



# W83195AR-We

## 200MHZ 3-DIMM CLOCK FOR WHITNEY CHIPSET

### 1.0 GENERAL DESCRIPTION

The W83195AR-We is a Clock Synthesizer for Intel Solano chipset. W83195AR-We provides all clocks required for high-speed RISC or CISC microprocessor and also provides 64 different frequencies of CPU, SDRAM, PCI, 3V66, IOAPIC clocks frequency setting. All clocks are externally selectable with smooth transitions.

The W83195AR-We provides I<sup>2</sup>C serial bus interface to program the registers to enable or disable each clock outputs and provides 0.5% and 0.75% center type spread spectrum to reduce EMI.

The W83195AR-We accepts a 14.318 MHz reference crystal as its input and runs on a 3.3V supply. High drive PCI and SDRAM CLOCK outputs typically provide greater than 1 V /ns slew rate into 30 pF loads. CPU CLOCK outputs typically provide better than 1 V /ns slew rate into 20 pF loads as maintaining 50± 5% duty cycle. The fixed frequency outputs as REF, 24MHz, and 48 MHz provide better than 0.5V /ns slew rate.

### 2.0 PRODUCT FEATURES

- 2 CPU clocks
- 12 SDRAM clocks for 3 DIMMs
- 8 PCI synchronous clocks.
- Optional single or mixed supply:  
(VddR = VddP=VddS = Vdd48 = Vdd3 = 3.3V, VddLAPIC=VddLCPU=2.5V)
- Skew form CPU to PCI clock -1 to 4 ns, center 2.6 ns
- Smooth frequency switch with selections from 66.8 to 200 MHz
- I<sup>2</sup>C 2-Wire serial interface and I<sup>2</sup>C read back
- 0.5% and 0.75% center type spread spectrum
- Programmable registers to enable/stop each output and select modes  
(mode as Tri-state or Normal )
- Two 48 MHz pins for USB
- 24 MHz for super I/O
- 56-pin SSOP package

PRELIMINARY

## 3.0 PIN CONFIGURATION

|                   |                          |           |   |           |                          |                 |
|-------------------|--------------------------|-----------|---|-----------|--------------------------|-----------------|
| REFX2/*FS3        | <input type="checkbox"/> | 1         | ● | 56        | <input type="checkbox"/> | VddLAPIC        |
| VddR              | <input type="checkbox"/> | 2         |   | 55        | <input type="checkbox"/> | IOAPIC          |
| Xin               | <input type="checkbox"/> | 3         |   | 54        | <input type="checkbox"/> | VddLCPU         |
| Xout              | <input type="checkbox"/> | 4         |   | 53        | <input type="checkbox"/> | CPUCLK0         |
| Vss               | <input type="checkbox"/> | 5         |   | 52        | <input type="checkbox"/> | CPUCLK1         |
| Vdd3              | <input type="checkbox"/> | 6         |   | 51        | <input type="checkbox"/> | VssC            |
| 3V66-0            | <input type="checkbox"/> | 7         |   | 50        | <input type="checkbox"/> | VddS            |
| 3V66-1            | <input type="checkbox"/> | 8         |   | 49        | <input type="checkbox"/> | SDRAM 0         |
| Vss3              | <input type="checkbox"/> | 9         |   | 48        | <input type="checkbox"/> | SDRAM 1         |
| PCICLK0/*FS0      | <input type="checkbox"/> | 10        |   | 47        | <input type="checkbox"/> | SDRAM 2         |
| PCICLK1/FS1#      | <input type="checkbox"/> | 11        |   | 46        | <input type="checkbox"/> | VssS            |
| PCICLK2/*FS2      | <input type="checkbox"/> | 12        |   | 45        | <input type="checkbox"/> | SDRAM 3         |
| VssP              | <input type="checkbox"/> | 13        |   | 44        | <input type="checkbox"/> | SDRAM 4         |
| PCICLK3/*APIC_SEL | <input type="checkbox"/> | 14        |   | 43        | <input type="checkbox"/> | SDRAM 5         |
| PCICLK4           | <input type="checkbox"/> | 15        |   | 42        | <input type="checkbox"/> | VddS            |
| VddP              | <input type="checkbox"/> | 16        |   | 41        | <input type="checkbox"/> | SDRAM 6         |
| PCICLK5           | <input type="checkbox"/> | 17        |   | 40        | <input type="checkbox"/> | SDRAM 7         |
| PCICLK6           | <input type="checkbox"/> | 18        |   | 39        | <input type="checkbox"/> | SDRAM 8         |
| PCICLK7           | <input type="checkbox"/> | 19        |   | 38        | <input type="checkbox"/> | VssS            |
| Vss48             | <input type="checkbox"/> | 20        |   | 37        | <input type="checkbox"/> | PD#             |
| 48MHz_0           | <input type="checkbox"/> | 21        |   | 36        | <input type="checkbox"/> | *SDCLK          |
| 48MHz_1/FS4#      | <input type="checkbox"/> | 22        |   | 35        | <input type="checkbox"/> | VddS            |
| SIO_SEL*/24_48MHz | <input type="checkbox"/> | 23        |   | 34        | <input type="checkbox"/> | VssS            |
| Vdd48             | <input type="checkbox"/> | 24        |   | 33        | <input type="checkbox"/> | *SDATA          |
| <b>VddS</b>       | <input type="checkbox"/> | <b>25</b> |   | <b>32</b> | <input type="checkbox"/> | <b>VddS</b>     |
| <b>SDRAM 12</b>   | <input type="checkbox"/> | <b>26</b> |   | <b>31</b> | <input type="checkbox"/> | <b>SDRAM 9</b>  |
| <b>SDRAM 11</b>   | <input type="checkbox"/> | <b>27</b> |   | <b>30</b> | <input type="checkbox"/> | <b>SDRAM 10</b> |
| <b>VssS</b>       | <input type="checkbox"/> | <b>28</b> |   | <b>29</b> | <input type="checkbox"/> | <b>VssS</b>     |



PRELIMINARY

## 4.0 FREQUENCY SELECTION BY HARDWARE

| SSEL4 | SSEL3 | SSEL2 | SSEL1 | SSEL0 | CPU (MHz) | SDRAM (MHz) | CPU /SDRAM | 3V66 (MHz) | PCI(MHz) | IOAPIC (MHz) APIC_SEL=1 | IOAPIC (MHz) APIC_SEL=0 |
|-------|-------|-------|-------|-------|-----------|-------------|------------|------------|----------|-------------------------|-------------------------|
| 0     | 0     | 0     | 0     | 0     | 83.3      | 124.95      | 2/3        | 83.30      | 41.65    | 20.83                   | 41.65                   |
| 0     | 0     | 0     | 0     | 1     | 90        | 90          | 1          | 60.00      | 30.00    | 15.00                   | 30.00                   |
| 0     | 0     | 0     | 1     | 0     | 75        | 112.5       | 2/3        | 75.00      | 37.50    | 18.75                   | 37.50                   |
| 0     | 0     | 0     | 1     | 1     | 72        | 108         | 2/3        | 72.00      | 36.00    | 18.00                   | 36.00                   |
| 0     | 0     | 1     | 0     | 0     | 89.07     | 133.6       | 2/3        | 89.07      | 44.53    | 22.27                   | 44.53                   |
| 0     | 0     | 1     | 0     | 1     | 95.25     | 95.25       | 1          | 63.50      | 31.75    | 15.88                   | 31.75                   |
| 0     | 0     | 1     | 1     | 0     | 121       | 121         | 1          | 80.67      | 40.33    | 20.17                   | 40.33                   |
| 0     | 0     | 1     | 1     | 1     | 124       | 124         | 1          | 82.67      | 41.33    | 20.67                   | 41.33                   |
| 0     | 1     | 0     | 0     | 0     | 119       | 119         | 1          | 79.33      | 39.67    | 19.83                   | 39.67                   |
| 0     | 1     | 0     | 0     | 1     | 114       | 114         | 1          | 76.00      | 38.00    | 19.00                   | 38.00                   |
| 0     | 1     | 0     | 1     | 0     | 110       | 110         | 1          | 73.33      | 36.67    | 18.33                   | 36.67                   |
| 0     | 1     | 0     | 1     | 1     | 105       | 105         | 1          | 70.00      | 35.00    | 17.50                   | 35.00                   |
| 0     | 1     | 1     | 0     | 0     | 66.8      | 100.2       | 2/3        | 66.80      | 33.40    | 16.70                   | 33.40                   |
| 0     | 1     | 1     | 0     | 1     | 100.2     | 100.2       | 1          | 66.80      | 33.40    | 16.70                   | 33.40                   |
| 0     | 1     | 1     | 1     | 0     | 133.6     | 133.6       | 1          | 66.80      | 33.40    | 16.70                   | 33.40                   |
| 0     | 1     | 1     | 1     | 1     | 133.6     | 100.2       | 4/3        | 66.80      | 33.40    | 16.70                   | 33.40                   |
| 1     | 0     | 0     | 0     | 0     | 135       | 101.25      | 4/3        | 67.50      | 33.75    | 16.88                   | 33.75                   |
| 1     | 0     | 0     | 0     | 1     | 125       | 125         | 1          | 83.33      | 41.67    | 20.83                   | 41.67                   |
| 1     | 0     | 0     | 1     | 0     | 127       | 127         | 1          | 84.67      | 42.33    | 21.17                   | 42.33                   |
| 1     | 0     | 0     | 1     | 1     | 130       | 130         | 1          | 86.67      | 43.33    | 21.67                   | 43.33                   |
| 1     | 0     | 1     | 0     | 0     | 140       | 140         | 1          | 70.00      | 35.00    | 17.50                   | 35.00                   |
| 1     | 0     | 1     | 0     | 1     | 136       | 136         | 1          | 68.00      | 34.00    | 17.00                   | 34.00                   |
| 1     | 0     | 1     | 1     | 0     | 166       | 166.00      | 1          | 83.00      | 41.50    | 20.75                   | 41.50                   |
| 1     | 0     | 1     | 1     | 1     | 155       | 155         | 1          | 77.50      | 38.75    | 19.38                   | 38.75                   |
| 1     | 1     | 0     | 0     | 0     | 150       | 112.5       | 4/3        | 75.00      | 37.50    | 18.75                   | 37.50                   |
| 1     | 1     | 0     | 0     | 1     | 117       | 117         | 1          | 78.00      | 39.00    | 19.50                   | 39.00                   |
| 1     | 1     | 0     | 1     | 0     | 107       | 107         | 1          | 71.33      | 35.67    | 17.83                   | 35.67                   |
| 1     | 1     | 0     | 1     | 1     | 100.9     | 100.9       | 1          | 67.27      | 33.63    | 16.82                   | 33.63                   |
| 1     | 1     | 1     | 0     | 0     | 145       | 108.75      | 4/3        | 72.50      | 36.25    | 18.13                   | 36.25                   |
| 1     | 1     | 1     | 0     | 1     | 140       | 105         | 4/3        | 70.00      | 35.00    | 17.50                   | 35.00                   |
| 1     | 1     | 1     | 1     | 0     | 138       | 103.5       | 4/3        | 69.00      | 34.50    | 17.25                   | 34.50                   |
| 1     | 1     | 1     | 1     | 1     | 137       | 102.75      | 4/3        | 68.50      | 34.25    | 17.13                   | 34.25                   |



**PRELIMINARY**

## 5.0 SERIAL CONTROL 0REGISTERS

The Pin column lists the affected pin number and the @PowerUp column gives the state at true power up. Registers are set to the values shown only on true power up. "Command Code" byte and "Byte Count" byte must be sent following the acknowledge of the Address Byte. Although the data (bits) in these two bytes are considered "don't care", they must be sent and will be acknowledge. After that, the below described sequence (Register 0, Register 1, Register 2, ....) will be valid and acknowledged.

### Frequency Table Setting by I2C (SEL5 ~ SEL0)

| SSE L5 | SS EL4 | SS EL3 | SS EL2 | SS EL1 | SS EL0 | CPU (MHz) | SDRAM (MHz) | CPU/S DRAM | 3V66 (MHz) | PCI(M Hz) | IOAPIC (MHz) APIC_SEL=1 | IOAPIC (MHz) APIC_SEL=0 |
|--------|--------|--------|--------|--------|--------|-----------|-------------|------------|------------|-----------|-------------------------|-------------------------|
| 0      | 0      | 0      | 0      | 0      | 0      | 83.3      | 124.95      | 2/3        | 83.30      | 41.65     | 20.83                   | 41.65                   |
| 0      | 0      | 0      | 0      | 0      | 1      | 90        | 90          | 1          | 60.00      | 30.00     | 15.00                   | 30.00                   |
| 0      | 0      | 0      | 0      | 1      | 0      | 75        | 112.5       | 2/3        | 75.00      | 37.50     | 18.75                   | 37.50                   |
| 0      | 0      | 0      | 0      | 1      | 1      | 72        | 108         | 2/3        | 72.00      | 36.00     | 18.00                   | 36.00                   |
| 0      | 0      | 0      | 1      | 0      | 0      | 89.07     | 133.6       | 2/3        | 89.07      | 44.53     | 22.27                   | 44.53                   |
| 0      | 0      | 0      | 1      | 0      | 1      | 95.25     | 95.25       | 1          | 63.50      | 31.75     | 15.88                   | 31.75                   |
| 0      | 0      | 0      | 1      | 1      | 0      | 121       | 121         | 1          | 80.67      | 40.33     | 20.17                   | 40.33                   |
| 0      | 0      | 0      | 1      | 1      | 1      | 124       | 124         | 1          | 82.67      | 41.33     | 20.67                   | 41.33                   |
| 0      | 0      | 1      | 0      | 0      | 0      | 119       | 119         | 1          | 79.33      | 39.67     | 19.83                   | 39.67                   |
| 0      | 0      | 1      | 0      | 0      | 1      | 114       | 114         | 1          | 76.00      | 38.00     | 19.00                   | 38.00                   |
| 0      | 0      | 1      | 0      | 1      | 0      | 110       | 110         | 1          | 73.33      | 36.67     | 18.33                   | 36.67                   |
| 0      | 0      | 1      | 0      | 1      | 1      | 105       | 105         | 1          | 70.00      | 35.00     | 17.50                   | 35.00                   |
| 0      | 0      | 1      | 1      | 0      | 0      | 66.8      | 100.2       | 2/3        | 66.80      | 33.40     | 16.70                   | 33.40                   |
| 0      | 0      | 1      | 1      | 0      | 1      | 100.2     | 100.2       | 1          | 66.80      | 33.40     | 16.70                   | 33.40                   |
| 0      | 0      | 1      | 1      | 1      | 0      | 133.6     | 133.6       | 1          | 66.80      | 33.40     | 16.70                   | 33.40                   |
| 0      | 0      | 1      | 1      | 1      | 1      | 133.6     | 100.2       | 4/3        | 66.80      | 33.40     | 16.70                   | 33.40                   |
| 0      | 1      | 0      | 0      | 0      | 0      | 135       | 101.25      | 4/3        | 67.50      | 33.75     | 16.88                   | 33.75                   |
| 0      | 1      | 0      | 0      | 0      | 1      | 125       | 125         | 1          | 83.33      | 41.67     | 20.83                   | 41.67                   |
| 0      | 1      | 0      | 0      | 1      | 0      | 127       | 127         | 1          | 84.67      | 42.33     | 21.17                   | 42.33                   |
| 0      | 1      | 0      | 0      | 1      | 1      | 130       | 130         | 1          | 86.67      | 43.33     | 21.67                   | 43.33                   |
| 0      | 1      | 0      | 1      | 0      | 0      | 140       | 140         | 1          | 70.00      | 35.00     | 17.50                   | 35.00                   |
| 0      | 1      | 0      | 1      | 0      | 1      | 136       | 136         | 1          | 68.00      | 34.00     | 17.00                   | 34.00                   |
| 0      | 1      | 0      | 1      | 1      | 0      | 166       | 166.00      | 1          | 83.00      | 41.50     | 20.75                   | 41.50                   |
| 0      | 1      | 0      | 1      | 1      | 1      | 155       | 155         | 1          | 77.50      | 38.75     | 19.38                   | 38.75                   |
| 0      | 1      | 1      | 0      | 0      | 0      | 150       | 112.5       | 4/3        | 75.00      | 37.50     | 18.75                   | 37.50                   |
| 0      | 1      | 1      | 0      | 0      | 1      | 117       | 117         | 1          | 78.00      | 39.00     | 19.50                   | 39.00                   |
| 0      | 1      | 1      | 0      | 1      | 0      | 107       | 107         | 1          | 71.33      | 35.67     | 17.83                   | 35.67                   |
| 0      | 1      | 1      | 0      | 1      | 1      | 100.9     | 100.9       | 1          | 67.27      | 33.63     | 16.82                   | 33.63                   |
| 0      | 1      | 1      | 1      | 0      | 0      | 145       | 108.75      | 4/3        | 72.50      | 36.25     | 18.13                   | 36.25                   |
| 0      | 1      | 1      | 1      | 0      | 1      | 140       | 105         | 4/3        | 70.00      | 35.00     | 17.50                   | 35.00                   |
| 0      | 1      | 1      | 1      | 1      | 0      | 138       | 103.5       | 4/3        | 69.00      | 34.50     | 17.25                   | 34.50                   |



# W83195AR-We

## PRELIMINARY

|   |   |   |   |   |   |     |        |     |       |       |       |       |
|---|---|---|---|---|---|-----|--------|-----|-------|-------|-------|-------|
| 0 | 1 | 1 | 1 | 1 | 1 | 137 | 102.75 | 4/3 | 68.50 | 34.25 | 17.13 | 34.25 |
|---|---|---|---|---|---|-----|--------|-----|-------|-------|-------|-------|

| SSE L5 | SS EL4 | SS EL3 | SS EL2 | SS EL1 | SS EL0 | CPU (MHz) | SDRAM (MHz) | CPU/S DRAM | 3V66 (MHz) | PCI(M Hz) | IOAPIC (MHz) APIC_SEL=1 | IOAPIC (MHz) APIC_SEL=0 |
|--------|--------|--------|--------|--------|--------|-----------|-------------|------------|------------|-----------|-------------------------|-------------------------|
| 1      | 0      | 0      | 0      | 0      | 0      | 136       | 102.00      | 4/3        | 68.00      | 34.00     | 17.00                   | 34.00                   |
| 1      | 0      | 0      | 0      | 0      | 1      | 138       | 138.00      | 1          | 69.00      | 34.50     | 17.25                   | 34.50                   |
| 1      | 0      | 0      | 0      | 1      | 0      | 139       | 104.25      | 4/3        | 69.50      | 34.75     | 17.38                   | 34.75                   |
| 1      | 0      | 0      | 0      | 1      | 1      | 141       | 141.00      | 1          | 70.50      | 35.25     | 17.63                   | 35.25                   |
| 1      | 0      | 0      | 1      | 0      | 0      | 142       | 142.00      | 1          | 71.00      | 35.50     | 17.75                   | 35.50                   |
| 1      | 0      | 0      | 1      | 0      | 1      | 142       | 106.50      | 4/3        | 71.00      | 35.50     | 17.75                   | 35.50                   |
| 1      | 0      | 0      | 1      | 1      | 0      | 143       | 143.00      | 1          | 71.50      | 35.75     | 17.88                   | 35.75                   |
| 1      | 0      | 0      | 1      | 1      | 1      | 143       | 107.25      | 4/3        | 71.50      | 35.75     | 17.88                   | 35.75                   |
| 1      | 0      | 1      | 0      | 0      | 0      | 144       | 144.00      | 1          | 72.00      | 36.00     | 18.00                   | 36.00                   |
| 1      | 0      | 1      | 0      | 0      | 1      | 144       | 108.00      | 4/3        | 72.00      | 36.00     | 18.00                   | 36.00                   |
| 1      | 0      | 1      | 0      | 1      | 0      | 146       | 146         | 1          | 73.00      | 36.50     | 18.25                   | 36.50                   |
| 1      | 0      | 1      | 0      | 1      | 1      | 146       | 109.50      | 4/3        | 73.00      | 36.50     | 18.25                   | 36.50                   |
| 1      | 0      | 1      | 1      | 0      | 0      | 147       | 147         | 1          | 73.50      | 36.75     | 18.38                   | 36.75                   |
| 1      | 0      | 1      | 1      | 0      | 1      | 147       | 110.25      | 4/3        | 73.50      | 36.75     | 18.38                   | 36.75                   |
| 1      | 0      | 1      | 1      | 1      | 0      | 148       | 148.00      | 1          | 74.00      | 37.00     | 18.50                   | 37.00                   |
| 1      | 0      | 1      | 1      | 1      | 1      | 148       | 111.00      | 4/3        | 74.00      | 37.00     | 18.50                   | 37.00                   |
| 1      | 1      | 0      | 0      | 0      | 0      | 149       | 111.75      | 4/3        | 74.50      | 37.25     | 18.63                   | 37.25                   |
| 1      | 1      | 0      | 0      | 0      | 1      | 152       | 152.00      | 1          | 76.00      | 38.00     | 19.00                   | 38.00                   |
| 1      | 1      | 0      | 0      | 1      | 0      | 153       | 114.75      | 4/3        | 76.50      | 38.25     | 19.13                   | 38.25                   |
| 1      | 1      | 0      | 0      | 1      | 1      | 156       | 156.00      | 1          | 78.00      | 39.00     | 19.50                   | 39.00                   |
| 1      | 1      | 0      | 1      | 0      | 0      | 157       | 117.75      | 4/3        | 78.50      | 39.25     | 19.63                   | 39.25                   |
| 1      | 1      | 0      | 1      | 0      | 1      | 158       | 158.00      | 1          | 79.00      | 39.50     | 19.75                   | 39.50                   |
| 1      | 1      | 0      | 1      | 1      | 0      | 159       | 119.25      | 4/3        | 79.50      | 39.75     | 19.88                   | 39.75                   |
| 1      | 1      | 0      | 1      | 1      | 1      | 160       | 160.00      | 1          | 80.00      | 40.00     | 20.00                   | 40.00                   |
| 1      | 1      | 1      | 0      | 0      | 0      | 162       | 121.5       | 4/3        | 81.00      | 40.50     | 20.25                   | 40.50                   |
| 1      | 1      | 1      | 0      | 0      | 1      | 164       | 164.00      | 1          | 82.00      | 41.00     | 20.50                   | 41.00                   |
| 1      | 1      | 1      | 0      | 1      | 0      | 170       | 170.00      | 1          | 85.00      | 42.50     | 21.25                   | 42.50                   |
| 1      | 1      | 1      | 0      | 1      | 1      | 175       | 175         | 1          | 87.5       | 43.75     | 21.88                   | 43.75                   |
| 1      | 1      | 1      | 1      | 0      | 0      | 180       | 90          | 4/3        | 60         | 30        | 15                      | 30                      |
| 1      | 1      | 1      | 1      | 0      | 1      | 185       | 92.5        | 2          | 61.67      | 30.83     | 15.42                   | 30.83                   |
| 1      | 1      | 1      | 1      | 1      | 0      | 190       | 126.67      | 3/2        | 63.33      | 31.67     | 15.83                   | 31.67                   |

PRELIMINARY

|   |   |   |   |   |   |       |        |     |       |       |       |       |
|---|---|---|---|---|---|-------|--------|-----|-------|-------|-------|-------|
| 1 | 1 | 1 | 1 | 1 | 1 | 200.4 | 133.60 | 3/2 | 66.80 | 33.40 | 16.70 | 33.40 |
|---|---|---|---|---|---|-------|--------|-----|-------|-------|-------|-------|

### 5.1 Register 0: Control Register

| Bit | @PowerUp | Pin   | Description                         |
|-----|----------|-------|-------------------------------------|
| 7   | 1        | 26    | SDRAM12(Active / Inactive)          |
| 6   | 1        | 1     | REF2X(Active / Inactive)            |
| 5   | 1        | 27    | SDRAM11(Active / Inactive)          |
| 4   | 1        | 30    | SDRAM10(Active / Inactive)          |
| 3   | 1        | 31    | SDRAM9(Active / Inactive)           |
| 2   | 1        | 23    | 24/48MHz(Active / Inactive)         |
| 1   | 1        | 21,22 | 48MHz_0, 48MHz_1(Active / Inactive) |
| 0   | 1        | 39    | SDRAM8(Active / Inactive)           |

### 5.2 Register 1 : SDRAM Register (1 = Active, 0 = Inactive)

| Bit | @PowerUp | Pin | Description                |
|-----|----------|-----|----------------------------|
| 7   | 1        | 40  | SDRAM7 (Active / Inactive) |
| 6   | 1        | 41  | SDRAM6 (Active / Inactive) |
| 5   | 1        | 43  | SDRAM5 (Active / Inactive) |
| 4   | 1        | 44  | SDRAM4 (Active / Inactive) |
| 3   | 1        | 45  | SDRAM3 (Active / Inactive) |
| 2   | 1        | 47  | SDRAM2 (Active / Inactive) |
| 1   | 1        | 48  | SDRAM1 (Active / Inactive) |
| 0   | 1        | 49  | SDRAM0 (Active / Inactive) |

### 5.3 Register 2: PCI Clock Register (1 = Active, 0 = Inactive)

| Bit | @PowerUp | Pin | Description                 |
|-----|----------|-----|-----------------------------|
| 7   | 1        | 19  | PCICLK7 (Active / Inactive) |
| 6   | 1        | 18  | PCICLK6 (Active / Inactive) |
| 5   | 1        | 17  | PCICLK5 (Active / Inactive) |
| 4   | 1        | 15  | PCICLK4 (Active / Inactive) |
| 3   | 1        | 14  | PCICLK3 (Active / Inactive) |
| 2   | 1        | 13  | PCICLK2 (Active / Inactive) |

**PRELIMINARY**

|   |   |    |                             |
|---|---|----|-----------------------------|
| 1 | 1 | 11 | PCICLK1 (Active / Inactive) |
| 0 | 1 | 10 | PCICLK0 (Active / Inactive) |

#### 5.4 Register 3: CPU Clock Register (1 = Active, 0 = Inactive)

| Bit | @PowerUp | Pin | Description                 |
|-----|----------|-----|-----------------------------|
| 7   | X        | -   | FS0#                        |
| 6   | 1        | 7   | 3V66_0(Active / Inactive)   |
| 5   | 1        | 8   | 3V66_1(Active / Inactive)   |
| 4   | X        | -   | FS1#                        |
| 3   | 1        | 55  | IOAPIC(Active/ Inactive)    |
| 2   | 1        | 44  | CPUCLK1 (Active / Inactive) |
| 1   | 1        | 43  | CPUCLK0 (Active / Inactive) |
| 0   | X        | -   | FS2#                        |

#### 5.5 Register 4: Control Register (1 = Active, 0 = Inactive)

| Bit | @PowerUp | Pin | Description  |
|-----|----------|-----|--|
| 7   | 0        | -   | SSEL3 (Frequency table selection by software via I <sup>2</sup> C )                      |
| 6   | 0        | -   | SSEL2 ( Frequency table selection by software via I <sup>2</sup> C)                      |
| 5   | 0        | -   | SSEL1 ( Frequency table selection by software via I <sup>2</sup> C)                      |
| 4   | 0        | -   | SSEL0 ( Frequency table selection by software via I <sup>2</sup> C)                      |
| 3   | 0        | -   | 0 = Selection by hardware<br>1 = Selection by software I <sup>2</sup> C - Bit (1,2, 4:6) |
| 2   | 0        | -   | SSEL4 (Frequency table selection by software via I <sup>2</sup> C )                      |
| 1   | 0        | -   | SSEL5 (Frequency table selection by software via I <sup>2</sup> C )                      |
| 0   | X        | -   | APIC_SEL#  |

#### 5.6 Register 5: Control Register (1 = Active, 0 = Inactive)

| Bit | @PowerUp | Pin | Description   |
|-----|----------|-----|---|
| 7   | 0        | -   | 0 = ±0.5% Center type Spread Spectrum Modulation<br>1 = ±0.75% Center type Spread Spectrum Modulation |
| 6   | 1        | -   | SKEW2(SDRAM to CPU Skew programming bit)  |
| 5   | 0        | -   | SKEW1(SDRAM to CPU Skew programming bit)  |
| 4   | 0        | -   | SKEW0(SDRAM to CPU Skew programming bit)  |
| 3   | X        | -   | FS3#  |



**PRELIMINARY**

|   |          |   |   |
|---|----------|---|---|
| 2 | <b>X</b> | - | <b>FS4#</b>                               |
| 1 | 0        | - | 0 = Normal<br>1 = Spread Spectrum enabled |
| 0 | 0        | - | Reserved                                  |

**5.7 Register 6: Winbond Chip ID Register (Read Only)**

| Bit | @PowerUp | Pin | Description     |
|-----|----------|-----|-----------------|
| 7   | 1        | -   | Winbond Chip ID |
| 6   | 0        | -   | Winbond Chip ID |
| 5   | 0        | -   | Winbond Chip ID |
| 4   | 1        | -   | Winbond Chip ID |
| 3   | <b>1</b> | -   | Winbond Chip ID |
| 2   | 0        | -   | Winbond Chip ID |
| 1   | <b>0</b> | -   | Winbond Chip ID |
| 0   | 0        | -   | Winbond Chip ID |

**5.8 Register 7: Winbond Chip ID Register (Read Only)**

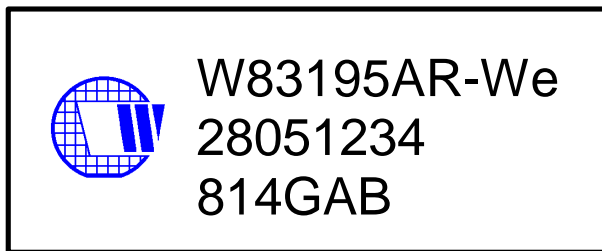
| Bit | @PowerUp | Pin | Description               |
|-----|----------|-----|---------------------------|
| 7   | <b>0</b> | -   | <b>Winbond Chip ID</b>    |
| 6   | <b>0</b> | -   | <b>Winbond Chip ID</b>    |
| 5   | <b>1</b> | -   | <b>Winbond Chip ID</b>    |
| 4   | <b>1</b> | -   | <b>Winbond Chip ID</b>    |
| 3   | <b>0</b> | -   | <b>Winbond Chip ID</b>    |
| 2   | <b>0</b> | -   | <b>Winbond Version ID</b> |
| 1   | <b>0</b> | -   | <b>Winbond Version ID</b> |
| 0   | <b>1</b> | -   | <b>Winbond Version ID</b> |



## 6.0 ORDERING INFORMATION

| Part Number | Package Type | Production Flow          |
|-------------|--------------|--------------------------|
| W83195AR-We | 56 PIN SSOP  | Commercial, 0°C to +70°C |

## 7.0 HOW TO READ THE TOP MARKING



1st line: Winbond logo and the type number: W83195AR-We

2nd line: Tracking code 2 8051234

2: wafers manufactured in Winbond FAB 2

8051234: wafer production series lot number

3rd line: Tracking code 814 G B B

814: packages made in '98, week 14

G: assembly house ID; O means OSE, G means GR

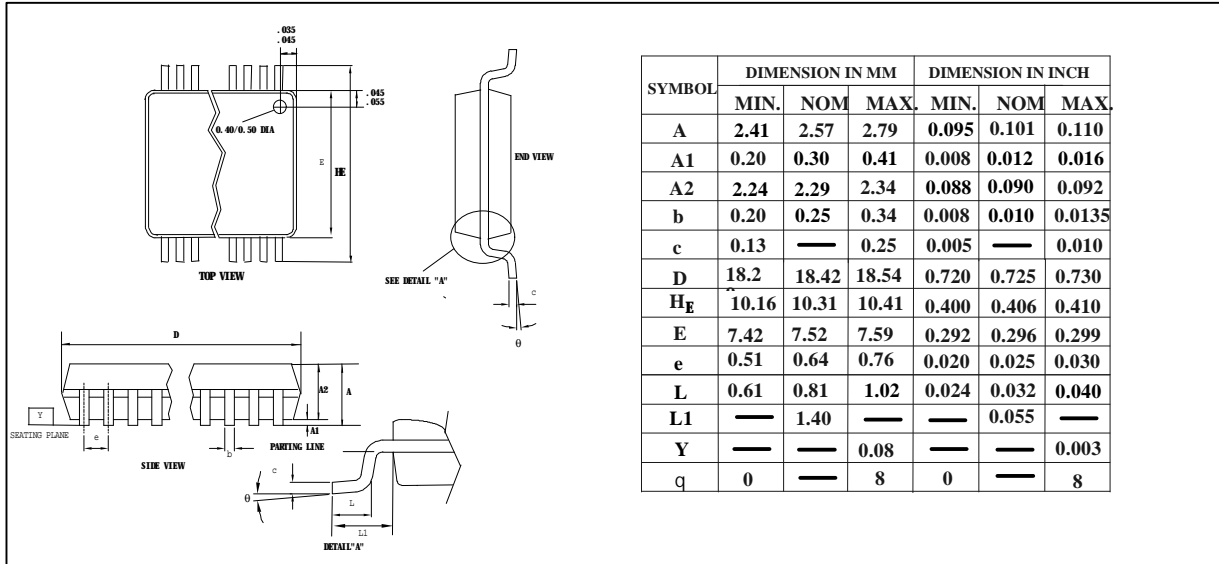
A: Internal use code

B: IC revision

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**PRELIMINARY**

## 8.0 PACKAGE DRAWING AND DIMENSIONS



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