

The Key to A Better VR Headset Experience in Metaverse World with mini-LED Backlight

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LED Backlight IC Product Manager, Macroblock

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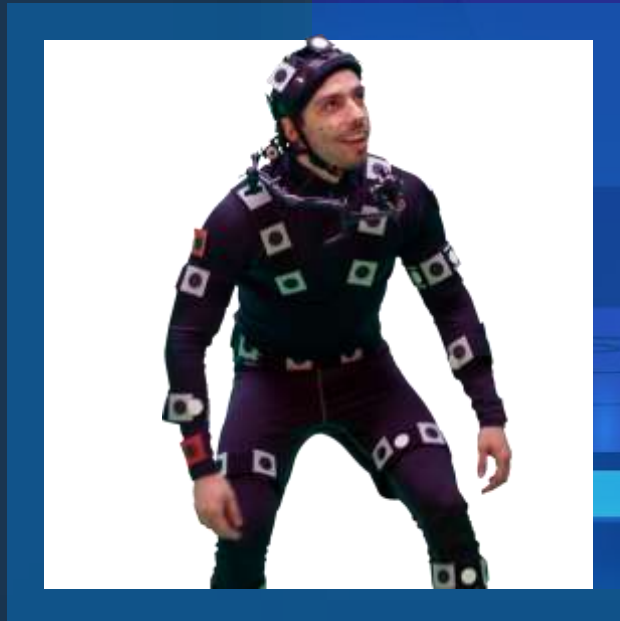
WHOLE

NEW

WORLD

METaverse

Macroblock Symposium 2022



The Key to A Better VR Headset Experience
in Metaverse World with

mini-LED Backlight

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The Birth of the Metaverse

Virtual Reality



Mixed Reality



Surfing in the Metaverse

VR Headsets

Macroblock Symmetry 2



VR Applications

Engineering & Simulation

- ◆ Mechanism Design and Assembly
- ◆ Product Appearance Design
- ◆ Medical Engineering Collaboration



VR Applications

Entertainment & Fashion

- ◆ Video Game
- ◆ Social Entertainment
- ◆ Art & Fashion



VR Applications

Education & Training

- ◆ Experimental Education
- ◆ Skill Training
- ◆ Disaster Prevention Education



Macroblock Symp

Challenges faced by VR Headsets

Improving User Experience

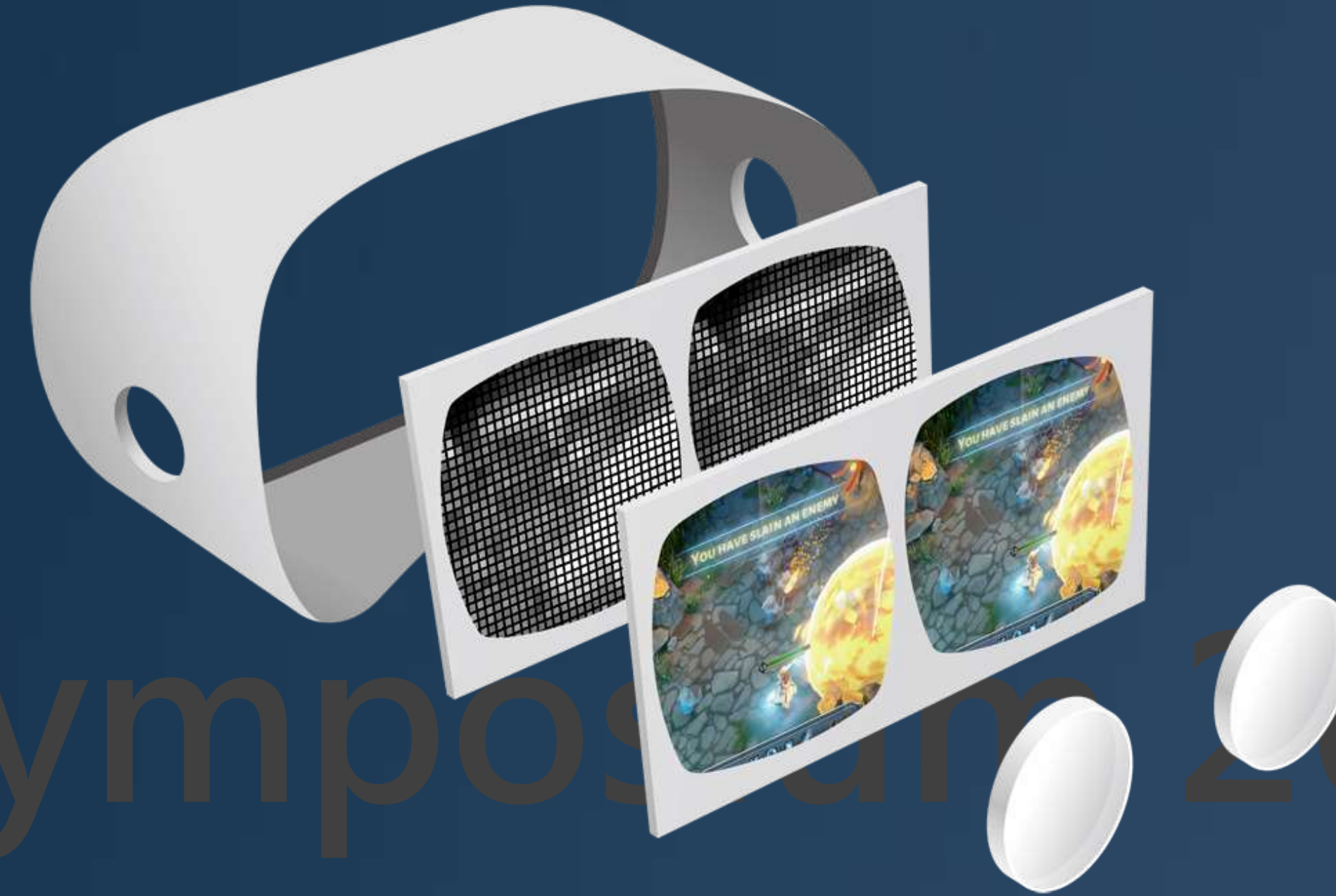
- ◆ Lowering Screen Door Effect
- ◆ Increasing Contrast
- ◆ Eliminating Abnormal Condition

Improving Comfort Level

- ◆ Overcoming Motion Sickness
- ◆ Preventing Eye Fatigue
- ◆ Creating Slim and Sleek Design

VR Headsets

with mini-LED Backlight

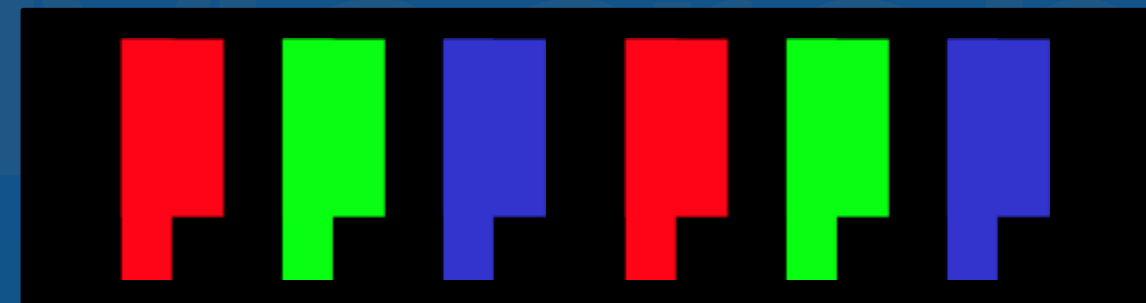


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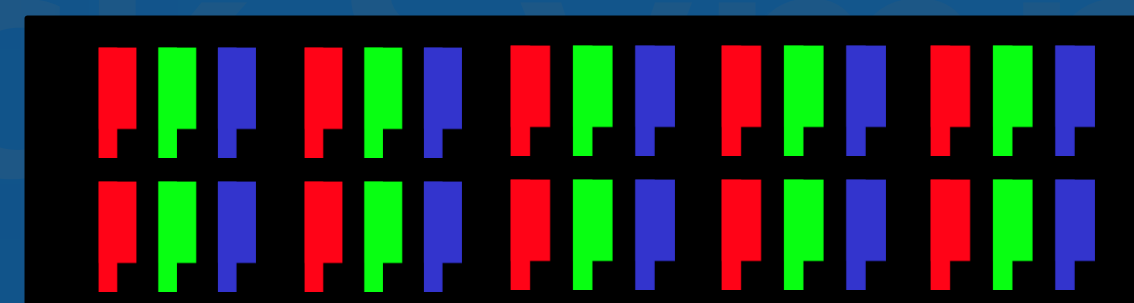
Increasing PPI (Pixel Per Inch)

→ Lowering Screen Door Effect

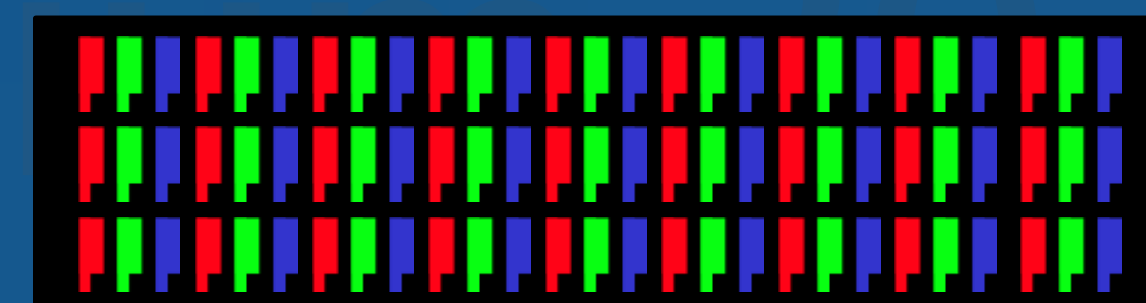
1



2



3



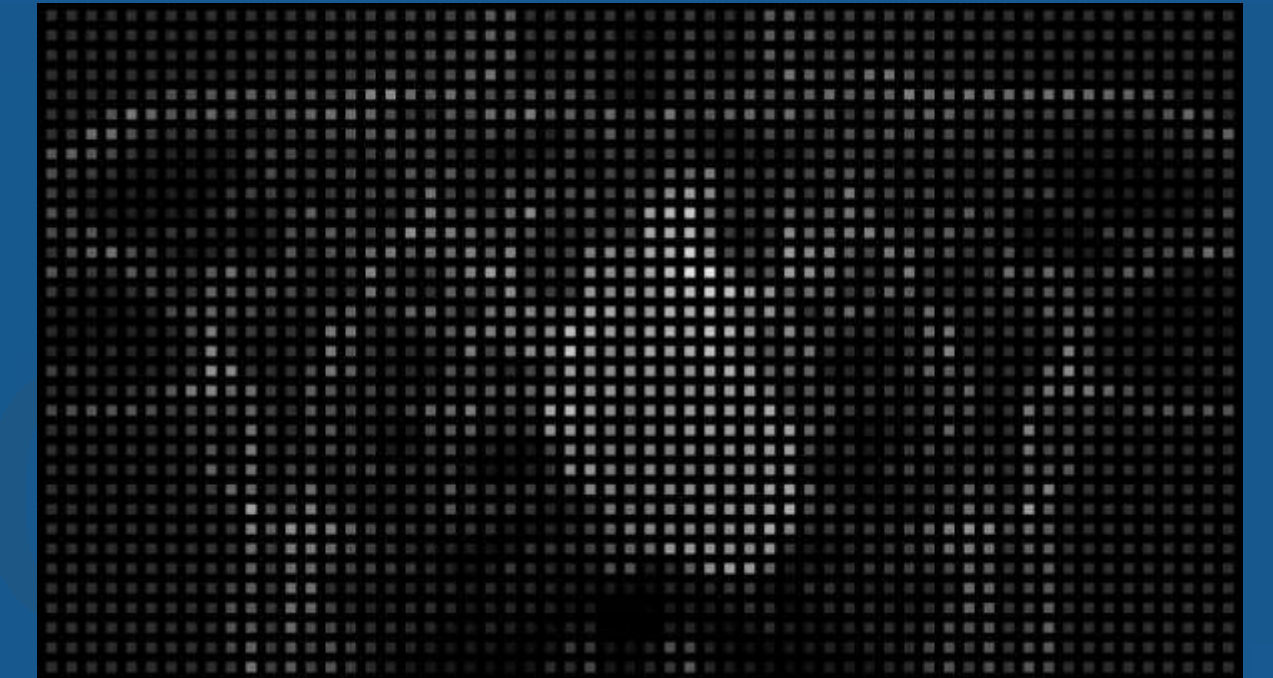
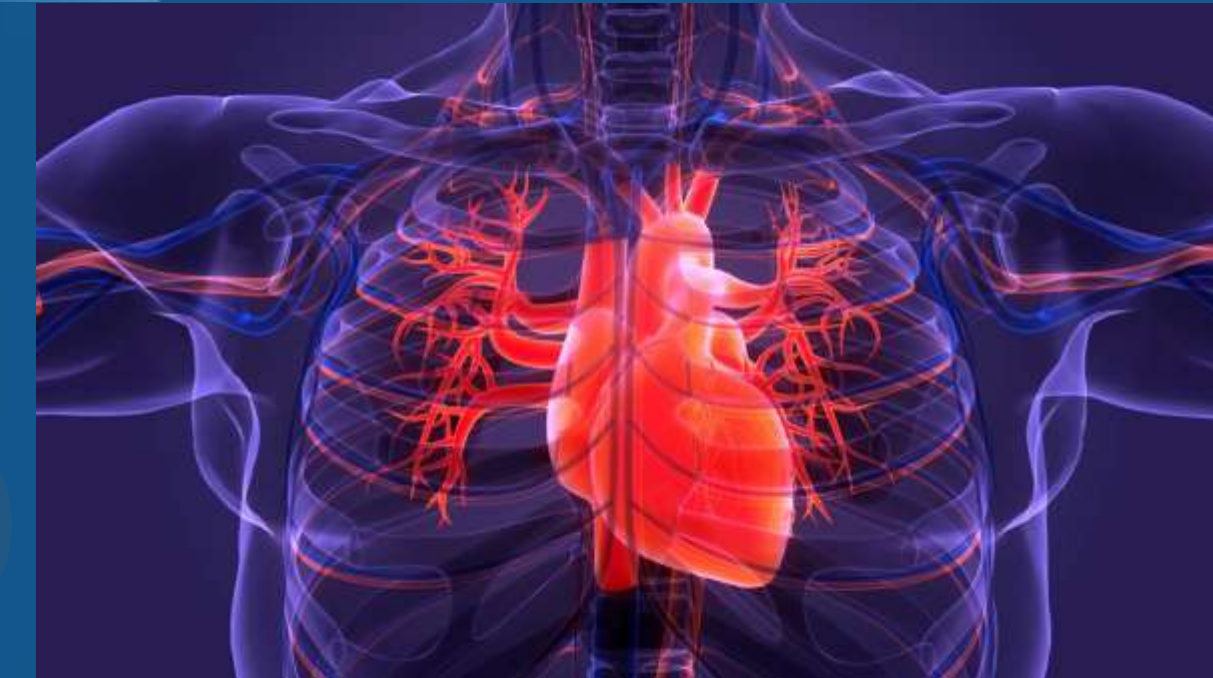
Increasing Dimming Zones

→ Increasing Contrast

1



2



Enabling Dynamic-Sync

→ Eliminating Abnormal Conditions

LCD Display Panel



Stutter



Tearing

mini-LED Backlight



Flicker

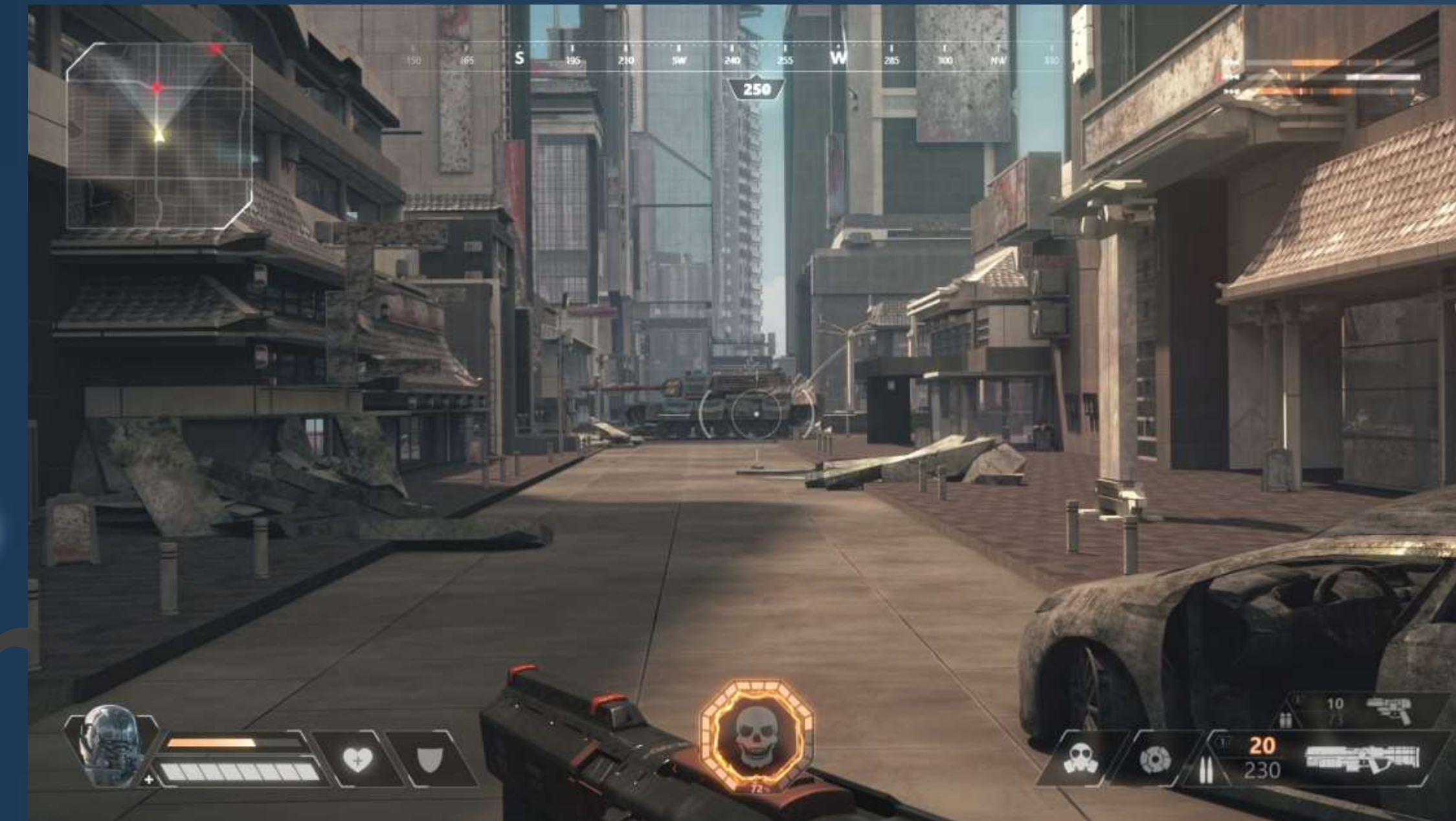


Uneven Brightness

Dynamic-Sync

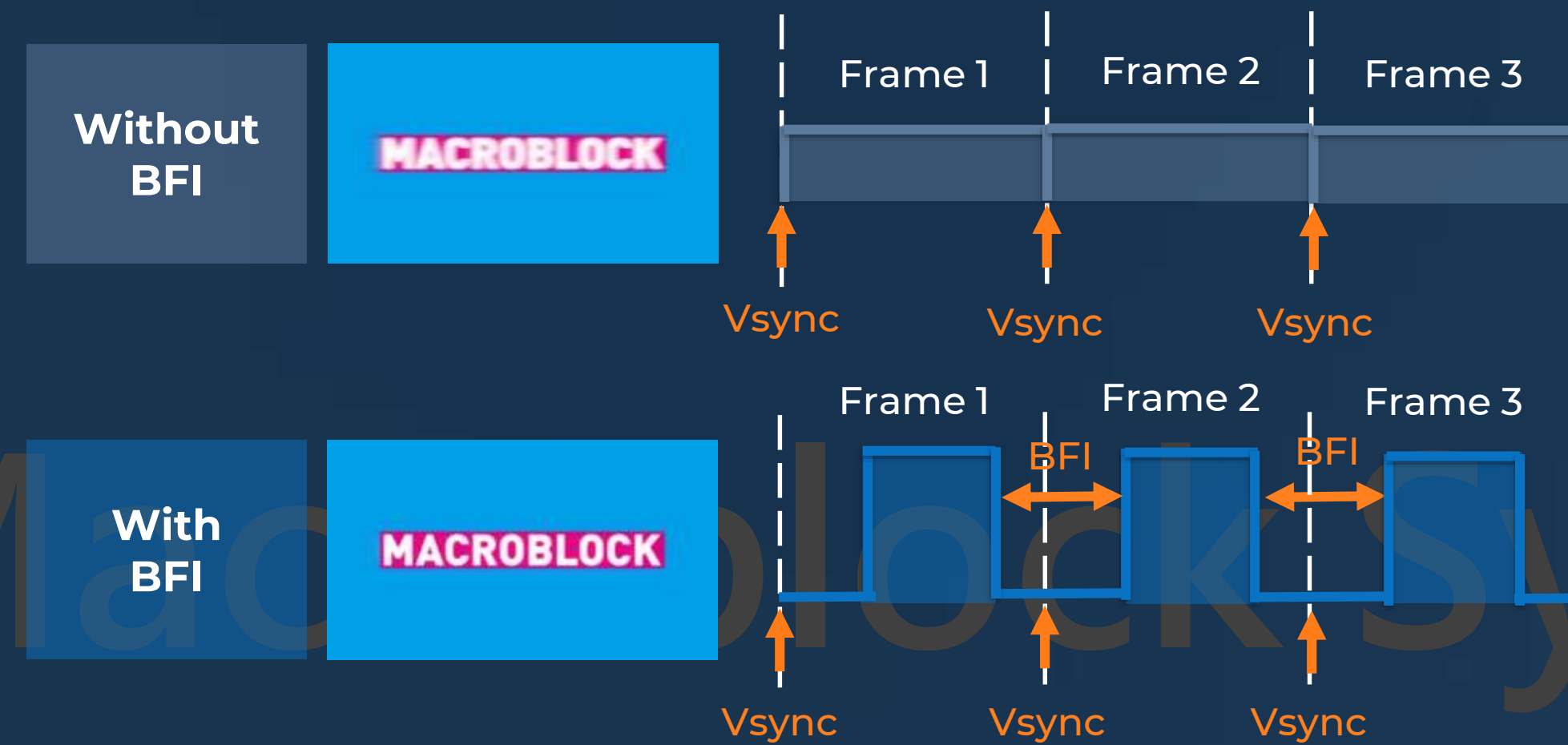
Eliminate Flicker & Uneven Brightness

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Enabling BFI (Black Frame Insertion)

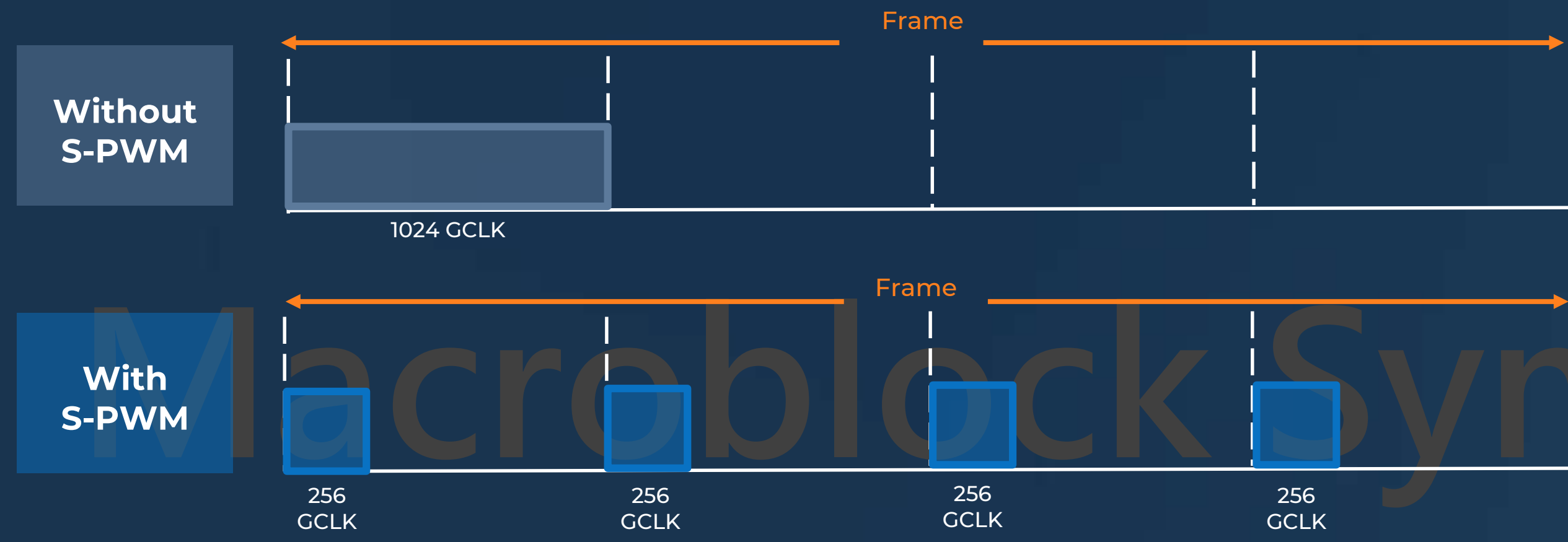
→ Overcoming motion sickness



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Enabling S-PWM

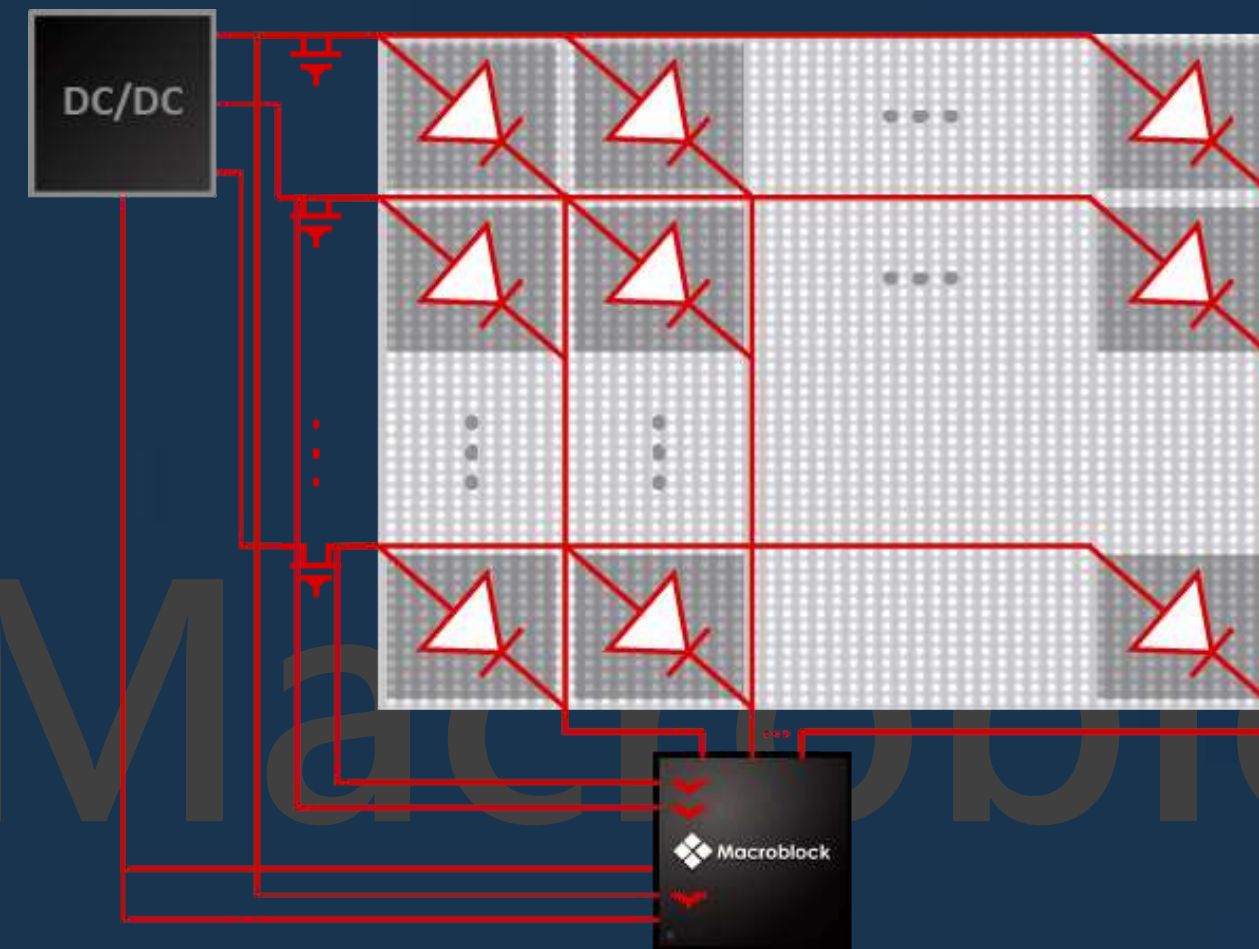
→ Preventing Eye Fatigue



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Adopting High Integration Circuit

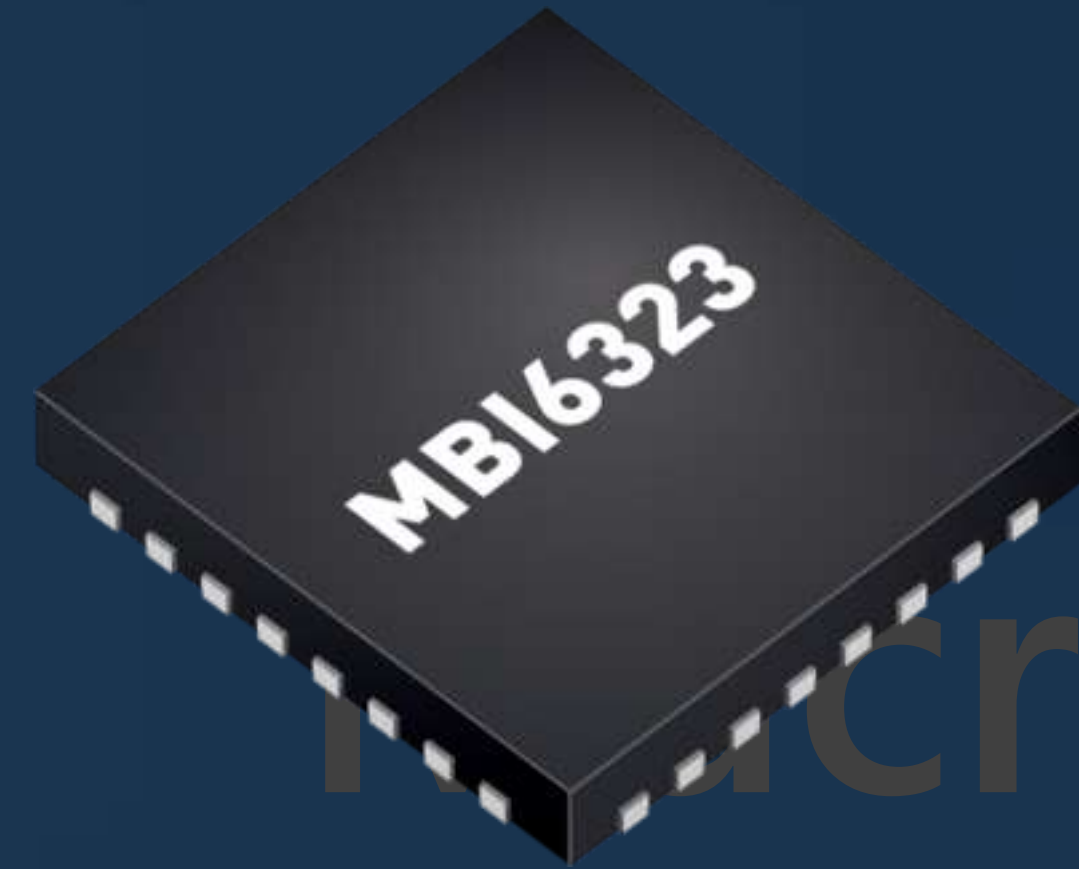
→ Creating Slim and sleek design



- ◆ Few Components
- ◆ Simple Design
- ◆ Neat Layout
- ◆ PCB-Layer Reduction

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Macroblock Solution for VR Headsets: MBI6323



35mA, 17V
QFN64L 7x7

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Macroblock Solution for VR Headsets: MBI6323

Increasing Contrast

◆ 32 channels, 16 scans



35mA, 17V
QFN64L 7x7

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◆ S-PWM (Refresh Rate: 960~20KHz)

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Creating Slim and Sleek Design

◆ High Integration (with Scan-MOS)

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Thank You !

Innovate for light

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