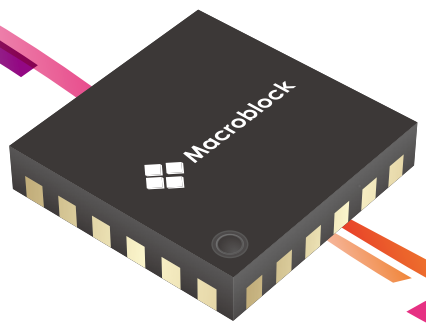
Macroblock

PRODUCT CATALOG

LED Driver IC Expert

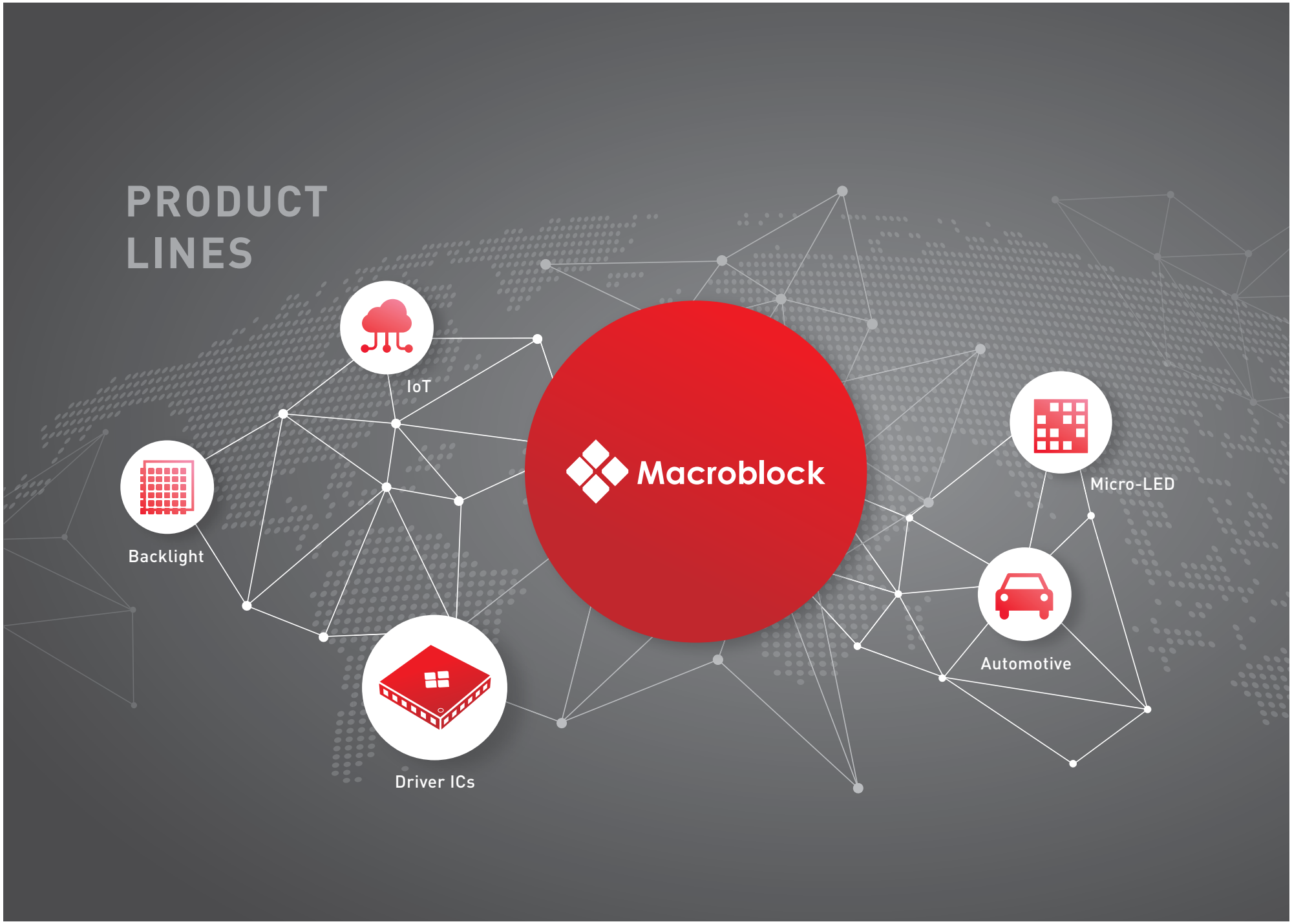


About Macroblock

Macroblock was founded in Taiwan in 1999. With a passion rooted in LED driver IC design, Macroblock positions as a mixed-signal driver IC design house focusing on opto-electronic applications and power management.

Not only have our drivers been used for the 2008 Beijing Olympics and Shanghai Expo 2010, whether it is a display found in Times Square, NYC, USA or in Tokyo Dome, Japan, Macroblock's driver ICs have been the preferred option due to our performance and reliability.

PRODUCT LINES



CONTENTS

LED Display

As the leading supplier in LED display driver ICs, our products have been chosen and applied towards various world-class events, landmarks, as well as venues with specific demands and strict requirements.

SUCCESS STORY

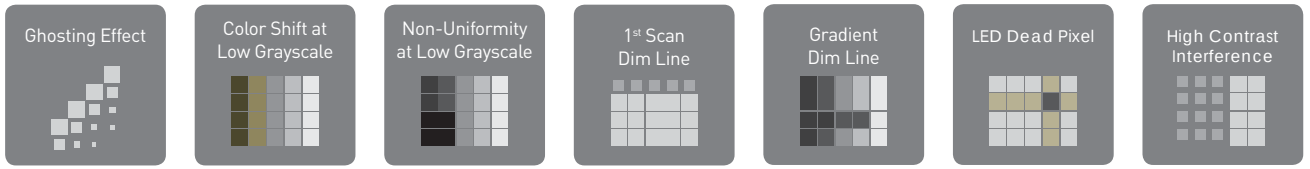
Note 8 Launch Event
(Courtesy of V2)

Hawkeye Solution: LED Driver IC Recommendation For Time-Multiplexing LED Displays

Specification \ Category	Hawkeye 100				Hawkeye 150		
Solution	High Brightness		Fine Pitch		Fine Pitch		
Driver IC	MBI5051	MBI5250	MBI5252	MBI5153/MBI5253	MBI5254	MBI5264	MBI5754 (for common cathode LED)
MOSFETs	MBI5926 / MBI5947		MBI5927 / MBI5947 / MBI5986		MBI5927 / MBI5947 / MBI5986		MBI5981
HDR-Optimized *	-		-		-	●	-
Superior Image Quality	Solving the seven common problems found in fine pitch LED display Ghosting Effect · Color Shift at Low Grayscale · Non-Uniformity at Low Grayscale · 1st Scan Dim Line · Gradient Dim Line · LED Dead Pixel · High Contrast Interference						
Scan Design	Up to 8-scan		Up to 16-scan	Up to 32-scan	Up to 64-scan		
Intelligent Power Saving	-	Dynamic+	-	-	Dynamic+	Dynamic+	Dynamic+
LED Failure Prediction	-	-	-	-	-	-	-
Board Level Circuitry	Regular		Regular		Regular		
Output Current	2mA-45mA@V_{DD}=5V		0.5mA-20mA@V_{DD}=5V		0.5mA-20mA@ V_{DD}=5V	0.5mA-20mA@ V_{DD}=4.2V	1.0mA-18mA@ V_{DD}=2.8V & 3.8V
Recommended Pixel Pitch Range	4mm~12mm		1.2mm~6mm		1mm~4mm	1mm~4mm	1.2mm~4mm

* HDR-Optimized: 16-bit grayscale @ 4KHz refresh rate at 32-scan design or above

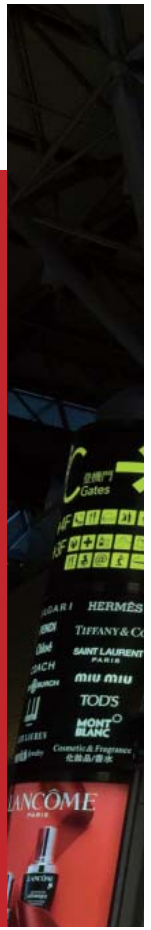
Hawkeye Solution: LED Driver IC Recommendation For Time-Multiplexing LED Displays

Specification \ Category	Hawkeye 200	Hawkeye 250	Hawkeye 300		Hawkeye 350
Solution	Fine Pitch	Fine Pitch	Ultra Fine Pitch, mini-LED, micro-LED		Ultra Fine Pitch, mini-LED, micro-LED
Driver IC	MBI5353	MBI5850	MBI5759 (for common cathode LED)	MBI5359	MBI5864
MOSFETs	MBI5927 / MBI5947 / MBI5986				
HDR-Optimized *	-	●	-	●	●
Superior Image Quality	Solving the seven common problems found in fine pitch LED display 				
Scan Design	Up to 32-scan		Up to 32-scan		Up to 64-scan
Intelligent Power Saving	Dynamic	Dynamic+	Dynamic+	Dynamic+	Dynamic+
LED Failure Prediction	-	-	●	●	●
Board Level Circuitry	Simplified	Simplified and Modular	Simplified and Modular		Simplified and Modular
Output Current	0.5mA-20mA@V_{DD}=5V	0.5mA-20mA@V_{DD}=4.2V	0.5mA-15mA@V_{DD}=2.8V & 3.8V	0.5mA-20mA@V_{DD}=4.2V	0.1mA-5mA@V_{DD}=3.3V & 4.2V
Recommended Pixel Pitch Range	0.8mm~4mm	1.5mm~6mm	0.6mm~1.5mm	0.6mm~1.5mm	0.4mm~1mm

* HDR-Optimized: 16-bit grayscale @ 4KHz refresh rate at 32-scan design or above

SRAM Embedded S-PWM LED Driver

Driver ICs with built-in memory, primarily used in time-multiplexing display, are the highest level ICs today. Driver IC with built-in SRAM can greatly improve display refresh rate and utilization rate without damaging grayscale performance, and is the driver IC used in mainstream time-multiplexing display in the market today.



Taiwan Taoyuan International Airport- Terminal II

SUCCESS STORY

SRAM Embedded S-PWM LED Driver

		MBI5051	MBI5250	MBI5151	MBI5252	MBI5153	MBI5253	MBI5254	MBI5264
LED Type		Common anode							
Scan Type		Typical							
No. of Output Channel		16							
Output Current Per Channel		2~45mA		0.5~20mA					
Sustaining Output Voltage		17V	7V	17V			7V		
Excellent Output Current Accuracy	Between Channels	<±1.5% (typ.)							
	Between ICs	<±1.5% (typ.)							
Embedded MOSFET		-	-	-	-	-	-	-	-
Error Detection	LED Open	●	●	●	●	●	●	●	●
	LED Short	-	-	-	-	-	-	-	-
Current Gain		6-bit							
PWM Enhancement		-	-	-	-	-	-	-	●
GCLK Multiplier		●	●	●	●	●	●	●	●
Ghosting Elimination		●	●	●	●	●	●	●	●
High Contrast Interference Elimination		-	●	-	-	-	●	●	●
Color Shift Elimination		●	●	●	●	●	●	●	●
Non-uniformity (IC Controlled) Elimination		●	●	●	●	●	●	●	●
Dim Line at the 1st Scan Line Elimination		-	●	●	●	●	●	●	●
Gradient Dim Line Elimination		●	●	-	●	●	●	●	●
Dead Pixel Isolation		●	●	-	●	●	●	●	●
Intelligent Power Saving		-	●	-	-	-	-	●	●
S-PWM		14/16-bit			13 /14-bit				13 / 14 / 15 / 16-bit
Scan Design		Up to 8-scan			Up to 16-scan	Up to 32-scan		Up to 64-scan	
RoHS Compliant Package		SSOP24	SSOP24	SSOP24	SSOP24	SSOP24	SSOP24	SSOP24	SSOP24
		-	QFN24	-	QFN24	QFN24	QFN24	QFN24	QFN24
Major Applications		Time-multiplexing LED display							

SRAM Embedded S-PWM LED Driver

		MBI5353	MBI5354	MBI5359	MBI5754	MBI5759	MBI5850	MBI5864
LED Type		Common anode			Common cathode		Common anode	
Scan Type		Typical					Scan-sharing	
No. of Output Channel		48			16	48	12	48
Output Current Per Channel		0.5~20mA			1~18mA	0.5~15mA	0.5~20mA	0.1~5mA
Sustaining Output Voltage		7V						
Excellent Output Current Accuracy	Between Channels	<±1.5% (typ.)						<±0.5% (typ.)
	Between ICs	<±1.5% (typ.)						<±0.5% (typ.)
Embedded MOSFET		-	-	32	-	32	4	16
Error Detection	LED Open	●	●	●	●	●	●	●
	LED Short	●	●	●	-	●	●	●
Current Gain		Global/RGB			6-bit	Global/RGB		
PWM Enhancement		-	-	●	-	-	●	●
GCLK Multiplier		●	●	●	●	●	●	●
Ghosting Elimination		●	●	●	●	●	●	●
High Contrast Interference Elimination		-	●	●	●	●	●	●
Color Shift Elimination		●	●	●	●	●	●	●
Non-uniformity (IC Controlled) Elimination		●	●	●	●	●	●	●
Dim Line at the 1st Scan Line Elimination		●	●	●	●	●	●	●
Gradient Dim Line Elimination		●	●	●	●	●	●	●
Dead Pixel Isolation		●	●	●	●	●	●	●
Intelligent Power Saving		●	●	●	●	●	●	●
S-PWM		13 /14 /15 /16-bit					15/16-bit	13 /14 /15 /16-bit
Scan Design		Up to 32-scan	Up to 64-scan	Up to 32-scan	Up to 64-scan	Up to 32-scan		Up to 64-scan
RoHS Compliant Package		QFN56	QFN56	BGA104	SSOP24	BGA104	SSOP24	QFN88
		-	-	-	QFN24	-	-	BGA90
Major Applications		Time-multiplexing LED display						

MOSFET for Time-Multiplexing LED Display

		MBI5926	MBI5927	MBI5947	MBI5986	MBI5981
No. of Output Channel		2	2	4	8	8
MOSFET Type		PMOS				NMOS
Output Current Per Channel		3A			2A	2.5A
Operation Voltage		3.3V~5V				
ON Resistance		100m ohm			200m ohm	170m ohm
High Contrast Interference Elimination		-	●	●	-	-
Upper Ghosting Effect Elimination		●	●	●	-	-
Short-LED Color Stripe Elimination		●	●	●	-	-
RoHS Compliant Package	SOP8	●	●	-	-	-
	SOT236	●	●	-	-	-
	SSOP16	-	-	●	●	●
	QFN16	-	-	●	●	●
Major Applications Support Time-Multiplexing LED Display Driver		For common anode LED driver				For common cathode LED driver (ex. MBI5754)

SUCCESS STORY

The World's Largest Outdoor Centre-Hung Video Display at Bristol Motor Speedway (BMS), USA (Courtesy of digiLED & Go Vision)

S-PWM Technology

The Scrambled Pulse Width Modulation (S-PWM) technology enhances Pulse Width Modulation (PWM) by scrambling an image into several sub-images with the same color quality. Besides increasing the image refresh rate, this feature also supports flicker-free image and improves reliability when building a 16-bit grayscale LED display.

S-PWM LED Driver

		MBI5030	MBI5031	MBI5040	MBI5043
No. of Output Channel		16			
Output Current Per Channel		8~90mA		2~60mA	1~45mA
Sustaining Output Voltage		17V			
Excellent Output Current Accuracy	Between Channels	<±1.5% (typ.)			
	Between ICs	<±3% (typ.)			<±1.5% (typ.)
Error Detection	LED Open	●	●	●	-
	LED Short	-	-	●	-
Thermal Shutdown		-	-	●	-
Current Gain		8-bit		7-bit, 0%~100%	6-bit
GCLK Multiplier		-	-	-	●
Lower Ghosting Effect Elimination		-	-	-	●
S-PWM		12/16-bit	12-bit	12/16-bit	16-bit
Dot Correction		-	-	8-bit, Digital	-
RoHS Compliant Package	SOP24	●	●	●	-
	SSOP24	-	-	-	●
	TSSOP24	●	●	●	-
	QFN24	●	●	●	-
Major Applications		High refresh rate / High grayscale LED display			

Multi-Function LED Driver (PrecisionDrive™ / Share-I-O™)

Share-I-O™ Technology

Share-I-O™ technology features pin compatibility. Share-I-O™, additional functions can be added to LED drivers without adding extra pins and changing the printed circuit board (PCB) originally designed for conventional LED drivers.

Multi-Function LED Driver

		MBI5169	MBI5037	MBI5038	MBI5039
No. of Output Channel		8	16		
Output Current Per Channel		5~120mA	10~80mA	3~45mA	8~90mA
Sustaining Output Voltage		17V			
Excellent Output Current Accuracy	Between Channels	<±1% (typ.)	<±1.5% (typ.)		
	Between ICs	<±1% (typ.)	<±3% (typ.)	<±1.5% (typ.)	<±3% (typ.)
Error Detection	LED Open	●	●	●	●
	LED Short	●	●	●	●
	Leakage	-	●	●	-
Current Gain		-	-	●	●
Power Saving		-	●	●	-
RoHS Compliant Package	P-DIP16	●	-	-	-
	SOP16	●	-	-	-
	SSOP16	●	-	-	-
	SOP24	-	●	●	●
	SSOP24	-	●	●	●
	QFN 24	-	-	-	●
Major Applications		Commercial LED display, message sign, VMS traffic sign, bus sign			

Classic Constant Current (PrecisionDrive™) LED Driver

PrecisionDrive™ Technology

The PrecisionDrive™ technology enhances the characteristics of current output and current accuracy, allowing viewers to enjoy a clear and refined image on the LED display. Driver ICs with this technology has a ±1.5% current accuracy between output ports within each driver IC and a ±1.5% deviation between driver ICs. The current varied with LED forward voltage change is no more than 0.1% per volt while the current varied with supply voltage change and ambient temperature change is restricted to 1%.

Classic Constant Current (PrecisionDrive™) LED Driver

		MBI5167	MBI5168	MBI5025	MBI5026	MBI5035	MBI5124	MBI5125
No. of Output Channel		8		16				
Output Current Per Channel		3~45mA	5~120mA	1~45mA	5~90mA	3~45mA	1~25mA	2~30mA
Sustaining Output Voltage		17V					V_{DD}+0.3	11V
Excellent Output Current Accuracy	Between Channels	<±1% (typ.)	<±1% (typ.)	<±1.5% (typ.)	<±1% (typ.)	<±3% (typ.)	<±1.5% (typ.)	<±1.5% (typ.)
	Between ICs	<±1% (typ.)	<±1% (typ.)	<±1.5% (typ.)	<±1% (typ.)	<±3% (typ.)	<±1.5% (typ.)	<±1.5% (typ.)
Lower Ghosting Effect Elimination		-	-	-	-	-	●	●
Low Knee Voltage		-	-	-	-	●	-	-
Current Gain		-	-	-	-	-	-	●
RoHS Compliant Package	SOP16	●	●	-	-	-	-	-
	SSOP16	●	●	-	-	-	-	-
	SOP24	-	-	●	●	●	●	-
	SSOP24	-	-	●	●	●	●	●
	TSSOP24	-	-	●	-	-	-	-
	mSSOP24	-	-	-	-	-	●	-
	P-DIP24	-	-	-	●	-	-	-
	SP-DIP24	-	-	-	●	-	-	-
	QFN24	-	-	-	-	-	●	●
Major Applications		Commercial LED display, message sign				Commercial LED display (low power)	Commercial LED display, message sign	

Automotive Lighting

Driving Safety with Innovation

Macroblock has a series of LED driver ICs that passed AEC-Q100 for automotive lighting.

Automotive Lighting Driver IC

Switch and/or linear type drivers and controllers are targeted for LED lamps in vehicles. The optimized technical and protection features help strengthen system reliability for automobiles.

AEC-Q100 Automotive Driver

		MBI6657Q	MBI6671Q	MBI1841Q
Topology		Buck	Multi-topology	Linear
Max. Channel Current		1.2A	By External MOSFET	150mA×8
Max. Sustaining Voltage		45V	71V	50V
Supply Voltage		6~40V	5.4~65V	6~50V
Switching on Resistance		0.3Ω	-	-
AEC-Q100 (SOP8/TSSOP14/QFN)		●	●	●
Dimming Method	Digital/Analog	●	●	●
	Built-in Pattern	-	-	●
Protection	LED Open/Short	●	● *	● **
	TFB	●	-	●
	OTP	●	●	●
	Start-up	●	●	-
	UVLO	-	●	●
	OCP	●	-	-
RoHS Compliant Package	TO252	-	-	-
	SOP8	●	-	-
	TSSOP14	-	●	-
	TSSOP20	-	-	-
	SOT89	-	-	-
	SOT23	-	-	-
	QFN	-	-	●
Major Applications		DRL / Fog Lamp / Interior Lamp / Rear Lamp	Head Lamp / DRL / Fog Lamp	DRL / Fog Lamp / Interior Lamp / Rear Lamp

		MBI5353Q
No. of Output Channel		48
Output Current Per Channel		2~20mA
Sustaining Output Voltage		17V
AEC-Q100 (QFN)		●
Excellent Output Current Accuracy	Between Channels	<±3.0% (max.)
	Between ICs	<±7.5% (max.)
Scan Design		Up to 32-scan
S-PWM		13/14/15/16-bit
Current Gain		3-bit/Global 7-bit/Group
Error Detection	LED Open	●
	LED Short	●
Thermal Protection		●
RoHS Compliant Package		QFN-56 8×8
Major Applications		Brake Lamp / Rear Lamp / LED Display / Backlight

* LED short protection should be supported by external circuit

** LED short/open protections are only supported by certain patterns

LED Lighting

Illumination as a Service

Look no further if you're finding the next driver IC to be used in your LED lighting products. We are humbled by our worldwide customers' support and pledge to continue to improve our products and service.

LED Driver for General LED Lighting

DC/DC converters and AC/DC controllers are specifically designed for LED lighting applications that require large power consumption. The constant current and high power efficiency meet the safety and reliability standards required for LED lighting applications.

All-Ways-On™ LED Driver

		MBI1801	MBI1802	MBI1804	MBI1812	MBI1816	MBI1824	MBI1828	MBI1838
Topology		Linear							
No. of Output Channel		1	2	4	2	16	4	8	8
Excellent Output Current Accuracy	Between Channels (typ.)	-	1%		3%	1%			
	Between ICs (max.)	6%							
Output Current Per Channel		50mA~1.2A	40~360mA	240mA	360 mA	60mA	120mA	60mA	80mA
Sustaining Output Voltage		17V					50V		70V
Supply Voltage		5V			12V	5V	8~40V		
Dimming Method	Digital	●	●	●	-	●	●	●	●
	Analog	-	-	-	●	-	-	-	-
Protection	Thermal Shutdown	●	●	●	●	●	-	-	●
	Thermal Error Flag	-	●	-	-	-	-	●	-
RoHS Compliant Package	SOP8	-	●	●	●	-	●	-	-
	TSSOP16	-	-	-	-	-	-	●	-
	TSSOP20	-	-	-	-	●	-	-	-
	TSSOP24	-	-	-	-	-	-	-	●
	TO265	●	-	-	-	-	-	-	-
	QFN24	-	-	-	-	-	-	●	-
Major Applications		LED lighting, automotive lighting							

DC/DC Converter

		MBI6646	MBI6651	MBI6652	MBI6653	MBI6655	MBI6656	MBI6657	MBI6658	MBI6660	MBI6661	MBI6662	MBI6663	MBI6664
Topology		Buck / Hysteretic PFM			Buck	Buck / Hysteretic PFM						Buck / Adaptive PFM	Buck / Hysteretic PFM	
Common Anode		●	-	-	-	-	-	-	●	-	-	●	-	●
Max. Output Current Per Channel		1A		750mA	1A			1.2A*	2A	500mA	1A	2A	1A	2A
Max. Sustaining Voltage		40V		32V	65V	40V	45V	45V	36V	75V				71V
Supply Voltage		6~36V	9~36V	6~30V	4.5~65V	6~36V	6~40V	6~40V	4.5~32V	9~60V		5~60V	6~65V	4.5~65V
Switch on Resistance (Typ.)		0.6Ω	0.45Ω		0.3Ω			0.25Ω	0.12Ω	0.35Ω		0.2Ω	0.3Ω	0.2Ω
Dimming method	Digital	●	●	●	●	●	●	●	●	●	●	●	●	●
	Digital to Analog	-	-	-	●	-	-	-	-	-	-	-	-	-
	Analog	●	-	-	●	-	●	●	-	-	-	-	●	-
Protection	LED Open	●	●	●	●	●	●	●	●	●	●	●	●	●
	LED Short	●	●	●	●	●	●	●	●	●	●	●	●	●
	Thermal Shutdown	●	●	●	●	●	●	●	●	●	●	●	●	●
	Start-up	●	●	●	●	●	●	●	-	●	●	●	●	●
	UVLO	●	●	-	●	-	●	●	●	●	●	●	●	●
	OCP/OCL	●	-	-	●	●	●**	●	●	●	●	●	●	●
	Thermal Fold-back	-	-	-	-	-	-	●	-	-	-	-	-	-
	OTP Error FLAG	-	-	-	-	-	-	-	●	-	-	-	-	●
	OCP Error FLAG	-	-	-	-	-	-	-	●	-	-	-	-	●
RoHS Compliant Package	TO252	●	●	-	-	-	●	-	-	●	●	-	●	-
	SOP8	●	-	-	●	●	●	-	●	●	●	-	●	●
	SOP10		-	-	-	-	-	-	-	-	-	●	-	-
	MSOP8	-	●	●	●	-	-	-	-	-	-	-	-	-
	SOT89	●	-	-	-	●	●	●	-	-	-	-	-	-
	SOT23	●	●	●	-	-	●	●	-	-	-	-	-	-
	DFN10	-	-	-	-	-	-	-	-	-	-	●	-	-
Major Applications		MR11, MR16, Flood light, PAR light, wall wash light, stage light, panel light, emergency lighting, street light, tunnel lighting, high power LED lighting, automotive lighting												

* 1.2A for SOT89 package only and 1A for SOT23 Package.

** Protection feature may very from different versions.

DC/DC Controller

		MBI6671	MBI6672	MBI6673
Topology		Multi-topology / PFM	Constant Off Time with Peak Current Detection	Single Inductor Multi Output / PFM
Max. Output Current Per Channel		By External MOSFET		
Supply Voltage		4.5~65V	6~60V	20~50V
Dimming Method	Digital	●	●	-
	Analog	●	-	-
	Shunt Dimming	-	●	●
Protection	LED Open	● *	-	●
	LED Short	● *	-	-
	Thermal Shutdown	●	●	●
	OVP	●	-	-
	UVLO	●	●	●
	OCP	-	-	●
RoHS Compliant Package	TSSOP14	●	●	-
	TSSOP24	-	-	●
Major Applications		High power LED lighting, automotive lighting	High power LED lighting, stage lighting	

* LED open /short status can be reported by the FLT pin

AC/DC Controller

		MBI6804	MBI6812	MBI6902	MBI6912
Electrical Isolation		Isolation		Non-Isolation	
Topology		Flyback /QR		Buck	Buck/BCM
Max. Output Current Per Channel		By External MOSFET			
Max. Sustaining Voltage		44V			
Supply Voltage		16~28V		9~40V	9~36V
Dimming Method	Non-dim	-	●	-	●
	Step	●	-	-	-
	Digital	-	-	●	-
Protection	LED Open/ Short	●	●	●	●
	Thermal Shutdown	●	●	●	●
	Start-up	●	●	●	●
	UVLO	●	●	●	●
	VDD_OVP	-	-	●	●
	OVP	●	●	-	●
RoHS Compliant Package	MSOP8	-	-	●	-
	SOP8	●	●	-	-
	SOP23	-	-	-	●
Major Applications		LED light tube, LED light bulb			

RGB Lighting

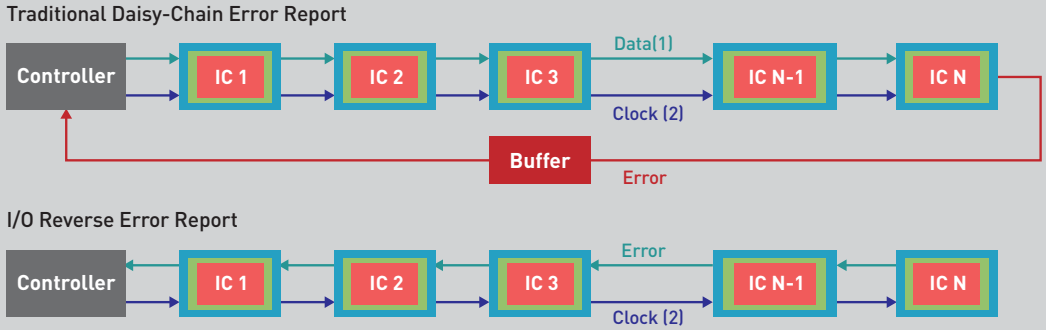
Including RGB LED drivers for architectural lighting and backlight & lighting solutions for consumer electronics.

RGB LED Driver for Architectural Lighting

Bi-Directional Transmission

- Data transmission mode: forward transmission
- Error report mode: reverse transmission

  In traditional designs, the Error report feature is achieved by connecting one additional wire from the last IC to the controller and a signal buffer. With I/O bi-directional transmission, the same wire connecting the controller to the ICs is used to report information back to the control system. This not only improves communication between control systems and light fixtures but also saves wire costs.



RGB LED Driver

		MBI6023	MBI6024	MBI6033	MBI6034	MBI6020	MBI6021	MBI6027	MBI6030	MBI6120
No. of Output Channel		3×4				3×1				
Transmission Interface	Topology	2-Wire				2-Wire				1-Wire
	Clock Integrity	Clock Inversion				Clock Inversion			Clock Regeneration	Clock Inversion
	Bi-directional	-	-	-	●	-	-	●	-	-
Constant Output Current Range Per Channel		3~45mA				5~50mA		5~45mA	5~150mA	3~30mA
Sustaining Output Voltage		17V		28V		17V			40V	17V
Supply Voltage		3~5.5V		3~5.5V/ 6~24V		3~5.5V			7~30V	5~12V
Built-in LDO		-	-	●	●	-	-	-	●	●
S-PWM		16-bit				16-bit	-	12/8-bit	16/10-bit	12-bit
PWM		-	-	-	-	10-bit	10-bit	-	-	-
Dot Correction		-	8/6-bit	-	-	8/6-bit	-	10/8-bit	6-bit	-
Current Gain		-	-	●	●	-	-	●	-	-
Error Detection	LED Open	-	-	-	●	-	-	●	-	-
	LED Short	-	-	-	●	-	-	-	-	-
	Leakage	-	-	-	-	-	-	●	-	-
	Wire Disconnection	-	-	-	●	-	-	●	-	-
Thermal Protection		-	-	-	-	-	-	-	●	-
RoHS Compliant Packge	SSOP16	-	-	-	-	●	●	-	●	-
	QFN16	-	-	-	-	●	-	-	-	-
	SSOP24	●	●	●	●	-	-	-	-	-
	QFN24	●	●	●	●	-	-	●	●	-
	TSSOP24	-	-	●	●	-	-	-	-	-
	SOP8	-	-	-	-	-	-	-	-	●
Major Applications		LED strip, mesh display						LED cluster		LED strip

AMUSE LED Driver

Professional RGB LED Backlight & Lighting Solution for Consumer Electronics

- SPI & I^2C control interface
- Excellent output current accuracy enables precise color lighting
- Built-in auto breath lighting function with gamma correction

AMUSE LED Driver

		MBIA045	MBIA127	MBIA128
No. of Output Channel		16	12	12
Control Interface		Proprietary SPI-like	I^2C w/ high speed mode (up to 3.4Mhz)	SPI 15MHz
Embedded MOSFET		-	●	●
Scan Design		-	Up to 12-scan	Up to 20-scan
LED Matrix Configuration		-	Up to 144 RGB pixels	Up to 400 RGB pixels
Output Current Per Channel		1~45mA	5~40mA	5~40mA
Output Current Accuracy	Between Channels	<±2.0% (typ.)	<±1.5% (typ.)	<±1.5% (typ.)
	Between ICs	<±2.5% (typ.)	<±2.5% (typ.)	<±2.5% (typ.)
Supply Voltage		3.3V ~ 5V	4.5V ~ 5V	4.5V ~ 5V
I/O Level		V_{DD}	3.3V / 5V selectable	3.3V / 5V selectable
Sustaining Output Voltage		17V	7V	7V
PWM		16 /10-bit	10 / 8-bit	10 / 8-bit
Current Gain		6-bit	8-bit	8-bit
Ghosting Effect Elimination		●	●	●
Error Detection	LED Open	-	●	●
	LED Short	-	●	●
	LED Pixel Short	-	●	●
EMI Noise Reduction	Channel Output Shift	●	●	●
	PWM Forward/Backward Counting	●	●	●
	Output Slew Rate Control	-	●	●
	PWM Enhancement	-	●	●
Protection	Thermal Shutdown	-	●	●
	Over Current	-	●	●
Intelligent Power Saving		-	●	●
Auto Breath Lighting Function		-	●	●
RoHS Compliant Package	SSOP24	●	-	-
	QFN24	●	-	-
	TSSOP28	-	●	●
	QFN28	-	●	●
Major Applications		LED lighting for gaming keyboard, home appliance	LED lighting for gaming keyboard, home appliance, IoT device, MIDI controller	

Full-Array Local Dimming LED Backlight

Macroblock's solution can realize thousands of zones local dimming far beyond the conventional solutions which only support tens of zones.


60
500m
self-driving
mode

Full-Array Local Dimming LED Backlight Driver IC

High Dynamic Range (HDR) is a new standard for the new era display equipment. Full-Array Local Dimming (FALD) is a necessary technology for LCD to meet HDR requirements. Macroblock introduces several FALD LED backlight driver ICs designed to cover every size LCD to integrate time-multiplexing architecture.

FALD Backlight LED Driver

		MBI6322	MBI6328	MBI6334	MBI6353	MBI5353Q
No. of Output Channel		32	48	64	48	48
Transmission Interface	SPI	●	-	-	-	-
	SPI W/Daisy Chain	-	●	●	●	-
	Daisy Chain	-	-	-	-	●
Output Current Per Channel		2~15mA	4~40mA	5~30mA	25~100mA	2~20mA
Sustaining Output Voltage		17V	55V	17V	24V	17V
Excellent Output Current Accuracy	Between Channels	<±2.0% (max.)	<±3.0% (max.)	<±3.0% (max.)	<±3.0% (max.)	<±3.0% (max.)
	Between ICs	<±2.0% (max.)	<±3.0% (max.)	<±3.0% (max.)	<±3.0% (max.)	<±7.5% (max.)
Scan Design		Up to 16-scan	Up to 8-scan	Up to 8-scan	Up to 4-scan	Up to 32-scan
Embedded MOSFET		16	-	-	-	-
PWM Enhancement		●	-	●	●	-
S-PWM		10/11/12/13/14-bit	12/13/14-bit	12-bit	12-bit	13/14/15/16-bit
Current Gain		3-bit	8-bit	10-bit	10-bit	3-bit/Global 7-bit/Group
Feedback Control		●	●	●	●	-
Error Detection	LED Open	●	●	●	●	●
	LED Short	●	●	●	●	●
Thermal Protection		●	●	●	●	●
RoHS Compliant Package		QFN-64 7×7	QFN-64 9×9	BGA 5×11	QFN-68 8×8	QFN-56 8×8
Major Applications		Laptop, Tablet	Monitor, TV	Laptop, Tablet	Monitor, TV	CID

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