

# BTG

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| BTG               | Bit Toggle f   |              |                    |      |      |        |                   |              |                    |
|-------------------|--|--------------|--------------------|------|------|--------|-------------------|--------------|--------------------|
| Syntax:           | [ <i>label</i> ] BTG f,b[,a]   |              |                    |      |      |        |                   |              |                    |
| Operands:         | $0 \leq f \leq 255$<br>$0 \leq b \leq 7$<br>$a \in [0,1]$  |              |                    |      |      |        |                   |              |                    |
| Operation:        | $(\overline{f\langle b \rangle}) \rightarrow f\langle b \rangle$   |              |                    |      |      |        |                   |              |                    |
| Status Affected:  | None   |              |                    |      |      |        |                   |              |                    |
| Encoding:         | <table><tr><td>0111</td><td>bbba</td><td>ffff</td><td>ffff</td></tr></table>   | 0111         | bbba               | ffff | ffff |        |                   |              |                    |
| 0111              | bbba   | ffff         | ffff               |      |      |        |                   |              |                    |
| Description:      | Bit 'b' in data memory location 'f' is inverted. If 'a' is 0, the Access Bank will be selected, overriding the BSR value. If 'a' = 1, then the bank will be selected as per the BSR value (default). |              |                    |      |      |        |                   |              |                    |
| Words:            | 1  |              |                    |      |      |        |                   |              |                    |
| Cycles:           | 1  |              |                    |      |      |        |                   |              |                    |
| Q Cycle Activity: | <table><tr><th>Q1</th><th>Q2</th><th>Q3</th><th>Q4</th></tr><tr><td>Decode</td><td>Read register 'f'</td><td>Process Data</td><td>Write register 'f'</td></tr></table>                               | Q1           | Q2                 | Q3   | Q4   | Decode | Read register 'f' | Process Data | Write register 'f' |
| Q1                | Q2   | Q3           | Q4                 |      |      |        |                   |              |                    |
| Decode            | Read register 'f'  | Process Data | Write register 'f' |      |      |        |                   |              |                    |

Example:                    BTG            PORTC,    4, 0

Before Instruction:

PORTC = 0111 0101 [0x75]

After Instruction:

PORTC = 0110 0101 [0x65]

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