n_rst

Next State
Logic

[NUM_BITS-1:0]
next_parallel_out

D   Q

[NUM_BITS-1:0]
parallel_out

shift_enable

serial_in

clk

```
if(shift_enable)
    if(SHIFT_MSB)
        next_parallel_out = {parallel_out [NUM_BITS-2:0], serial_in};
    else
        next_parallel_out = {serial_in, parallel_out [NUM_BITS-1:0]};
else
    next_parallel_out = parallel_out;
```