Reduce M6117D Power Consumption

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Because Mity-Mite module is 386 CPU, it does not support ACPI or other function to save power consumption. HLT puts the processor into a halted state, where it will perform no more operations until restarted by an interrupt or a reset. System timer0 will generate IRQ0 18.2 times every second, so your code will be run after 55ms after HLT instruction. As our test, it will save 150~200mA on M6117D series. Here is C example code for DOS:

```
#include <conio.h>
void main()
{
  while(!kbhit())
  {
    /* HLT puts the processor into a halted state, where it will perform no
       more operations until restarted by an interrupt or a reset.        */
    asm {
      hlt
    }
    /* System timer0 will generates IRQ0 18.2 times every second, so you can
       see 18 '.' every second. */
    cprintf("."); /* do your job here */
  }
}
```

It's power consumption test on Mity SoC module (without VGA):

	Mity SoC 40MHz	Mity SoC 7.159MHz	ICOP-6026
Original current	285mA	98mA	900mA
Run "hlt" current	160mA	92mA	750mA

On ICOP-6026, the current is deduced from 900mA to 750mA after 'hlt' instruction is run. If you want to save more power, refer to M6117D data sheet page 34: "**4.7 How to enter power saving mode**". Because some DOS C/C++ compiler can not use 32-bit assembler code, we provide DOS C example code to set M6117D into power saving mode:

```
#include <conio.h>
void main()
{
  /* Refer to M6117D data sheet page 34 */
  asm {
```

```
    /* MOV EAX, 00008000 */
    db 0x66, 0xb8, 0x00, 0x80, 0x00, 0x00
    /* MOV PWRCR , EAX */
    db 0xd6, 0xfa, 0x03, 0x02
  }
  while(!kbhit())
  {
    /* HLT puts the processor into a halted state, where it will perform no
       more operations until restarted by an interrupt or a reset.        */
    asm {
      hlt
    }
    /* System timer0 will generates IRQ0 18.2 times every second, so you can
       see 18 '.' every second. */
    cprintf("."); /* do your job here */
  }
}
```

On ICOP-6026, the current is deduced from 900mA to 600mA after running this test program. It's power consumption test on Mity SoC module (without VGA):

	Mity SoC 40MHz		Mity SoC 7.159MHz		ICOP-6026	
Original current	285mA		98mA		900mA	
Run "hlt" current	160mA	-44%	92mA	-6%	750mA	-17%
Run "hlt" + PWRCR current	95mA	-67%	83mA	-15%	600mA	-33%

Those examples will save power from M6117D CPU, but peripheral I/O components do not enter power saving mode. This is why test programs only can save 15%-30% power consumption on ICOP-6026. For MitySoC, the most current is from M6117D, M6117D enter power saving mode can save 45%-65% power consumption. The job in the example is only printing “.” on screen. If your job is more complex than it, the current will be larger. All current data on this document is only for reference, and they will be different on your boards.

Technical Support

For more technical support, please visit http://www.dmp.com.tw/tech or mail to tech@dmp.com.tw.