MICRODISPLAY PANEL GUIDE VER 2.1

RDP series consists of highly integrated LCoS microdisplay panels for optical display system such as AR·VR smart glasses, FPV goggles, HMD (Head-Mounted Display), HUD (Head-Up Display), and pico projectors. RDP series provides high resolution in a highly compact panel.

RDP551F

Resolution: Full HD (1920 x 1080) & 2K1K (2048 x 1024)
Active Area: 0.55"
Module Size: 25.9 x 10 mm

RDP502H

Resolution: HD (1280 x 720)
Active Area: 0.5"
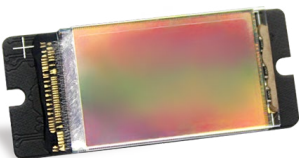Module Size: 25.0 x 11.0 mm

RDP370F

Resolution: Full HD (1920 x 1080)
Active Area: 0.37"
Module Size: 23.4 x 8.65 mm

RDP370F-X

Resolution: Full HD (1920 x 1080)
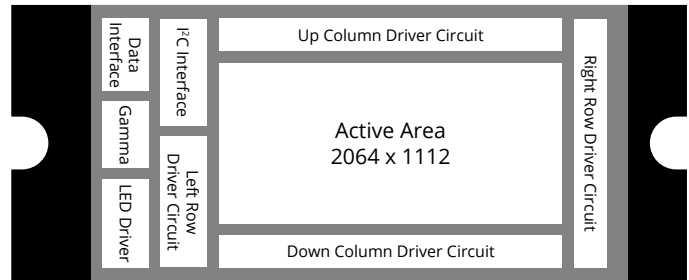Active Area: 0.37"
Module Size: 13.8 x 8.5 mm

RDP700Q

Available as sample

Resolution: WQHD (2560 x 1440)
HD/FHD to QHD Video Scaler
Active Area: 0.7"
Module Size: 28.3 x 12 mm

RAONTECH

FUNCTIONAL BLOCK DIAGRAM

Data Interface	I²C Interface	Up Column Driver Circuit	Right Row Driver Circuit
Gamma	Left Row Driver Circuit	Active Area 2064 x 1112	
LED Driver		Down Column Driver Circuit	

FEATURES

· Single panel Liquid Crystal on Silicon (LCoS)

· 0.55"/0.57" active display diagonal

· High definition (2064 x 1112) array of 6.3 µm mirrors

· High frame refresh rate (up to 420 Hz) for Field Sequential Color

· Gamma corrected 8-bit gray depth

· Low power consumption

· LED driver embedded

· Temperature sensor embedded

· High speed LVDS interface: 8 channels x 1000 Mbps

· High reflectivity: over 82%

· Contrast ratio: 500:1 (at FSC driving)

· Active area: 12.096 x 6.804 mm (1080P)
$\qquad$ 12.9024 x 6.4512 mm (2k1k)

· Module size: 25.8 x 10 mm

· Power consumption: 120 mW

· Fast VA (Vertical Alignment) LC mode

· High voltage LCoS process

· RoHS compatible package

GENERAL DESCRIPTION

The RDP551F is a highly integrated LCoS display module for a single panel optical display system such as HMD (Head-Mounted Display), HUD (Head-Up Display), and Pico Projectors. It operates up to 420 Hz refresh rate. It includes RGB LED driver, low- voltage differential signal receiver and power-down detection circuit. The fast-speed differential signal receiver, which receives LVDS format, interfaces with fast- speed parallel digital signals (8 channels x 1000 Mbps) and controls signals for high frame rate of a panel. The LVDS interface enables RDP551F to perform a long path con- nection and high frame rate display, allowing the panel to be applied to a single panel system such as HMD, HUD, and Pico Projectors. Gamma corrected resistor string and gamma tab voltages are fully programmable for enhanced gray scaling performance. The RGB LED driver supports RGB LEDs as a light source of applications.
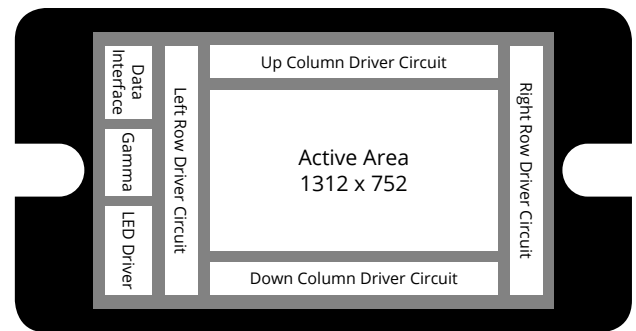
APPLICATIONS

· Head-Mounted Display

· Head-Up Display

· Pico Projector

· AV Projector

· VR

PRODUCT HIGHLIGHTS

1. High frame rate for field sequential color of single panel optical system

2. Differential signal interface for long path

3. Embedded LED driver

4. Embedded temperature sensor

5. Low power consumption

FUNCTIONAL BLOCK DIAGRAM

Data Interface

Gamma

LED Driver

Left Row Driver Circuit

Up Column Driver Circuit

Active Area
1312 x 752

Down Column Driver Circuit

Right Row Driver Circuit

FEATURES

· Single panel Liquid Crystal on Silicon (LCoS)
· 0.5" active display diagonal
· High definition (720P, 1312 x 752) array of 8.6 μm mirrors
· High frame refresh rate (up to 400Hz) for Field Sequential Color
· Gamma corrected 8-bit gray depth
· Low power consumption
· LED driver embedded
· DC-DC converter embedded

· High speed LVDS interface: 4 channels x 800 Mbps
· High reflectivity: over 82%
· Contrast ratio: 500:1 (at FSC driving)
· Active area: 11.2832 x 6.4672 mm
· Module size: 24.8 mm x 10.8 mm
· Power consumption: 150 mW
· Fast VA (Vertical Alignment) LC mode
· High voltage LCoS process
· RoHS compatible package

GENERAL DESCRIPTION

The RDP502H is a highly integrated LCoS display module for single panel optical display system such as HMD (Head Mounted Display), HUD (Head-Up Display), and Pico Projector. It operates over 400 Hz refresh rate. It includes RGB LED driver, low voltage differential signal receiver and power-down detection circuit. The fast speed differential signal receiver, which receives LVDS format, interfaces fast speed parallel digital signals (4channel x 8bit) and controls signals for high frame rate of panel. The LVDS interface makes RDP502H be able to long path connection and high frame rate display, which enables panel to apply to single panel system such as HMD, HUD, and Pico Projector. Gamma corrected resistor string and gamma tab voltages are fully programmable for enhanced gray scaling performance. The RGB LED driver supports RGB LEDs as a light source of applications.
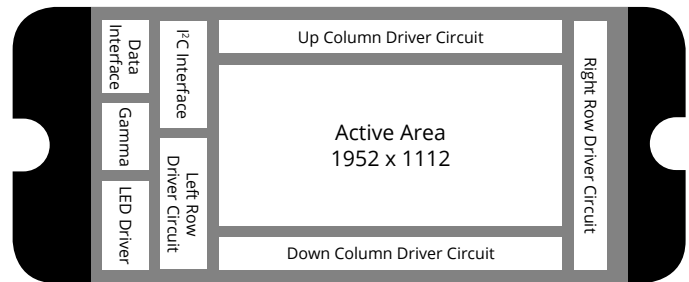
APPLICATIONS

· Head-Mounted Display
· Head-Up Display
· Pico Projector
· AV Projector

PRODUCT HIGHLIGHTS

1. High frame rate for Field Sequential Color of single panel optical system
2. Differential Signal interface for long path
3. LED driver embedded
4. Low power consumption

FUNCTIONAL BLOCK DIAGRAM

Data Interface	I²C Interface
Gamma	Up Column Driver Circuit
LED Driver	Left Row Driver Circuit

Active Area
1952 x 1112

Down Column Driver Circuit

Right Row Driver Circuit

FEATURES

· Single panel Liquid Crystal on Silicon (LCoS)
· 0.37" active display diagonal
· High definition (1952x1112) array of 4.3 μm mirrors
· High frame refresh rate (up to 420 Hz) for Field Sequential Color
· Gamma corrected 8-bit gray depth
· Low power consumption
· LED driver embedded
· Temperature sensor embedded

· High speed LVDS interface: 8 channels x 1000 Mbps
· High reflectivity: over 82%
· Contrast ratio: 500:1 (at FSC driving)
· Active area: 8.393 x 4.781 mm
· Module size: 23.4 x 8.65 mm
· Power consumption: 120 mW
· Fast VA (Vertical Alignment) LC mode
· High voltage LCoS process
· RoHS compatible package

GENERAL DESCRIPTION

The RDP370F is a highly integrated LCoS display module for single panel optical display system such as HMD (Head Mounted Display), HUD (Head-Up Display), and Pico Projector. It operates up to 420 Hz frame rate. It includes RGB LED driver, low voltage differential signal receiver and power-down detection circuit. The fast speed differential signal receiver, which receives LVDS format, interfaces fast speed parallel digital signals (8 channel x 1000 MHz) and controls signals for high frame rate of panel. The LVDS interface makes RDP370F be able to long path connection and high frame rate display, which enables panel to apply to single panel system such as HMD, HUD, and Pico Projector. Gamma corrected resistor string and gamma tab voltages are fully programmable for enhanced gray scaling performance. The RGB LED driver supports RGB LEDs as a light source of applications.
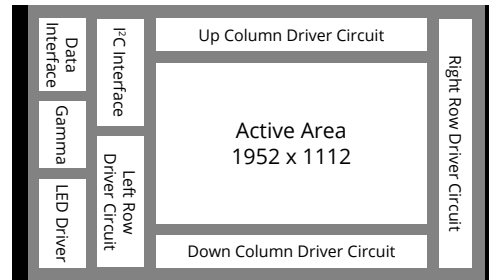
APPLICATIONS

· Head-Mounted Display
· Head-Up Display
· Pico Projector
· AV Projector
· AR Smart Glasses
· Near Eye Display Devices

PRODUCT HIGHLIGHTS

1. High frame rate for Field Sequential Color of single panel optical system
2. Differential Signal interface for long path
3. LED driver embedded
4. Temperature sensor embedded
5. Low power consumption

RDP370F-X

FUNCTIONAL BLOCK DIAGRAM

Data Interface	I²C Interface	Up Column Driver Circuit	Right Row Driver Circuit
Gamma		Active Area 1952 x 1112	
LED Driver	Left Row Driver Circuit	Down Column Driver Circuit	

FEATURES

· Single panel Liquid Crystal on Silicon (LCoS)

· 0.37" active display diagonal

· High definition (1952x1112) array of 4.3 μm mirrors

· High frame refresh rate (up to 420 Hz) for Field Sequential Color

· Gamma corrected 8-bit gray depth

· Low power consumption

· LED driver embedded

· Temperature sensor embedded

· High speed LVDS interface: 8 channels x 1000 Mbps

· High reflectivity: over 82%

· Contrast ratio: 500:1 (at FSC driving)

· Active area: 8.393 x 4.781 mm

· Module size: 13.8 x 8.5 mm

· Power consumption: 100 mW

· Fast VA (Vertical Alignment) LC mode

· High voltage LCoS process
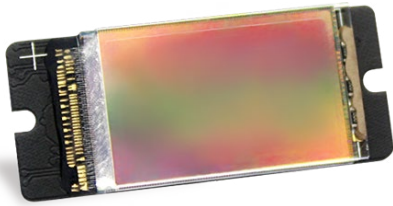
· RoHS compatible package

GENERAL DESCRIPTION

The RDP370F-X is a highly integrated LCoS display module for single panel optical display system such as HMD (Head Mounted Display), HUD (Head-Up Display), and Pico Projector. It operates up to 420 Hz frame rate. It includes RGB LED driver, low voltage differential signal receiver and power-down detection circuit. The fast speed differential signal receiver, which receives LVDS format, interfaces fast speed parallel digital signals (8 channel x 1000 MHz) and controls signals for high frame rate of panel. The LVDS interface makes RDP370F-X be able to long path connection and high frame rate display, which enables panel to apply to single panel system such as HMD, HUD, and Pico Projector. Gamma corrected resistor string and gamma tab voltages are fully programmable for enhanced gray scaling performance. The RGB LED driver supports RGB LEDs as a light source of applications.
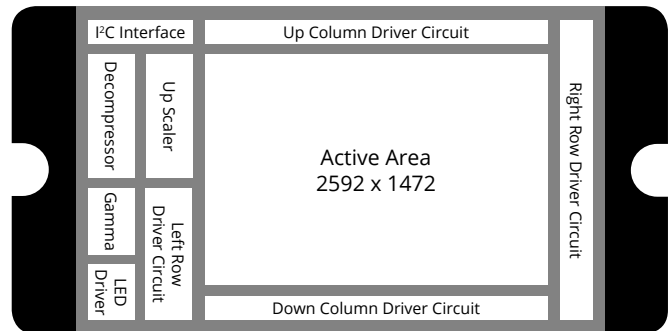
APPLICATIONS

· Head-Mounted Display

· Head-Up Display

· Pico Projector

· AV Projector

· AR Smart Glasses

· Near Eye Display Devices

PRODUCT HIGHLIGHTS

1. High frame rate for Field Sequential Color of single panel optical system

2. Differential Signal interface for long path

3. LED driver embedded

4. Temperature sensor embedded

5. Low power consumption

FUNCTIONAL BLOCK DIAGRAM

I²C Interface	Up Column Driver Circuit	
Decompressor / Up Scaler	Active Area 2592 x 1472	Right Row Driver Circuit
Gamma / Left Row Driver Circuit		
LED Driver	Down Column Driver Circuit	

FEATURES

· Single panel Liquid Crystal on Silicon (LCoS)

· 0.7" active display diagonal

· High definition (2560x1440) array of 6.05 µm mirrors

· High frame refresh rate (up to 360 Hz) for Field Sequential Color

· Gamma corrected 8-bit gray depth

· Low power consumption

· LED driver embedded

· Temperature sensor embedded

· High speed LVDS interface: 8 channels x 1000 Mbps

· High reflectivity: over 82% (NFY)

· Contrast ratio: 500:1 (at FSC driving, NFY)

· Active area: 15.488 x 8.712 mm (QHD)

· Module size: 28.3 x 12 mm (NFY)

· Power consumption: 200 mW (NFY)

· Fast VA (Vertical Alignment) LC mode

· High voltage LCoS process

· RoHS compatible package

GENERAL DESCRIPTION

The RDP700Q is a highly integrated LCoS display module for a single panel optical display system such as HMD (Head-Mounted Display), HUD (Head-Up Display), and Pico Projectors. It operates up to 360 Hz refresh rate. It includes RGB LED driver, low-voltage differential signal receiver and power-down detection circuit. The fast-speed differential signal receiver, which receives LVDS format, interfaces with fast- speed parallel digital signals (8 channels x 1000 Mbps) and controls signals for high frame rate of a panel. The LVDS interface enables RDP700Q to perform a long path connection and high frame rate display, allowing the panel to be applied to a single panel system such as HMD, HUD, and Pico Projectors. Gamma corrected resistor string and gamma tab voltages are fully programmable for enhanced gray scaling performance. The RGB LED driver supports RGB LEDs as a light source of applications.

APPLICATIONS

· Head-Mounted Display

· Head-Up Display

· Pico Projector

· AV Projector

· VR

PRODUCT HIGHLIGHTS

1. High frame rate for field sequential color of single panel optical system
2. Differential signal interface for long path
3. LED driver embedded
4. Temperature sensor embedded
5. Low power consumption