

Blue

Bit 

BlueBit Ltd.

MULTIMEDIA PROCESSOR VI-1888

PRODUCT DATA SHEET

VERSION 0.48

INTRODUCTION

The VI-1888 is a complex multimedia processor for audio, video, and Internet applications. In particular it is specified to meet the requirements of next generation video and VoIP products in customer and business fields. This document describes the features of the VI-1888 multimedia processor, which can be used in a wide range of DSP applications.

State-of-the-art deep sub-micron technology ensures lowest unit price at highest performance. The VI-1888 is designed for low-power consumption, which makes it suitable for portable applications.

Most valuable I/O standards are supported (e.g. USB2.0, Ethernet 10/100), including a large set of serial port protocols (I²C, SSI, I²S, AC'97, etc.).

1.1 VI-1888 FEATURE LIST

The VI-1888 multimedia processor features:

- ARM1136J-S CPU core
 - Operating @ up to 360MHz
 - 16k ICache, 16k DCache, 8k ITCM, 8k DTCM
- ETM11RV @ up to 360MHz
- 2x 32k internal 0 wait state SRAM and (64k BootROM)
- 2x Vector Interrupt Controllers
- VSP (video signal processing) System @ up to 240MHz
 - Supporting MPEG2, MPEG4, H.263, H.264 video encoding and decoding simultaneously up to VGA resolution @ 30fps
 - Decoding only up to D1 resolution @ 30fps
 - Configurable to support any other Video standards
 - 3x 4kBytes internal 0 wait state SRAM for data exchange
- Flash code validation before execution
- Triple DMA controller
 - 2 independent AHB master interfaces with 64bit data width
 - 1 independent AHB master interfaces with 32bit data width
- Multi Port Memory Controller
 - Up to 8 external memory ports
 - Supporting SDR-SDRAM 32 and 64bit data width and up to 166MHz
 - Supporting asynchronous SRAM 8/16/32/64 bit data width
 - Supporting synchronous SRAM 8/16/32/64 bit data width and up to 166MHz
 - Supporting NOR-FLASH 8/16/32/64 bit data width
 - Supporting with software driver NAND-Flash (e.g. 8/16bit with 512 and 2048byte pages)
- 2 independent AHB bus systems @ up to 166 MHz
 - Support of mixed endianness data access via dedicated ARM cpu commands and unaligned data access

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- 4 internal PLLs
 - LCD Controller supporting
 - STN display modules
 - TFT graphics display up to 1024x768 pixel at 24bit per pixel
 - color and monochrome displays
 - Single and dual display mode
 - 2x Video I/O
 - 8bit YUV + CLK + HSYNC + VSYNC + Field + Valid
 - USB 2.0 Host with ULPI SDR interface
 - 2x (R)MII Ethernet port 10/100Mbit
 - SmartCard Interface
 - 2x high speed I2C
 - 2x Fast UART
 - 2x Fast IrDA
 - 3x Generic Serial Interfaces (GSI) configurable to support e.g.
 - SSP
 - I²S
 - 3x SSI
 - 4x AD/DA Converter for audio signals
 - 100x GPIO pins
 - 8x General Purpose Timers
 - Watchdog Timer
 - JTAG port for SW debugging and boundary scan

1.2 APPLICATIONS

This section gives some examples of applications for the VI-1888.

1.2.1 COMFORT VIDEO & VOIP PHONE

The VI-1888 multimedia processor is perfectly suited for comfort video & VoIP phone applications as shown in Figure 2-1, supporting

- Full telephony features incl.
 - FAX / ATA (e.g. for analog cordless phone)
 - Interface to PSTN and LAN switch
- Video: MPEG2, MPEG4, H.263, H.264
- Audio: G.711a/μ, G.723.1, G.726, G.728, G.729A/B, iLBC
- Protocols: SIP, H.232, SRTP (secure encrypted Audio and Video)
- Integrated switch for PC connection

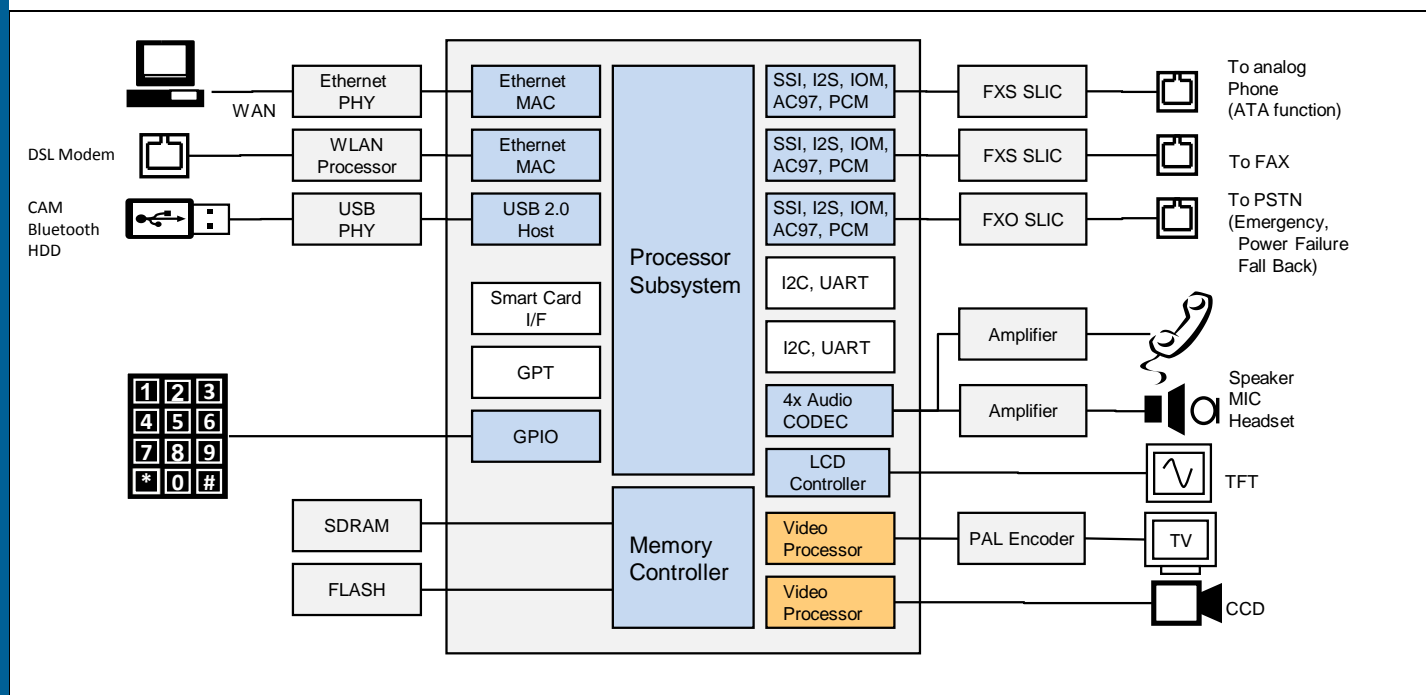


Figure 2-1: Comfort Video and VoIP Phone with VI-1888

1.2.2 MULTIMEDIA PLAYER

The VI-1888 multimedia processor may also be used for a portable multimedia player application as shown in Figure 2-2, supporting

- Audio Formats: MP3, WMA, etc.
- Video formats: MPEG2, MPEG4, H.263, H.264, WMV9
- Image formats: JPEG, TIFF, GIF, etc.
- Audio I/F: 16-bit stereo
- Video I/F: PAL, NTSC, SECAM

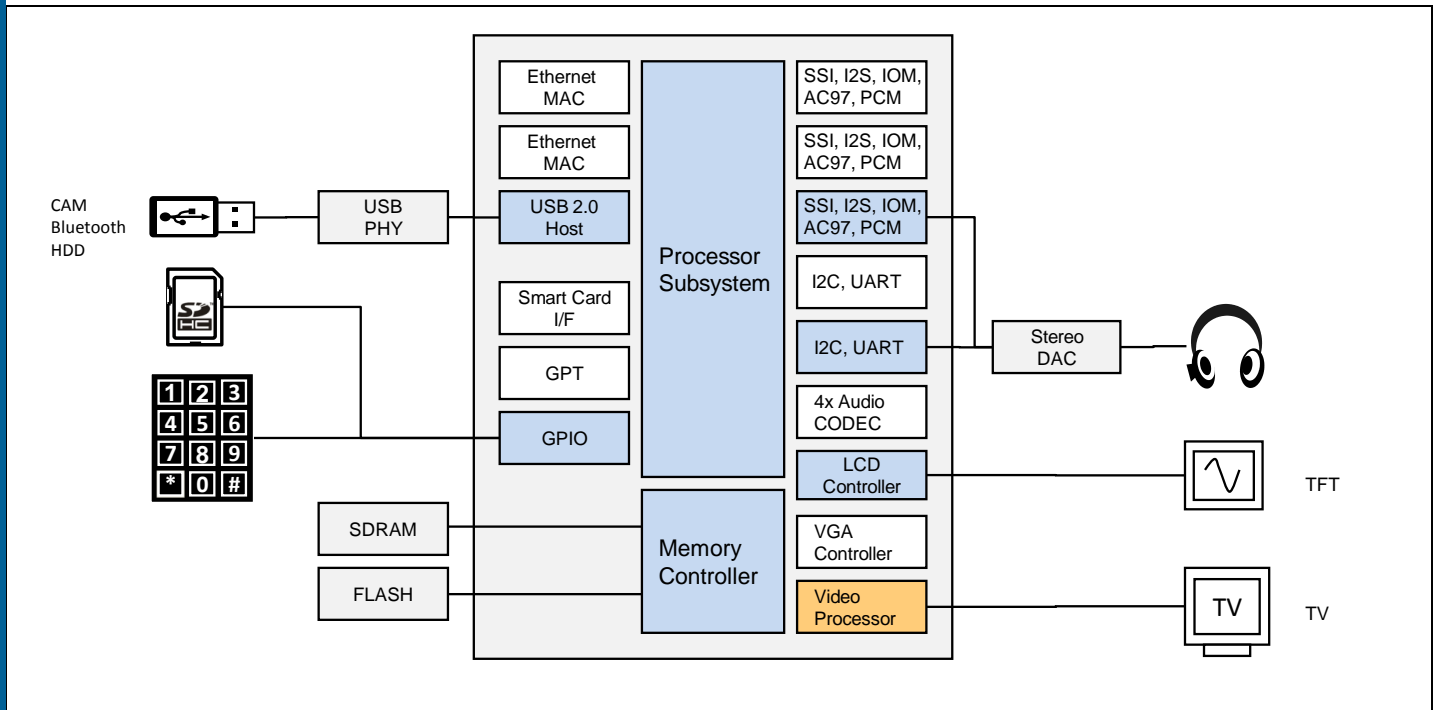


Figure 2-2: Multimedia Player with VI-1888

1.2.3 POS TERMINAL

The VI-1888 also may be used for Internet service applications like a point-of-service terminal as shown in Figure 2-3, supporting

- Secure encrypted data Rx/Tx
- Analog and DVI TFT displays
- SmartCard, magnetic card, memory card read/write

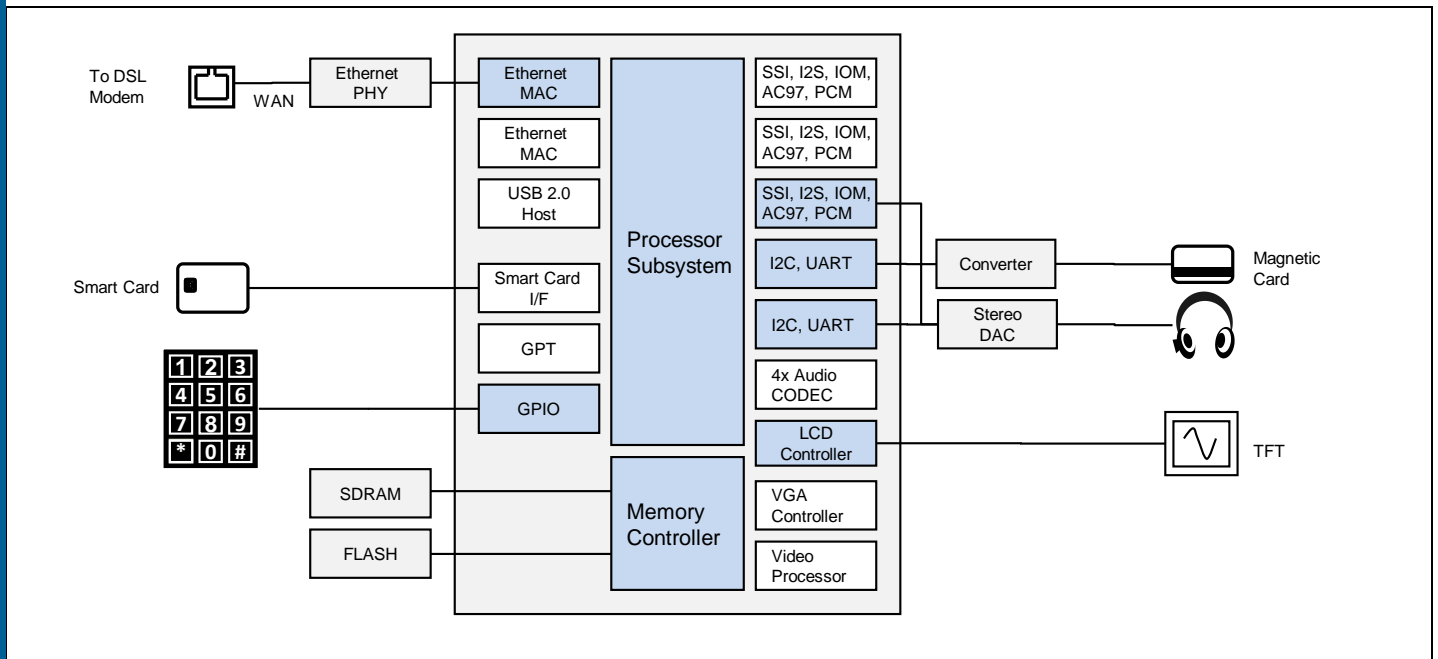


Figure 2-3: POS Terminal with VI-1888

2 FUNCTIONAL OVERVIEW

This section describes the design architecture of the VI-1888 multimedia processor and elaborates on the features of the integrated building blocks.

2.1 SYSTEM ARCHITECTURE

The following figure gives an overview of the architecture.

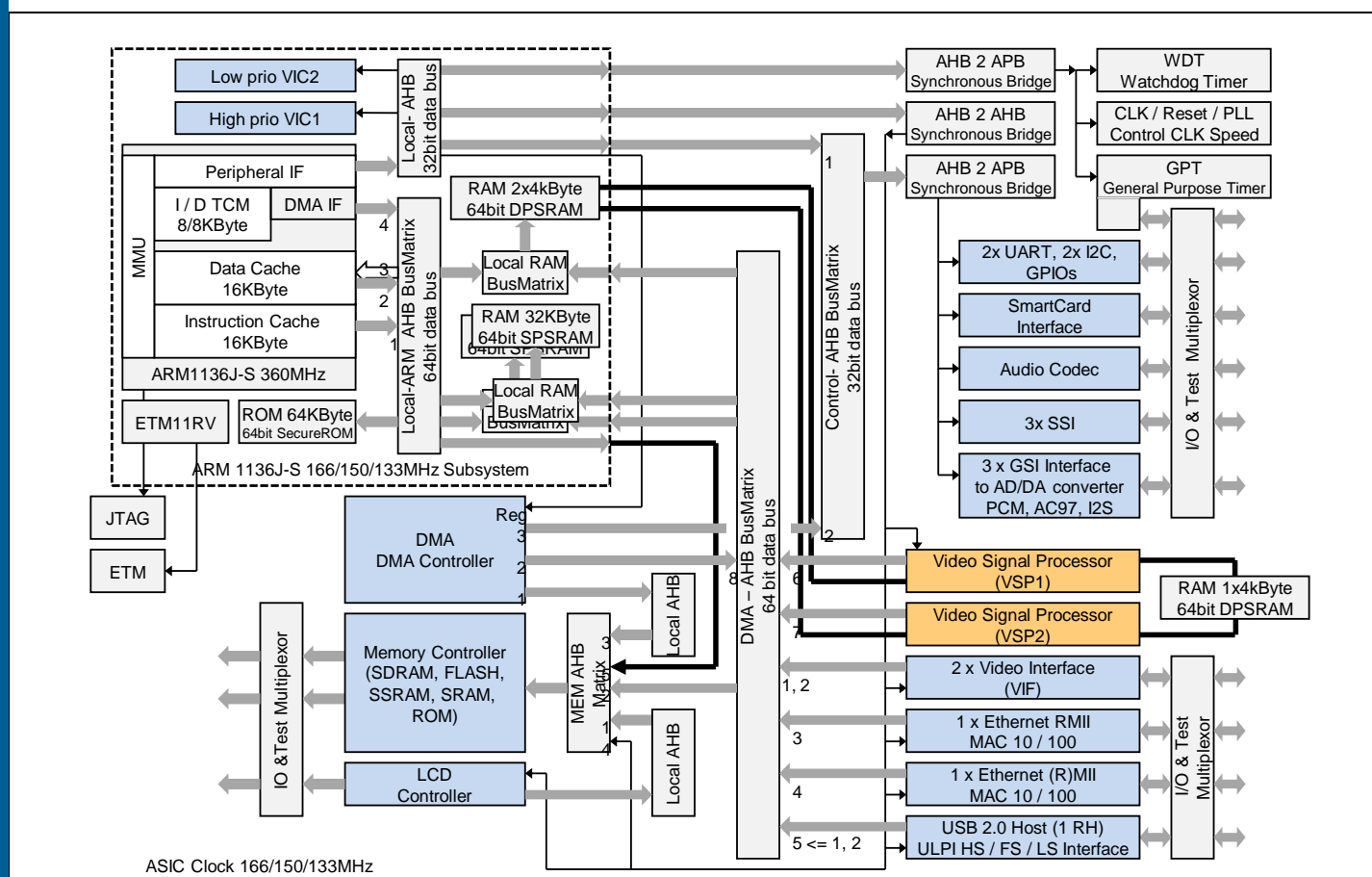


Figure 2-1: VI-1888 Architecture

The architecture is based on two individual AHB systems, the “DMA-AHB BusMatrix” and the “Control-AHB BusMatrix”. The DMA-AHB is used to provide an individual bus just for the data traffic. The Control-AHB is used to connect the DSP to all peripherals and give the DMA access to APB peripherals. The DSP sub system at the top left corner of the figure has an own local bus system with memories and interrupt controller. The AHB busses will run at up to 166MHz. The ARM1136J-S may run at bus-asynchronous or bus-synchronous mode with up to 360Mhz, which is configurable via an ASIC pin. The VSP will run at up to 240MHz. The memory interface will run at up to 166MHz and is up to 64bit wide.

3 PHYSICAL INFORMATION

3.1 PACKAGE

The VI-1888 is packaged in a standard PBGA 388 package.

- Package size: 27x27mm²
- Pitch: 1.00mm
- Ball matrix: 26x26
- Ground center matrix: 6x6

The mechanical outline is shown in Figure 3-1 and Figure 3-2.

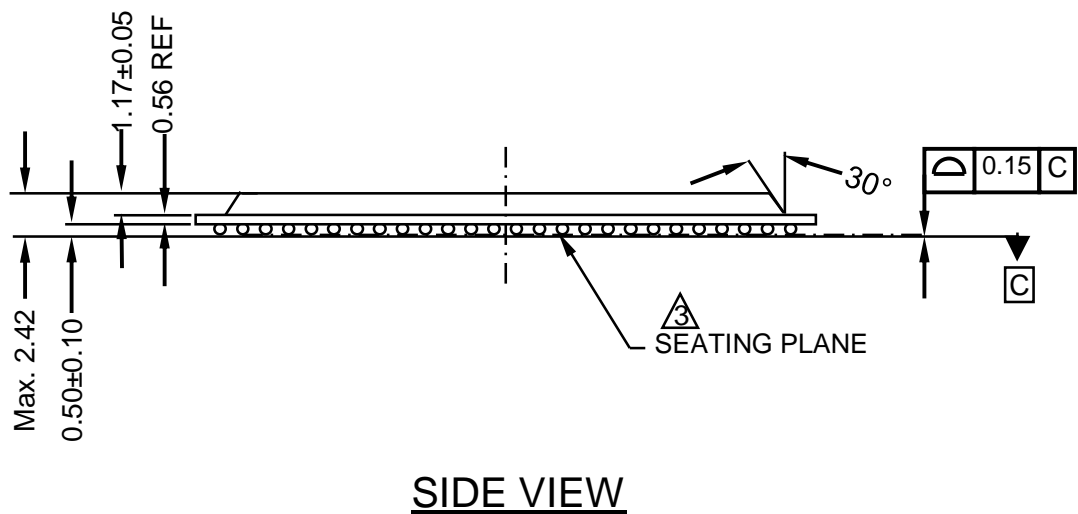
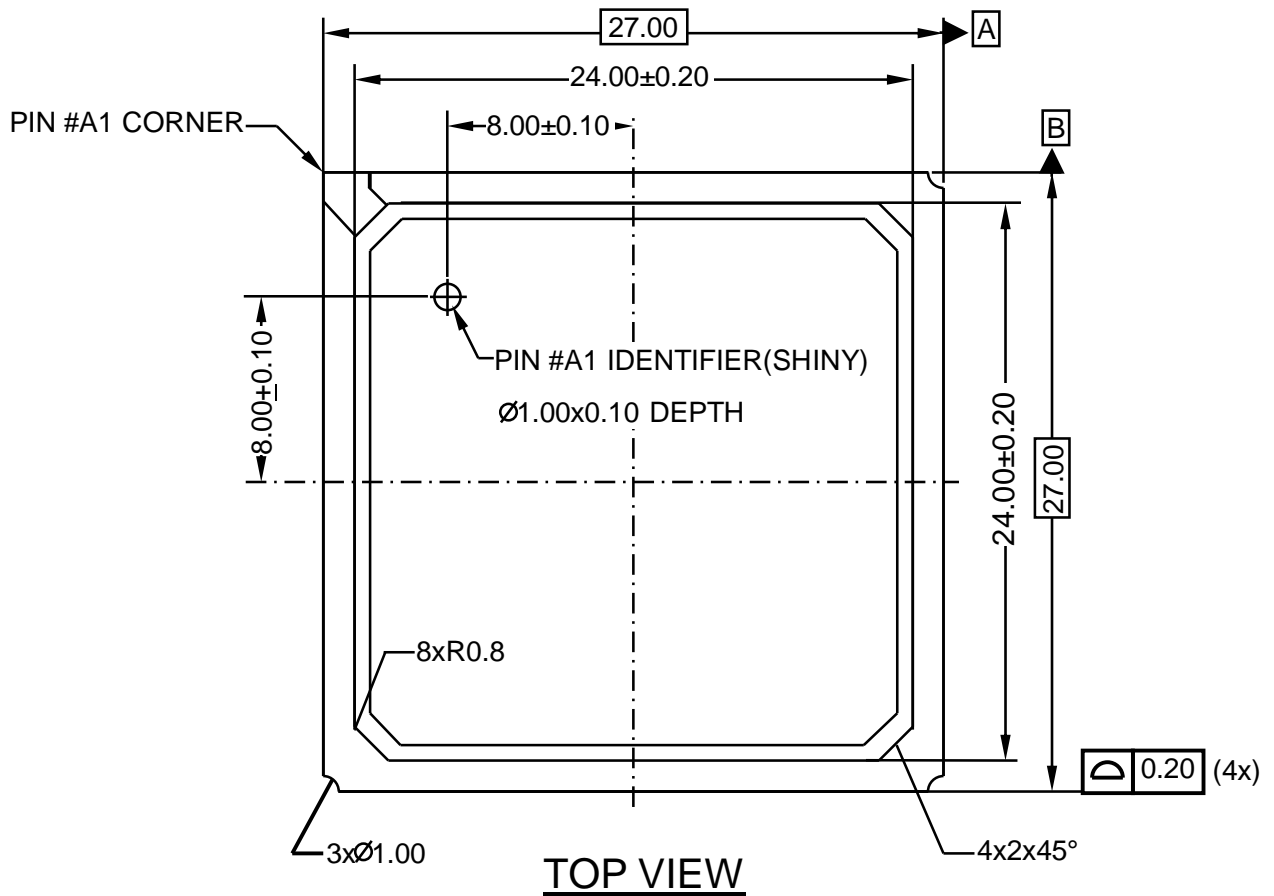
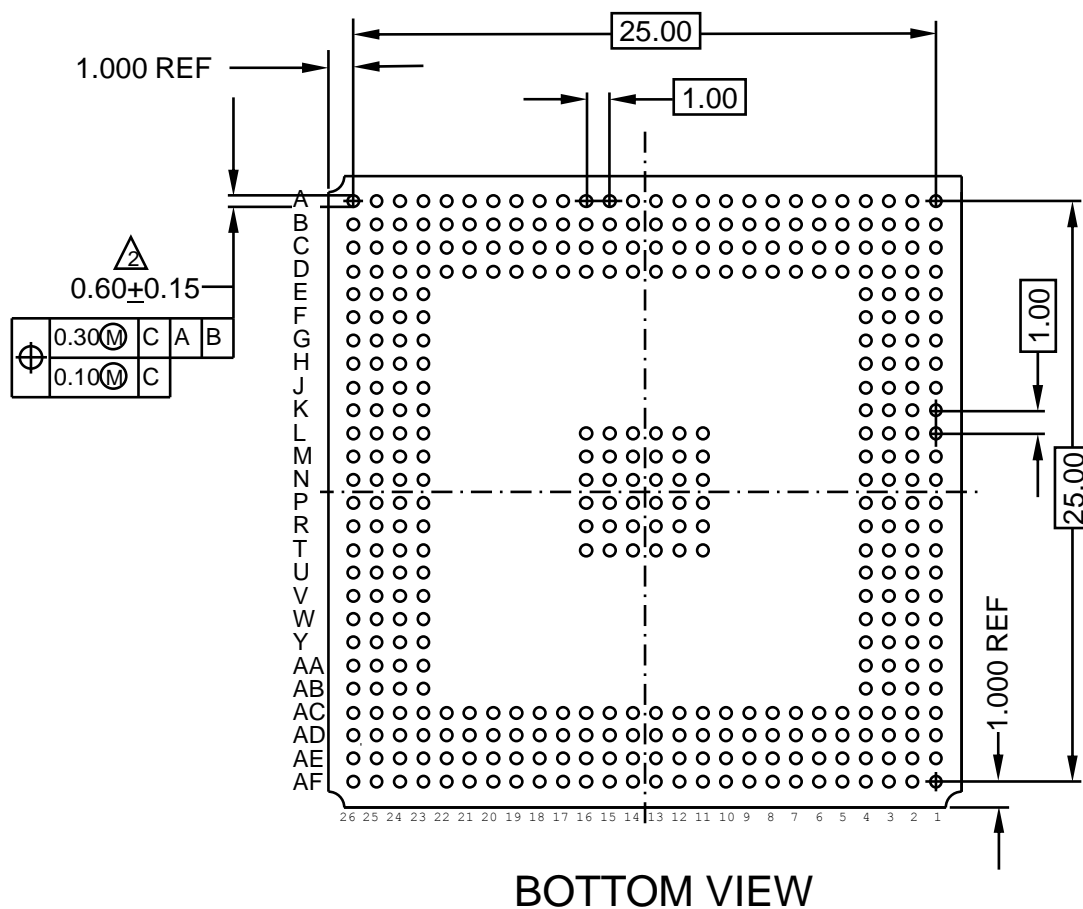


Figure 3-1: Package Outline (Top / Side)



Note

1. ALL DIMENSIONS AND TOLERANCE CONFORM TO ASME Y 14.5M - 1994.
2. COLLAPSED BALL DIAMETER AFTER REFLOW.
DIMENSION IS MEASURED AT THE MAXIMUM SOLDER BALL DIAMETER, PARALLEL TO PRIMARY DATUM \square .
3. PRIMARY DATUM \square AND SEATING PLANE ARE DEFINED BY THE SPHERICAL CROWNS OF THE SOLDER BALLS.
4. MAXIMUM MOLD TO SUBSTRATE OFFSET SHALL BE 0.127
5. THE SURFACE FINISH OF THE PACKAGE SHALL BE EDM CHARMILLE #24 - #27
6. UNLESS OTHERWISE SPECIFIED TOLERANCE: DECIMAL ± 0.05
ANGULAR $\pm 2^\circ$

UNIT: mm

Figure 3-2: Package Outline (Bottom)

4 SALES INFORMATION

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