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Intelligent Lighting









O2Micro®
Breathing Life into Mobility

Intelligent Lighting Family Product Guide

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Intelligent Lighting

Mission Statement

Be the leading supplier of highly efficient Intelligent Lighting solutions for power management of electronic products in the Computer, Consumer, Industrial, Automotive, and Communications markets worldwide.

Products

O_2Micro® offers a family of *Intelligent Lighting* LED controllers for General Lighting, ranging from bulbs and tubes to high power street/ area lighting to automotive applications.

O_2Micro's LED controllers are also ideal for various sizes of Liquid Crystal Display (LCD) and Power Management Unit (PMU) applications – e.g., Monitors, TVs, Notebooks and Netbooks, PDVDs, Car TVs, GPS, Digital Photo Frames, and PNDs (Personal Navigation Devices).

CONSUMER Applications



LED MONITOR & TV

Car TV

DIGITAL PHOTO FRAME

OZ9956B

FEATURES

- High frequency DC/DC power converter controller
- Drives up to 6 strings in parallel
- Integrated LED current balance control circuit
- Wide input voltage range
- Up to 2.0MHz switching frequency
- External PWM dimming
- Over-voltage and over-current protection
- Soft start function

GENERAL DESCRIPTION

OZ9956B is a high efficiency, DC/DC controller that drives up to six (6) strings of LEDs in parallel configuration, with multiple LEDs in each string connected in series. It is targeted for notebook/netbook applications.

It provides six (6) LED current sense inputs in an “OR” configuration for improved backlight reliability. This allows the backlight to remain functional in the event that any string (s) is damaged during normal operation.

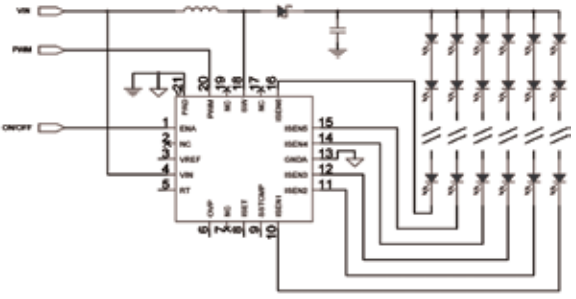
OZ9956B can receive either an analog signal or an external Pulse Width Modulation (PWM) signal for the dimming control function.

This IC provides an integrated circuit to balance the current flow through each LED string, as well as, the integrated power MOSFET.

APPLICATIONS

- Notebook/Netbook Computer

APPLICATION DIAGRAM



U.S. Patent #’s 7,498,793; 7,847,783; and more patents pending.

OZ9956C

FEATURES

- High frequency DC/DC power converter controller for LEDs
- Drives up to 6 strings in parallel
- Integrated LED current balance control circuit
- Integrated power MOSFET
- Up to 1.5MHz switching operation
- Supports phase-shift dimming with adaptive phase control
- External PWM dimming control
- Output over-voltage and short circuit protection
- LED over-current and short circuit protection
- Switch over-current protection
- Thermal protection
- Under-voltage protection

GENERAL DESCRIPTION

The OZ9956C is a high efficiency, DC/DC controller that drives up to six (6) strings of LEDs in parallel configuration, with multiple LEDs in each string connected in series. It is targeted for notebook/netbook applications.

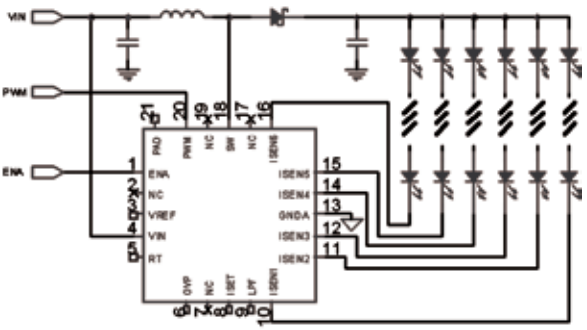
It provides six (6) LED current sense inputs in an “OR” configuration for improved backlight reliability. This allows the backlight to remain functional in the event that any string (s) is damaged during normal operation.

OZ9956C supports an external Pulse Width Modulation (PWM) signal for the phase-shifted dimming control function. It provides an integrated circuit to balance the current flow through each LED string, as well as, an integrated power MOSFET.

APPLICATIONS

- Notebook/Netbook Computer

APPLICATION DIAGRAM



U.S. Patent #’s 7,498,793; 7,847,783; 8,248,439; and more patents pending.

OZ9960

FEATURES

- High frequency DC/DC boost converter controller
- Integrated power MOSFET
- Supports low input voltage
- Up to 200mA LED current
- External PWM dimming
- Open LED protection
- MOSFET over-current protection
- Soft start function

GENERAL DESCRIPTION

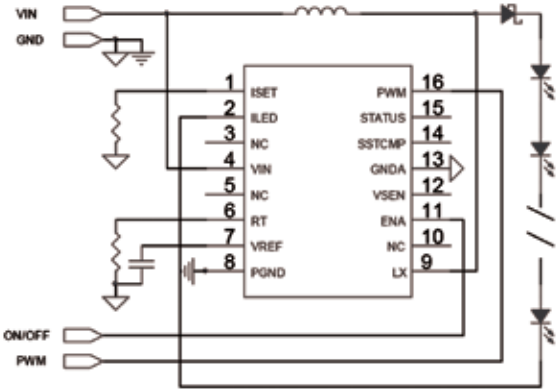
OZ9960 is a high efficiency DC/DC boost converter controller that drives a string of LEDs connected in a serial configuration. It is ideal for small and mid-size LCD backlight applications.

OZ9960 supports a wide input range and constant, user-defined operating frequency for a single string LED application. It receives an external Pulse Width Modulation (PWM) signal for dimming control.

APPLICATIONS

- Notebook/Netbook Computer
- GPS
- PND

APPLICATION DIAGRAM



Patents pending.

OZ9979

FEATURES

- High frequency DC/DC boost converter controller
- Integrated power MOSFET, and LED current balance control circuit
- Drives up to 6 strings in parallel
- Supports external, internal PWM and analog dimming
- Enhanced dimming resolution
- Supports 6 equal-delay PWM dimming signals
- PWM dimming frequency synchronized with external signal
- Protection includes: MOSFET over-current, over-voltage, LED short circuit detection, output short circuit/open diode, and thermal
- Soft start function

GENERAL DESCRIPTION

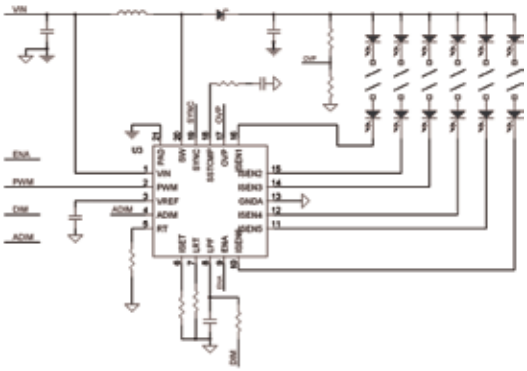
OZ9979 is a high efficiency, DC/DC controller that drives up to six strings of LEDs connected in parallel configuration; with multiple LEDs in each string connected in series. It is targeted for notebook backlight applications.

The IC provides six (6) LED current sense inputs in an “OR” configuration for improved backlight reliability. This allows the backlight to remain functional in the event that any string (s) is damaged during normal operation.

APPLICATIONS

- Notebook Computer

APPLICATION DIAGRAM



U.S. Patent #’s 7,498,793; 7,847,783; 8,248,439; and more patents pending.

OZ9993

FEATURES

- High frequency DC/DC boost converter controller
- Supports a single cell Li-Ion battery
- Fixed 975kHz switching frequency
- Integrated power MOSFET with over-current protection
- Output over-voltage protection
- Open diode or output short circuit protection
- Thermal protection

GENERAL DESCRIPTION

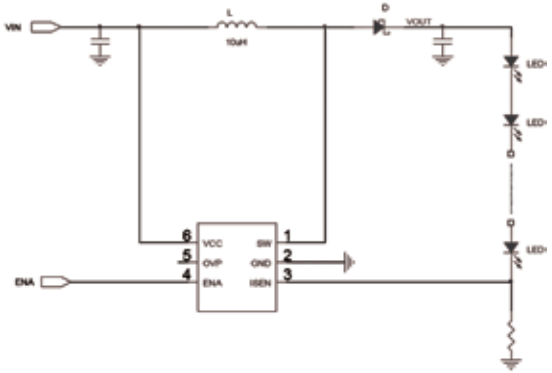
OZ9993 is a high efficiency, DC/DC controller with an integrated power MOSFET that drives one string of LEDs. It provides the user with a low cost solution that requires minimum components for the boost regulator and is suitable for applications requiring a single cell Li-Ion battery.

A soft start feature is provided to minimize in-rush current during start-up.

APPLICATIONS

- Netbook Computer
- PND
- Camcorder

APPLICATION DIAGRAM



U.S. Patent #'s 7,498,793; 7,847,783; and more patents pending.

OZ9902

FEATURES

- Dual Channel DC/DC converter
- Constant current or voltage output
- Drives one string of high power LEDs per channel
- 180 degrees phase-shift between the two driver outputs
- Independent PWM dimming control for each channel
- Analog dimming
- Constant operation frequency; and Operation frequency synchronization
- Power MOSFET over-current protection
- Over-voltage protection
- Output to return and Output to ground short-circuit protection
- Output over load protection
- Limited Current Condition (LCC) protection
- Thermal protection
- LED fault status output

GENERAL DESCRIPTION

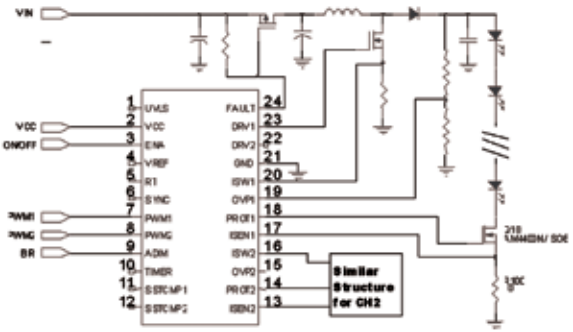
OZ9902 is a dual, high power LED driver designed to build LED backlight for large-size LCD TV applications. It integrates two independently-controlled LED drivers to achieve optimum efficiency. The drive outputs are phase-shifted by 180 degrees to minimize current ripple in high power applications.

OZ9902 supports independent Pulse Width Modulation (PWM) dimming control for each channel and common analog dimming control for both channels. It provides system design flexibility for LCD TV with local dimming or 3D display mode.

APPLICATIONS

- LCD Monitor
- LCD TV

APPLICATION DIAGRAM



U.S. Patent #7,498,793; and more patents pending.

OZ9906

FEATURES

- Switch-mode DC/DC controller to balance LED current
- High current output drive for 6 LED strings
- Spread spectrum feature on operating frequency
- High efficiency LED current regulation
- Supports analog and external PWM dimming
- User-defined phase-shift PWM dimming function with 2 to 6 phase options
- PWM dimming frequency synchronization
- MOSFET over-current protection
- LED short circuit protection
- User-defined short circuit protection threshold
- LED fault status output

GENERAL DESCRIPTION

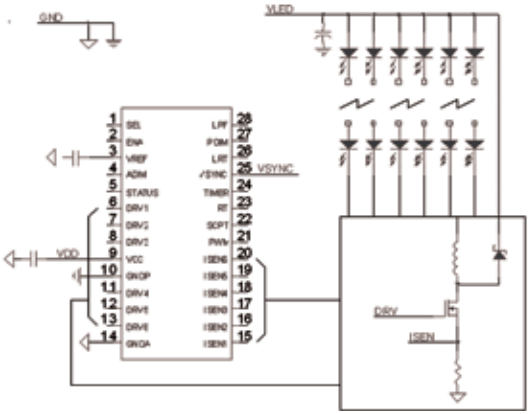
The OZ9906 is a high efficiency switch-mode DC/DC controller that drives up to 6 LED strings connected in parallel. It is targeted for large-size monitor and TV applications.

OZ9906 provides six (6) LED current sense inputs. The IC provides individual LED current regulation for each LED string. This allows the backlight to remain functional in the event that any string (s) is damaged during normal operation.

APPLICATIONS

- LCD Monitor
- LCD TV

APPLICATION DIAGRAM



U.S. Patent #'s 7,847,783; 7,919,936; 8,248,439; and more patents pending.

OZ9908

FEATURES

- Supports 8 strings of 355mA LEDs
- Supports master-slave synchronous operation
- Boost converter switching at 180 degree phase-shift between master and slave ICs
- Supports analog dimming
- Individual PWM dimming for each LED string
- Supports over-voltage and over-current protections in application
- Supports LED open/short circuit protection
- LED fault status output

GENERAL DESCRIPTION

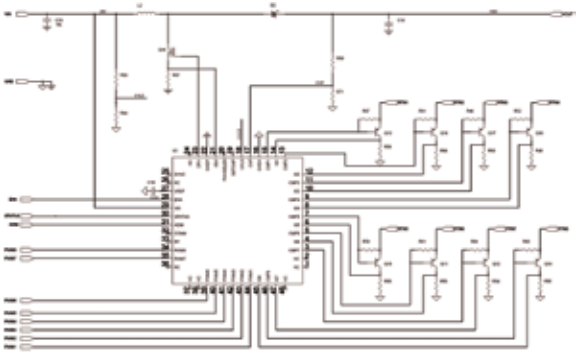
The OZ9908 is a LED driver controller designed for large-screen LCD backlit by LEDs. It provides an integrated eight channel LED current regulation control circuit. Using external balance transistors for each channel, the IC is capable of driving a current up to 350mA per LED channel.

OZ9908 provides individual Pulse Width Modulation (PWM) dimming for its respective LED string. The IC is suitable for LCD TV applications where area-lighting technology using local dimming control is applied.

APPLICATIONS

- LCD Monitor
- LCD TV

APPLICATION DIAGRAM



U.S. Patent #'s 7,498,793; 7,847,783; and more patents pending.

OZ9961

FEATURES

- High frequency DC/DC power converter controller
- Drives 6 LED strings in parallel
- Integrated LED current balance control circuit
- Up to 2.35MHz switching frequency
- Analog or external PWM or internal LPWM dimming control
- Over-current and over-voltage protection
- Thermal protection
- Open diode and open/short circuit protection
- Soft start function

GENERAL DESCRIPTION

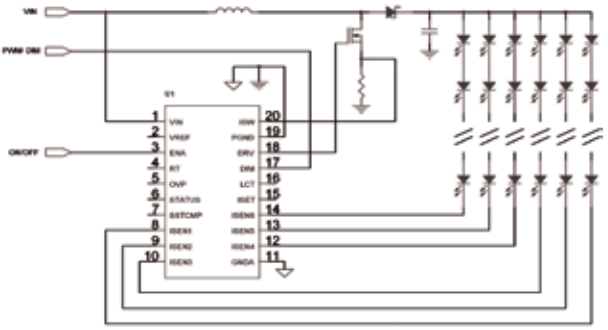
The OZ9961 is a LED controller that drives up to six (6) strings of LEDs in parallel configuration, with multiple LEDs per string connected in series. It provides six (6) LED current sense inputs in an “OR” configuration to improve backlight reliability. This allows the backlight to remain functional in the event that any string (s) is damaged during normal operation.

OZ9961 supports either analog, external Pulse Width Modulation (PWM) or internal Low frequency PWM (LPWM) dimming control.

APPLICATIONS

- LCD Monitor
- GPS

APPLICATION DIAGRAM



U.S. Patent #’s 7,498,793; 7,847,783; and more patents pending.

OZ9967

FEATURES

- High frequency DC/DC boost converter controller
- Drives 6 LED strings in parallel
- Integrated LED current balance control circuit
- Up to 1MHz switching frequency
- External PWM or internal LPWM dimming control
- LED short circuit protection
- Over-current and over-voltage protection
- Soft start function

GENERAL DESCRIPTION

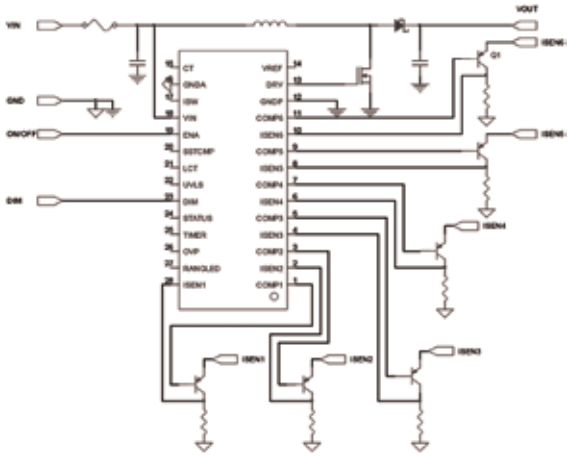
The OZ9967 is an LED controller that drives up to six (6) strings of LEDs in parallel configuration, with multiple LEDs per string connected in series. It provides six (6) LED current sense inputs in an “OR” configuration to improve backlight reliability. This allows the backlight to remain functional in the event that any string (s) is damaged during normal operation.

OZ9967 supports external Pulse Width Modulation (PWM) or internal Low frequency PWM (LPWM) dimming control. Plus, it provides an integrated circuit to balance the current flow through each LED string. The balance transistors are external to accommodate different power dissipation resulting from the forward voltage difference among the LED strings.

APPLICATIONS

- LCD Monitor
- LCD TV

APPLICATION DIAGRAM



U.S. Patent #7,847,783; and more patents pending.

OZ9997

FEATURES

- High power DC/DC boost converter controller
- Drives up to 8 LED strings in parallel
- External PWM dimming control
- Integrated LED current balance control circuit
- User-defined string selection
- Multi-chip parallel operation for more than 8 LED strings
- MOSFET over-current protection
- LED short circuit and open string protection
- Thermal protection
- LED fault status output

GENERAL DESCRIPTION

The OZ9997 is a high efficiency, DC/DC controller that drives up to eight (8) strings of LEDs in parallel configuration, with multiple LEDs in each string connected in series.

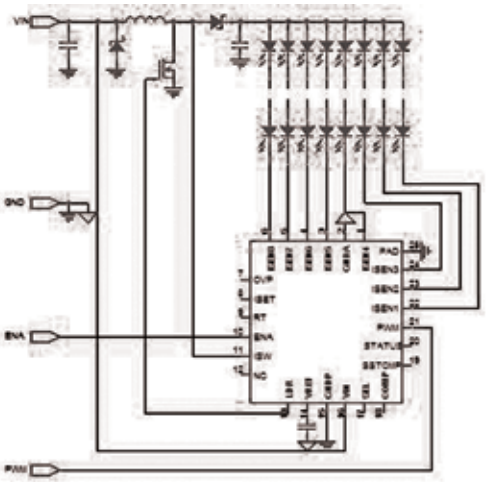
The IC provides eight (8) LED current sense inputs in an “OR” configuration to improve backlight reliability. This allows the backlight to remain functional in the event that any string (s) is damaged during normal operation.

OZ9997 supports external Pulse Width Modulation (PWM) dimming control, and provides an integrated circuit to balance the current flow through each LED string.

APPLICATIONS

- LCD Monitor

APPLICATION DIAGRAM



U.S. Patent #’s 7,498,793; 7,847,783; and more patents pending.

OZ9998/9998A

FEATURES

- High power DC/DC boost converter controller
- Drives up to 8 strings in parallel
- Integrated LED current balance control circuit
- User-defined string selection
- External PWM dimming control
- Time-shift PWM phase dimming control for low audible noise
- Multi-chip parallel operation for more than 8 LED strings
- MOSFET over-current protection
- LED short circuit and open string protection
- Thermal protection
- LED fault status output

GENERAL DESCRIPTION

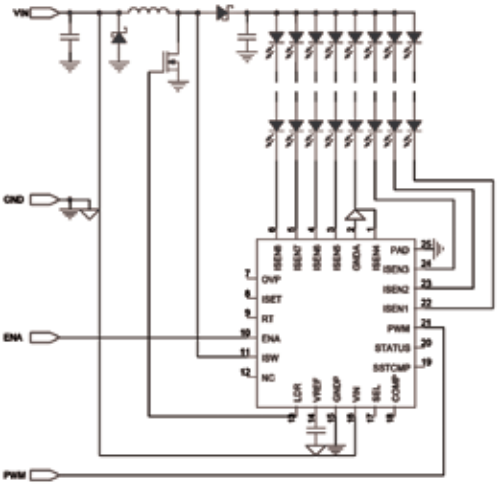
OZ9998/98A are high efficiency, DC/DC controllers that drive up to eight (8) strings of LEDs connected in parallel configuration, with multiple LEDs in each string connected in series. Each IC provides eight (8) LED current sense inputs in an “OR” configuration to improve backlight reliability. This allows the backlight to remain functional in the event that any string (s) is damaged during normal operation.

OZ9998/98A support external Pulse Width Modulation (PWM) dimming control. Plus, each provides an integrated circuit to balance the current flow through each LED string.

APPLICATIONS

- LCD Monitor
- LCD TV

APPLICATION DIAGRAM



U.S. Patent #’s 7,498,793; 7,847,783; and more patents pending.

OZ9998B

FEATURES

- High power DC/DC boost converter controller
- Drives up to 4 strings in parallel, up to 160mA per string
- Integrated LED current balance control circuit
- External PWM dimming control
- Time-shift PWM phase dimming control for low audible noise
- MOSFET over-current protection
- LED short circuit and open string protection
- Thermal protection
- LED fault status output

GENERAL DESCRIPTION

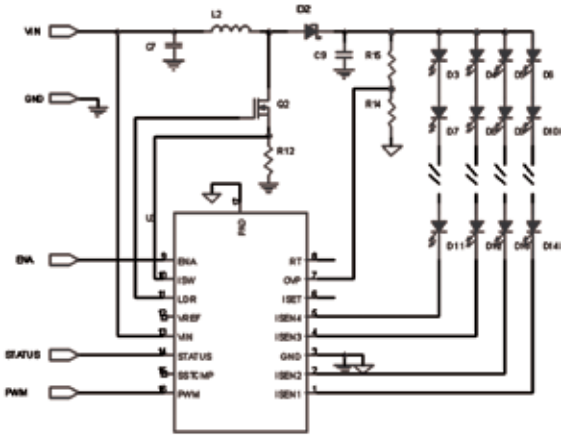
OZ9998B is a high efficiency DC/DC controller that drives up to eight strings connected in parallel configuration, with multiple LEDs in each string connected in series. It provides four (4) LED current sense inputs in an “OR” configuration to improve backlight reliability. This allows the backlight to remain functional in the event that a string (s) is damaged during normal operation.

OZ9998B supports external Pulse Width Modulation (PWM) dimming control. Plus, it provides an integrated circuit to balance the current flow through each LED string.

APPLICATIONS

- LCD Monitor
- LCD TV

APPLICATION DIAGRAM



U.S. Patent #’s 7,498,793; 7,847,783; and more patents pending.

OZ9998H

FEATURES

- High power DC/DC boost converter controller
- Drives up to 4 high power LED strings
- Optimized for high voltage drive output
- Integrated 90V transistors for LED current balance control circuit
- External PWM dimming control
- Up to 50kHz PWM dimming frequency; and 1000:1 PWM dimming ratio
- Supports single power train with multiple IC in parallel operation
- Power MOSFET over-current protection
- LED short circuit and open string protection
- LED return to ground short circuit protection
- Thermal protection
- LED fault status output

GENERAL DESCRIPTION

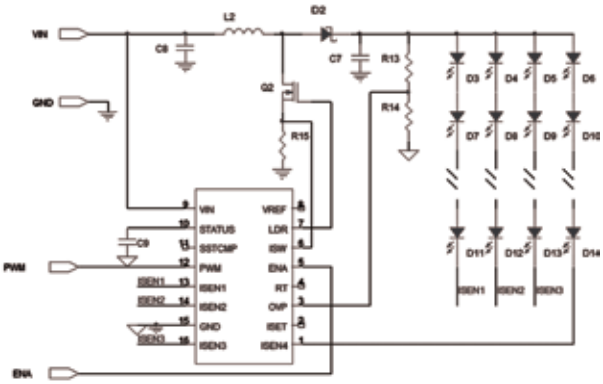
OZ9998H is a high efficiency, high power LED driver controller optimized for large-size LCD Monitor and LCD TV applications. It is integrated with a high voltage MOSFET driver and up to 90V rating current balance transistors. It can drive up to four (4) strings of high power LEDs connected in parallel configuration.

OZ9998H supports external Pulse Width Modulation (PWM) dimming control.

APPLICATIONS

- LCD Monitor
- LCD TV

APPLICATION DIAGRAM



U.S. Patent #'s 7,498,793; 7,847,783; and more patents pending.

GB98A

FEATURES

- Boost converter controller for up to four strings of high power LEDs
- Integrated transistors for LED current balance control circuit
- Supports both analog and direct PWM dimming control
- Time-shift PWM phase dimming control for low audible noise
- Built-in converter for PWM signal to analog dimming control conversion
- Wide range dimming control
- Supports single power train, multiple-IC parallel operation
- Power MOSFET over-current protection
- LED short circuit and open string protection
- LED return to ground short circuit protection
- Thermal protection

GENERAL DESCRIPTION

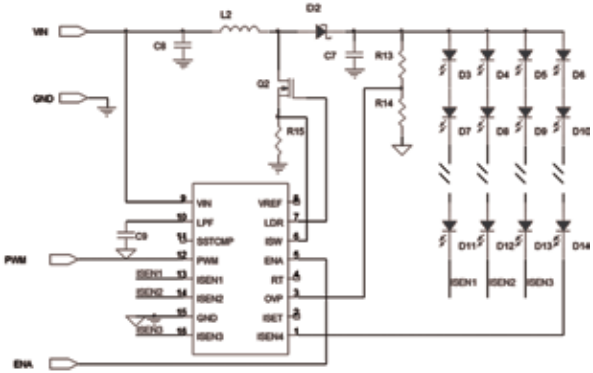
GB98A is a high efficiency, high power LED driver controller that provides high voltage MOSFET driver for the boost converter. It can drive up to four strings of LEDs at 250mA current rating. It also supports up to 400mA pulsing current for applications.

GB98A receives external Pulse Width Modulation (PWM) signal input for dimming control.

APPLICATIONS

- LCD Monitor
- LCD TV

APPLICATION DIAGRAM



U.S. Patent #'s 7,498,793; 7,847,783; and more patents pending.

OZ9902C

FEATURES

- Constant current or voltage output
- Drives one string of high power LEDs
- 0% to 100% PWM dimming control
- Analog dimming control
- Constant operation frequency
- Power MOSFET over-current protection
- Over-voltage protection
- Output to return and Output to ground short circuit protection
- Output over load protection
- Thermal protection
- LED fault status output

GENERAL DESCRIPTION

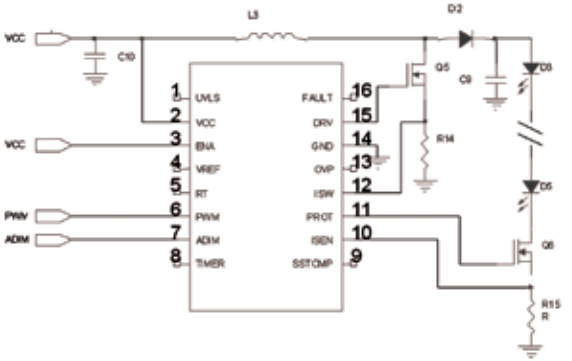
OZ9902C is a single channel, high power LED driver designed for LED backlight applications used in large-size LCD TVs.

The controller supports wide range, direct Pulse Width Modulation (PWM) dimming control and analog dimming control for LED string forward current.

APPLICATIONS

- LCD TV

APPLICATION DIAGRAM



U.S. Patent #7,498,793; and more patents pending.

OZ9904

FEATURES

- Supports up to 4 strings
- Up to 355mA LED current per string
- Supports external and internal PWM dimming control
- Supports analog dimming
- Over-voltage and over-current protections in applications
- Supports LED open/short circuit protections in applications
- LED fault status output

GENERAL DESCRIPTION

The OZ9904 is a LED driver controller optimized for large screen LED backlight LCD TV applications. It provides an integrated four-channel LED current control circuit. In application, it controls external balance transistors to maintain the current balance among LED strings.

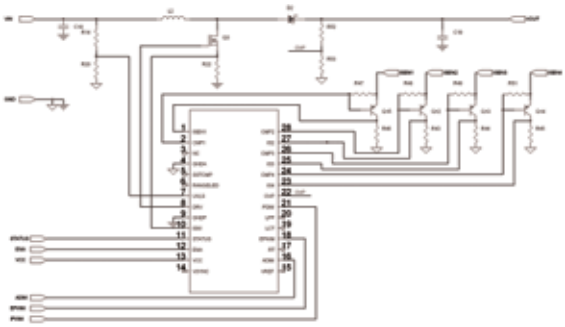
OZ9904 supports both internal and external Pulse Width Modulation (PWM) dimming methods for brightness control of LCDs for various system applications. The internal PWM dimming signal can also be synchronized with the vertical sync signal of the LCD display.

The IC further supports an analog dimming control function, which adjusts the LED current amplitude of all the four ISEN channels simultaneously.

APPLICATIONS

- LCD TV

APPLICATION DIAGRAM



U.S. Patent #'s 7,498,793; 7,847,783; and more patents pending.

OZ9904A

FEATURES

- Drives up to 8 strings of LEDs
- Up to 350mA LED current per string
- Supports two boost converters in parallel
- 180 degree phase-shift between the two drive outputs
- Provides two sets of PWM dimming control
- Built-in 180 degree phase-shift PWM dimming control synchronization
- Supports analog dimming
- Over-voltage and over-current protection
- Supports LED open/short circuit protection
- LED fault status output

GENERAL DESCRIPTION

OZ9904A is a high performance LED driver controller optimized for large screen LED backlight LCD TV applications.

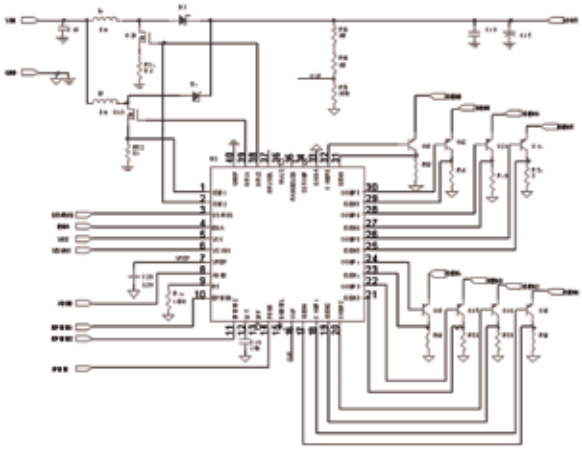
It provides two high voltage gate drive signals for the boost converters, with 180° phase-shift between the two signals. The IC minimizes input and output current ripple, and provides a flexible design using only one drive signal for low-power applications through pin DRVSEL.

OZ9904A supports both internal and external Pulse Width Modulation (PWM) dimming interfaces for various system configurations.

APPLICATIONS

- LCD TV

APPLICATION DIAGRAM



U.S. Patent #'s 7,498,793; 7,847,783; and more patents pending.

OZ9908A

FEATURES

- Drives up to 6 strings of LEDs
- Up to 350mA LED current per string
- Multiple IC parallel operation with power train sharing
- Primary side regulation application
- Analog dimming control
- Individual PWM dimming for every 3 strings
- Over-voltage and over-current protection
- LED open/short circuit protection
- LED fault status output

GENERAL DESCRIPTION

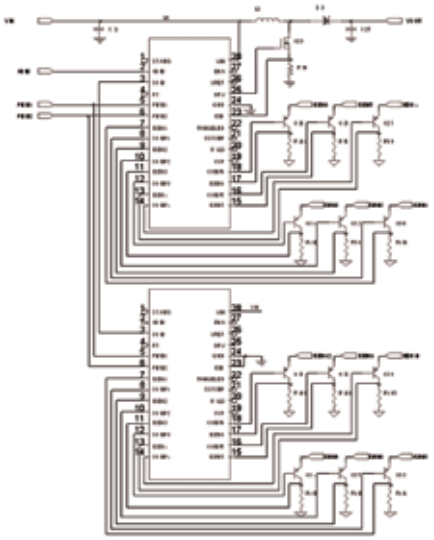
The OZ9908A is a high performance LED driver controller optimized for large screen LED backlight LCD TV applications. It provides an integrated six-channel LED current regulation control circuit. Using external balance transistors for each channel, the IC is capable of driving a current up to 350mA per LED channel.

OZ9908A provides two external Pulse Width Modulation (PWM) dimming interfaces for the six LED strings. Each PWM signal controls the brightness of three LED strings. This feature is suitable for LCD TV applications using a scanning backlight or 3-dimensional display mode functions.

APPLICATIONS

- LCD TV

APPLICATION DIAGRAM



U.S. Patent #'s 7,498,793; 7,847,783; and more patents pending.

OZ9908B

FEATURES

- Drives up to 6 strings of LEDs
- Up to 350mA LED current per string
- Supports multiple IC operation synchronization
- Boost drive outputs 180 degree phase-shift between master and slave ICs
- Analog dimming control
- Individual PWM dimming for each string
- Over-voltage and over-current protection
- LED open/short circuit protection
- LED fault status output

GENERAL DESCRIPTION

The OZ9908B is a high performance LED driver controller optimized for large screen LED backlight LCD TV applications. It provides an integrated six-channel LED current regulation control circuit. Using external balance transistors for each channel, the IC is capable of driving a current up to 350mA per LED channel.

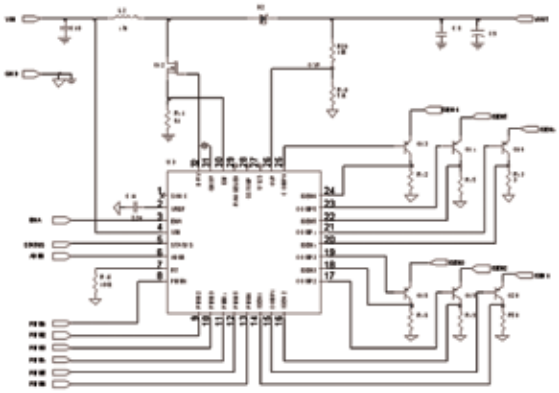
OZ9908B provides 6 individual external Pulse Width Modulation (PWM) dimming interfaces for its respective LED string. The IC is suitable for LCD TV applications using a local-dimming control backlight.

When using multiple ICs, the operating frequency can be synchronized with a 180° phase-shift between the drive outputs of each IC. These features greatly reduce the interference between ICs.

APPLICATIONS

- LCD TV

APPLICATION DIAGRAM



U.S. Patent #'s 7,498,793; 7,847,783; and more patents pending.

OZ9916

FEATURES

- Dual drive outputs with 180 degree phase-shift for boost controllers
- Drives up to 6 strings of high power LEDs
- Built-in 6-channel, 90V, 1A MOSFETs for LED current regulation
- Inductor-less switching mode LED current balance control
- Individual PWM dimming for each string
- Wide range analog dimming control
- Synchronized operation of multiple ICs
- Feed forward compensation function
- Over-voltage and over-current protection
- LED open/short circuit protection
- Thermal protection
- LED fault status output

GENERAL DESCRIPTION

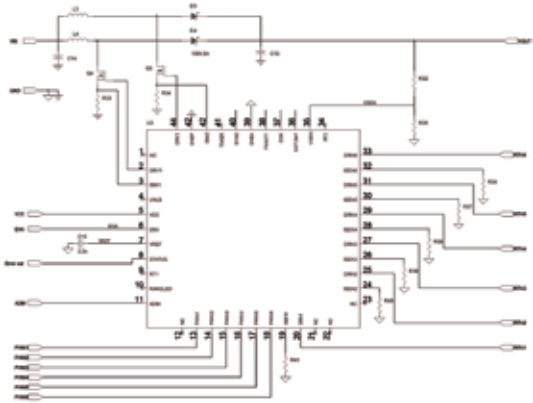
The OZ9916 is a high performance LED driver controller optimized for large screen LED backlight LCD TV applications. It provides an integrated six-channel LED current regulation control circuit. Using O_2Micro's proprietary design of switching mode LED current regulation without inductors, this architecture provides up to 400mA average current and up to 1A pulsed current for each LED string.

OZ9916 provides six individual Pulse Width Modulation (PWM) dimming interfaces for its respective LED string. This IC is suitable for LCD TV applications where a local-dimming control or scan mode backlight applies.

APPLICATIONS

- LCD TV

APPLICATION DIAGRAM



U.S. Patent #'s 8,044,609; 8,237,379; 8,253,352; and more patents pending.

OZ9920

FEATURES

- Drives up to 4 strings of LEDs
- High voltage gate drive for the boost converter
- Two blocks individual PWM dimming control for 3D TVs
- Internal PWM dimming control synchronization with VSYNC
- 10:1 analog dimming ratio
- Up to 1000:1 external PWM dimming ratio
- Output over-voltage protection
- Thermal protection
- LED open/short circuit protection
- Open-diode protection in boost converter

GENERAL DESCRIPTION

The OZ9920 is a LED driver controller optimized for large screen LED backlight, global and/or 3-dimensional TV applications. It provides a high voltage gate driver for the boost converter, which is designed to drive high voltage power MOSFETs.

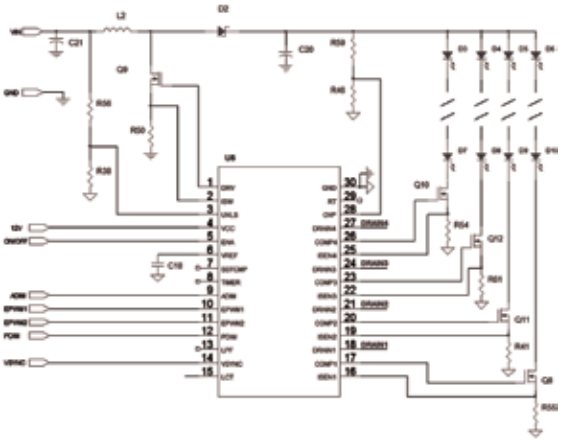
It provides an integrated four-channel LED current regulation control circuit through the use of external high voltage N-channel MOSFETs.

OZ9920 supports both internal and external Pulse Width Modulation (PWM) dimming interfaces for various system applications. The internal PWM dimming signal can be synchronized with the VSYNC signal of the LCD display.

APPLICATIONS

- LCD TV

APPLICATION DIAGRAM



U.S. Patent #'s 7,498,793; 7,847,783; and more patents pending.

OZ9984

FEATURES

- Drives up to 4 LED strings in parallel
- Integrated LED current balance control circuit
- Multi-chip parallel operation
- Analog dimming control
- Over-voltage protection (OVP)
- User-defined LED short circuit protection
- Soft start function

GENERAL DESCRIPTION

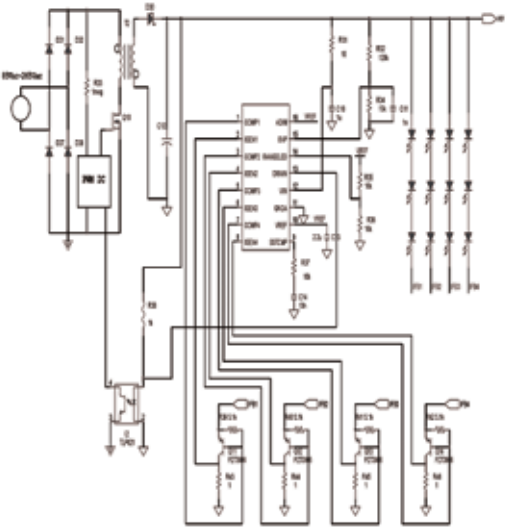
OZ9984 is a high efficiency LED driver IC that works in conjunction with a primary side external Pulse Width Modulation (PWM) controller for offline, isolated LED lighting application. It has four (4) LED current sense inputs in an “OR” configuration to ensure uniform lighting of the LEDs. It can drive up to 4 strings of LEDs in parallel and up to 9 LEDs per string connected in series.

OZ9984 supports up to 350mA of LED current per string. It is designed in such a way that if any LED string is damaged during normal operation, the remaining string (s) continue normal operation. Multi-chip parallel operation supports additional LED strings.

APPLICATIONS

- LCD TV
- General Lighting

APPLICATION DIAGRAM



U.S. Patent #’s 7,847,783; 8,084,960; and more patents pending.

OZ9986/9986A

FEATURES

- **OZ9986:** Boost and Buck converter
- **OZ9986A:** Buck converter
- High efficiency DC/DC converter controller for LEDs
- Drives up to 6 strings in parallel; number of LEDs in series limited by external MOSFET(s) rating
- High efficiency LED current balance function
- User-selectable, phase-shift PWM dimming function with 3, 4, 5 and 6 phases
- PWM dimming control signals synchronized with external signal
- Over-voltage and over-current protection
- Soft start function

GENERAL DESCRIPTION

OZ9986/86A are high efficiency, DC/DC controllers that drive up to six (6) strings connected in parallel configuration, with multiple LEDs in each string connected in series. Each is targeted for large-size monitor and TV applications.

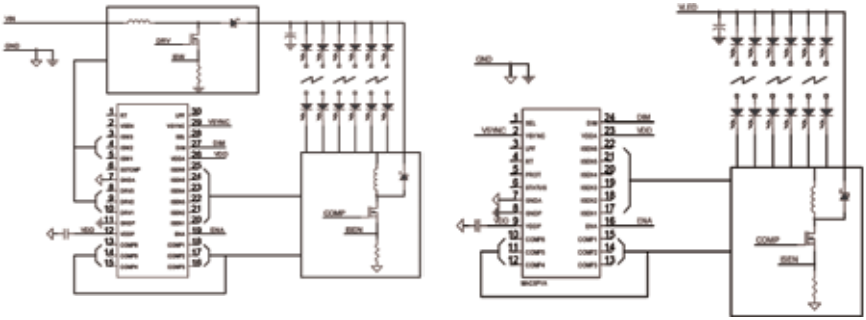
Each IC provides six (6) LED current sense inputs in an “OR” configuration to improve backlight reliability. This allows the backlight to remain functioning in the event that any string (s) is damaged during normal operation.

OZ9986/86A support internal Pulse Width Modulation (PWM) dimming control, where the PWM dimming signal is phase-shifted by 60 degrees per channel when all 6 channels are connected. This proprietary feature significantly enhances the system performance.

APPLICATIONS

- LCD Monitor
- LCD TV

APPLICATION DIAGRAMS



U.S. Patent #’s 7,498,793; 7,847,783; 7,919,936; 8,248,439; and more patents pending.

OZ521

FEATURES

- Supports wide-range operating voltage
- Integrated with a 50V/2A power MOSFET
- Supports an optional spread-spectrum switching frequency
- In applications:
  - Supports either constant-voltage or constant-current output
  - Protection includes: output over-voltage, power MOSFET over-current, over-temperature, and open rectifier diode
  - Low standby current

GENERAL DESCRIPTION

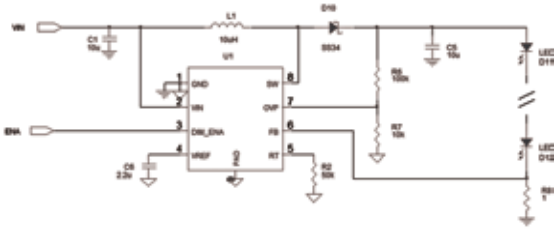
OZ521 is a boost converter controller suitable for LED lighting or general purpose DC/DC converter applications.

It integrates a 50V/2A MOSFET as the switch and compensation components for the boost converter to optimize the cost/performance of applications. In applications, the operating frequency is user-selectable.

APPLICATIONS

- LED Lighting
- Tablet
- Cell Phone

APPLICATION DIAGRAM



Patents pending.

OZ532

FEATURES

- High efficiency controller for boost converter
- Supports single-cell Li-Ion battery operation
- Drives up to 10 LEDs in series
- Integrated power MOSFET
- Integrated load-disconnection switch
- Supports 100:1 analog dimming ratio
- Self-adaptive operating frequency, optimizing efficiency
- Protection includes: output over-voltage and over-current, LED short circuit to ground, and IC over-temperature
- Output capacitor discharge function in shutdown mode
- Low standby current

GENERAL DESCRIPTION

OZ532 is a controller designed for boost converter LED driver applications. It integrates a power MOSFET and drives single-string LEDs in applications.

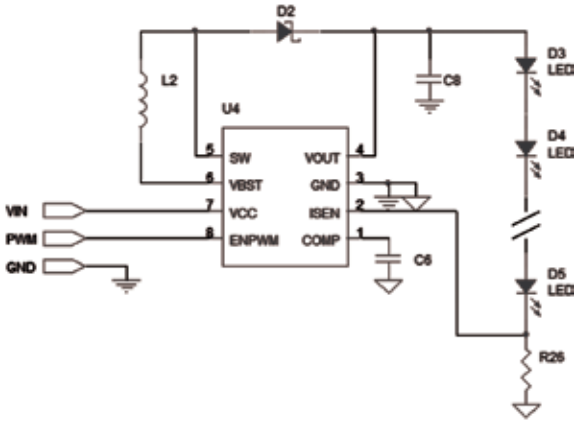
OZ532 provides a compact solution to the applications that require minimum components for the boost regulator. It is suitable for portable device applications requiring a single-cell Li-Ion battery.

This IC accepts an external Pulse Width Modulation (PWM) signal to perform dimming control.

APPLICATIONS

- LED Lighting
- Tablet
- Cell Phone

APPLICATION DIAGRAM



U.S. Patent #7,471,144; and more patents pending.

OZ9956E

FEATURES

- Highly integrated LED driver controller
- 2.5V – 33V input voltage range
- Drives up to 6 strings of LEDs in parallel
- Up to 30mA current per string
- Built-in LED current balance control circuit
- Integrated power MOSFET
- Built-in 20kHz PWM dimming control eliminates audible noise
- Supports external PWM dimming control
- 100:1 dimming ratio at 20kHz PWM frequency
- Protection: over-voltage, over-current, thermal, and open rectifier diode

GENERAL DESCRIPTION

The OZ9956E is a highly efficient, integrated LED driver controller designed for middle power LCD backlight applications. Featuring a very wide operational input voltage range, it works as a universal solution for applications powered by one or multiple Li-Ion battery cells or those directly powered by an adapter.

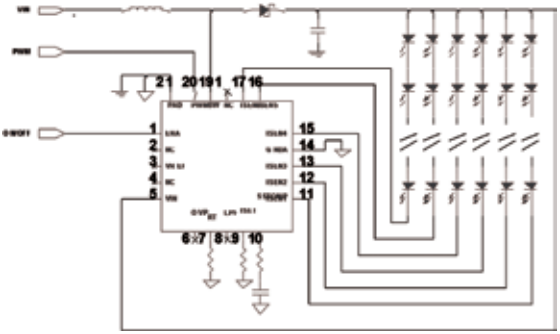
It provides six (6) LED current sense inputs in an “OR” configuration for improved backlight reliability. This allows the backlight to remain functional in the event that any string (s) is damaged during normal operation.

OZ9956E accepts external Pulse Width Modulation (PWM) dimming signals to perform either directly controlled external or fixed 20kHz internal dimming function.

APPLICATIONS

- Notebook/Netbook Computer

APPLICATION DIAGRAM



U.S. Patent #’s 7,498,793; 7,847,783; and more patents pending.

OZ523

FEATURES

- Supports constant voltage or constant current applications
- 1.5A continuous output current
- 0.25Ω internal Power MOSFET
- Stable control loop
- V_{OUT} from 0.8V to 0.9*V_{IN}
- Soft start function
- Fixed switching frequency
- Low current shutdown mode
- Over-current and thermal protection

GENERAL DESCRIPTION

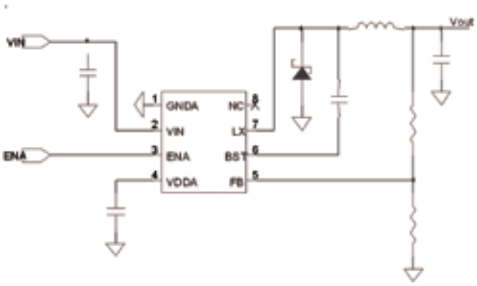
The OZ523 is a fast response PWM controller using minimum external components to achieve control loop stability in DC/DC and LED driver applications. It supports both constant voltage and constant current applications. OZ523 can operate in constant current mode to drive high power LED applications.

OZ523 is a non-synchronous step down DC/DC converter with a 0.25Ω integrated MOSFET. It supports a 1.5A continuous load current with up to 3.2A peak current. The output voltage can be user-defined from 0.8V up to 0.9*V_{IN} using a feedback resistor divider.

APPLICATIONS

- General Purpose DC/DC Converter
- High Power LED Driver

APPLICATION DIAGRAM



Patents pending.

OZ524

FEATURES

- Supports constant voltage or constant current applications
- 3.0A continuous output current
- 0.12Ω internal Power MOSFET
- Stable control loop
- V_{OUT} from 0.8V to 0.9*V_{IN}
- Soft start function
- Fixed switching frequency
- Low current shutdown mode
- Over-current and thermal protection

GENERAL DESCRIPTION

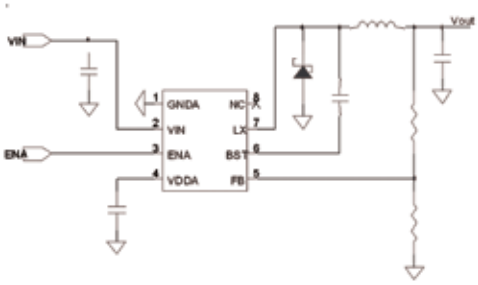
The OZ524 is a fast response PWM controller using minimum external components to achieve control loop stability in DC/DC and LED driver applications. It supports both constant voltage and constant current applications. OZ524 can operate in constant current mode to drive high power LED applications.

OZ524 is a non-synchronous step down DC/DC converter with a 0.12Ω integrated MOSFET. It supports a 3.0A continuous load current with up to 4.7A peak current. The output voltage can be user-defined from 0.8V up to 0.9*V_{IN} using a feedback resistor divider.

APPLICATIONS

- General Purpose DC/DC Converter
- High Power LED Driver

APPLICATION DIAGRAM



Patents pending.

OZ526

FEATURES

- High frequency DC/DC power converter for LEDs
- Integrated power MOSFET
- Integrated LED current balance control circuit
- User-defined operation frequency
- Drives 1 or 2 strings
- External PWM and Analog dimming control
- Converter output over-voltage protection
- Internal power MOSFET over-current protection
- Over-current protection for each string
- Output short circuit detection
- Open diode and thermal protection

GENERAL DESCRIPTION

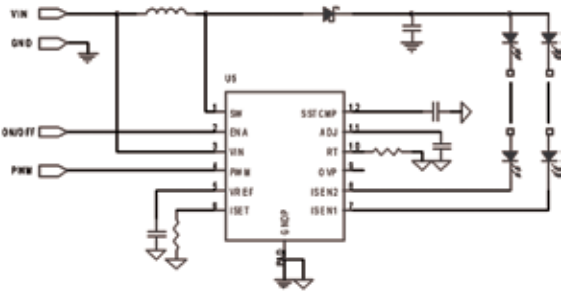
The OZ526 is a high efficiency DC/DC controller with an integrated power MOSFET that drives one string or two LED strings in parallel configuration, with multiple LEDs connected in series. It is targeted for netbook and PND (Personal Navigation Device) backlight applications.

OZ526 provides two LED current sense inputs in an “OR” configuration for improved backlight reliability. This allows the backlight to remain functioning in the event that any string(s) is damaged during normal operation. The controller receives an external Pulse Width Modulation (PWM) signal for the dimming control function.

APPLICATIONS

- GPS
- PND

APPLICATION DIAGRAM



U.S. Patent #’s 7,498,793; 7,847,783; and more patents pending.

OZ527

FEATURES

- High power DC/DC power converter
- Integrated Power N-Channel MOSFET
- Integrated LED current balance control circuit
- Drives up to 6 strings in parallel
- User-defined string selection
- Time-shift PWM phase dimming control for low audible noise
- Operation frequency synchronization
- LED open string protection
- Output short circuit or open diode protection
- LED short circuit protection
- MOSFET over-current protection
- Shutdown under abnormal condition protection
- Thermal protection
- LED fault status output

GENERAL DESCRIPTION

The OZ527 is a high efficiency DC/DC controller that drives up to six strings connected in parallel configuration with multiple LEDs in each string connected in series.

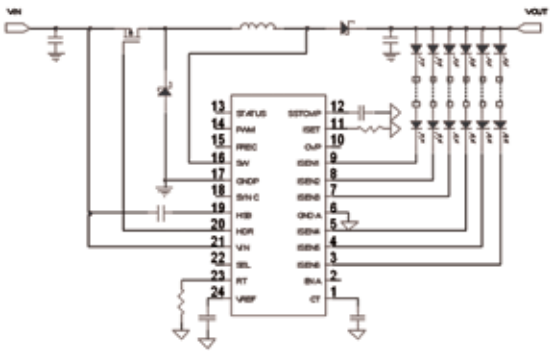
OZ527 provides 6 LED current sense inputs in an “OR” configuration to improve backlight reliability. This allows the backlight to remain functioning in the event that a string(s) is damaged during normal operation.

OZ527 supports external Pulse Width Modulation (PWM) dimming control.

APPLICATIONS

- GPS

APPLICATION DIAGRAM



U.S. Patent #’s 7,498,793; 7,847,783; and more patents pending.

OZ528

FEATURES

- High power DC/DC power converter
- Operation frequency synchronization
- Optional spread spectrum operation frequency
- Thermal, over-current, and over load protection
- Abnormal pulled-up output protection
- LED fault status output

Buck Converter

- Integrated power MOSFET
- Current mode control
- Soft start function

Two Independent Boost Converters

- Integrated power MOSFET
- Current mode control
- Wide output range: up to 25.0V
- Adjustable power on/off delay time
- Soft start function

Negative Charge Pump

- Voltage mode control
- Adjustable power on/off delay time

GENERAL DESCRIPTION

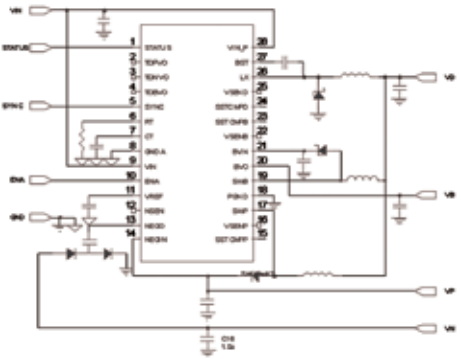
The OZ528 is a LCD panel bias power supply controller, suitable for GPS application. It generates four voltage rails for a TFT LCD panel. It includes a boost converter to provide the source voltage, buck converter to provide the logic voltage for the system, boost converter for positive gate voltage and a negative charge-pump driver to provide adjustable regulated output voltages to bias the TFT panel.

OZ528 has power-on sequencing. The buck converter is the first to start after the IC is enabled. Two boost converters and a negative charge-pump are enabled when their corresponding TIMER reaches approximately 2.0V.

APPLICATIONS

- GPS

APPLICATION DIAGRAM



Patents pending.

OZ9965

FEATURES

- Integrated LED controller and two (2) DC/DC converters
- User-defined operation frequency
- Wide input voltage range
- Thermal protection
- User-defined shutdown delay time
- LED fault status output

LED Controller

- User-defined boost topology or buck-boost topology
- Current mode control
- Drives up to 4 strings of LEDs in parallel
- User-defined string selection
- Integrated LED current balance control circuit
- External PWM dimming control
- LED open string and short circuit protection

LED Controller (cont.)

- MOSFET over-current protection
- Over load protection
- Output short circuit or open diode protection

Boost Converter

- Current mode control
- Over-voltage protection
- MOSFET over-current protection
- Over load protection
- Soft start function

General Purpose Converter

- User-defined negative buck-boost or buck topology
- Voltage mode control
- Over-voltage and over load protection
- Soft start function

GENERAL DESCRIPTION

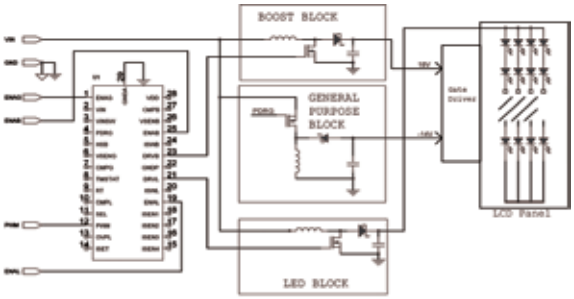
The OZ9965 is a wide input range, multi-output, power management controller for small panel LCD applications. It controls the DC/DC power conversion from a single input supply voltage to provide the power needed to drive an LED backlight module, source drivers and gate drivers used in a LCD application.

OZ9965 includes a high power LED driver controller, a boost converter, and one general purpose converter that can be configured into either a buck or negative buck-boost converter.

APPLICATIONS

- Car TV
- GPS

APPLICATION DIAGRAM



U.S. Patent #7,847,783; and more patents pending.

OZ9990

FEATURES

- High power DC/DC power converter controller
- Drives up to 4 strings in parallel
- Integrated LED current balance control circuit
- User-defined string selection
- Operation frequency synchronization
- External PWM dimming control
- Time-shift PWM phase dimming control for low audible noise
- LED open string protection
- Output short circuit and open diode protection
- LED short circuit protection
- MOSFET over-current protection
- Thermal protection
- LED fault status output
- Soft start function

GENERAL DESCRIPTION

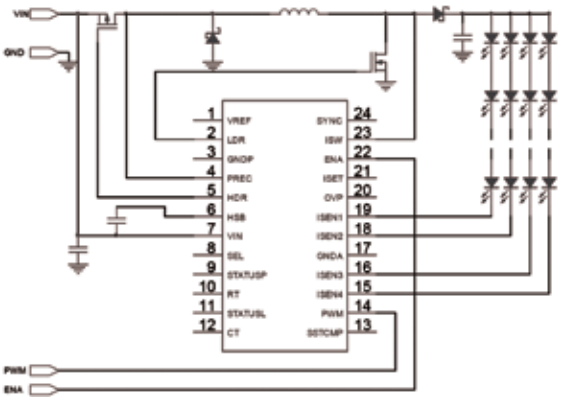
OZ9990 is a LED controller that drives up to four (4) strings connected in parallel configuration, with multiple LEDs per string connected in series. It provides four (4) LED current sense inputs in an “OR” configuration to improve backlight reliability. This allows the backlight to remain functioning in the event that any string(s) is damaged during normal operation.

OZ9990 supports external Pulse Width Modulation (PWM) dimming control, and provides an integrated circuit to balance the current flow through each LED string.

APPLICATIONS

- Car TV
- GPS

APPLICATION DIAGRAM



U.S. Patent #’s 7,498,793; 7,847,783; and more patents pending.

OZ8022

FEATURES

- Quasi-resonant converter controller for high brightness LEDs
- Low start-up and operating current, maximizing conversion efficiency
- Peak current mode control simplifies circuit design
- Under-voltage lockout with hysteresis
- Minimum off-time control for light-load operation, maximizing efficiency
- Provides complete protection functions:
  - Maximum gate drive output at 19.5V
  - Over-voltage for IC bias voltage
  - Cycle-by-cycle current limit at current sense
  - LED short circuit
  - Output over-voltage and internal thermal

GENERAL DESCRIPTION

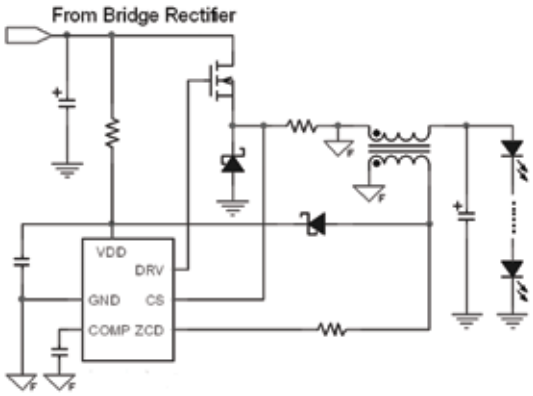
OZ8022 is a controller for Buck converters that use quasi-resonant conversion technology. It can be used to drive high brightness LEDs in offline applications. The controller is implemented with compensated peak current mode control to regulate the average LED current.

The operation of the Buck converter is between the continuous and discontinuous mode of the inductor current. During a light-load condition, it provides a minimum off-time scheme to maximize the operating efficiency.

APPLICATIONS

- General Lighting

APPLICATION DIAGRAM



Patents pending.

OZ8022A/8022B/8022M

FEATURES

- **OZ8022A:** Three-step forward, 100%-60%-20%, analog dimming control using wall switch
- **OZ8022B:** Three-step reverse, 20%-60%-100%, analog dimming control using wall switch
- **OZ8022M:** Three-step night light, 100%-40%-2.5%, analog dimming control using wall switch
- Quasi-resonant converter controller for high brightness LEDs
- Low start-up and operating current, maximizing conversion efficiency
- Peak current mode control simplifies circuit design
- Under-voltage lockout with hysteresis
- Minimum off-time control for light-load operation, maximizing efficiency
  - Provides complete protection functions:
  - Maximum gate drive output at 19.5V
  - Over-voltage for IC bias voltage
  - Cycle-by-cycle current limit
  - LED short circuit; output over-voltage; and internal over-temperature

GENERAL DESCRIPTION

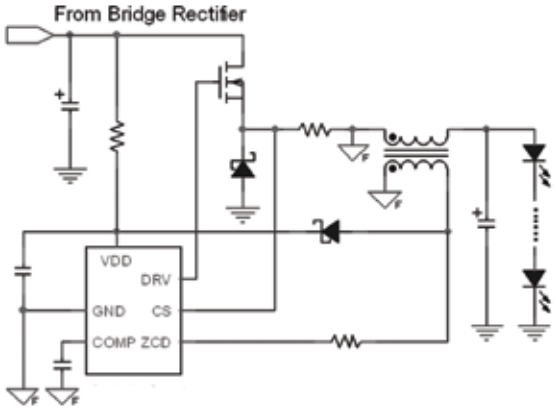
The OZ8022A/22B/22M are controllers for Buck converters that use quasi-resonant conversion technology. Each can be used to drive high brightness LEDs in offline applications.

OZ8022A/22B/22M provide proprietary Free Dimming technology to control LED brightness using a non-dimming ON/OFF wall switch.

APPLICATIONS

- General Lighting

APPLICATION DIAGRAM



U.S. Patent #8,044,608; and more patents pending.

OZ8022T

FEATURES

- Three-step analog dimming control using wall switch
- Supports high power factor and low THD for residential and commercial lighting applications
- Quasi-resonant converter controller for high brightness LEDs
- Built-in high voltage start-up circuit
- Under-voltage lockout with hysteresis
- Minimum off-time control for light-load operation, maximizing efficiency
- Provides complete protection functions:
  - Maximum gate drive output and clamp
  - Over-voltage for IC bias voltage
  - Cycle-by-cycle current limit
  - LED short circuit; output over-voltage; and internal thermal

GENERAL DESCRIPTION

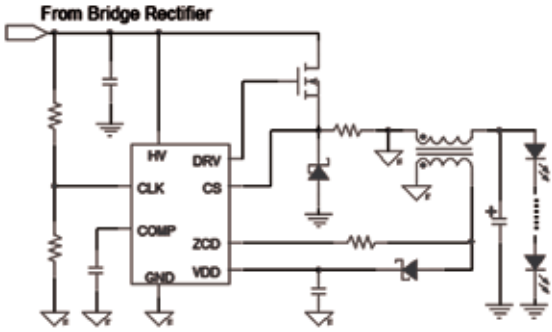
The OZ8022T is a controller for Buck converters that use quasi-resonant conversion technology. It can be used to provide regulated current for high brightness LEDs with power factor correction in offline applications.

OZ8022T provides proprietary Free Dimming technology to control LED brightness using a non-dimming ON/OFF wall switch.

APPLICATIONS

- General Lighting

APPLICATION DIAGRAM



U.S. Patent #8,044,608; and more patents pending.

OZ8022V

FEATURES

- Quasi-resonant converter controller for high brightness LEDs
- Supports high power factor for LED lighting applications
- Low start-up and operating current, maximizing conversion efficiency
- Voltage-mode control simplifies circuit design
- Under-voltage lockout with hysteresis
- Minimum off-time control for light-load operation, maximizing efficiency
- Provides complete protection functions:
  - Maximum gate drive output and clamp
  - Over-voltage for IC bias voltage
  - Cycle-by-cycle current limit
  - LED short circuit; output over-voltage; and internal thermal

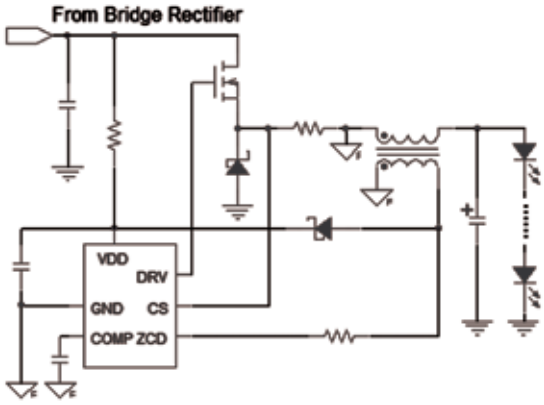
GENERAL DESCRIPTION

The OZ8022V is a controller for Buck converters that use quasi-resonant conversion technology. It can be used to drive high brightness LEDs with power factor correction in offline applications. The Buck converter operates between the continuous and discontinuous modes of inductor current.

APPLICATIONS

- General Lighting

APPLICATION DIAGRAM



Patents pending.

OZ8024/8024R

FEATURES

- **OZ8024:** Proprietary continuous forward PWM dimming technology using wall switch
- **OZ8024R:** Proprietary continuous reverse PWM dimming technology using wall switch
- Quasi-resonant converter controller for high brightness LEDs
- Low standby and operating current
- Peak current mode control simplifies circuit design
- Under-voltage lockout with hysteresis
- Minimum off-time control at high-input voltage operation condition
- Provides complete protection functions:
  - Maximum gate drive output and clamp
  - Over-voltage for IC bias voltage
  - Cycle-by-cycle current limit
  - LED short circuit; output over-voltage; and internal thermal

GENERAL DESCRIPTION

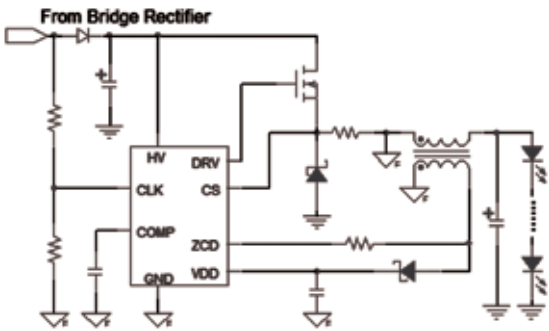
The OZ8024/24R are controllers for Buck converters that use quasi-resonant conversion technology to provide regulated power for high brightness LEDs in offline applications.

Each IC provides patented Free Dimming technology to control LED brightness using a non-dimming ON/OFF wall switch. End-users can simply select a desired LED brightness level from high-to-low (OZ8024) or low-to-high (OZ8024R).

APPLICATIONS

- General Lighting

APPLICATION DIAGRAM



U.S. Patent #8,076,867; and more patents pending.

OZ9992/9992A

FEATURES

- Quasi-resonant AC/DC converter controller for high brightness LEDs
- Three-step analog dimming control using wall switch
- Low start-up and operating current, maximizing conversion efficiency
- Peak current mode control simplifies circuit design
- Under-voltage lockout with hysteresis
- Minimum off-time control for light-load operation, maximizing efficiency
- Constant output power for universal AC input
- Provides complete protection functions:
  - Maximum gate drive output at 18.0V
  - Over-voltage for IC bias voltage
  - Cycle-by-cycle current limit
  - LED short circuit; output over-voltage; and internal thermal

GENERAL DESCRIPTION

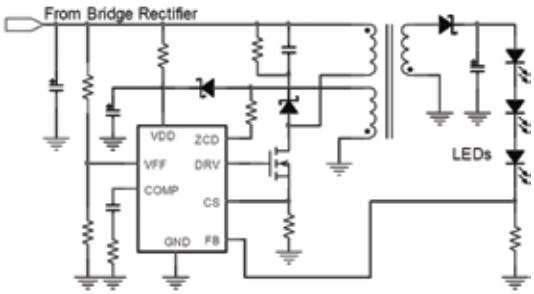
OZ9992/92A are controllers for offline AC/DC flyback converter applications that use quasi-resonant power conversion technology. One application using OZ9992/92A drives high power LEDs using compensated peak current mode control to regulate the average LED current.

OZ9992/92A require very low start-up current, which maximizes the efficiency of the converter. Each IC provides a proprietary Free Dimming technology using a non-dimming ON/OFF wall switch.

APPLICATIONS

- General Lighting
- Power Adapter/Battery Charger
- TV/Monitor Power Supplies

APPLICATION DIAGRAM



U.S. Patent #8,044,608; and more patents pending.

OZ8027/8027A

FEATURES

- **OZ8027A**: Three-level analog dimming control using wall switch
- Primary side control, AC/DC converter controller
- High power factor with wide range input voltage
- Constant current output
- Fixed operation frequency
- Built-in high voltage start-up circuit
- Compatible with neon indicators in wall switch
- Provides complete protection functions:
  - VDD over-voltage
  - VDD under-voltage lockout with hysteresis
  - Open and Short LED
  - Primary side cycle-by-cycle current limit
  - Maximum gate drive output and clamp
  - Over-temperature

GENERAL DESCRIPTION

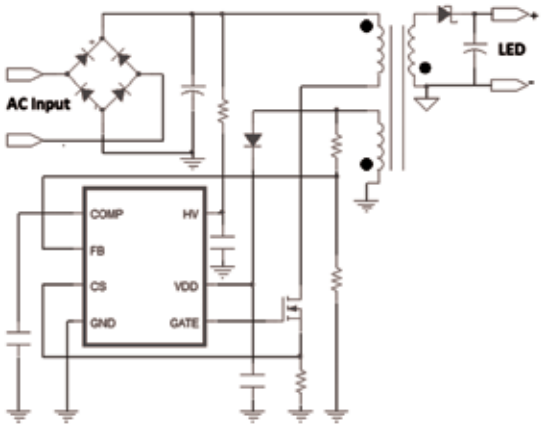
The OZ8027/27A are primary side control, LED driver controllers. Each can be used in high power factor AC/DC converter applications. Each IC operates at a fixed frequency of 50kHz with discontinuous current mode in flyback circuit topology.

OZ8027/27A work with neon indicators in a traditional wall switch, without interference.

APPLICATIONS

- General Lighting

APPLICATION DIAGRAM



U.S. Patent #'s 8,044,608; 8,076,867; and more patents pending.

OZ8023/8025

FEATURES – OZ8023

- Quasi-resonant converter controller
- Built-in high voltage start-up circuit
- Voltage-mode control simplifies circuit design
- Under-voltage lockout with hysteresis
- Minimum off-time control for light-load operation, maximizing efficiency
- Excellent line-voltage regulation
- Provides complete protection functions:
  - Clamped gate drive output
  - Over-voltage for IC bias voltage
  - Cycle-by-cycle current limit
  - Output short circuit; over load; output over-voltage; and internal thermal

FEATURES – OZ8025

- Secondary side LED controller
- Three-step analog dimming control using wall switch
- Low operating current
- Provides complete protection functions:
  - VDD over-voltage
  - Output over-voltage
  - Internal thermal

GENERAL DESCRIPTION

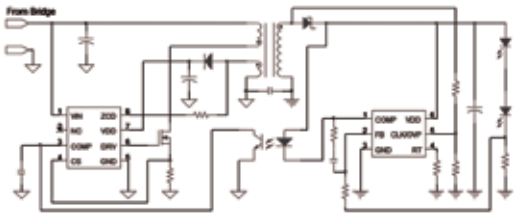
The **OZ8023** is a voltage-mode, quasi-resonant converter controller suitable for offline AC/DC flyback converter applications. It can be used as a single-stage power factor correction controller for an isolated power supply or LED driver applications.

The **OZ8025** is a controller for an isolated LED driver application. It provides a proprietary three-step Free Dimming technology to control LEDs using an ON/OFF wall switch.

APPLICATIONS

- Isolated LED Driver

APPLICATION DIAGRAM



U.S. Patent #8,044,608; and more patents pending.

OZ522

FEATURES

Charger

- 550KHz switching mode charger for 1 – 4 cell Li-Ion or Li-Polymer batteries
- Supports fast charge mode
- Wake-up charging function for discharged batteries
- Built-in charge termination function
- Internal safety timer for charger
- 92% efficiency
- Automatic battery recharge
- 1% constant voltage accuracy
- Charge status indication by LED
- Battery absence detection

DC/DC Converters

- Two switch mode buck converters with under-voltage protection
- 2% voltage accuracy
- Output protection:
  - Over-current for each DC/DC converter
  - Over-voltage lockout on adapter voltage
  - Under-voltage lockout on battery voltage
- Output voltage range of 1.0V to 5.5V
- Integrated soft start function, 4ms soft start function at start-up
- ON/OFF control pin

GENERAL DESCRIPTION

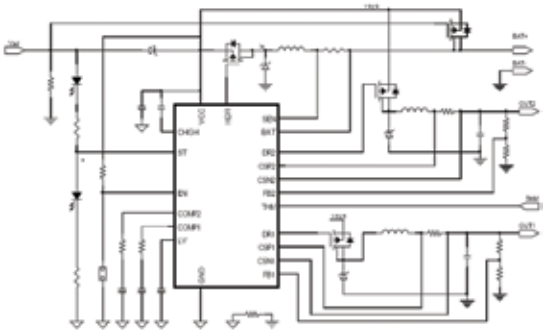
The OZ522 is a charger plus DC/DC Power Management Unit (PMU). It provides a complete charging algorithm to control 1 – 4 cell Li-Ion batteries, used in Portable DVDs (PDVDs), and other portable electronic equipment.

It delivers a wake-up charging current for discharged batteries followed by a fast charging current to minimize the charging time, and keeps the battery regulation voltage within 1% accuracy. A battery temperature sensing scheme allows the battery to be charged within a user-defined temperature range. The switch mode charger allows use of low AC adapter voltage at high efficiency.

APPLICATIONS

- PDVD

APPLICATION DIAGRAM



U.S. Patent #'s 7,268,520; 7,977,911; and more patents pending.

OZ525

FEATURES

- Asymmetrical switch mode DC/DC Controller
- Voltage mode PWM control with adjustable drive output sequence
- Complementary drive architecture supporting various topologies
- Highly customizable driver sequence to minimize switching loss
- Complete protection features:
  - Over-Voltage Protection (OVP) via VVD pin
  - Two-level Over-Current Protection (OCP) via CS pin
  - Over-Temperature (thermal) protection (OTP) via OTP pin
  - Brownout Protection via BO pin
  - Open loop Protection (OLP) via FB pin
  - Adjustable shutdown delay timer via TIMER pin
- Fast line feed forward compensation
- Adjustable start-up delay time to reduce excessive voltage stress to power components
- User-defined soft start time

GENERAL DESCRIPTION

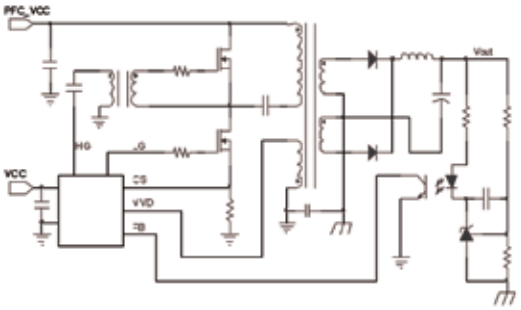
The OZ525 is an energy efficient, switched mode DC/DC controller designed for Switched Mode Power Supply (SMPS) applications, using a half-bridge topology. High level integration and distinctive features result in a cost-effective power supply design, requiring few external components.

The controller provides complementary Pulse Width Modulation (PWM) control that enables the designer to customize the drive sequence. Such customization, through dedicated pins, ensures high efficiency and performance in a power supply system by minimizing switching loss.

APPLICATIONS

- General Purpose AC/DC Converter

APPLICATION DIAGRAM



Patents pending.

OZ529

FEATURES

DC/DC Buck Converter

- Integrates 40V, 3A N-Channel power MOSFET
- Adjustable operation frequency range 200kHz – 800kHz
- Operation frequency synchronization
- System power input under-voltage lockout
- Adaptive output voltage following USB output requirement
- Thermal protection

USB Power Switch

- Independent ON/OFF control
- Sustains up to 40V input voltage stress
- Up to 1.5A output current capability
- Adjustable over-current limit threshold
- Built-in soft start function
- Output voltage vs. load current compensation
- Reverse current protection under shutdown condition
- USB fault status output

GENERAL DESCRIPTION

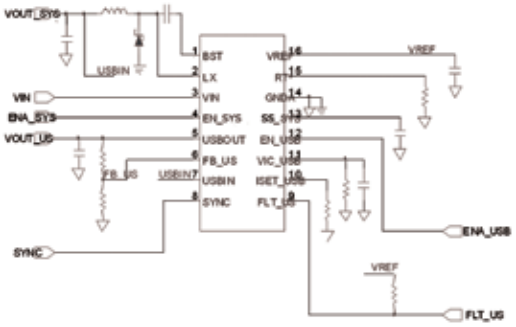
The OZ529 includes a high efficiency DC/DC buck converter and a high current USB power switch designed for USB port power supply applications. With current mode DC/DC conversion control and internal compensation, OZ529 provides fast line voltage transient response to minimize application component count.

The USB power switch employs a proprietary design technique that provides output voltage vs. load current compensation. The adaptive buck converter output voltage control achieves a reliable, flexible and efficient solution for high current USB port, power supply applications.

APPLICATIONS

- USB Port Power Supply

APPLICATION DIAGRAM



Patents pending.

OZ531

FEATURES

- Current mode PWM Controller
- Built-in high voltage (500V) start-up circuit
- Low standby power meets Energy Star® specification
- Current mode control with frequency fold back under light-load condition
- Built-in synchronized slope compensation
- Drive current up to 500mA
- Leading-edge blanking at current sense
- Protection features:
  - Under-voltage lockout
  - Clamped gate output voltage at 18V
  - VDD over-voltage
  - Cycle-by-cycle current limiting
  - Output over-current; short circuit; and thermal protection

GENERAL DESCRIPTION

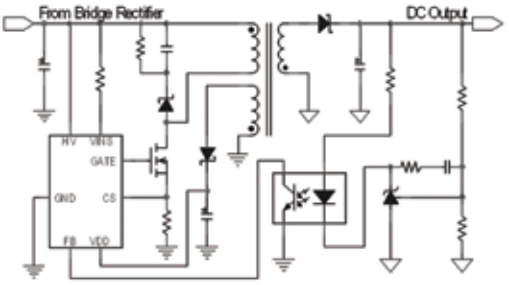
The OZ531 is a highly integrated current mode Pulse Width Modulation (PWM) controller that is ideal for offline AC/DC flyback converter applications.

The controller operates at a fixed frequency of 67kHz. With a built-in high voltage start-up circuit, OZ531 eliminates the power loss caused by start-up resistors. The driver outputs a soft-drive signal which reduces electromagnetic interference in the converter system.

APPLICATIONS

- Battery Charger
- AC/DC Power Adapter

APPLICATION DIAGRAM



Patents pending.

OZ531A

FEATURES

- Current mode PWM Controller
- Built-in high voltage (500V) start-up circuit
- Low standby power meets Energy Star® specification
- Current mode control with frequency fold back under light-load condition
- Built-in synchronized slope compensation
- Leading-edge blanking at current sense
- Protection features:
  - Under-voltage lockout
  - Maximum gate drive output and clamp
  - VDD over-voltage
  - Cycle-by-cycle current limiting
  - Output over-current; short circuit; and thermal protection

GENERAL DESCRIPTION

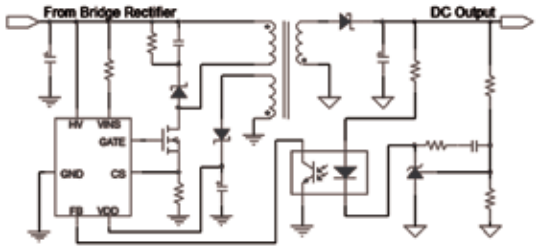
The OZ531A is a highly integrated current mode Pulse Width Modulation (PWM) controller that is ideal for offline AC/DC flyback converter applications.

The controller operates at a fixed frequency of 67kHz. With a built-in high voltage start-up circuit, OZ531A eliminates the power loss caused by start-up resistors. The driver outputs a soft-drive signal which reduces electromagnetic interference in the converter system.

APPLICATIONS

- Battery Charger
- AC/DC Power Adapter

APPLICATION DIAGRAM



Patents pending.

OZ533

FEATURES

- Integrates power MOSFET
- Supports wide input voltage range
- Up to 3A output current capability
- Stable operation without output capacitor
- Fixed operation frequency
- 100:1 ratio PWM dimming control for LEDs
- Built-in soft start function
- Over-current; LED short circuit; and thermal protection

GENERAL DESCRIPTION

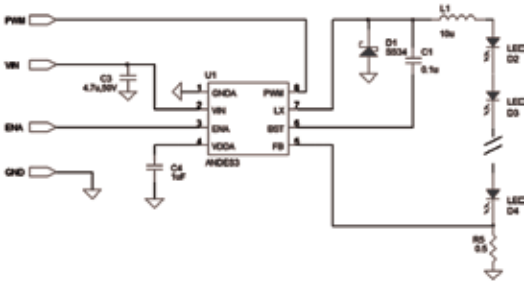
The OZ533 is a high power DC/DC buck regulator controller designed for LED backlight and general lighting applications. It is designed to drive single or multiple LEDs in series with up to 3A output current.

OZ533 integrates a 36V V_{DS} N-Channel MOSFET, which supports up to 5A peak current. It provides fast line voltage transient response to minimize application component count. The operating frequency is fixed at about 800kHz, which balances the efficiency while minimizing the sizes of the components chosen for applications.

APPLICATIONS

- AC/DC Power Supply
- PFC

APPLICATION DIAGRAM



Patents pending.

Company Background

Founded in April 1995, O_2Micro® International Limited (NASDAQ: OIIM) designs, develops and markets innovative ***power management*** and ***e-commerce*** components for the Computer, Consumer, Industrial/Automotive, and Communications markets.

O_2Micro maintains an extensive portfolio of intellectual property, and has numerous Trademark Applications and Copyright Registrations.

The company's extensive list of customers includes many of the world's leading electronics manufacturers.

For additional information, including sales office locations, please visit the O_2Micro web site at **www.o2micro.com**.

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INDUSTRIAL / AUTOMOTIVE Applications





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with Free Dimming™
Technology



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