

Automotive Metaverse : Create Unique Smart Cockpit Through mini-LED Backlight

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DRIVE

A

WHOLE

NEW

WORLD

METaverse

Macroblock Symposium 2022

Macroblock's Deployment

LED Backlight



LED Lighting



Automotive Metaverse

“Smart Cockpit”

Macroblock Symp



Cutting-edge Display Technology in **Smart Cockpit**

Macroblock Symposium 2022

Cutting-edge Display Technology in **Smart Cockpit**

+
+
**mini-LED Backlight
AR HUD**
(Augmented Reality
Head-up Display)

+
+
**mini-LED Backlight
Automotive Panel**

Mini-LED Backlight Symposium 2022

AR HUD

1 // Collecting Nearby Traffic Information



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AR HUD

1 // Collecting Nearby Traffic Information



2 // Displaying Real-time Traffic Conditions



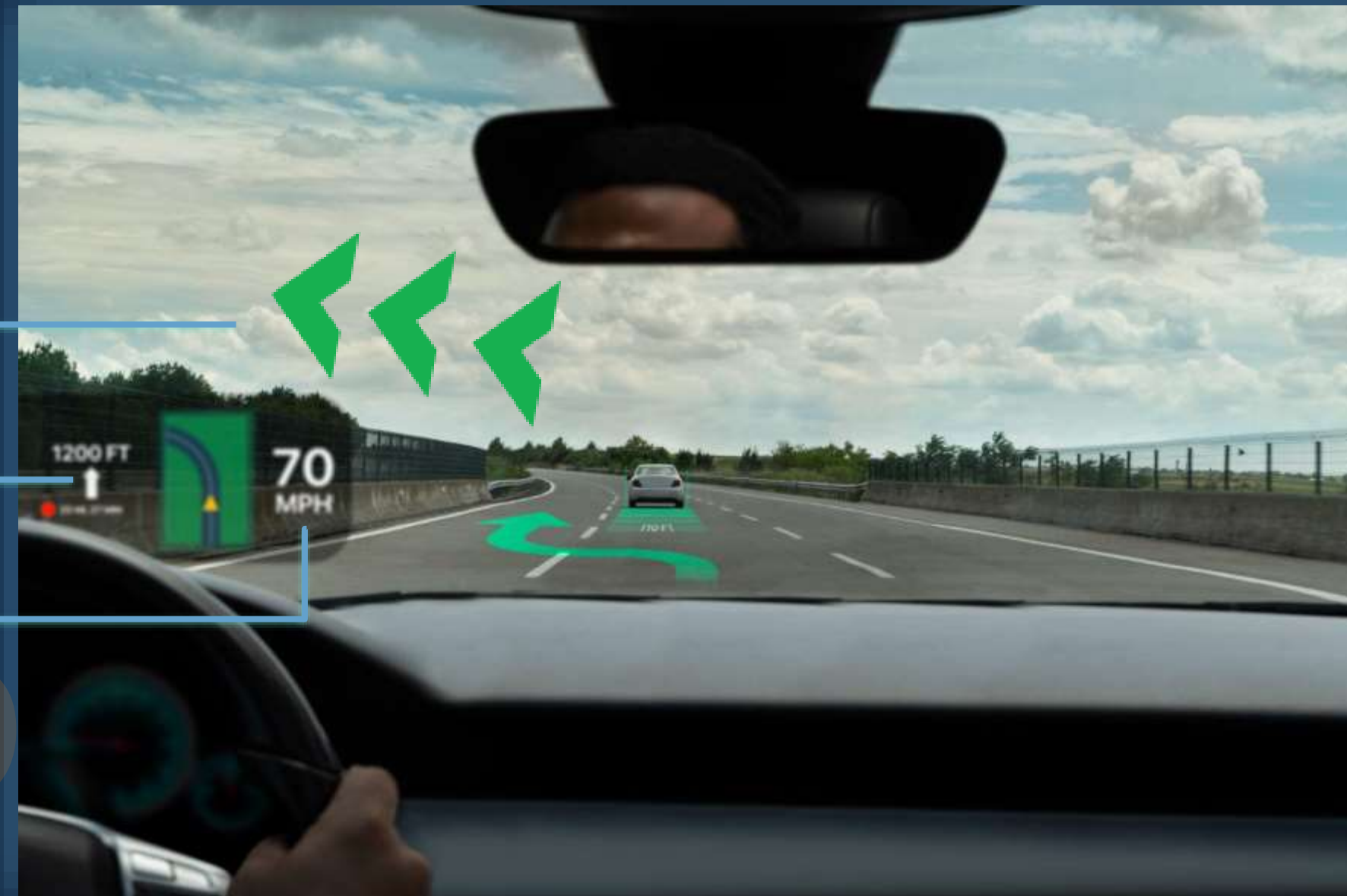
ium 2022

AR HUD

Driving Notification

Navigation

Speed Limit



Macro

gium 2022

Automotive Panel

Instrument Cluster

Infotainment Panel



Digital Rearview Mirror

Macro

gium 2022

Automotive Panel

Rear Seat
Entertainment System



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sium 2022

Driver Requirement

Driver
Requirement



mini-LED
Backlight
Feature

High
Brightness



Multi-channel
+
Multi-scan

Low-Grayscale
Performance



Hybrid
Dimming
Technology

ium 2022

Passenger Requirement

Passenger
Requirement



mini-LED
Backlight
Feature

High Contrast
&
High Picture Quality



High Dimming Zones

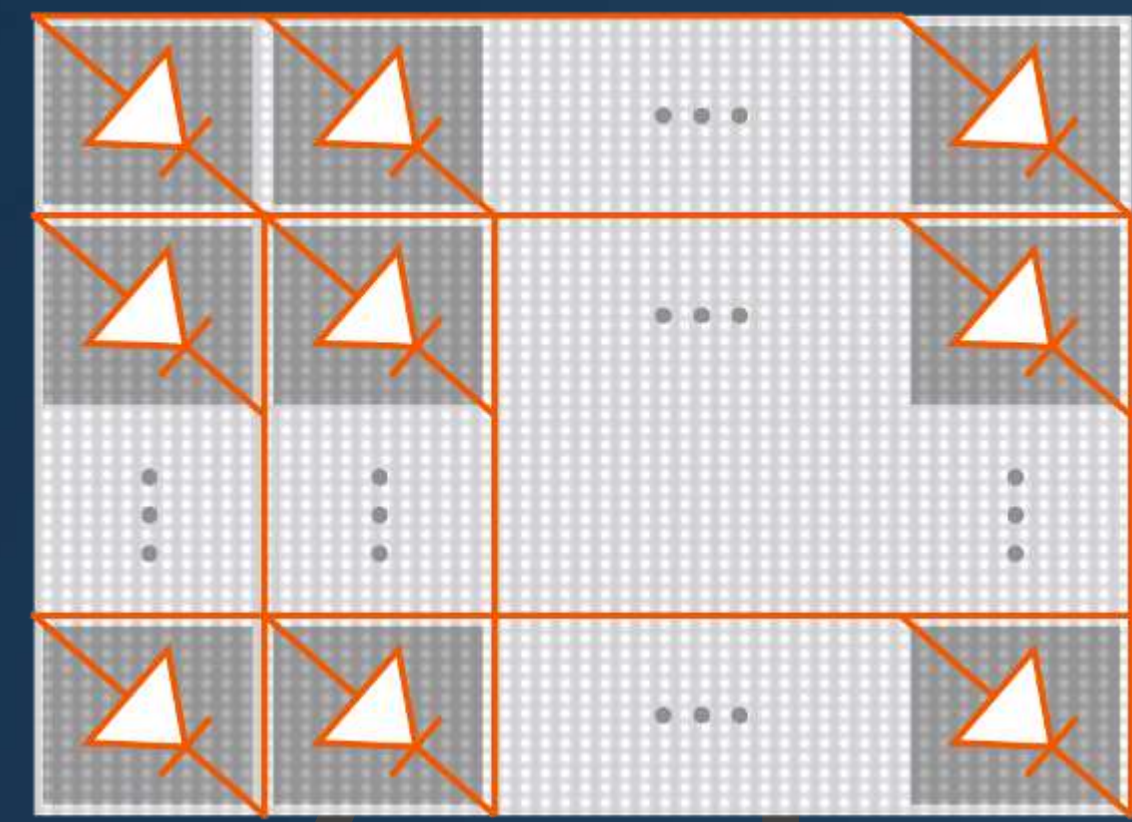
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Driver Requirements ✦ High Brightness

1. Multi-channel + Multi-scan

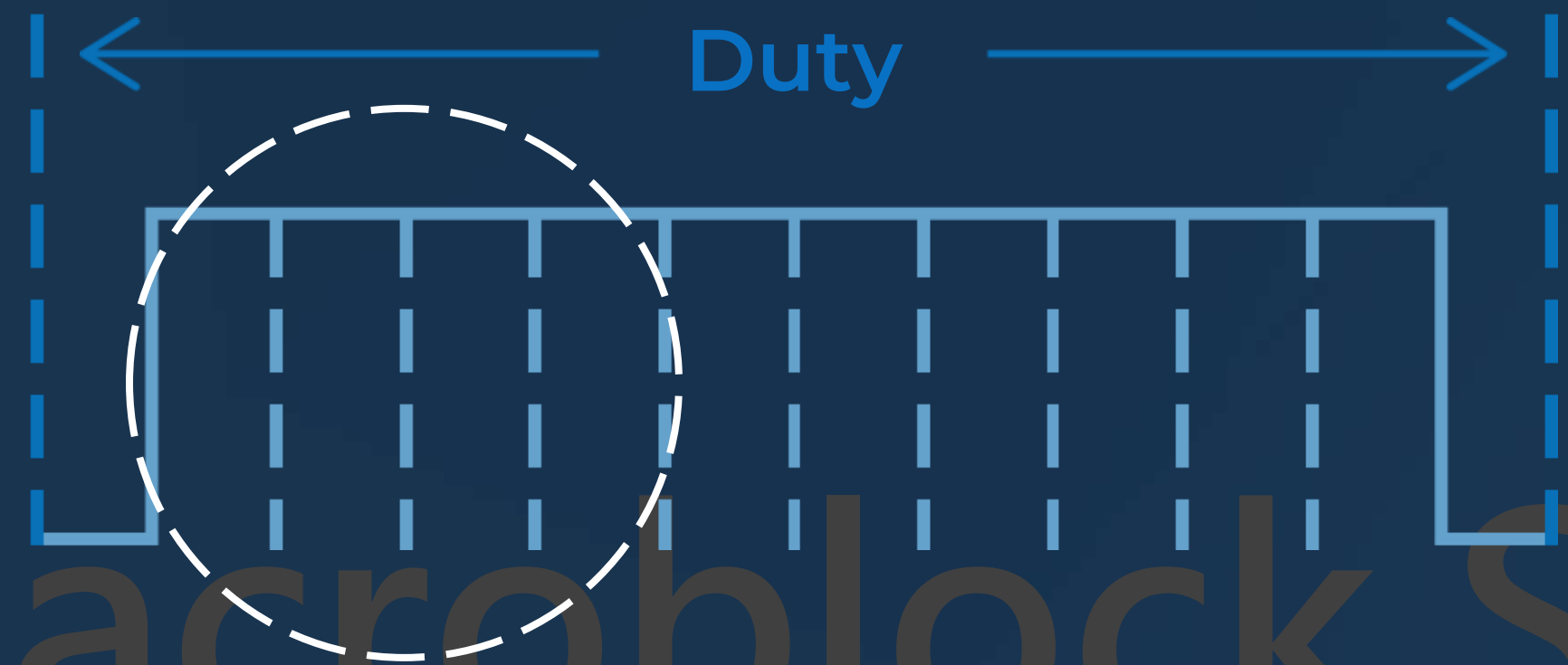
→ Increase the number of LEDs

2. Maximum 100mA



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Driver Requirement ✦ **Low-Grayscale Performance**



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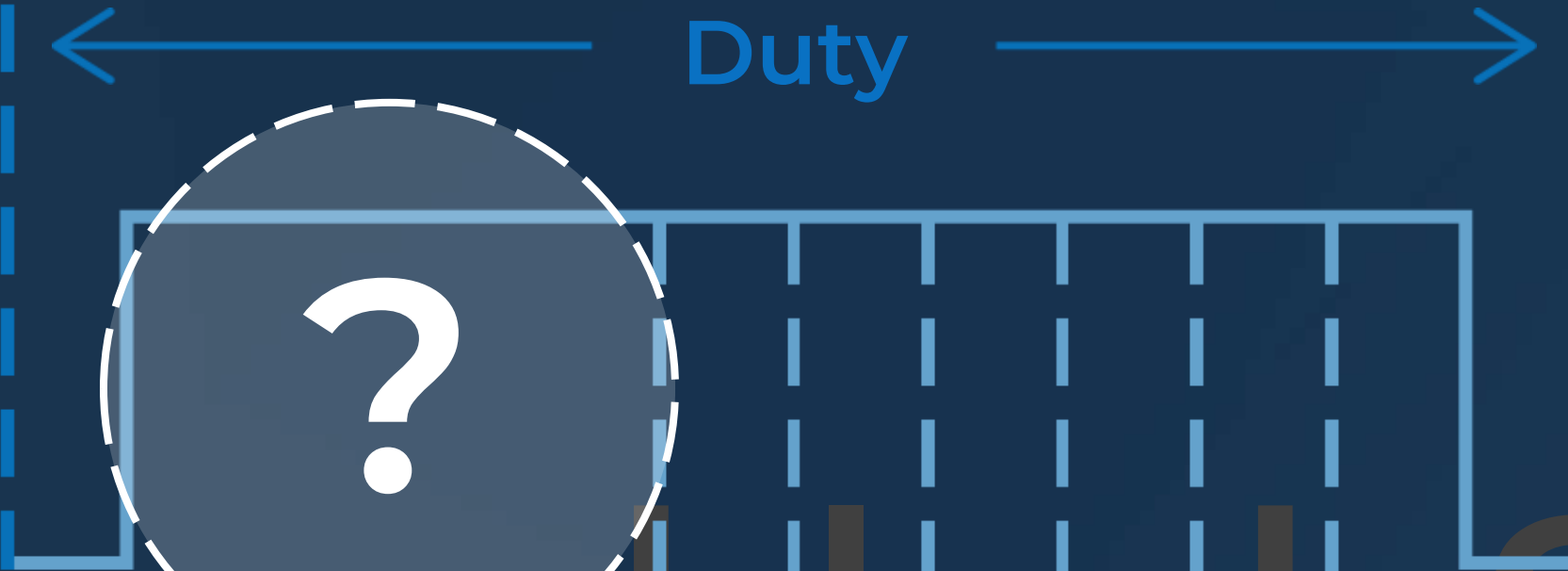
Driver Requirement ✦ **Low-Grayscale Performance**



Poor Low Grayscale Rendering

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Driver Requirement ✦ **Low-Grayscale Performance**



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How to increase the current on time ?

Driver Requirement ✦ Low-Grayscale Performance



Better Low Grayscale Rendering

Hybrid Dimming Technology

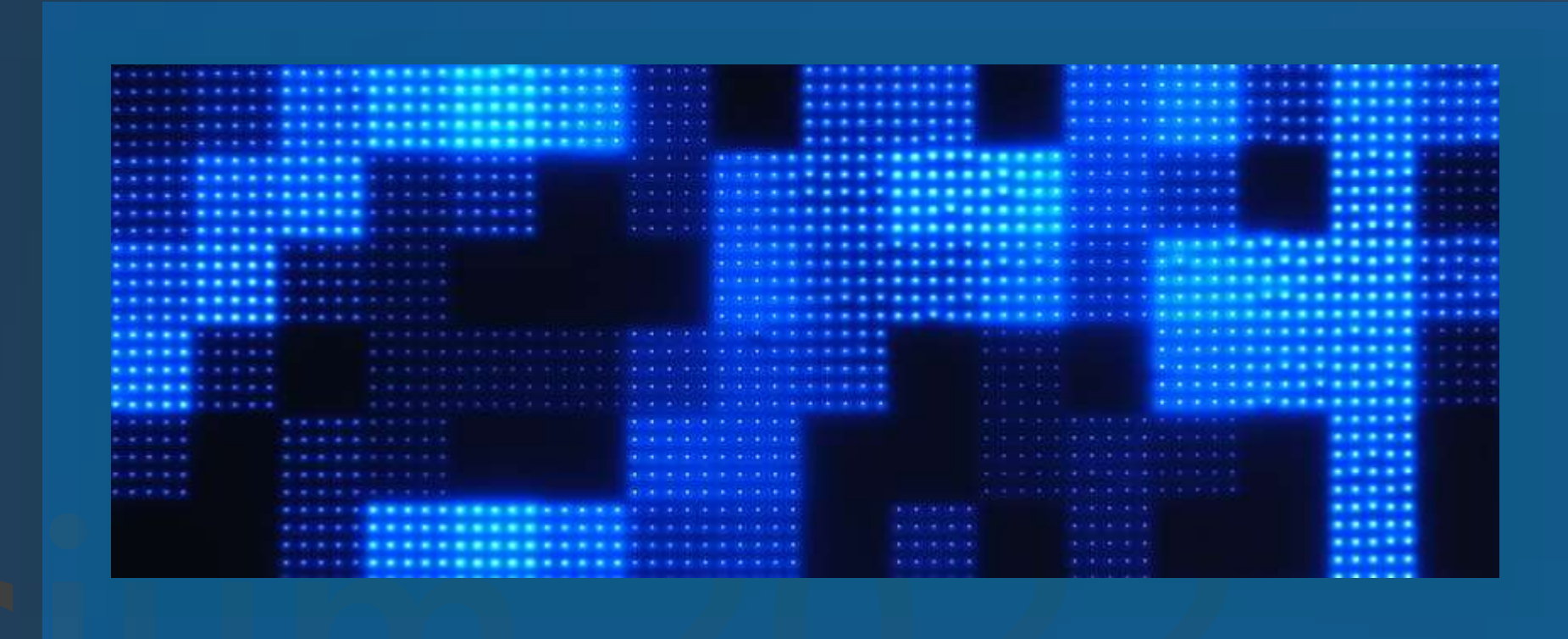
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Passenger Requirement

- ◆ **High Contrast**
- ◆ **High Picture Quality**

Low Dimming Zones

96 Zones



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Passenger Requirement

- ◆ **High Contrast**
- ◆ **High Picture Quality**

High Dimming Zones

2400 Zones



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The Benefit for Automotive Manufacturers



Macroblock Systems 2022

Flexible Circuit Design Option

Option 1 → Support Extra Functional Expansion



Image Mapping

Scan control

Error detection

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Flexible Circuit Design Option

Option 2 → Simplify Circuit Design Complexity



Microblock Symposium 2022

Macroblock Smart Cockpit **mini-LED Backlight Solution**

MBI5353Q

- ◆ Iout: 20mA
- ◆ 48 channels
- ◆ 32 Scans
- ◆ Compulsory Open / Short detection
- ◆ ASIL A

MBI6353Q

- ◆ Iout: 100mA
- ◆ 48 channels
- ◆ 4 Scans
- ◆ OTP & Open / Short Detection
- ◆ ASIL B



Macroblock's Deployment

LED Backlight



LED Lighting





Head Light

- MBI6671Q
- MBI6665Q
- MBI6353Q

**Macroblock
Automotive Lighting Solution**

Daytime Running Lamp (DRL)

- MBI6665Q MBI6671Q
- MBI6659Q MBI6657Q

Fog Lamp

- MBI6659Q MBI6657Q

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Macroblock Automotive Lighting Solution

Tail Light & Brake Light

MBI6671Q MBI6665Q
MBI6659Q

Ambient Light

MBI6659Q MBI6657Q



Macroblock

Macroblock
Automotive Lighting Solution

AEC-Q100

Macroblock System



Thank You !

Innovate for light

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