24ch LED Lamp Drivers for Automotive Animation Lighting

HTSSOP-B54
(18.5mm × 9.5mm × 1.0mm)
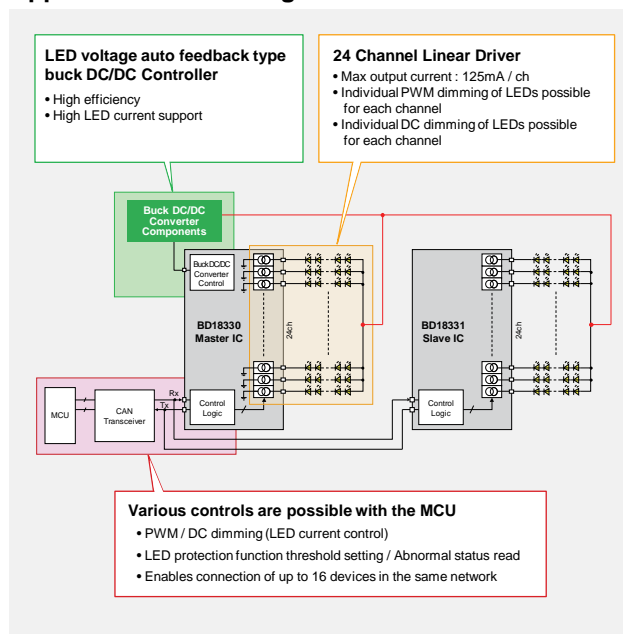
BD18330EFV-M, BD18331EFV-M

Features

- **1ch buck DC/DC controller + 24ch linear LED driver with built-in FET**

- **Operating voltage range : 4.5V to 40V**

- **Max output current : 60mA/ch**
  125mA/ch
  (when using EXTISET)

- **Spread spectrum function**

- **UART Interface (Max 1Mbps)**
  - Enables connection of up to 16 devices
  - DC / PWM dimming settings
  - LED short detection threshold voltage setting
  - Output ON delay time setting for each channel
  - Enable function supports a variety of protection operations / Abnormal status read
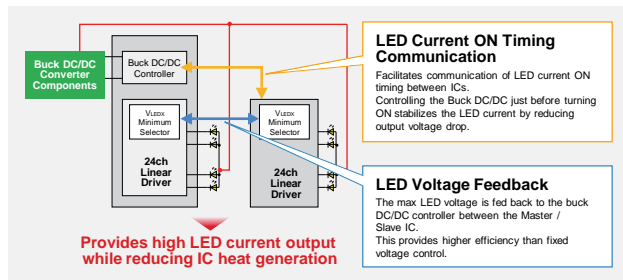 - Communication error flag output

Applications

- **Animation lamps (front/rear)**

- **Sequential turn signals (front/rear)**

Application Circuit Diagram

LED voltage auto feedback type buck DC/DC Controller
- High efficiency
- High LED current support

24 Channel Linear Driver
- Max output current : 125mA / ch
- Individual PWM dimming of LEDs possible for each channel
- Individual DC dimming of LEDs possible for each channel

Buck DC/DC Converter Components

Buck DC/DC Converter Control

BD18330 Master IC

24ch

BD18331 Slave IC

24ch

Control Logic

Control Logic

MCU

CAN Transceiver

Rx

Tx

Various controls are possible with the MCU
- PWM / DC dimming (LED current control)
- LED protection function threshold setting / Abnormal status read
- Enables connection of up to 16 devices in the same network

LED Voltage Auto Feedback type Buck DC/DC Controller

Buck DC/DC Converter Components

Buck DC/DC Controller

V_LEDX Minimum Selector

V_LEDX Minimum Selector

24ch Linear Driver

24ch Linear Driver

Provides high LED current output while reducing IC heat generation

LED Current ON Timing Communication
Facilitates communication of LED current ON timing between ICs.
Controlling the Buck DC/DC just before turning ON stabilizes the LED current by reducing output voltage drop.

LED Voltage Feedback
The max LED voltage is fed back to the buck DC/DC controller between the Master / Slave IC.
This provides higher efficiency than fixed voltage control.

Application Example (Animation Lighting)

Currently, the automotive lamp market is seeing increased demand for animation lighting, in which LED lamp arrays are lit up in different patterns

Rear Lamp Lighting Pattern ①

Rear Lamp Lighting Pattern ②