Power Considerations for IDT Processors

Notes

Power Considerations

The maximum current and power values listed in IDT data sheets are not guaranteed to be the highest obtainable. These parameters depend on many factors, such as the applications being run, clock frequencies, use of the processor internal features, external loads, environment temperature, and power supply voltages.

Consequently, different applications could produce significantly different results. V_{cc} CORE current and power mostly depend on the applications being run and the use of internal chip controllers, including DMA, Ethernet, DDR, and the memory controller. V_{cc}IO current and power are primarily dependent on the capacitive loading, frequency, and utilization of the external buses. The following information provides details about the conditions under which the values listed in the data sheet were obtained:

- All measurements were done at room temperature ($T_{ambient}$ = +25°C).
- For V_{cc}IO and V_{cc}CORE, the typical and maximum values were measured on a tester set with the following parameters:
  - *PCI loads: 35pf*
  - *Memory loads (DDR or SDRAM): 35pF*
  - *PCI frequency = 66MHz*
  - *Memory bus frequency = CPU/2 (400/200, 300/150, 266/133, 200/100, 180/90, etc.).*
- A 10% margin has been added to account for part variation.

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- For V_{cc}DDR, the typical and the maximum values were measured on a tester set with the following parameters:
  - *PCI loads: N/A*
  - *Memory loads (DDR or SDRAM): 35pF*
  - *PCI frequency = N/A*
  - *Memory bus frequency = CPU/2 (400/200, 300/150, 266/133, 200/100, 180/90, etc.).*
- Typical V_{cc}IO, V_{cc}DDR, and V_{cc}CORE current and power are characterized at V_{cc}IO = +3.3V, V_{cc}DDR = +2.5V, V_{cc}CORE = +1.2V, and $T_{ambient}$ = +25°C on the tester.
- Maximum V_{cc}IO, V_{cc}DDR, and V_{cc}CORE current and power are characterized at V_{cc}IO = +3.465V, V_{cc}DDR = +2.625V, V_{cc}CORE = +1.3V, and $T_{ambient}$ = +25°C on the tester.
- Typical V_{cc}CORE current on the tester correlates with system tests running IP forwarding applications under the IDT Linux operating system.
- Maximum V_{cc}CORE current on the tester correlates with system tests running cache and DDR-intensive applications designed to maximize the CPU power consumption.