



Extend Your LED Value



LED Driver IC Expert

Through the continuous innovations and the professional team support, Macroblock delivers leading technology to achieve excellent performance, reliability and flexibility.



About Macroblock

Macroblock was founded in June, 1999 in Hsinchu, Taiwan, and positions itself as a mixed-signal design house with special focus on the power management and opto-electronic applications. Macroblock was certified by ISO 9001:2000 in April, 2004.

Macroblock is now a leading LED driver provider and focuses on the LED driver design which contributes to ultimate LED performance for LED display and lighting applications. With continuous technology innovations, Macroblock has been successfully marketed over 500 worldwide customers and ranked 2nd in LED driver IC market by IMS Research in 2013.

Macroblock has developed the world' s first 16-bit PWM embedded LED driver with patented S-PWM technology which has been applied in world events, such as Opening Ceremony of 2008 Beijing Olympics and Expo 2010 Shanghai China. Aiming at future prospect of LED display and lighting market, Macroblock positions itself with outstanding technologies and solutions in LED display and lighting applications.



Your Best LED Solution Provider

Performance

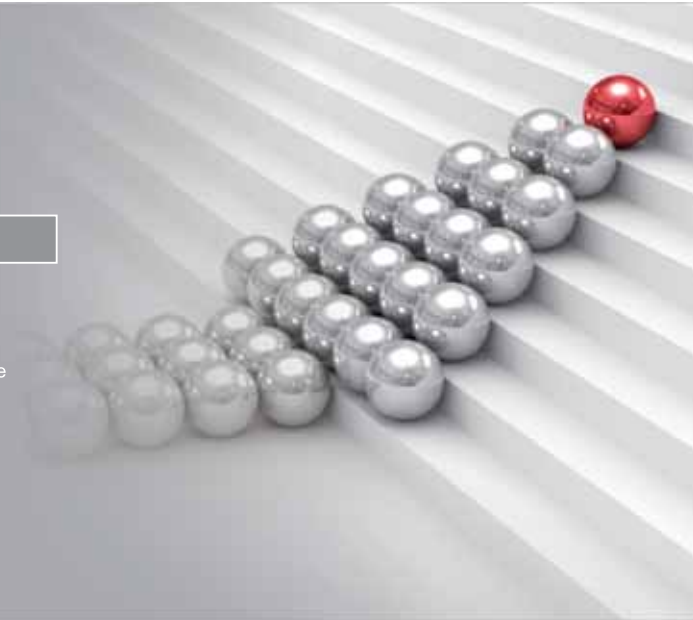
- Good Current Uniformity
- S-PWM Patented Technology
- Share-I-O™ Patented Technology

Quality

- ISO 9001
- Product Reliability
- Package Reliability
- Process Reliability
- Supplier Quality Management

Services

- Short Lead -Time
- Global Sales Channel
- Excellent After Service



LED Display

	8-Channel	16-Channel	24-Channel
Generic Constant Current LED Driver	MBI5167, MBI5168	MBI5025, MBI5026, MBI5035	—
Multi-Function LED Driver	MBI5169, MBI5170, MBI5171, MBI5137	MBI5037, MBI5039	MBI5324
S-PWM LED Driver	—	MBI5030, MBI5031, MBI5040, MBI5041, MBI5042, MBI5045, MBI5047, MBI5050, MBI5051, MBI5052, MBI5053, MBI5151, MBI5152, MBI5153	—

Architectural Lighting

	3-Channel	12-Channel
LED Driver for RGB Clusters	MBI6020, MBI6027, MBI6030, MBI6120	MBI6024, MBI6033, MBI6034

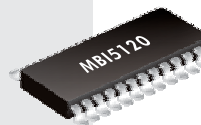
LED Lighting

DC/DC Converter	MBI6651, MBI6652, MBI6653, MBI6654, MBI6655, MBI6660, MBI6661, MBI6662				
DC/DC Controller	MBI6703, MBI6705				
AC/DC Controller	MBI6902, MBI6903, MBI6904, MBI6801, MBI6802, MBI6803, MBI6812				
Linear Regulator	1-Channel	2-Channel	4-Channel	8-Channel	16-Channel
	MBI1801	MBI1802, MBI1812	MBI1804	MBI1828, MBI1838	MBI1816





Generic Constant Current LED Driver (PrecisionDrive™)



MBI5120

The First Tiny Package with Lead



PrecisionDrive™ Technology

The PrecisionDrive™ LED Drivers are dedicated for LED displays. All the series exploits state-of-the-art PrecisionDrive™ technology to enhance the output characteristics and accuracy. The PrecisionDrive™ series features $\pm 1.5\%$ current accuracy among output ports within a single driver IC, and $\pm 1.5\%$ deviation among lots of driver ICs. The current varied with the LED forward voltage change is confined to 0.1% per volt. The current varied with supply voltage change and ambient temperature change is also restricted to 1%.

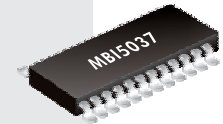
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Generic Constant Current LED Driver (PrecisionDrive™)

		MBI5167	MBI5168	MBI5025	MBI5026	MBI5035
No. of Output Channel		8		16		
Output Current per Channel		3~45mA	5~120mA	1~45mA	5~90mA	3~45mA
Sustaining Output Voltage		17V				
Low Knee Voltage		—	—	—	—	●
Excellent Output Current Accuracy	Between Channels	<±1% (typ.)	<±1% (typ.)	<±1.5% (typ.)	<±1% (typ.)	<±3% (typ.)
	Between ICs	<±1% (typ.)	<±1% (typ.)	<±1.5% (typ.)	<±1% (typ.)	<±3% (typ.)
RoHS Compliant Packag	SOP16	●	●	—	—	—
	SSOP16	●	●	—	—	—
	SOP24	—	—	●	●	●
	SSOP24	—	—	●	●	●
	TSSOP24	—	—	●	—	—
	P-DIP24	—	—	—	●	—
	SP-DIP24	—	—	—	●	—
Major Applications		Commercial LED Panel, Message Sign				Power Saving LED Panel



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



MBI5037

LED Driver Suitable for Traffic Sign Applications



Share-I-O™ Technology

Share-I-O™ technology features pin compatibility. By means of the Share-I-O™ technique, additional functions can be added to LED drivers without adding any extra pins in package and without changing the printed circuit board originally designed for conventional LED drivers.

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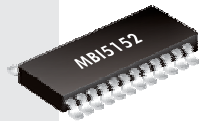
Multi-Function LED Driver

		MBI5169	MBI5170	MBI5171	MBI5137	MBI5037	MBI5039	MBI5324
No. of Output Channel		8			16		24	
Output Current per Channel		5~120mA			3~80mA	3~80mA	3~90mA	1~35mA
Sustaining Output Voltage		17V						
Excellent Output Current Accuracy	Between Channels	<±1% (typ.)			<±1.5% (typ.)			<±2% (typ.)
	Between ICs	<±1% (typ.)			<±3% (typ.)			<±4% (typ.)
Error Detection	LED Open	●	—	●	●	●	●	●
	LED Short	●	—	●	●	●	●	—
	Leakage	—	—	—	●	●	—	—
Current Gain		—	●	●	—	—	●	—
Power Saving Mode		—	—	—	●	●	—	—
RoHS Compliant Package	P-DIP16	●	●	●	—	—	—	—
	SOP16	●	●	●	●	—	—	—
	SSOP16	●	●	●	●	—	—	—
	SOP24	—	—	—	—	●	●	—
	SSOP24	—	—	—	—	●	●	—
	QFN 24	—	—	—	—	—	●	—
	LQFP48	—	—	—	—	—	—	●
Major Applications		Commercial LED Panel, Message Sign, VMS traffic Sign, Bus Sign						



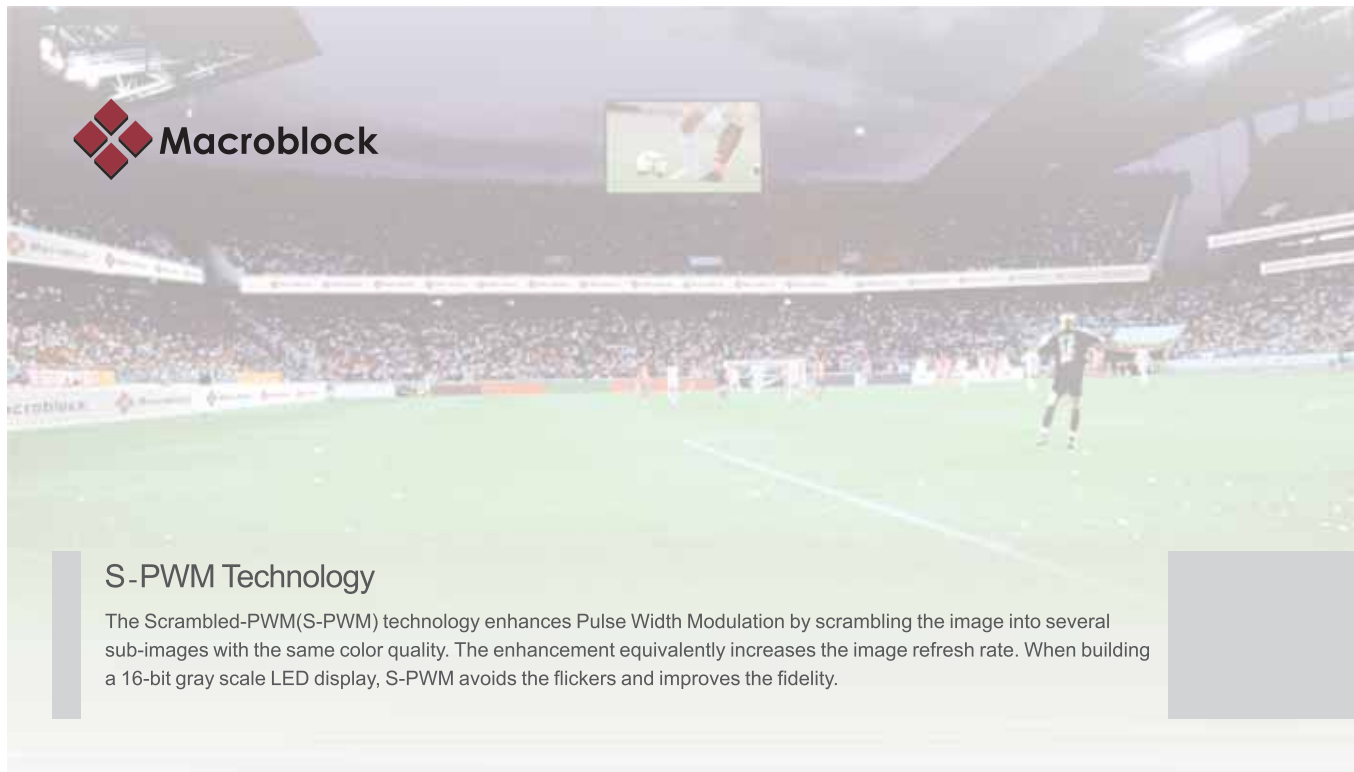


S-PWM LED Driver (PrecisionDrive™ / Share-I-O™)



MBI5152

LED Driver Suitable for Scan Type LED Display Applications



S-PWM Technology

The Scrambled-PWM(S-PWM) technology enhances Pulse Width Modulation by scrambling the image into several sub-images with the same color quality. The enhancement equivalently increases the image refresh rate. When building a 16-bit gray scale LED display, S-PWM avoids the flickers and improves the fidelity.

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S-PWM LED Driver

		MBI5030	MBI5031	MBI5040	MBI5041	MBI5042	MBI5045	MBI5047	
No. of Output Channel		16							
Output Current per Channel		3~90mA		2~60mA	2~30mA	2~45mA		3~45mA	
Sustaining Output Voltage		17V							
Excellent Output Current Accuracy	Between Channels	<±1.5% (typ.)					<±3.0% (typ.)	<±1.5% (typ.)	
	Between ICs	<±3.0% (typ.)							
Error Detection	LED Open	●	●	●	—	—	●	●	
	LED Short	—	—	●	—	—	—	●	
	Thermal Protection	—	—	●	—	—	—	●	
	Leakage	—	—	—	—	—	—	●	
Current Gain (12.5%~200%)		8-bit		7-bit,0%~100%		6-bit			
GCLK Multiplier		—	—	—	—	—	●	—	
Power Saving		—	—	—	—	—	—	●	
Low Knee Voltage		—	—	—	—	—	●	—	
Lower Ghost Effecting Elimination		—	—	—	—	—	●	—	
S-PWM		12/16-bit	12-bit	12/16-bit	16-bit				
Visual Refresh Rate		3840Hz@GCLK=4MHz							
Dot Correction		—	—	8-bit, Digital		—	—	—	
RoHS Compliant Package	SOP24	●	●	●	●	●	●	●	
	SSOP24	—	—	—	●	●	●	●	
	TSSOP24	●	●	●	—	●	—	—	
	QFN24	●	●	●	●	●	—	—	
Major Applications		High Refresh Rate / Gray Scale LED Panel							



Embedded Ghost Effecting Elimination and GCLK Multiplier Function Series

This series integrate ghost effecting elimination circuit that could ease lower ghost effecting problems shown in LED display. Besides, it also embeds the innovative GCLK multiplier technique that help double visual refresh rate without increasing GCLK frequency.

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SRAM Embedded S-PWM LED Driver

		MBI5050	MBI5051	MBI5052	MBI5053	MBI5151	MBI5152	MBI5153
No. of Output Channel		16						
Output Current per Channel		3~45mA	2~45mA			0.5~20mA		
Sustaining Output Voltage		17V						
Excellent Output Current Accuracy	Between Channels	<±1.5% (typ.)						
	Between ICs	<±3.0% (typ.)				<±1.5% (typ.)		
Error Detection	LED Open	—	●	●	●	●	●	●
Current Gain (12.5%~200%)		—	—	—	—	6-bit	6-bit	6-bit
GCLK Multiplier		—	●	●	●	●	●	●
Lower Ghost Effecting Elimination		—	●	●	●	●	●	●
S-PWM		14/16-bit						
Scan-Type		Up to 1/8	Up to 1/8	Up to 1/16	Up to 1/32	Up to 1/8	Up to 1/16	Up to 1/32
Visual Refresh Rate		>1000Hz@GCLK= 16MHz						
RoHS Compliant Package	SOP24	●	●	●	●	●	●	●
	SSOP24	●	●	●	●	●	●	●
Major Applications		Time-multiplexing LED Panel						



RGB LED Driver for Architectural Lighting



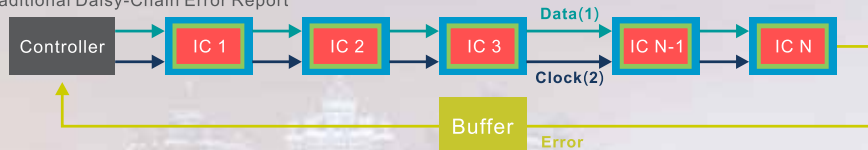
MBI6034

28V Sustaining Voltage,
Bi-Direction Transmission with I/O Reverse Report

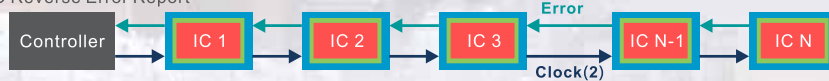


Bi-Direction Transmission

Traditional Daisy-Chain Error Report



I/O Reverse Error Report



- Data Transmission Mode: Forward Direction Transmission
- Error Report Mode: Reverse Direction Transmission
 - Traditionally, we need one more wire from the last IC to the controller and a signal buffer to implement error report.
 - With reverse I/O swap transmission, wire cost is greatly reduced.

RGB LED Driver

		MBI6024	MBI6033	MBI6034	MBI6020	MBI6027	MBI6030	MBI6120
No. of Output Channel		3x4			3x1			
Transmission Interface	Topology	2-Wire			1-Wire			1-Wire
	Clock Integrity	Clock Inversion					Clock Regeneration	—
	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				12/8-bit	16-bit	12-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 Package	SSOP16	—	—	—	●	—	●	—
	QFN16	—	—	—	●	—	—	—
	SSOP24	●	●	●	—	—	—	—
	QFN24	●	●	●	—	●	●	—
	TSSOP24	—	●	●	—	—	—	—
	SOP8	—	—	—	—	—	—	●
Major Applications		LED Strip, Mesh Display				LED Cluster		LED Strip





LED Driver for General LED Lighting



MBI6662

High Efficiency, DC/DC Buck/Adapter PFM Converter Suitable for Wall Wash Light



LED Drivers for General Lighting Applications

DC/DC converters and AC/DC controllers are specifically designed for high power LED lighting applications. The constant current and high power efficiency meet the higher standards of safety and reliability for LED lighting applications.

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		DC/DC Converter							
		MBI6651	MBI6652	MBI6653	MBI6654	MBI6655	MBI6660	MBI6661	MBI6662
Topology		Buck / Hysteretic PFM							Buck/Adaptive PFM
Max. Output Current per Channel		1A	750mA	1A			500mA	1A	2A
Max. Sustaining Voltage		40V	32V	40V			75V		75V
Supply Voltage		9~36V	6~30V	6~36V			9~60V		5~60V
Switch on Resistance (Typ.)		0.45Ω		0.3Ω			0.35Ω		0.2Ω
Dimming Method	Digital	●	●	●	●	●	●	●	●
	Digital to Analog	—	—	●	—	—	—	—	—
	Analog	—	—	●	—	—	—	—	—
	4-Step	—	—	—	●	—	—	—	—
Protection	LED Open	●	●	●	●	●	●	●	●
	LED Short	●	●	●	●	●	●	●	●
	Thermal	●	●	●	●	●	●	●	●
	Start-Up	●	●	●	●	●	●	●	●
	UVLO	●	—	●	●	—	●	●	●
	OCP	—	—	●	●	●	●	●	●
RoHS Compliant Package	TO252	●	—	—	—	—	●	●	—
	SOP8	—	—	●	●	●	●	●	—
	SOP10	—	—	—	—	—	—	—	●
	MSOP8	●	●	●	●	—	—	—	—
	SOT89	—	—	—	—	●	—	—	—
	SOT23	●	●	—	—	—	—	—	—
DFN10	—	—	—	—	—	—	—	●	
Major Application		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							

		DC/DC Controller	
		MBI6703	MBI6705
Topology		Boost / PWM	
Max. Output Current per Channel		By External MOSFET	
Supply Voltage		10~30V	
Dimming Method	Digital	●	●
Protection	LED Open	—	●
	LED Short	—	●
	Thermal	●	●
	OVP	●	●
	UVLO	●	●
	OCP	●	●
RoHS Compliant Package	TSSOP-24	●	—
	SOP-28	—	●
Major Applications		Street Lighting	

		AC/DC Controller						
		MBI6902	MBI6903	MBI6904	MBI6801	MBI6802	MBI6812	MBI6803
Electrical Isolation		Non Isolation			Isolation			
Topology		Buck / Hysteretic PFM	Buck Boost / PWM		Flyback / DCM	Flyback/DCM+BCM	Flyback/QR	Flyback/DCM+BCM
Max. Output Current per Channel		By External MOSFET						
Max. Sustaining Voltage		44V						
Supply Voltage		9~40V	9~36V		16~28V			
AC Input Voltage Range		85-265V _{AC}						
Dimming Method	Non-Dim	—	●	—	●	●	●	—
	Digital	●	—	—	—	—	—	—
	Step	—	—	●	—	—	—	—
	TRIAC	—	—	—	—	—	—	●
Protection	LED Open	●	●	●	●	●	●	●
	LED Short	●	●	●	●	●	●	●
	Thermal	●	●	●	●	●	●	●
	Start-Up	●	●	●	●	●	●	●
	UVLO	●	●	●	●	●	●	●
	OVP	●	●	●	●	●	●	●
	Rcs Open	●	●	●	●	●	●	●
	Rcs Short	—	—	—	—	—	●	—
RoHS Compliant Package	MSOP8	●	—	—	—	—	—	—
	SOP8	—	●	●	●	●	●	—
	SOP16	—	—	—	—	—	—	●
Major Applications		LED Bulbs, LED Tubes, Flat Panel Light, PAR Light, Down Light						

		All-Ways-On™ LED Driver						
		MBI1801	MBI1802	MBI1804	MBI1812	MBI1816	MBI1828	MBI1838
Topology		Linear						
No. of Output Channel		1	2	4	2	16	8	8
Excellent Output Current Accuracy	Between Channels (Typ.)	—	1%		3%	1%		
	Between ICs (Max.)	6%						
Output Current per Channel		0.5~1.2A	40~360mA	240mA	360mA	60mA	60mA	80mA
Sustaining Output Voltage		17V					50V	70V
Supply Voltage		5V			12V	5V	8-40V	
Dimming Method	Digital	●	●	●	—	●	●	●
	Analog	—	—	—	●	—	—	—
Protection	Thermal	●	●	●	●	●	—	●
	Thermal Error Flag	—	●	—	—	—	●	—
RoHS Compliant Package	SOP8	—	●	●	●	—	—	—
	TSSOP16	—	—	—	—	—	●	—
	TSSOP20	—	—	—	—	●	—	—
	TSSOP24	—	—	—	—	—	—	●
	TO265	●	—	—	—	—	—	—
	QFN24	—	—	—	—	—	●	—
Major Applications		LED Lighting, Automotive Lighting						



Contact Us

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