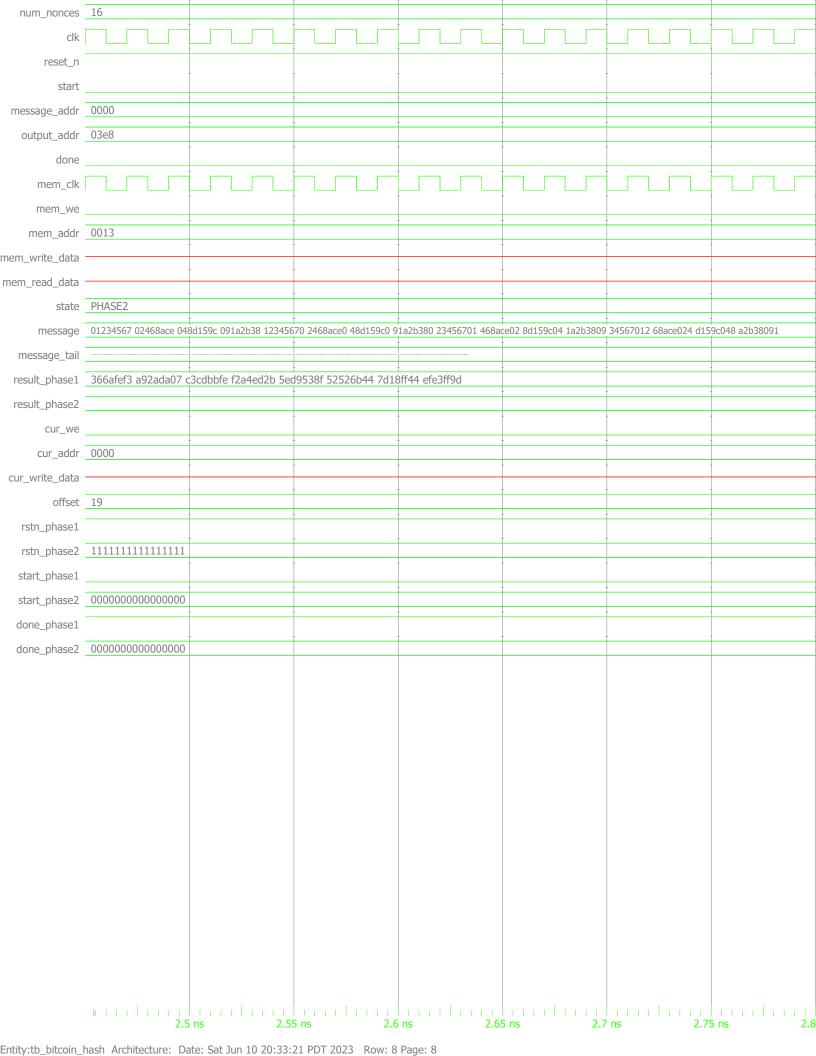
Entity:tb_bitcoin_hash Architecture: Date: Sat Jun 10 20:33:21 PDT 2023   Row: 1 Page: 1

Signal	Value
num_nonces	16
clk	
reset_n	
start	
message_addr	0000
output_addr	03e8
done	
mem_clk	
mem_we	
mem_addr	000c 000d 000e 000f 0010 0011 0012 0013
mem_write_data	
mem_read_data	1a2b3809 34567012 68ace024 d159c048 a2b38091 45670123 8ace0246 159c048d
state	READ PHASE1
message	01234567 02468ace 048d159c 091a2b38 12345670 2468ace0 48d159c0 91a2b380 23456701 468ace02 8d159c04 1a2b3809 34567012 68ace024 d159c048 a2b38091
message_tail	
result_phase1	xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
result_phase2	
cur_we	
cur_addr	0000
cur_write_data	
offset	12 13 14 15 16 17 18 19
rstn_phase1	
rstn_phase2	0000000000000000 1111111111111111
start_phase1	
start_phase2	0000000000000000
done_phase1	
done_phase2	0000000000000000

Time axis: 0.4 ns, 0.45 ns, 0.5 ns, 0.55 ns, 0.6 ns, 0.65 ns, 0.7 ns

Signal	Value
num_nonces	16
clk	
reset_n	
start	
message_addr	0000
output_addr	03e8
done	
mem_clk	
mem_we	
mem_addr	0013
mem_write_data	
mem_read_data	
state	PHASE1
message	01234567 02468ace 048d159c 091a2b38 12345670 2468ace0 48d159c0 91a2b380 23456701 468ace02 8d159c04 1a2b3809 34567012 68ace024 d159c048 a2b38091
message_tail	
result_phase1	xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
result_phase2	
cur_we	
cur_addr	0000
cur_write_data	
offset	19
rstn_phase1	
rstn_phase2	1111111111111111
start_phase1	
start_phase2	0000000000000000
done_phase1	
done_phase2	0000000000000000

0.75 ns   0.8 ns   0.85 ns   0.9 ns   0.95 ns   1 ns   1.05

Signal	Value
num_nonces	16
clk	
reset_n	
start	
message_addr	0000
output_addr	03e8
done	
mem_clk	
mem_we	
mem_addr	0013
mem_write_data	
mem_read_data	
state	PHASE1
message	01234567 02468ace 048d159c 091a2b38 12345670 2468ace0 48d159c0 91a2b380 23456701 468ace02 8d159c04 1a2b3809 34567012 68ace024 d159c048 a2b38091
message_tail	
result_phase1	xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
result_phase2	
cur_we	
cur_addr	0000
cur_write_data	
offset	19
rstn_phase1	
rstn_phase2	1111111111111111
start_phase1	
start_phase2	0000000000000000
done_phase1	
done_phase2	0000000000000000

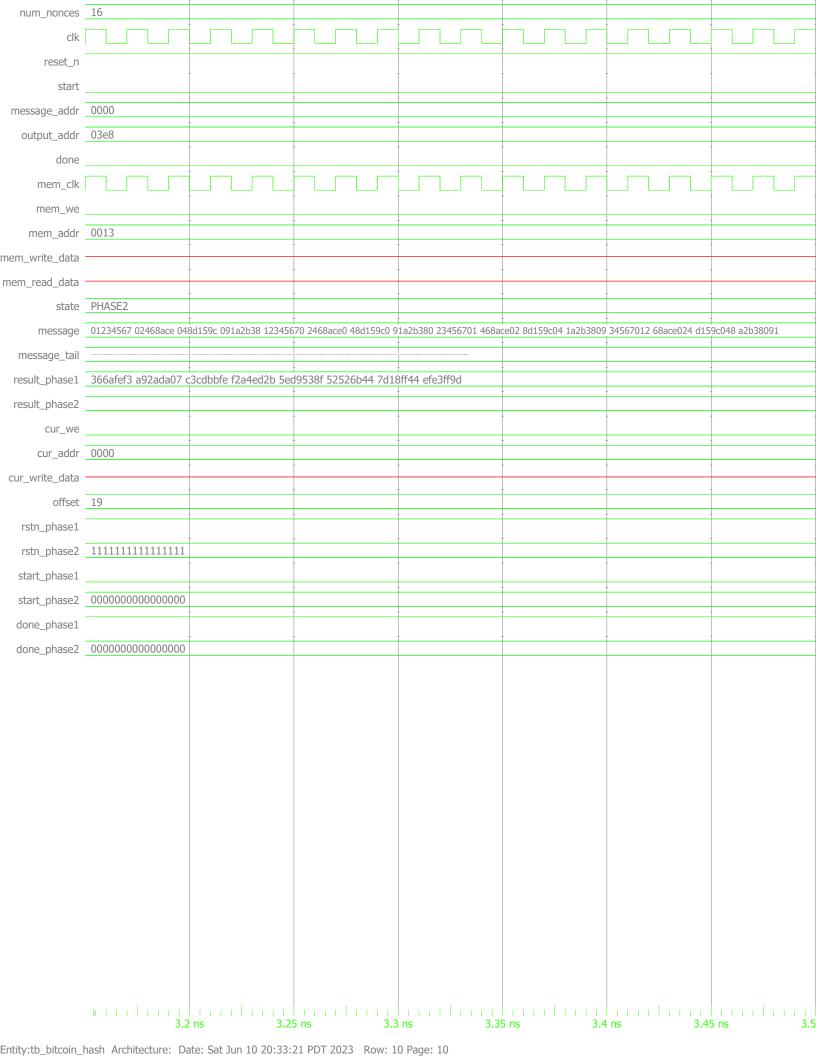1.1 ns 1.15 ns 1.2 ns 1.25 ns 1.3 ns 1.35 ns 1.4

Entity:tb_bitcoin_hash Architecture: Date: Sat Jun 10 20:33:21 PDT 2023   Row: 4 Page: 4

num_nonces	16
clk	
reset_n	
start	
message_addr	0000
output_addr	03e8
done	
mem_clk	
mem_we	
mem_addr	0013
mem_write_data	
mem_read_data	
state	PHASE1
message	01234567 02468ace 048d159c 091a2b38 12345670 2468ace0 48d159c0 91a2b380 23456701 468ace02 8d159c04 1a2b3809 34567012 68ace024 d159c048 a2b38091
message_tail	
result_phase1	xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
result_phase2	
cur_we	
cur_addr	0000
cur_write_data	
offset	19
rstn_phase1	
rstn_phase2	1111111111111111
start_phase1	
start_phase2	0000000000000000
done_phase1	
done_phase2	0000000000000000

1.45 ns   1.5 ns   1.55 ns   1.6 ns   1.65 ns   1.7 ns   1.75

Signal	Value
num_nonces	16
clk	
reset_n	
start	
message_addr	0000
output_addr	03e8
done	
mem_clk	
mem_we	
mem_addr	0013
mem_write_data	
mem_read_data	
state	PHASE1 → PHASE2
message	01234567 02468ace 048d159c 091a2b38 12345670 2468ace0 48d159c0 91a2b380 23456701 468ace02 8d159c04 1a2b3809 34567012 68ace024 d159c048 a2b38091
message_tail	
result_phase1	xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx → 366afef3 a92ada07 c3cdbbfe f2a4ed2b 5ed9538f 52526b44 7d18ff44 efe3ff9d
result_phase2	
cur_we	
cur_addr	0000
cur_write_data	
offset	19
rstn_phase1	
rstn_phase2	1111111111111111
start_phase1	
start_phase2	0000000000000000 → 0000000000000000
done_phase1	
done_phase2	0000000000000000

1.8 ns   1.85 ns   1.9 ns   1.95 ns   2 ns   2.05 ns   2.1

Entity:tb_bitcoin_hash Architecture: Date: Sat Jun 10 20:33:21 PDT 2023   Row: 6 Page: 6

Signal	Value
num_nonces	16
clk	
reset_n	
start	
message_addr	0000
output_addr	03e8
done	
mem_clk	
mem_we	
mem_addr	0013
mem_write_data	
mem_read_data	
state	PHASE2
message	01234567 02468ace 048d159c 091a2b38 12345670 2468ace0 48d159c0 91a2b380 23456701 468ace02 8d159c04 1a2b3809 34567012 68ace024 d159c048 a2b38091
message_tail	
result_phase1	366afef3 a92ada07 c3cdbbfe f2a4ed2b 5ed9538f 52526b44 7d18ff44 efe3ff9d
result_phase2	
cur_we	
cur_addr	0000
cur_write_data	
offset	19
rstn_phase1	
rstn_phase2	1111111111111111
start_phase1	
start_phase2	0000000000000000
done_phase1	
done_phase2	0000000000000000

2.15 ns   2.2 ns   2.25 ns   2.3 ns   2.35 ns   2.4 ns   2.45

Signal	Value
num_nonces	16
clk	
reset_n	
start	
message_addr	0000
output_addr	03e8
done	
mem_clk	
mem_we	
mem_addr	0013
mem_write_data	
mem_read_data	
state	PHASE2
message	01234567 02468ace 048d159c 091a2b38 12345670 2468ace0 48d159c0 91a2b380 23456701 468ace02 8d159c04 1a2b3809 34567012 68ace024 d159c048 a2b38091
message_tail	
result_phase1	366afef3 a92ada07 c3cdbbfe f2a4ed2b 5ed9538f 52526b44 7d18ff44 efe3ff9d
result_phase2	
cur_we	
cur_addr	0000
cur_write_data	
offset	19
rstn_phase1	
rstn_phase2	1111111111111111
start_phase1	
start_phase2	0000000000000000
done_phase1	
done_phase2	0000000000000000

2.5 ns   2.55 ns   2.6 ns   2.65 ns   2.7 ns   2.75 ns   2.8

Signal	Value
num_nonces	16
clk	
reset_n	
start	
message_addr	0000
output_addr	03e8
done	
mem_clk	
mem_we	
mem_addr	0013
mem_write_data	
mem_read_data	
state	PHASE2
message	01234567 02468ace 048d159c 091a2b38 12345670 2468ace0 48d159c0 91a2b380 23456701 468ace02 8d159c04 1a2b3809 34567012 68ace024 d159c048 a2b38091
message_tail	
result_phase1	366afef3 a92ada07 c3cdbbfe f2a4ed2b 5ed9538f 52526b44 7d18ff44 efe3ff9d
result_phase2	
cur_we	
cur_addr	0000
cur_write_data	
offset	19
rstn_phase1	
rstn_phase2	1111111111111111
start_phase1	
start_phase2	0000000000000000
done_phase1	
done_phase2	0000000000000000

2.85 ns 2.9 ns 2.95 ns 3 ns 3.05 ns 3.1 ns 3.15

num_nonces	16
clk	
reset_n	
start	
message_addr	0000
output_addr	03e8
done	
mem_clk	
mem_we	
mem_addr	0013
mem_write_data	
mem_read_data	
state	PHASE2
message	01234567 02468ace 048d159c 091a2b38 12345670 2468ace0 48d159c0 91a2b380 23456701 468ace02 8d159c04 1a2b3809 34567012 68ace024 d159c048 a2b38091
message_tail	
result_phase1	366afef3 a92ada07 c3cdbbfe f2a4ed2b 5ed9538f 52526b44 7d18ff44 efe3ff9d
result_phase2	
cur_we	
cur_addr	0000
cur_write_data	
offset	19
rstn_phase1	
rstn_phase2	1111111111111111
start_phase1	
start_phase2	0000000000000000
done_phase1	
done_phase2	0000000000000000

3.2 ns   3.25 ns   3.3 ns   3.35 ns   3.4 ns   3.45 ns   3.5

Entity:tb_bitcoin_hash Architecture: Date: Sat Jun 10 20:33:21 PDT 2023   Row: 10 Page: 10

Signal	Value
num_nonces	16
clk	
reset_n	
start	
message_addr	0000
output_addr	03e8
done	
mem_clk	
mem_we	
mem_addr	0013
mem_write_data	
mem_read_data	
state	PHASE2
message	01234567 02468ace 048d159c 091a2b38 12345670 2468ace0 48d159c0 91a2b380 23456701 468ace02 8d159c04 1a2b3809 34567012 68ace024 d159c048 a2b38091
message_tail	
result_phase1	366afef3 a92ada07 c3cdbbfe f2a4ed2b 5ed9538f 52526b44 7d18ff44 efe3ff9d
result_phase2	
cur_we	
cur_addr	0000
cur_write_data	
offset	19
rstn_phase1	
rstn_phase2	1111111111111111
start_phase1	
start_phase2	0000000000000000
done_phase1	
done_phase2	0000000000000000

3.55 ns   3.6 ns   3.65 ns   3.7 ns   3.75 ns   3.8 ns   3.85

Signal	Value
num_nonces	16
clk	
reset_n	
start	
message_addr	0000
output_addr	03e8
done	
mem_clk	
mem_we	
mem_addr	0013
mem_write_data	
mem_read_data	
state	PHASE2
message	01234567 02468ace 048d159c 091a2b38 12345670 2468ace0 48d159c0 91a2b380 23456701 468ace02 8d159c04 1a2b3809 34567012 68ace024 d159c048 a2b38091
message_tail	
result_phase1	366afef3 a92ada07 c3cdbbfe f2a4ed2b 5ed9538f 52526b44 7d18ff44 efe3ff9d
result_phase2	
cur_we	
cur_addr	0000
cur_write_data	
offset	19
rstn_phase1	
rstn_phase2	1111111111111111
start_phase1	
start_phase2	0000000000000000
done_phase1	
done_phase2	0000000000000000

3.9 ns   3.95 ns   4 ns   4.05 ns   4.1 ns   4.15 ns   4.2

Entity:tb_bitcoin_hash Architecture: Date: Sat Jun 10 20:33:21 PDT 2023   Row: 12 Page: 12

Signal	Value
num_nonces	16
clk	
reset_n	
start	
message_addr	0000
output_addr	03e8
done	
mem_clk	
mem_we	
mem_addr	0013
mem_write_data	
mem_read_data	
state	PHASE2
message	01234567 02468ace 048d159c 091a2b38 12345670 2468ace0 48d159c0 91a2b380 23456701 468ace02 8d159c04 1a2b3809 34567012 68ace024 d159c048 a2b38091
message_tail	
result_phase1	366afef3 a92ada07 c3cdbbfe f2a4ed2b 5ed9538f 52526b44 7d18ff44 efe3ff9d
result_phase2	
cur_we	
cur_addr	0000
cur_write_data	
offset	19
rstn_phase1	
rstn_phase2	1111111111111111
start_phase1	
start_phase2	0000000000000000
done_phase1	
done_phase2	0000000000000000

4.25 ns   4.3 ns   4.35 ns   4.4 ns   4.45 ns   4.5 ns   4.55

Signal	Value																
num_nonces	16																
clk																	
reset_n																	
start																	
message_addr	0000																
output_addr	03e8																
done																	
mem_clk																	
mem_we																	
mem_addr	0013	03e7	03e8	03e9	03ea	03eb	03ec	03ed	03ee	03ef	03f0	03f1	03f2	03f3	03f4	03f5	03f6
mem_write_data			7106973a	6e66eea7	fbef64dc	0888a18c	9642d5aa	2ab6af8b	24259d8c	ffb9bcd9	642138c9	054cafc7	78251a17	af8c8f22	d7a79ef8	c7d10c84	—
mem_read_data																	
state	PHASE2	WRITE															
message	01234567 02468ace 048d159c 091a2b38 12345670 2468ace0 48d159c0 91a2b380 23456701 468ace02 8d159c04 1a2b3809 34567012 68ace024 d159c048 a2b38091																
message_tail																	
result_phase1	366afef3 a92ada07 c3cdbbfe f2a4ed2b 5ed9538f 52526b44 7d18ff44 efe3ff9d																
result_phase2																	
cur_we																	
cur_addr	0000	03e7															
cur_write_data			7106973a	6e66eea7	fbef64dc	0888a18c	9642d5aa	2ab6af8b	24259d8c	ffb9bcd9	642138c9	054cafc7	78251a17	af8c8f22	d7a79ef8	c7d10c84	—
offset	19	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
rstn_phase1																	
rstn_phase2	1111111111111111																
start_phase1																	
start_phase2	0000000000000000																
done_phase1																	
done_phase2	0000000000000000	1111111111111111															

4.6 ns   4.65 ns   4.7 ns   4.75 ns   4.8 ns   4.85 ns   4.9

num_nonces	16	
clk		
reset_n		
start		
message_addr	0000	
output_addr	03e8	
done		
mem_clk		
mem_we		
mem_addr	03f6	03f7
mem_write_data	—	c1e4c72b
mem_read_data		
state	WRITE	
message		
message_tail		
result_phase1		
result_phase2		
cur_we		
cur_addr	03e7	
cur_write_data	—	c1e4c72b
offset	15	16
rstn_phase1		
rstn_phase2	1111111111111111	
start_phase1		
start_phase2	0000000000000000	
done_phase1		
done_phase2	1111111111111111	

4.95 ns   5 ns   5.05 ns   5.1 ns   5.15 ns   5.2 ns   5.25