TMS34010 SDB
User's Guide
Pocket Reference

SDB COMMAND SUMMARY

PROGRAM EXECUTION COMMANDS

COMMAND	DESCRIPTION
REset	Reset TMS34010
RUn [<inst count>]	Run (for no. of instructions)
SS[F][U] [<inst count>]	Single step

REGISTER COMMANDS

COMMAND	DESCRIPTION
A	Display A & B file registers
A{0,...,14} [<2-wd value>]	Modify/display A register
B	Display A & B file registers
B{0,...,14} [<2-wd value>]	Modify/display B register
CLA	Clear A file registers
CLB	Clear B file registers
CLIO	Clear I/O registers
CLR	Clear A and B registers
CTL [<value>]	Modify/display CONTROL I/O register
DR	Display A & B registers
IO	Toggle I/O & A/B regs
IO{0,...,1F0} [<value>]	Modify I/O register
PC [<2-wd value>]	Modify/display PC
NR <register>[<name>]	Give register a name
PM [<word value>]	Modify PMASK register
RIO	Restore copy of I/O registers
RR	Restore copy of A & B regs
SIO	Save copy of I/O regs
SP [<2-wd value>]	Modify/display Stack Pointer
SR	Save copy of A & B regs
ST [{ ({N, C, Z, V} {0, 1}), <double-word value>}]	Modify/display Status Register or status bit

DEBUG ENVIRONMENT CONTROL COMMANDS

COMMAND	DESCRIPTION
CNT [Inst.count]	Display count
RDE[file extension]	Restore debug environment
SDE[file extension]	Save debug environment

CACHE MANIPULATION COMMANDS

COMMAND	DESCRIPTION
CF [{0, 1}]	Modify/display cache flush bit
CD [{0, 1}]	Modify cache disable bit

SDB COMMAND SUMMARY (CONT.)

BREAKPOINT AND TRACE COMMANDS

COMMAND	DESCRIPTION
CTF	Close trace file
BP	Display existing breakpoints
BP{0-19,X} {Clear, OFf, ON, Toggle, Quit}	Modify existing breakpoints
BPAI {<address>}	Set breakpoint on address
TR	Display existing traces
TR{0,...,19,X} [{Clear, OFf, ON, Toggle, Quit}]	Modify existing traces
TRAI <address>	Set trace on address

STATUS REG. FIELD MANIPULATION

COMMAND	DESCRIPTION
FE{0,1} {0, 1}	Modify field extension bit
FS{0,1} <field size>	Modify specified field size
ITPVH[<5-bits>]	Display/Modify ITPVH bits
NCZV[<4-bits>]	Display/Modify NCZV bits
PBX [{0, 1}]	Set/toggle PBX bit
ST [{ ({N, C, Z, V} {0, 1}), <double-word value>}]	Modify or display the Status Register or status bit

MEMORY MANIPULATION/DISPLAY COMMANDS

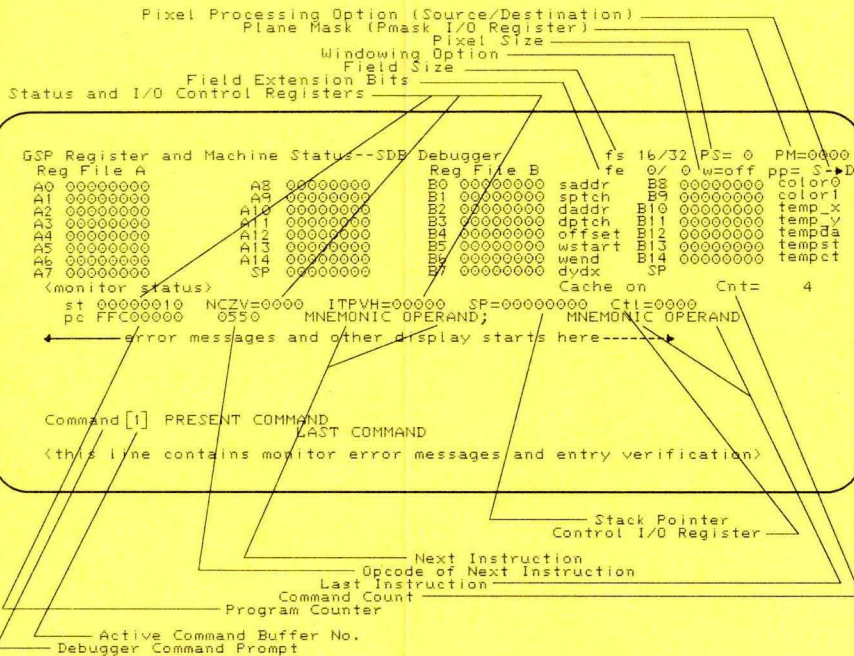| COMMAND	DESCRIPTION
CIF	Close input file
CTF	Close trace file
DB <start> [<end>]	Display bytes
DM <start> [<end>]	Display memory
D[W] <start> [<end>]	Display word of memory
F <start> <end> <word>	Fill memory with word value
FW <start> <end> <word>	Find or display memory word
MM <adr> [<value>]	Display/modify memory, word align
MMF <adr> <val> <fld sz>	Modify memory, no word align
RMI [<file ext> [<offst>]]	Restore memory image
SMI<start> <end> [<file>]	Save memory image
U [<st adr> [<end adr>]]	Unassemble specified range
V <value>	Evaluate data
VMI[<f.n.ext>[<off set>]]	Compare memory/disk

REGISTER FIELD MANIPULATION COMMANDS

COMMAND	DESCRIPTION
CD [{0, 1}]	Modify cache disable bit
IE [{0, 1}]	Modify interrupt enable bit
PB{H,V} [{0, 1}]	Toggle PBH or PBV bit
PP [<PP option no.>]	Set pixel processing option
PS [<pixel size>]	Set PSIZE register
T [{0, 1}]	Toggle transparency bit
W [{0, 1, 2, 3}]	Set/display window option

SDB COMMAND SUMMARY (CONT.)

MISCELLANEOUS AND SPECIAL COMMANDS

COMMAND	DESCRIPTION
HELP	Summary of commands
ID	Show SDB version number
L <filename> [<offset>]	Load COFF file
LE	Show last error messages
LH	Show last halt messages
LM	Show last monitor messages
Q [*] [Clear] [Save]	Quit SDB session
RMS[<file no. ext.>]	Restore machine state
SF<filename>	Show system file contents
SMS[<file no. ext.>]	Save machine state
SWitch.	Switch to command file
SY<command string>	Execute system function

I/O REGISTERS

OFF-SET	REGISTER	DESCRIPTION
0000	HESYNC	Horizontal end sync
0010	HEBLNK	Horizontal end blank
0020	HSBLNK	Horizontal start blank
0030	HTOTAL	Horizontal total
0040	VESYNC	Vertical end sync
0050	VEBLNK	Vertical end blank
0060	VSBLNK	Vertical start blank
0070	VTOTAL	Video total
0080	DPYCTL	Display control
0090	DPYSTRT	Display start
00A0	DPYINT	Display interrupt
00B0	CONTROL	Control
00C0	HSTDATA	Host data
00D0	HSTADRL	Host address (16 LSbs)
00E0	HSTADRH	Host address (16 MSbs)
00F0	HSTCTLL	Host control (8 LSbs)
0100	HSTCTLH	Host control (8 MSbs)
0110	INTENB	Interrupt enable
0120	INTPEND	Interrupt pending
0130	CONVSP	Conversion (source pitch)
0140	CONVDP	Conversion (dest pitch)
0150	PSIZE	Pixel size
0160	PMASK	Plane mask
0170	- -	Reserved
0180	- -	Reserved
0190	- -	Reserved
01A0	- -	Reserved
01B0	DPYTAP	Tap point
01C0	HCOUNT	Horizontal count
01D0	VCOUNT	Vertical count
01E0	DPYADR	Display address
01F0	REFCNT	DRAM refresh count

Pixel Processing Option (Source/Destination) ──────
Plane Mask (Pmask I/O Register) ──────
Pixel Size ──────
Windowing Option ──────
Field Size ──────
Field Extension Bits ──────
Status and I/O Control Registers ──────

```
GSP Register and Machine Status--SDB Debugger      fs 16/32 PS= 0  PM=0000
Reg File A                       Reg File B       fe  0/ 0 w=off pp= S-->D
A0 00000000      A8 00000000     B0 00000000 saddr  B8 00000000 color0
A1 00000000      A9 00000000     B1 00000000 sptch  B9 00000000 color1
A2 00000000      A10 00000000    B2 00000000 daddr  B10 00000000 temp_x
A3 00000000      A11 00000000    B3 00000000 dptch  B11 00000000 temp_y
A4 00000000      A12 00000000    B4 00000000 offset B12 00000000 tempda
A5 00000000      A13 00000000    B5 00000000 wstart B13 00000000 tempst
A6 00000000      A14 00000000    B6 00000000 wend   B14 00000000 tempct
A7 00000000      SP 00000000     B7 00000000 dydx   SP
<monitor status>                                 Cache on       Cnt=    4
   st 00000010   NCZV=0000  ITPVH=00000  SP=00000000  Ctl=0000
   pc FFC00000   0550  MNEMONIC OPERAND;      MNEMONIC OPERAND
◄──── error messages and other display starts here----►

Command[1] PRESENT COMMAND
                  LAST COMMAND
<this line contains monitor error messages and entry verification>
```

─── Stack Pointer
─── Control I/O Register
─── Next Instruction
─── Opcode of Next Instruction
─── Last Instruction
─── Command Count
─── Program Counter
─── Active Command Buffer No.
─── Debugger Command Prompt

B Registers

B0	SADDR	Source Address	B6 WEND	Window End Address
B1	SPTCH	Source Pitch	B7 DYDX	Delta Y/Delta X
B2	DADDR	Destination Address	B8 COLOR0	Source Background Color
B3	DPTCH	Destination Pitch	B9 COLOR1	Source Foreground Color
B4	OFFSET	Linear Bit Offset	B10-14	PixBlt Temporary Regs
B5	WSTART	Window Start Address	B15 SP	Stack Pointer

Status and I/O Control Registers

N	Neg.	SR	I	Interrupt Enable	SR
C	Carry	SR	T	Transparency	I/O
Z	Zero	SR	P	PixBlt Interrupted	SR
V	Overflow	SR	V	PixBlt Vert. Direction	I/O
			H	PixBlt Horiz. Direction	I/O

SDB SCREEN DISPLAY

PIXEL PROCESSING BITS

BIT	OPERATION	BIT	OPERATION
0	S ---> D	11	$\overline{S}$ AND D ---> D
1	S AND $\overline{D}$ ---> D	12	All-1s ---> D
2	S AND $\overline{D}$ ---> D	13	$\overline{S}$ OR D ---> D
3	All-0s ---> D	14	S NAND D ---> D
4	S OR $\overline{D}$ ---> D	15	$\overline{S}$ ---> D
5	S XNOR D ---> D	16	D + S ---> D
6	$\overline{D}$ ---> D	17	ADD S(D,S) ---> D
7	S NOR D ---> D	18	D - S ---> D
8	S OR D ---> D	19	SUB S(D,S) ---> D
9	D ---> D	20	MAX(D,S) ---> D
10	S XOR D ---> D	21	MIN(D,S) ---> D

HOTLINE NUMBER
(713) 274-2340

STATUS REGISTER
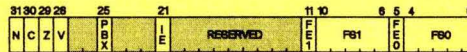
N: NEGATIVE   PBX: PIXBLT EXECUTING   FE0: FIELD EXTEND 0
C: CARRY   IE: INTERRUPT ENABLE   FS0: FIELD SIZE 0
Z: ZERO   FE1: FIELD EXTEND 1
V: OVERFLOW   FS1: FIELD SIZE 1

I/O CONTROL REGISTER

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
CD		PP				PBV	PBH	W		T		RR		RM	RSVD
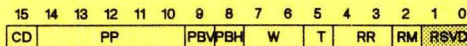
CD: INSTR. CACHE DISABLE   W: WNDW. VIOLTN. DET.
PP: PIXEL PROC. OPER.   T: PIXEL TRANS. ENBL.
PBV: PixBlt VERTICAL   RR: DRAM REFRESH RATE
PBH: PixBlt HORIZONTAL   RM: DRAM REFRESH MODE
                           RSVD: RESERVED--ALWAYS 0's

TMS34010

a. HOST INTERFACE   d. LOCAL MEMORY
b. VIDEO TIMING   INTERFACE
c. RESET/POWER   e. HOLD/EMULATOR
                            INTERFACE
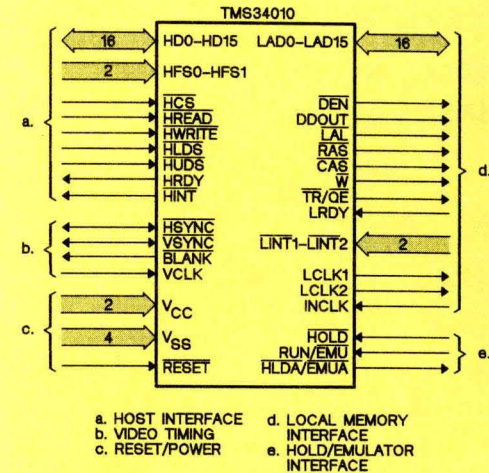
TMS34010 PIN DESCRIPTIONS

NAME	I/O	DESCRIPTION
		Host Interface Bus
HD0-15	I/O	Host bidirectional data bus
HFS0,1	I	Host function select
HCS	I	Host chip select
HREAD	I	Host read strobe
HWRITE	I	Host write strobe
HLDS	I	Host lower data select
HUDS	I	Host upper data select
HRDY	O	Host ready
HINT	O	Host interrupt request
		Video Timing
HSYNC	I/O	Horizontal sync
VSYNC	I/O	Vertical sync
BLANK	O	Blanking
VCLK	I	Video clock
		Reset/Power
VCC	I	Nominal 5-V power
VSS	I	Ground
RESET	I	Reset
		Local Interface Bus
LAD0-15	I/O	Local address/data bus
DEN	O	Local data enable
DDOUT	O	Local data direction out
LAL	O	Local address latched
RAS	O	Local row-address strobe
CAS	O	Local column-addr strobe
W	O	Local write strobe
TR/QE	O	Local shift-reg. Xfer/Enable
LRDY	I	Local ready
LINT1,2	I	Local interrupt request
LCLK1,2	O	Local output clocks
INCLK	I	Input clock
		Hold and Emulation
HOLD	I	Hold request
RUN/EMU	I	Run/not emulate
HLDA /EMUA	O	Hold/Emulate Acknowledge