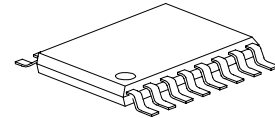


**3-Channel Driver for RGB LED Cluster****Features**

- 3 constant current channels for RGB LED cluster
- Output current invariant to load voltage change: 5V~ 12V
- Constant output current range: 3~ 60mA
- Output buffers for CLK, SDI, LE, and $\overline{OE}$
- Output current accuracy:
between channels: $< \pm 5\%$ (max.), and
between ICs: $< \pm 5\%$ (max.)
- Built-in voltage regulator for 5~ 12V supply voltage
- 5 MHz clock frequency

MBI6010CP

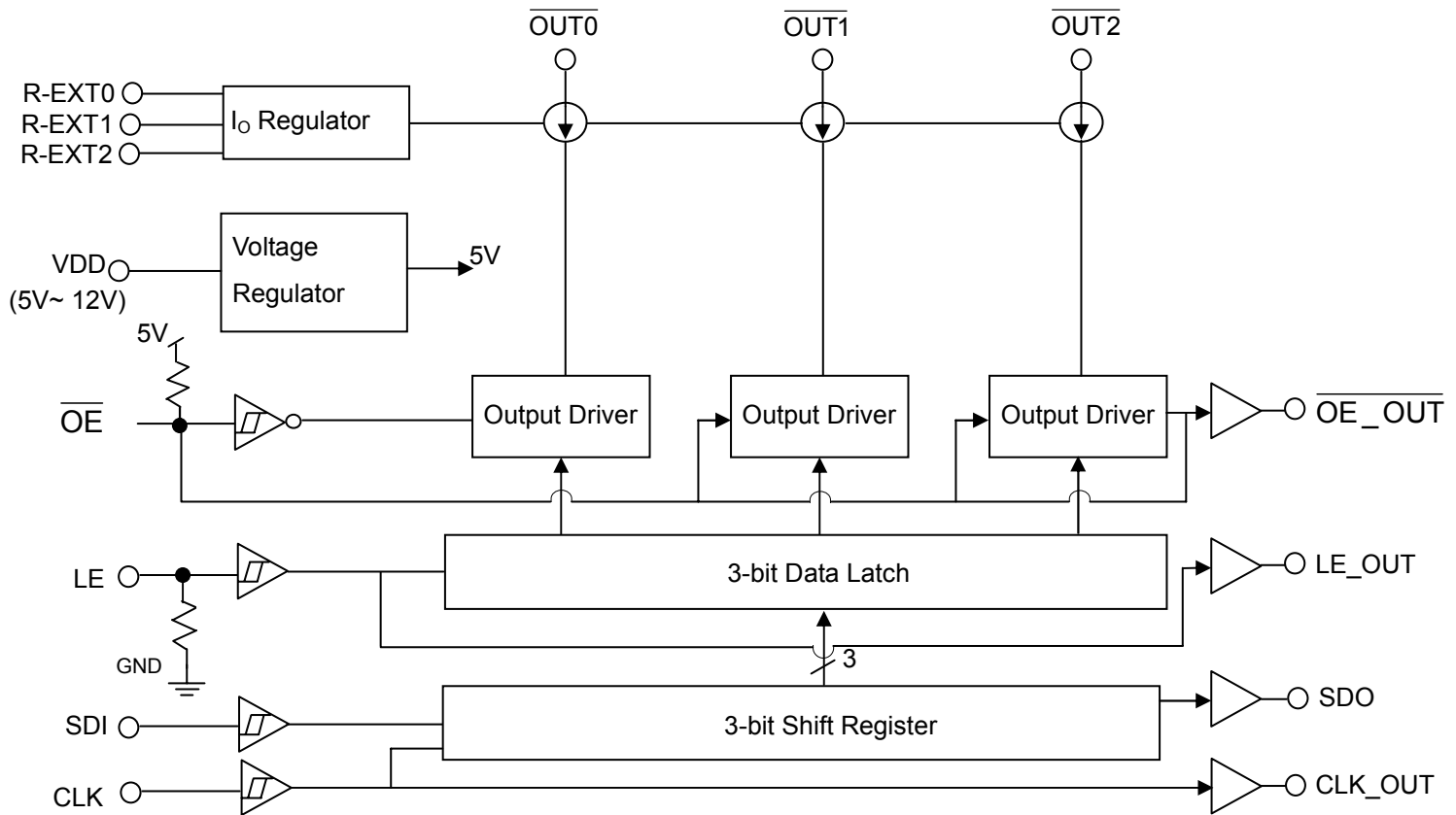


SSOP16-150-0.64 Weight : 0.07g

Applications

- Ground/Wall indicator
- Architectural lighting
- Entertainment lighting
- City beautification
- Landscape lighting
- Signage/sign board

Block Diagram



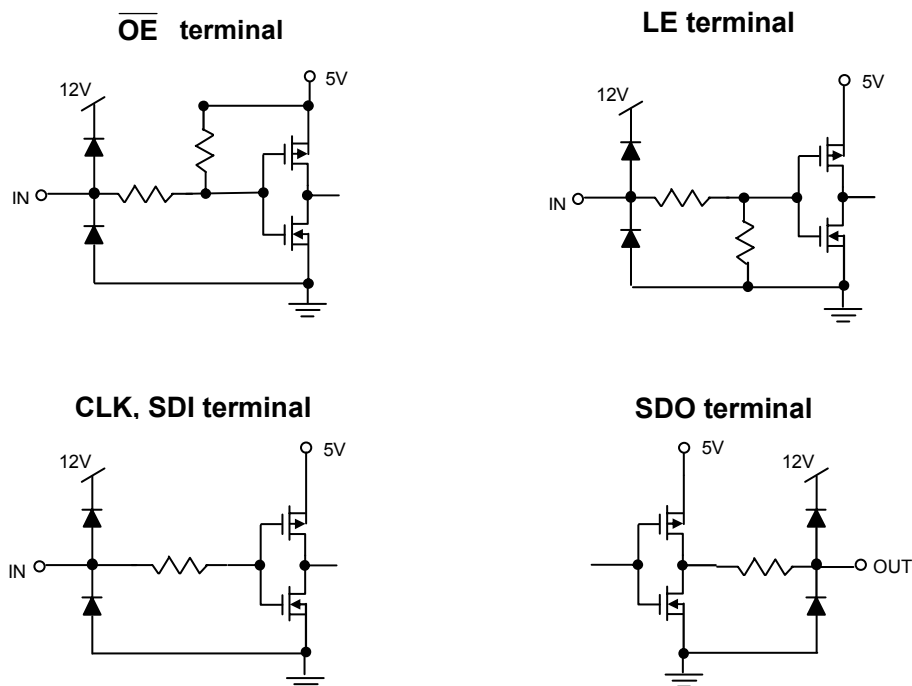
Terminal Description

Pin No.	Pin Name	Function
1	GND	Ground terminal for control logic and current sink
2, 15	$\overline{\text{OE}}$, $\overline{\text{OE_OUT}}$	Output enable terminal When(active)low, the output drivers are enabled; when high, all output drivers are turned OFF (blanked)
3, 14	LE, LE_OUT	Data strobe input terminal Serial data is transferred to the output latch when LE is high. The data is latched when LE goes low.
4	SDI	Serial-data input to the shift register
5, 12	CLK, CLK_OUT	Clock input terminal for data shift on rising edge
6~8	R-EXT0, R-EXT1, R-EXT2	Input terminal used to connect an external resistor for setting up output current for all output channels
9~11	$\overline{\text{OUT0}} \sim \overline{\text{OUT2}}$	Constant current output terminal
13	SDO	Serial-data output to the following SDI of next driver IC
16	VDD	5- 12V supply voltage terminal

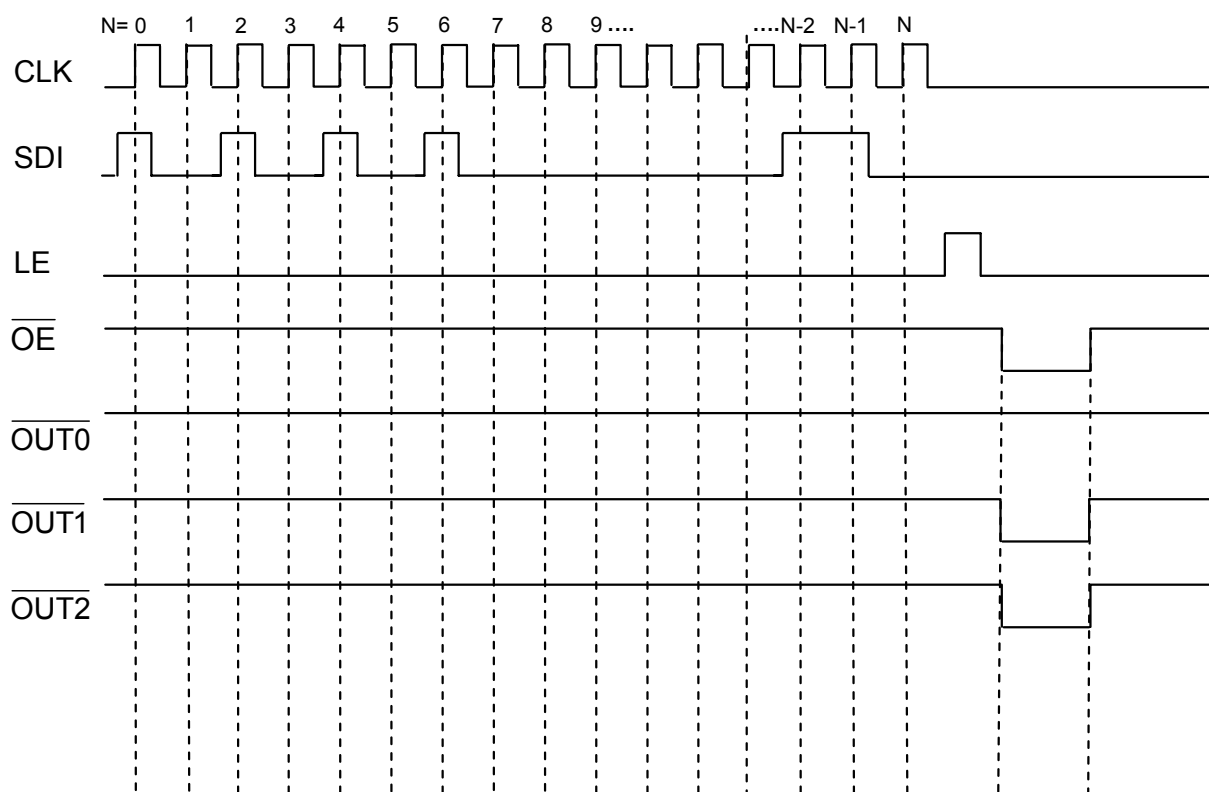
Pin Configuration

GND	1	16	VDD
$\overline{\text{OE}}$	2	15	$\overline{\text{OE_OUT}}$
LE	3	14	LE_OUT
SDI	4	13	SDO
CLK	5	12	CLK_OUT
R-EXT2	6	11	$\overline{\text{OUT0}}$
R-EXT1	7	10	$\overline{\text{OUT1}}$
R-EXT0	8	9	$\overline{\text{OUT2}}$

Equivalent Circuits of Inputs and Outputs



Timing Diagram



Maximum Ratings

Characteristic	Symbol	Rating	Unit
Supply Voltage	V_{DD}	5~12	V
Input Voltage	V_{IN}	$-0.4 \sim V_{DD} + 0.4$	V
Output Current	I_{OUT}	+60	mA
Output Voltage	V_{DS}	-0.5~+12.0	V
GND Terminal Current	I_{GND}	180	mA
Operating Temperature	T_{opr}	-40~+85	°C
Storage Temperature	T_{stg}	-55~+150	°C

Electrical Characteristics

Characteristic		Symbol	Condition		Min.	Typ.	Max.	Unit
Supply Voltage		V _{DD}	-		4.5	-	12	V
Output Voltage		V _{DS}	OUT0 ~ OUT2		-	-	17.0	V
Output Current		I _{OUT}	DC Test Circuit		3	-	60	mA
		I _{OH}	SDO, LE_OUT, OE_OUT, CLK_OUT		-	-	TBD	mA
		I _{OL}	SDO, LE_OUT, OE_OUT, CLK_OUT		-	-	TBD	mA
Input Voltage	“H” level	V _{IH}	Ta = -40~85°C		0.8V _{DD}	-	V _{DD}	V
	“L” level	V _{IL}	Ta = -40~85°C		GND	-	0.3V _{DD}	V
Output Leakage Current		I _{OH}	V _{OH} =17.0V		-	-	0.5	μA
Output Voltage	SDO, LE_OUT, OE_OUT, CLK_OUT	V _{OL}	I _{OL} =+1.0mA		-	-	0.4	V
		V _{OH}	I _{OH} =-1.0mA		4.6	-	-	V
Output Current 1		I _{OUT1}	V _{DS} =0.6V	R _{ext} =TBD	-	26.25	-	mA
Current Skew		dI _{OUT1}	I _{OL} =26.25mA V _{DS} =0.6V	R _{ext} =TBD	-	-	±5	%
Output Current 2		I _{OUT2}	V _{DS} =0.8V	R _{ext} =TBD	-	52.5	-	mA
Current Skew		dI _{OUT2}	I _{OL} =52.5mA V _{DS} =0.8V	R _{ext} =TBD	-	-	±5	%
Output Current vs. Output Voltage Regulation		%/dV _{DS}	V _{DS} within 1.0V and 3.0V		-	±0.1	-	% / V
Output Current vs. Supply Voltage Regulation		%/dV _{DD}	V _{DD} within 4.5V and 12V		-	±1	-	% / V
Pull-up Resistor		R _{IN} (up)	OE		250	500	800	KΩ
Pull-down Resistor		R _{IN} (down)	LE		250	500	800	KΩ