SYL2282-V1-A0
Product Brief

1080p Automotive Grade LCOS Light Modulation Panel

Features

- AEC-Q100 qualified for automotive applications.
- Operating Temperature: -40°C to 105°C ambient
- Single panel field sequential color Liquid Crystal On Silicon (LCOS) with digital drive
- 0.55” active display diagonal
- 1080p (1920x1080) array of mirrors (6.4µm pitch)
- Displays sequential colors up to 6 Color Fields per Frame (CF/F) with user programmable color field duration
- Second generation Syndiant architecture for improved power and optical efficiency
- Compatible with LED or Laser light source
- Wide field of view
- No high voltage supply needed; maximum supply voltage is only 3.3 / 3.8V

Example Applications

- LED and Laser 2D/3D projectors
- Head-Up Display (HUD
- Augmented Reality (AR) HUD
- In-Vehicle Infotainment (IVI) Systems
- Ambient Lighting and Mood Projection
- Adaptive Front Lighting Systems (AFS)
- Smart Headlights
- Advanced Driver-Assistance Systems (ADAS)
- Entertainment center
- Near eye solutions for automotive applications
- Projectors for automotive and industrial temperature range

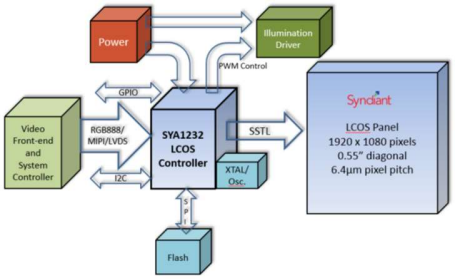
A. Overview

Syndiant's SYL2282-V1-A0 display panel offers 1080p resolution within a 0.55" viewable diagonal area, designed specifically for automotive applications that demand high-definition clarity and brightness in a space-efficient design. Equipped with an integrated thermoelectric cooler element, the display ensures efficient operation across automotive temperature range. Its vibrant color output, wide field of view, low power consumption and cost-effectiveness make it a compelling solution for automotive display needs. Syndiant's patented LCOS micro display architecture integrates all-digital smart electronics onto the display panel. An application specific SIMD processor performs bit serial data manipulation to control each pixel. The intelligence is divided between the controller and the panel; the controller formats and arbitrates data flow to the panel, and the panel logic computes new pixel values and updates the pixels. Pixel values are separated into base and sharpener bits which maintain sharpness while reducing data bandwidth to the panel.

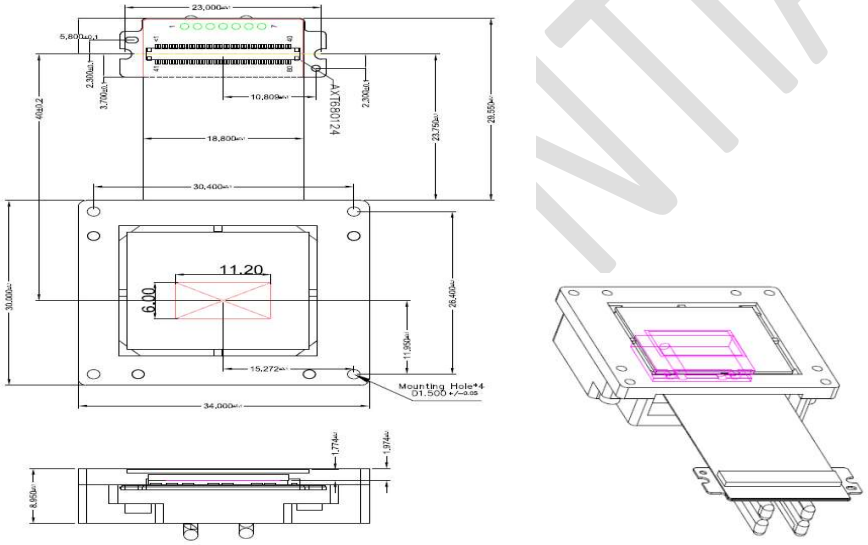
B. Automotive Applications

- **Head-Up Display (HUD)**. Display important information directly onto the windshield, allowing drivers to access critical data like speed, navigation directions, and vehicle status without taking their eyes off the road
- **Augmented Reality (AR) HUD**. Incorporate augmented reality technology to overlay additional information onto the windshield, such as navigation arrows that appear to be on the road ahead, enhancing situational awareness.
- **In-Vehicle Infotainment (IVI) Systems.** Display multimedia content onto screens embedded in the dashboard or rear seats, providing entertainment options for passengers.
- **Ambient Lighting and Mood Projection.** Create ambient lighting effects inside or outside the vehicle, projecting patterns or colors onto surfaces to enhance the mood or atmosphere.
- **Adaptive Front Lighting Systems (AFS).** Adjust the direction and intensity of the vehicle's headlights based on driving conditions, improving visibility and safety by illuminating curves and obstacles more effectively.
- **Smart Headlights.** Dynamically adjust the beam pattern to avoid dazzling oncoming drivers while maintaining optimal visibility for the driver.
- **Advanced Driver-Assistance Systems (ADAS).** Project warning symbols or visual alerts onto the windshield to notify drivers of potential hazards or unsafe driving conditions.
- **Near eye solution options:** Virtual Cockpit Displays, Driver Assistance Systems, Gesture Control Interfaces, Passengers Entertainment, Vehicle-to-Infrastructure (V2I) Communication, Enhanced Parking Assistance

C. System Block Diagram



D. Mechanical Specifications



E. Part Ordering Information

The following table describes components that can be ordered from Syndiant related to this product:

Ordering Part #	Description
Panel:	
42-2282-V1-A0	SYL2282-V1-A0, Automotive Panel, 1080p, 0.55” display panel chip on flex, without compensator and light mask (34x30mm)
ASIC:	
22-1311-00	SYA1311 LCOS Controller
22-1232-00	SYA1232 LCOS Controller
Development Kits:	
71-2210-05	SYL2282-V1-A0 Basic Development Kit with 2 X 42-2282-V1-A0 panels