

## BZ Branch if Zero

Syntax: [label] BZ n  
Operands:  $-128 \leq n \leq 127$   
Operation: if Zero bit is '1'  
(PC) + 2 + 2n → PC

Status Affected: None

Encoding:

1110	0000	nnnn	nnnn
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Description: If the Zero bit is '1', then the program will branch.  
The 2's complement number '2n' is added to the PC. Since the PC will have incremented to fetch the next instruction, the new address will be PC+2+2n. This instruction is then a two-cycle instruction.

Words: 1

Cycles: 1(2)

Q Cycle Activity:

If Jump:

Q1	Q2	Q3	Q4
Decode	Read literal 'n'	Process Data	Write to PC
No operation	No operation	No operation	No operation

If No Jump:

Q1	Q2	Q3	Q4
Decode	Read literal 'n'	Process Data	No operation

Example:                      HERE                      BZ    Jump

Before Instruction

PC = address (HERE)

After Instruction

If Zero = 1;  
PC = address (Jump)

PC = address (Jump)  
If Zero = 0;  
PC = address (HERE+2)

< Previous instruction: [BTG](#) | Instruction [index](#) | Next instruction: [CALL](#) >