





**Table 1: SDRAM Controller Design Parameters (Continued)**

| Grouping / Number     | Feature / Description | Parameter Name   | Allowable Values  | Default Value           | VHDL Type |
|-----------------------|-----------------------|--|---|-------------------------|-----------|
| G4                    | Target FPGA family    | C_FAMILY   | spartan2<br>spartan2e<br>virtex<br>virtexe<br>virtex2<br>virtex2p | virtex2p                | string    |
| SDRAM Device Features | G5                    | Load Mode Register command cycle time (Tck)  | C_SDRAM_TMRD  | 2                       | integer   |
|                       | G6                    | Write Recovery Time(1) (ps)  | C_SDRAM_TWR   | 15000                   | integer   |
|                       | G7                    | Read/Write Command to Read/Write command (Tck)                                     | C_SDRAM_TCCD  | 1                       | integer   |
|                       | G8                    | Delay after ACTIVE command before PRECHARGE command (ps)                           | C_SDRAM_TRAS  | 40000                   | integer   |
|                       | G9                    | Delay after ACTIVE command before another ACTIVE or AUTOREFRESH command (ps)       | C_SDRAM_TRC   | 65000                   | integer   |
|                       | G10                   | Delay after AUTOREFRESH before another command(ps)                                 | C_SDRAM_TREFC   | 75000                   | integer   |
|                       | G11                   | Delay after ACTIVE command before READ/WRITE command(ps)                           | C_SDRAM_TRCD  | 20000                   | integer   |
|                       | G12                   | Delay after ACTIVE command for a row before an ACTIVE command for another row (ps) | C_SDRAM_TRRD  | 15000                   | integer   |
|                       | G13                   | Delay after a PRECHARGE command (ps)   | C_SDRAM_TRP   | 20000                   | integer   |
|                       | G14                   | Refresh command interval (ms)  | C_SDRAM_TREF  | 64                      | integer   |
|                       | G15                   | Number of Rows in a Refresh Period <sup>(3)</sup>                                  | C_SDRAM_REFRESH_NUMROWS   | 2048, 4096, 8192, 16384 | integer   |
|                       | G16                   | CAS Latency  | C_SDRAM_CAS_LAT   | 2,3                     | integer   |
|                       | G17                   | Total data width of devices <sup>(4)</sup>   | C_SDRAM_DWIDTH  | 8, 16, 32, 64           | integer   |





































