

Overview

This chapter details the device specifications and characteristics of the VG-230 Sub-Notebook Engine.

Specifications

Processor

Type	V30HL	
Max Input Clock Frequency	32.215905 MHz	
Input Clock Frequencies Supported	32.215905 MHz	28.63636 MHz
(Maximum)	16.0 MHz (+ 2) 10.7 MHz (+ 3)	14.3 MHz (+ 2) 9.54 MHz (+ 3)
CPU Clock Frequencies	8.00 MHz (+ 4) 5.33 MHz (+ 6)	7.12 MHz (+ 4) 4.77 MHz (+ 6)
(Minimum)	4.00 MHz (+ 8)	3.58 MHz (+ 8)

Memory

Organization	8 or 16 bit			
Type	DRAM	SRAM	PSRAM	ROM
Density	256Kx1 256Kx4 256Kx16 512Kx8 1Mx1 1Mx4 4Mx1 4Mx4	32Kx8 128Kx8 512Kx8	32Kx8 128Kx8 512Kx8	32Kx8 and Larger (Through use of memory mapping registers).
Max. Number of Banks	6 (8 bit) 6 (16 bit)	8 (8 bit) 6 (16 bit)	7 (8 bit) 6 (16 bit)	
Wait States	0 - 4 (programmable)			

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I/O

Serial Port	8250 Based. Programmable as COM1 or COM2.
Interrupts	8259 Based. 2 channels available on bus (programmable).
DMA	8237 Based. 1 channel available on bus (programmable).
Timer	8254 Based. Provides Speaker I/F.
RTC	Includes 64 bytes of CMOS RAM.
Expansion	Supported though Single Bus. I/O channel is user-programmable to operate at CPU frequency or 1/2, 1/3, or 1/4 CPU frequency.

Configurable I/O

	<u>Configuration 1</u>	<u>Configuration 2</u>
Keyboard I/F*	Built-in keyboard scanner supporting 8x12 key matrix with 5 dedicated shift keys (101 keys total)	PC/XT compatible two line serial keyboard I/F
Parallel Port	None	PC/XT Compatible. (Requires external parallel data latch)
PC Card I/F	One PCMCIA 2.0 Memory or I/O Card Slot supported	Two PCMCIA 2.0 Memory or I/O CardSlots supported.

*Keyboard I/F itself may be disabled to allow implementation of separate keyboard controller.

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Power Management

CPU Clock Control	Divide by 4 or 8 Stop Clock
Power Control Pins (VP Pins)	2 for LCD 1 for PC Cards 1 for RAM 1 for System On/Off
Modes	On, Doze, Sleep, Suspend, and Off
Battery Monitoring	1 level (LB)
Suspend/Resume Control	Via EXT switch, RTC Alarm, Ring Indicator

LCD Controller

Supported Modes	AT&T 400 line Graphics, Double-Scan Text and Graphics, CGA Text and Graphics
Displays Supported	640x400, 640x200, 640x100, 480x128, 320x200, 240x128, 240x64, 128x128, and 128x64

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Electrical Characteristics

DC Characteristics

Supply Voltage 5V +/- 5%

Parameter	Symbol	Min	Max	Units
Input Low Voltage	V _{IL}	-	0.8	volt.
Input High Voltage	V _{IH}	2.0	-	volt.
Output Low Voltage (TTL & CMOS)	V _{OL}	0	0.45	volt.
Output High Voltage (TTL)	V _{OHi}	2.4	-	volt.
Output High Voltage (CMOS)	V _{OHe}	3.5	-	volt.
Input Low Current	I _{IL}	-	-200	μA
Input High Current V _{in} = 2.4v, V _{cc} = 5.5v	I _{IH1}	-	20	μA
Input High Current V _{in} = 5.5v, V _{cc} = 5.5v	I _{IH2}	-	200	μA
Output Short Circuit Current V _o = 0v	I _{os}	-	-100	mA
Input Clamp Voltage I _I = 020mA, V _{cc} = 4.5v	V _{IC}	-	-1.5	volt.
Output Leakage Current (Hi-Z)	I _{OLZ1}	-100	100	μA
Output Leakage Current (Bi-Dir)	I _{OLZ2}	-200	200	μA
Clock Input Low Voltage	V _{ILC}	-	0.4	volt.
Clock Input High Voltage	V _{ILH}	4.0	-	volt.

Mechanical Specifications

Package 160 pin QFP

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Absolute Maximum Ratings

Case Temperature Under Bias	-25C to +100C
Case Storage Temperature	-40C to +125 C
DC Supply Voltage (VCC)	0 to 7.0V
Voltage to any pin with respect to ground	-0.5V to VCC +0.5V

Operating Conditions

Symbol	Parameter	Min.	Max.	Unit
VCC	Supply Voltage (5 volt)	4.75	5.25	V
Freq	Operating Frequency	-	32.216	MHz
Ta	Ambient Temperature	0	70	C

Capacitance DC Specifications

Symbol	Parameter	Min.	Max.	Unit	Note
Cin	Input Capacitance	-	10	pF	1
Cout	Output Capacitance	-	10	pF	1

ICC Specifications

Symbol	Parameter	Typ.	Max.	Unit	Note
ICC ₁	Supply Current @ 8 MHz	60	120	mA	2
ICC ₂	Supply Current @ 16 MHz	90	180	mA	2
ICC ₃	Supply Current under Power Mgmt.	120	240	µA	3

Electrostatic Discharge Characteristics

Symbol	Parameter	Value	Test Condition
Vzap	E.S.D. Tolerance	>2000V	Mil-STD 883 Meth. 3015

Notes: 1. @ 1MHz
2. ON Mode
3. SLEEP Mode

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VG-230
Outline Diagram
Figure 4-1

VG-230 160 PIN FLAT PACK

