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## **Application Note**

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# **CONFIGURING THE CS423XB/CS9236 WAVETABLE INTERFACE**

The CS423xB (CS4236B, CS4237B, and CS4238B) Wavetable serial interface is enabled by setting the WTEN bit in the Hardware Configuration data "Global Configuration" byte (byte 8, bit3) or in Control Indirect Register "CS9236 Wavetable Control" (C8, bit3).

Contact the Crystal Semiconductor Applications group at (512)445-7222, or email [pcaudio@crystal.com](mailto:pcaudio@crystal.com) for the latest data sheets and information on how to obtain utility software from our BBS. For the latest drivers and further information, please see our web site at [www.crystal.com](http://www.crystal.com).

### **CS423XB HARDWARE CONFIGURATION DATA**

The CS423xB Hardware Configuration data may reside either in an EEPROM hooked directly to the CS423xB, or in a system BIOS. If an EEPROM is used, then the RESOURCE.EXE program may be used to download the configuration data. If the system BIOS is responsible for presenting configuration data to the CS423xB, then the BIOS must be updated to enable the WTEN bit.

In both cases, a resource.INI text file must be used. The CS9236 Wavetable interface is enabled by adding "WTEN" to the "GlobalConfigBits =" line in the resource.INI file. A typical resource.INI file may contain the following GlobalConfigBits entry:

```
GlobalConfigBits = IFM WTEN
```

Where IFM enables the CS423xB FM synthesis function and WTEN enables the Wavetable interface.

### **EEPROM Method**

Use the RESOURCE.EXE program with the following command line options:

```
resource /f=0x120 /r=<your resource>.ini /e
```

where /f=0x120 forces the control base address to hex 120, <your resource>.ini is the resource.INI text file, and /e initiates an EEPROM download. As of the writing of this application note, the latest version of RESOURCE.EXE was V3.83.

### **BIOS Method**

Please refer to the "CS423xB BIOS Kit" document for details on updating a BIOS.

### **CS423XB CONTROL INDIRECT REGISTER**

The CS423xB Wavetable serial port may be enabled via the WTEN bit in Control Indirect Register C8. Crystal provides two software utilities that may be used to access this register. These programs are not part of Crystal's standard software release - they may only be used by OEM's for diagnostic purposes:

### **CSPEEK.EXE**

In Windows 3.11 and Windows 95, the CSPEEK program may be used to set the WTEN bit. Choose the Registers/Control Indirect Registers menu op-

tion to access the WTEN bit in the CS9236 Wavetable Control register (C8, bit3).

### ***CS36BABD.EXE***

Use the following commands within CS36BABD to set the WTEN bit:

```
alt-b      ;display control registers
r          ;write control indirect register
8 <value> ;indirect register 8, new value to write
```

The new value written to C8 should preserve any other bits already set or cleared (WTEN is bit3).

### **DRIVERS**

Older drivers do not support the CS9236 wavetable function. Please use the following (or newer) driver versions:

Windows 3.11 - 1.70

Win95 - Beta Release V1.81

WinNT - V1.51

OS/2 - V1.60

### **OTHER DOCUMENTATION**

#### *Data Sheets*

CS9236 Data Sheet

CS4236B Data Sheet

CS4237B Data Sheet

CS4238B Data Sheet

#### *Resource*

RESOURCE.TXT

#### *BIOS*

CS423xB BIOS Kit document

#### *CSPEEK*

CS Peek

#### *CS36BABD*

CS36BABD Diagnostics User's Guide