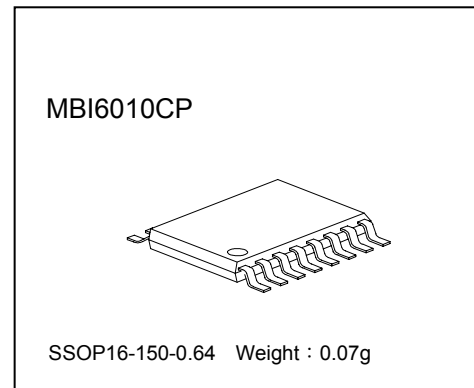


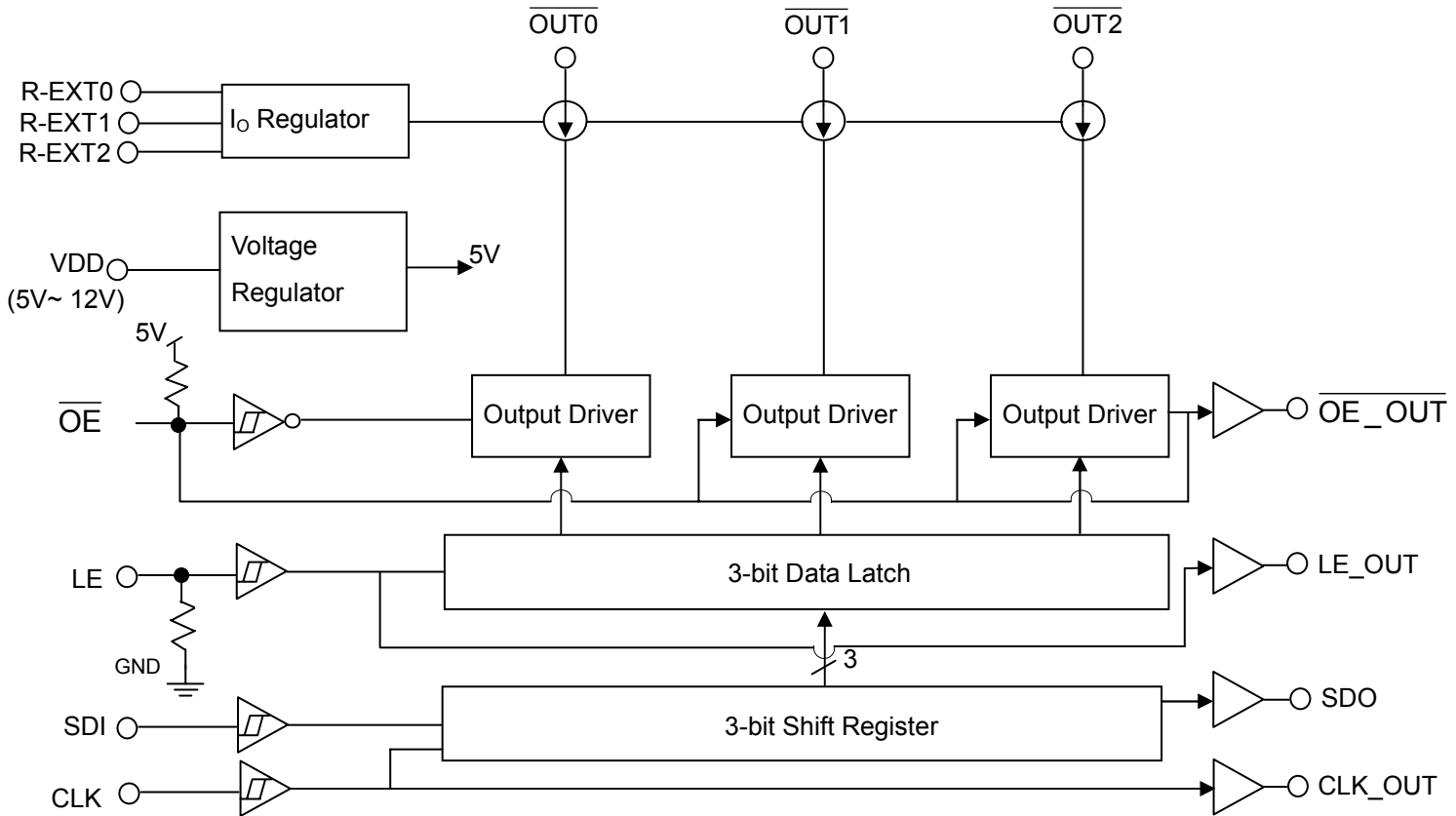
**3-Channel Driver for RGB LED Cluster****Features**

- 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

**Applications**

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

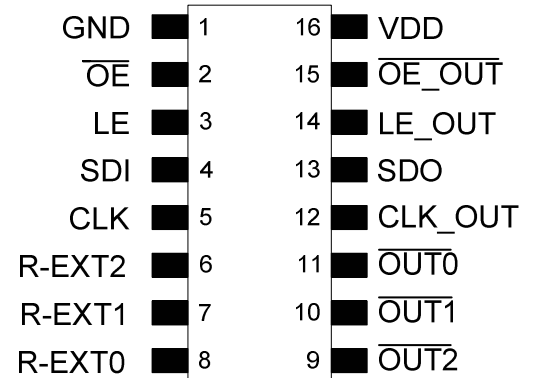
Block Diagram



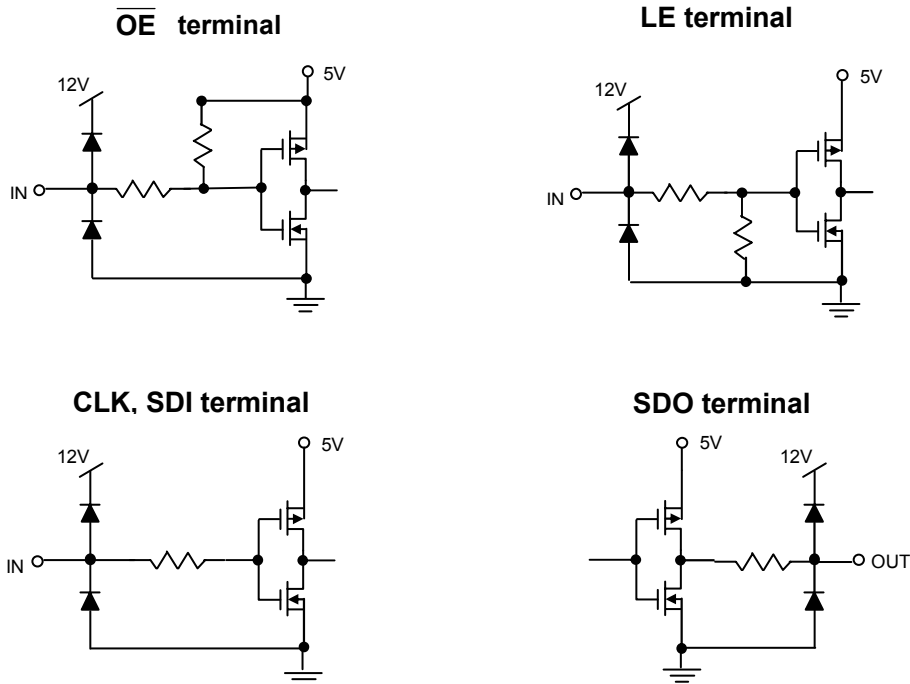
Terminal Description

Pin Configuration

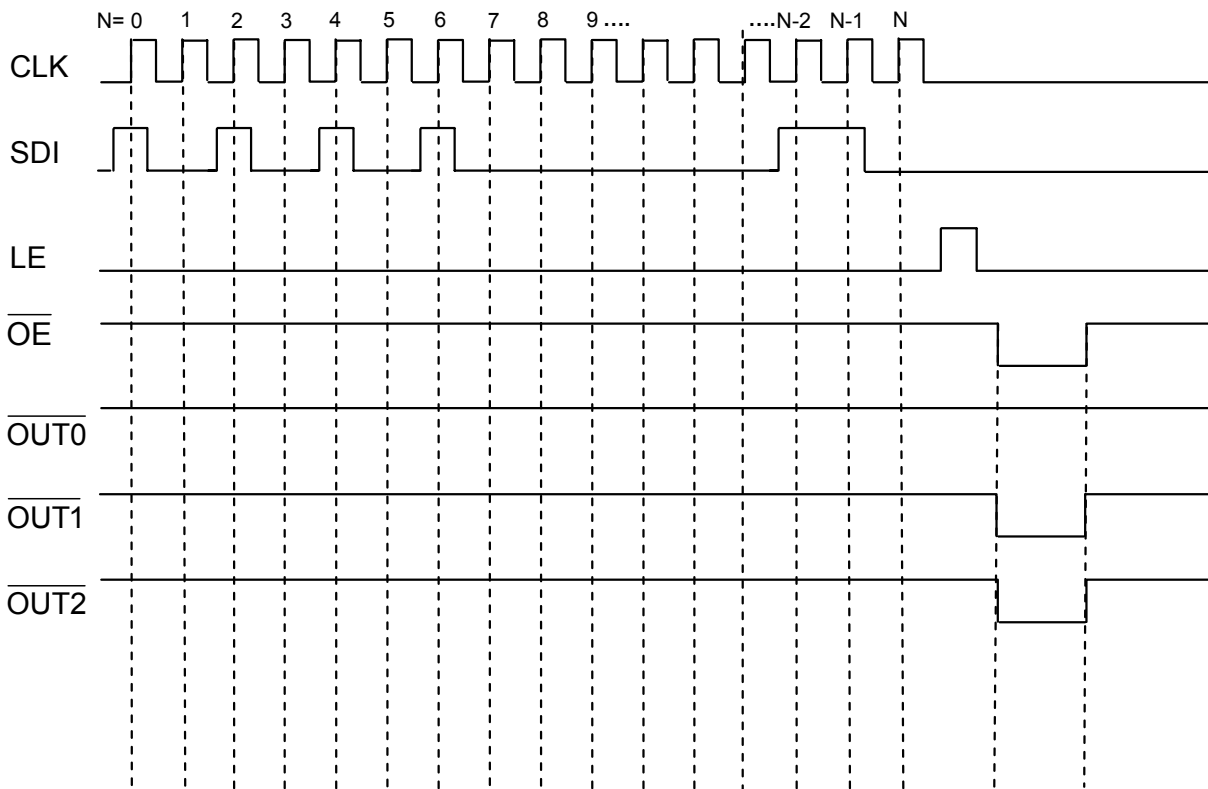
Pin No.	Pin Name	Function
1	GND	Ground terminal for control logic and current sink
2, 15	$\overline{\text{OE}}$, $\overline{\text{OE_OUT}}$	Output enable terminal When(active)low, the output drivers are enabled; when high, all output drivers are turned OFF (blanked)
3, 14	LE, LE_OUT	Data strobe input 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



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~ $V_{DD} + 0.4$	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}	$\overline{OUT0} \sim \overline{OUT2}$	-	-	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}	$T_a = -40 \sim 85^\circ C$	$0.8V_{DD}$	-	V_{DD}	V
	"L" level	V_{IL}	$T_a = -40 \sim 85^\circ C$	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		$R_{IN(up)}$	\overline{OE}	250	500	800	K Ω
Pull-down Resistor		$R_{IN(down)}$	LE	250	500	800	K Ω