Innovation in power conversion

Solid-State Lighting Solutions
AC-DC LED Driver ICs

December 2016
With over 8 billion of our monolithic integrated circuits designed into switching power supplies worldwide, Power Integrations is the clear leader in high-voltage ICs for power conversion. For more than two decades, we have focused on meeting power supply designers' needs with innovative products and comprehensive design support. If a product requires an AC-DC power supply up to 1000 W, Power Integrations’ ICs can provide a cost-effective, energy-efficient solution with a fast time to market.

Power Integrations has been at the forefront of LED driver design for the past 7 years and is one of the world's largest suppliers of AC-DC LED driver ICs. With a broad range of products suitable for LED lighting, including our new LYTSwitch™ LED driver-IC families, PI’s offering of LED lighting solutions is broader than anyone else’s. Our high-PF devices deliver the isolated topologies and low THD required by the India market today while safely meeting any challenging line-voltage conditions.

Great IC solutions on their own are not enough, so PI also works hard to ensure that our customers have the best possible support during the design phase. We offer more than 80 LED-driver reference designs with the number growing every day, as well as industry leading PI Expert™ design software. PI Expert allows customers to design a working circuit quickly and provides detailed build information including transformer construction and guidance on component selection to help translate a reference design into a production-ready device. On top of this we have an excellent network of highly trained field applications engineers at our India offices to offer direct local support for your designs.

Whenever you use Power Integrations ICs, you will benefit from our unsurpassed level of device integration to reduce cost and space in LED designs. In addition, PI brings the quality and reliability for which our products are justly famous.

Thank you for your interest in our power conversion ICs for LED. To make sure that you are always using our latest design-support materials, and up-to-date information of reference designs, please visit our website at https://led-driver.power.com. Here you will find extensive information on LED solutions for commercial, residential and industrial LED applications as well as videos describing our lighting products in more detail.

Comprehensive information on global energy-efficiency standards can be found in the Power Integrations Green Room at https://led-driver.power.com/green-room.

As always, we welcome your suggestions to further improve our technical support materials and to better serve your needs.

Balu Balakrishnan  
President and CEO  
April 2016  
San Jose, California
About Power Integrations’ Solid-State Lighting Solutions

Power Integrations is the leading supplier of high-voltage analog integrated circuits used in energy-efficient power supplies. The company’s innovative technology enables compact, energy-efficient power converters for a wide range of electronic products, LED lighting, AC-DC and DC-DC applications. With industry-leading product quality and delivery, the company has shipped billions of devices to customers around the world.

Power Integrations offers a broad range of highly integrated, high-power, constant current LED driver ICs for use in solid-state lighting LED applications where offline power supplies are required. Topologies include buck, buck-boost, resonant, and flyback.

- High efficiency single-stage conversion
- Long life time – no electrolytic bulk capacitors in the power train
- Phase-controlled TRIAC dimmability
- Single-stage power factor correction (PFC) plus accurate constant current (CC) output
- Small size
- Resistance to shock and vibration
- Highly integrated
- Design-in made easy with PI Expert design tools

For more detailed information about Power Integrations’ LED driver ICs, please visit our Solid-State Lighting microsite at https://led-driver.power.com.

AC-DC Product Overview

<table>
<thead>
<tr>
<th>Power Factor Correction (PFC)</th>
<th>TRIAC Dimming, Isolated and Non-Isolated Flyback, Buck, and Buck-Boost</th>
<th>PFC, Non-Dimming Non-Isolated Buck</th>
<th>PFC, Isolated and Non-Isolated Flyback, Buck, and Buck-Boost</th>
<th>Non-Isolated Buck or Buck-Boost (Non-PFC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HiperPFS™-3 (PFC)</td>
<td>LYTSwitch™-4</td>
<td>LYTSwitch-1</td>
<td>LYTSwitch-5</td>
<td>LYTSwitch-0</td>
</tr>
<tr>
<td>HiperLCS™ (LLC)</td>
<td>LinkSwitch™-PH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LYTSwitch-7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LYTSwitch-3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

AC-DC LED Driver ICs
Enabling Predictable Success
Power Integrations’ highly integrated ICs enable the design and production of switch-mode power supplies that use up to 70% fewer components compared to discrete solutions. Switchers that incorporate our ICs are smaller, lighter, and more portable than comparable power supplies.

We combine a high-voltage power MOSFET switch with a controller on a single chip to provide key power supply functions, such as:

- High-voltage start-up
- Short-circuit and open-loop protection
- Programmable current limit
- Line undervoltage and overvoltage protection
- Output overvoltage protection
- Accurate over-temperature and over-power protection
- Soft-start
- Feedback compensation
- Remote ON/OFF

Reducing Component Count
LinkSwitch-PH and LYTSwitch dramatically simplify isolated flyback LED driver designs by eliminating an optocoupler and secondary control circuitry. The devices introduce a revolutionary control technique to provide very tight output regulation, compensating for transformer and internal parameter tolerances, along with input voltage variations. In addition the switching stage combines PFC + CC control functions, greatly reducing component count and increasing efficiency.
Achieves Less Than 10% THD with LYTSwitch-4 and LinkSwitch-PH Designs
Low THD design (<10% THD) can easily be achieved with the LinkSwitch-PH and LYTSwitch-4 product families.

In order to achieve very low THD a simple line feed-forward circuit (shown below as $R_F$ and $C_F$) can be added to bias the feed-forward circuit on the control stage. Contact your local PI representative for more information.
Product Features & Benefits

Comprehensive Fault Protection – Simplifies Design and Improves Reliability

- On-chip hysteretic thermal shutdown with auto-recovery
- Control loop fault protection is independent of bias voltage
- Protects entire system: device, PC board, magnetics and output rectifiers

![Hysteretic Thermal Shutdown](image1)

**Line Overvoltage Protection**

Power Integration’s protection features include line overvoltage protection. Input voltage is monitored continuously by the IC. In the event that line voltage exceeds a safe operating point, switching is disabled. When line voltage returns to a safe level, switching restarts.

By interrupting switching, output reflected voltage ($V_{OR}$) is removed as a cause of stress on the switching stage. This together with the 700 V power MOSFET in the PI IC ensures a high level of protection against input surges and line swells.

A small amount of hysteresis is built into the OVP function to prevent misfiring. This is important in environments where high-line impedance is encountered.

![Line Overvoltage Hysteresis and Undervoltage Protection - LinkSwitch-PH](image2)
**Product Features & Benefits**

**Tight Device Tolerances – Reduce System Cost**
- Power Integrations’ ICs have tight tolerances for current limit and switching frequency. This reduces the output overload power and therefore the power rating, size and cost for the output rectifiers, transformer and clamp components.

![Graph showing variation in flyback converter output power capability over device tolerance range](image)

**Frequency Jittering – Reduces EMI and EMI Filtering Costs**
- Enables smaller, lower cost filter components

![Graphs showing conducted EMI with and without jitter](images)
Product Features & Benefits

Source Heat Sinking - For Low Radiated EMI
- Heat sink connected to SOURCE for low radiated EMI

Package Design/Pin Layout – Improves Reliability
- Wide package DRAIN – SOURCE creepage reduces probability of arcing
- Important for high pollution degree environments and forced air cooling
- Optimal pin arrangement allows compliance with safety agency adjacent pin short-circuit test
- Packages below are RoHS compliant

Package Comparison

Typical Power Device

Power Integrations Device

Source Heat Sinking – For Low Radiated EMI
- Heat sink connected to SOURCE for low radiated EMI

Note: Dimensions are in millimeters. Inch dimensions are shown in parenthesis.
Design Tools

**Total Product Support**
- Application notes
- Data sheets
- Design example reports
- Engineering prototype reports
- PI Expert design software
- Reference design kits

Learn more at led-driver.power.com/design-support

**Reference Designs**
Reference Design Kits (RDKs) provide all of the essential materials needed to demonstrate the advanced features of Power Integrations’ ICs. Kits include a fully assembled and tested reference design power supply board, product samples, and an unpopulated PCB.

**Design Example Report (DER)**
Design Example Reports contain a power supply design specification, schematic, bill of materials, transformer documentation, and PCB layout. This design has been built and bench-tested to provide performance data and typical operation characteristics.

**The Green Room**
Power Integrations’ Green Room web site (led-driver.power.com/green-room) offers the latest information in energy-efficient design, including:
- Energy-efficiency regulations: Search by application, regulatory agency or geographic location
- Mr. Green’s blog: An informative blog about energy-efficiency standards and other green matters
- Energy FAQs: Answers to frequently asked questions about energy efficiency
- Energy-efficiency resources: Links to other helpful web sites addressing energy issues
- Introduction to green power: Tips for minimizing standby waste

**PI Expert™ Design Software**
This powerful, interactive software takes a designer’s power supply specifications and automatically determines the critical components (including transformer specifications) needed to generate a working switch-mode power supply. Designs can be optimized for efficiency or cost using auto-design or manual control options. PI Expert simplifies the design of LED drivers, offline power supplies, and DC-DC converters, reducing design time from days to minutes.

Learn more at led-driver.power.com/design-support/pi-expert-suite

**PI Forums**
Power Integrations provides several forums where designers can discuss technical questions with PI engineers and the extensive Power Integrations’ design community:
- Power Supply Design Forum: For general technical questions
- PI Expert Support Forum: For discussing PI Expert Design Software
- Green Energy Forum: For discussing energy efficiency regulations, EcoSmart technology and improving the energy efficiency of electronic products

To participate in PI Forums, go to led-driver.power.com/forum

AC-DC LED Driver ICs
### Isolated IC Product Tables

#### LYTSwitch-3 - Single-Stage LED Driver IC with Combined PFC and Constant Current Output for Outstanding TRIAC Dimming in Isolated and Non-Isolated Topologies

<table>
<thead>
<tr>
<th>Product</th>
<th>Output Power (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LYT33x4D²</td>
<td>5.7</td>
</tr>
<tr>
<td>LYT33x5D</td>
<td>8.8</td>
</tr>
<tr>
<td>LYT33x6D</td>
<td>12.6</td>
</tr>
<tr>
<td>LYT33x8D</td>
<td>20.4</td>
</tr>
</tbody>
</table>

#### Additional Features:
- Less than ±3% CC regulation over line and load
- Power Factor >0.9
- Ensures monotonic VA reduction with TRIAC phase angle
- Low THD, 15% typical for dimmable bulbs, as low as 7% in optimized designs

#### Notes:
- 1. Maximum practical continuous power in an open frame design with adequate heat sinking, measured at 50°C ambient (see Key Applications Considerations section in data sheet for more information).
- 2. "x" digit describes $V_{DSON(MAX)}$ of the integrated switching MOSFET, 650 V = 1, 725 V = 2.
- 3. Package: D: SO-16B.

#### LYTSwitch-4 – Single-Stage Accurate Primary-Side Constant Current (CC) Controller with PFC for Applications with TRIAC Dimming and Non-Dimming Options²³

<table>
<thead>
<tr>
<th>Product</th>
<th>Minimum Output Power (W)</th>
<th>Maximum Output Power (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LYT4x11E³</td>
<td>2.5</td>
<td>12</td>
</tr>
<tr>
<td>LYT4x12E</td>
<td>2.5</td>
<td>15</td>
</tr>
<tr>
<td>LYT4x13E</td>
<td>3.8</td>
<td>18</td>
</tr>
<tr>
<td>LYT4x14E</td>
<td>4.5</td>
<td>22</td>
</tr>
<tr>
<td>LYT4x15E</td>
<td>5.5</td>
<td>25</td>
</tr>
<tr>
<td>LYT4x16E</td>
<td>6.8</td>
<td>35</td>
</tr>
<tr>
<td>LYT4x17E</td>
<td>8.0</td>
<td>50</td>
</tr>
<tr>
<td>LYT4x18E</td>
<td>18</td>
<td>78</td>
</tr>
</tbody>
</table>

#### Additional Features:
- Better than ±5% CC regulation
- TRIAC dimmable to less than 5% output
- Fast start-up
- <250 ms at full brightness
- <1s at 10% brightness
- High power factor >0.9
- Easily meets EN61000-3-2
- Less than 10% THD in optimized designs
- Up to 92% efficient
- 132 kHz switching frequency for small magnetics

#### Notes:
- 1. Performance for typical design. See Applications Note.
- 2. Continuous power in open-frame design with adequate heat sinking; device local ambient of 70 °C. Power level calculated assuming a typical LED string voltage and efficiency >80%.
- 3. Minimum output power requires $C_{BP} = 47 \mu F$.
- 4. Maximum output power requires $C_{BP} = 4.7 \mu F$.
- 5. LYT4311 $C_{BP} = 47 \mu F$, LYT4211 $C_{BP} = 4.7 \mu F$.
- 6. LYT4321 $C_{BP} = 47 \mu F$, LYT4221 $C_{BP} = 4.7 \mu F$.
- 7. Package: eSIP-7C.
LYTSwitch-5 – Single-Stage LED Driver IC with Combined PFC and Constant Current Output in Isolated and Non-Isolated Topologies

<table>
<thead>
<tr>
<th>Product</th>
<th>Output Power² (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>90-308 VAC</td>
</tr>
<tr>
<td>LYT5225D</td>
<td>9</td>
</tr>
<tr>
<td>LYT5216D, LYT5226D</td>
<td>16</td>
</tr>
<tr>
<td>LYT5218D, LYT5228D</td>
<td>25</td>
</tr>
</tbody>
</table>

Notes:
1. Maximum practical continuous power in an open frame design with adequate heat sinking, measured at 50°C ambient (see Key Applications Considerations section in data sheet for more information).
2. Package: D: SO-16B.

LinkSwitch-PH – Single-Stage PFC, Primary-Side Constant Current Control and TRIAC Dimming/Non-Dimming Options¹,²

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rₚ = 2 MΩ</td>
<td>Rₚ = 4 MΩ</td>
<td>85-132 VAC</td>
<td>85-308 VAC</td>
</tr>
<tr>
<td>LNK403/413E/L</td>
<td>2.5</td>
<td>4.5</td>
<td>6.5</td>
<td>12</td>
</tr>
<tr>
<td>LNK404/414E/L</td>
<td>2.5</td>
<td>5.5</td>
<td>6.5</td>
<td>15</td>
</tr>
<tr>
<td>LNK405/415E/L</td>
<td>3.8</td>
<td>7.0</td>
<td>8.5</td>
<td>18</td>
</tr>
<tr>
<td>LNK406/416E/L</td>
<td>4.5</td>
<td>8.0</td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td>LNK407/417E/L</td>
<td>5.5</td>
<td>10</td>
<td>12</td>
<td>25</td>
</tr>
<tr>
<td>LNK408/418E/L</td>
<td>6.8</td>
<td>13.5</td>
<td>16</td>
<td>35</td>
</tr>
<tr>
<td>LNK409/419E/L</td>
<td>8.0</td>
<td>20</td>
<td>18</td>
<td>50</td>
</tr>
<tr>
<td>LNK410/420E/L</td>
<td>18</td>
<td>31</td>
<td>40</td>
<td>78</td>
</tr>
</tbody>
</table>

Notes:
1. Continuous power in an open frame with adequate heat sinking at device local ambient of 70 °C.
2. Power level calculated on typical LED string voltage with efficiency >80%.
3. Minimum output power with Cₚ = 10 µF.
4. Maximum output power with Cₚ = 100 µF. LNK4x3EG Cₚ = 10 µF.
5. Package: eSIP-7C, eSIP-7F.

Additional Features:
- Single-stage power factor correction and accurate constant current (CC) output
- Flicker-free phase-controlled TRIAC dimming
- Primary side control eliminates optocoupler and all secondary current control circuitry
- Eliminates electrolytic bulk capacitor
- Eliminates all control loop compensation circuitry
- Simple PWM dimming interface

Notes:
1. Continuous power in an open frame with adequate heat sinking at device local ambient of 70 °C.
2. Power level calculated on typical LED string voltage with efficiency >80%.
3. Minimum output power with Cₚ = 10 µF.
4. Maximum output power with Cₚ = 100 µF. LNK4x3EG Cₚ = 10 µF.
5. Package: eSIP-7C, eSIP-7F.
# Isolated IC Product Tables

## HiperPFS-3 - PFC Controller with Integrated High-Voltage MOSFET and Qspeed Diode Optimized for High PF and Efficiency Across Load Range

### Universal Input Devices

<table>
<thead>
<tr>
<th>Product</th>
<th>Maximum Continuous Output Power Rating at 90 VAC(^1) (W)</th>
<th>Peak Output Power(^2) (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFS7523L/H</td>
<td>110</td>
<td>120</td>
</tr>
<tr>
<td>PFS7524L/H</td>
<td>130</td>
<td>150</td>
</tr>
<tr>
<td>PFS7525L/H</td>
<td>185</td>
<td>205</td>
</tr>
<tr>
<td>PFS7526H</td>
<td>230</td>
<td>260</td>
</tr>
<tr>
<td>PFS7527H</td>
<td>290</td>
<td>320</td>
</tr>
<tr>
<td>PFS7528H</td>
<td>350</td>
<td>385</td>
</tr>
<tr>
<td>PFS7529H</td>
<td>405</td>
<td>450</td>
</tr>
</tbody>
</table>

### High-Line Only Input Devices

<table>
<thead>
<tr>
<th>Product</th>
<th>Maximum Continuous Output Power Rating at 180 VAC(^1) (W)</th>
<th>Peak Output Power(^2) (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFS7533H</td>
<td>255</td>
<td>280</td>
</tr>
<tr>
<td>PFS7534H</td>
<td>315</td>
<td>350</td>
</tr>
<tr>
<td>PFS7535H</td>
<td>435</td>
<td>480</td>
</tr>
<tr>
<td>PFS7536H</td>
<td>550</td>
<td>610</td>
</tr>
<tr>
<td>PFS7537H</td>
<td>675</td>
<td>750</td>
</tr>
<tr>
<td>PFS7538H</td>
<td>810</td>
<td>900</td>
</tr>
<tr>
<td>PFS7539H</td>
<td>900</td>
<td>1000</td>
</tr>
</tbody>
</table>

### Additional Features:
- Incorporates high-voltage power MOSFET, ultra-low reverse recovery loss Qspeed diode, controller and gate driver.
- EN61000-3-2 Class C and Class D compliance.
- Integrated protection features reduce external component count.
  - Accurate built-in brown-in/out protection.
  - Accurate built-in undervoltage (UV) protection.
  - Accurate built-in overvoltage (OV) protection.
  - Hysteretic thermal shutdown (OTP).
  - Internal power limiting function for overload protection.
  - Cycle-by-cycle power switch current limit.
  - Internal non-linear error amplifier for enhanced load transient response.
- No external current sense resistor required.
- Provides 'lossless' internal sensing via sense-FET.
- Reduces component count and system losses.
- Minimizes high current gate drive loop area.
- Minimizes output overshoot and stresses during start-up
- Integrated power limit.
- Improved dynamic response.
- Digitally controlled input line feed-forward gain adjustment for flattened loop gain across entire input voltage range.
- Eliminates up to 40 discrete components for higher reliability and lower cost.
  - High efficiency across load.
  - High power factor across load.
  - Low cost EMI filter.
  - Frequency sliding technique for light load efficiency improvements.
  - >95% efficiency from 10% load to full load achievable at nominal input voltages.
- Variable switching frequency to simplify EMI filter design.
  - Varies over input line voltage to maximize efficiency and minimize EMI filter requirements.
  - Varies with input line cycle voltage by >60 kHz to maximize spread spectrum effect.
- Up to 450 W [universal], 1 kW [high-line only] peak output power capability in a highly compact package.
- Simple adhesive or clip mounting to heat sink.
- No insulation pad required and can be directly connected to heat sink.
- Staggered pin arrangement for simple routing of board traces and high-voltage creepage requirements.
- Single package solution for PFC converter reduces assembly costs and layout size.

## HiperLCS - Integrated LLC Controller, High-Voltage Power MOSFETs and Drivers

### Additional Features:
- Accurate programmable minimum and maximum frequency limits
- Precise duty symmetry balances output rectifier current, improving efficiency
- Comprehensive fault handling and current limiting
  - Programmable brown-in/out thresholds and hysteresis
  - Undervoltage (UV) and overvoltage (OV) protection
  - Programmable over-current protection (OCP)
  - Short-circuit protection (SCP)
  - Over-temperature protection (OTP)
- Programmable dead-time
- Programmable burst mode maintains regulation at no-load and improves light load efficiency
- Programmable soft-start time and delay before soft-start
- Proprietary eSIP-16J package
  - Exposed thermal pad connected to ground potential - no insulators required between package and heat sink
  - Staggered pin arrangement for simple PC board routing and high-voltage creepage requirements

### Notes:
1. Maximum practical continuous power at 90 VAC in an open-frame design with adequate heat sinking, measured at 50 °C ambient.
2. Internal output power limit.

## Isolated IC Product Tables

### Universal Input Devices

<table>
<thead>
<tr>
<th>Product</th>
<th>Maximum Continuous Output Power Rating at 90 VAC(^1) (W)</th>
<th>Peak Output Power(^2) (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCS700H/L</td>
<td>110</td>
<td>120</td>
</tr>
<tr>
<td>LCS701H/L</td>
<td>170</td>
<td>205</td>
</tr>
<tr>
<td>LCS702H/L</td>
<td>220</td>
<td>275</td>
</tr>
<tr>
<td>LCS703H/L</td>
<td>275</td>
<td>350</td>
</tr>
<tr>
<td>LCS705H</td>
<td>350</td>
<td>440</td>
</tr>
</tbody>
</table>

### High-Line Only Input Devices

<table>
<thead>
<tr>
<th>Product</th>
<th>Maximum Continuous Output Power Rating at 180 VAC(^1) (W)</th>
<th>Peak Output Power(^2) (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFS7533H</td>
<td>255</td>
<td>280</td>
</tr>
<tr>
<td>PFS7534H</td>
<td>315</td>
<td>350</td>
</tr>
<tr>
<td>PFS7535H</td>
<td>435</td>
<td>480</td>
</tr>
<tr>
<td>PFS7536H</td>
<td>550</td>
<td>610</td>
</tr>
<tr>
<td>PFS7537H</td>
<td>675</td>
<td>750</td>
</tr>
<tr>
<td>PFS7538H</td>
<td>810</td>
<td>900</td>
</tr>
<tr>
<td>PFS7539H</td>
<td>900</td>
<td>1000</td>
</tr>
</tbody>
</table>

### Additional Features:
- Accurate programmable minimum and maximum frequency limits
- Precise duty symmetry balances output rectifier current, improving efficiency
- Comprehensive fault handling and current limiting
  - Programmable brown-in/out thresholds and hysteresis
  - Undervoltage (UV) and overvoltage (OV) protection
  - Programmable over-current protection (OCP)
  - Short-circuit protection (SCP)
  - Over-temperature protection (OTP)
- Programmable dead-time
- Programmable burst mode maintains regulation at no-load and improves light load efficiency
- Programmable soft-start time and delay before soft-start
- Proprietary eSIP-16J package
  - Exposed thermal pad connected to ground potential - no insulators required between package and heat sink
  - Staggered pin arrangement for simple PC board routing and high-voltage creepage requirements

### Notes:
1. Maximum practical power is the power the part can deliver when properly mounted to a heat sink and a maximum heat sink temperature of 90 °C.
<table>
<thead>
<tr>
<th>Product Family</th>
<th>AC Input Voltage (V)</th>
<th>Output Power (W)</th>
<th>Output Current (A)</th>
<th>TRIAC Dimming</th>
<th>Power Factor</th>
<th>Efficiency (%)</th>
<th>Topology</th>
<th>Document</th>
<th>RDK</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TRIAC Dimmable, Bulb Replacement Designs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>185-264</td>
<td>6</td>
<td>0.26</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>78</td>
<td>Flyback</td>
<td>DER-269</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>90-265</td>
<td>7</td>
<td>0.38</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>85</td>
<td>Flyback</td>
<td>DER-277</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>90-265</td>
<td>7</td>
<td>0.33</td>
<td>✓</td>
<td>&gt;0.97</td>
<td>82</td>
<td>Flyback</td>
<td>RDR-193</td>
<td>RDK-193</td>
<td>15</td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>198-265</td>
<td>8</td>
<td>0.38</td>
<td>✓</td>
<td>&gt;0.86</td>
<td>74</td>
<td>Flyback</td>
<td>DER-264</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>90-132</td>
<td>9.5</td>
<td>0.53</td>
<td>✓</td>
<td>&gt;0.96</td>
<td>81</td>
<td>Flyback</td>
<td>DER-353</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>90-132</td>
<td>12.6</td>
<td>0.37</td>
<td>✓</td>
<td>&gt;0.96</td>
<td>83</td>
<td>Flyback</td>
<td>RDR-347</td>
<td>RDK-347</td>
<td>**</td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>90-265</td>
<td>14</td>
<td>0.5</td>
<td>✓</td>
<td>&gt;0.98</td>
<td>87</td>
<td>Flyback</td>
<td>RDR-195</td>
<td>RDK-195</td>
<td>18</td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>180-265</td>
<td>14</td>
<td>0.5</td>
<td>*</td>
<td>&gt;0.97</td>
<td>85.5</td>
<td>Flyback</td>
<td>DER-263</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>185-265</td>
<td>15.3</td>
<td>0.425</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>87</td>
<td>Flyback</td>
<td>DER-314</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>90-132</td>
<td>20</td>
<td>0.55</td>
<td>✓</td>
<td>&gt;0.98</td>
<td>85</td>
<td>Flyback</td>
<td>DER-350</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>185-265</td>
<td>20</td>
<td>0.55</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>86</td>
<td>Flyback</td>
<td>DER-396</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>170-300</td>
<td>33</td>
<td>0.35</td>
<td>*</td>
<td>&gt;0.90</td>
<td>85</td>
<td>Flyback</td>
<td>DER-427</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td><strong>Non-Dimmable Bulb Replacement Designs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-5</td>
<td>90-265</td>
<td>14</td>
<td>0.35</td>
<td></td>
<td>&gt;0.90</td>
<td>86</td>
<td>Flyback</td>
<td>DER-528</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td><strong>Tube Replacement Designs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>90-265</td>
<td>15</td>
<td>0.3</td>
<td></td>
<td>&gt;0.96</td>
<td>87</td>
<td>Flyback</td>
<td>DER-256</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>90-265</td>
<td>15</td>
<td>0.5</td>
<td></td>
<td>&gt;0.90</td>
<td>90.7</td>
<td>Flyback</td>
<td>DER-278</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>90-265</td>
<td>15</td>
<td>0.5</td>
<td></td>
<td>&gt;0.90</td>
<td>91.7</td>
<td>Flyback</td>
<td>DER-284</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>90-265</td>
<td>15</td>
<td>0.5</td>
<td></td>
<td>&gt;0.90</td>
<td>85</td>
<td>Flyback</td>
<td>DER-288</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>90-135</td>
<td>23</td>
<td>0.43</td>
<td></td>
<td>&gt;0.90</td>
<td>86</td>
<td>Flyback</td>
<td>DER-338</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>185-265</td>
<td>23</td>
<td>0.430</td>
<td></td>
<td>&gt;0.90</td>
<td>87</td>
<td>Flyback</td>
<td>DER-318</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>195-265</td>
<td>25</td>
<td>1.04</td>
<td></td>
<td>&gt;0.90</td>
<td>85</td>
<td>Flyback</td>
<td>DER-429</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>90-308</td>
<td>30</td>
<td>1</td>
<td></td>
<td>&gt;0.90</td>
<td>91</td>
<td>Flyback</td>
<td>DER-286</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>90-132</td>
<td>30</td>
<td>0.50</td>
<td>*</td>
<td>&gt;0.95</td>
<td>85</td>
<td>Flyback</td>
<td>DER-442</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td><strong>Down Light Designs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-3</td>
<td>90-132</td>
<td>9.5</td>
<td>0.35</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>85</td>
<td>Flyback</td>
<td>DER-502</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td><strong>High Power LED Designs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>180-300</td>
<td>75</td>
<td>2.1</td>
<td></td>
<td>&gt;0.95</td>
<td>92</td>
<td>Flyback</td>
<td>RDR-290</td>
<td>RDK-290</td>
<td>33</td>
</tr>
<tr>
<td>HiperLCS</td>
<td>90-265</td>
<td>150</td>
<td>3.5</td>
<td></td>
<td>&gt;0.97</td>
<td>93</td>
<td>PFC + LLC</td>
<td>RDR-382</td>
<td>RDK-382</td>
<td>34-35</td>
</tr>
<tr>
<td>HiperPFS-3</td>
<td>90-264</td>
<td>275</td>
<td>0.71</td>
<td></td>
<td>&gt;0.90</td>
<td>95</td>
<td>PFC</td>
<td>DER-394</td>
<td>36</td>
<td></td>
</tr>
</tbody>
</table>

*Analog dimming, **See www.power.com
LinkSwitch-PH – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (RDK-193)

7 W, 21 V, 330 mA OUTPUT, 90 – 265 VAC INPUT, SINGLE-STAGE PFC, FLYBACK, PAR20 POWER SUPPLY
LinkSwitch-PH – High-Efficiency, High Power Factor, High Power TRIAC Dimmable LED Driver (DER-264)

8 W, 22 V, 380 mA OUTPUT, 198 – 265 VAC INPUT, SINGLE-STAGE PFC, FLYBACK, A19 POWER SUPPLY

---

**Diagram Details:**

- **Component Types:**
  - Resistors (R): 10 kΩ, 750 Ω, 1 kΩ, 178 kΩ, 10 kΩ, 2 MΩ, 510 Ω, 1 MΩ, 5.1 kΩ, 22 V.
  - Capacitors (C): 10 μF, 220 μF, 1 nF, 100 kΩ, 1 nF, 10 kΩ, 10 μF, 100 nF, 100 nF, 100 nF, 100 nF, 100 kΩ, 10 kΩ, 270 μF, 10 μF, 1 nF, 1 nF, 1 nF, 1 nF, 1 nF, 1 nF.
  - Inductors (L): 1.5 mH, 1.5 mH.
  - Transistors (Q): MMBT3904, MMBT3904.
  - MOSFETs (VR): 1N4007.

- **Part Numbers:**
  - U1: LNK403EG
  - F1: 3.15 A
  - BR1: MB65 600 V
  - RV1: 275 VAC
  - L1: 1.5 mH
  - L2: 1.5 mH

- **Power Ratings:**
  - ±1 W
  - 270 μF, 50 V
  - 270 μF, 50 V
  - 270 μF, 50 V
  - 270 μF, 50 V
  - 270 μF, 50 V
  - 270 μF, 50 V
  - 270 μF, 50 V
  - 270 μF, 50 V
  - 270 μF, 50 V
  - 270 μF, 50 V
  - 270 μF, 50 V
  - 270 μF, 50 V

---

**Output Specifications:**

- **Output Power:** 8 W
- **Output Current:** 380 mA
- **Input Voltage:** 198 – 265 VAC
- **Input Power Factor:** Single-stage PFC
- **Flyback Design:**
- **Control Circuit:**

---

**Additional Information:**

- **Image Reference:** Image 13232-131710
LYTSwitch-4 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-353)

9.5 W, 18 V, 530 mA OUTPUT, SINGLE-STAGE PFC, ISOLATED FLYBACK, TRACK LIGHT POWER SUPPLY
LinkSwitch-PH – High-Efficiency, High Power Factor, PWM Dimming LED Driver (DER-263)

14 W, 28 V, 500 mA OUTPUT, 90 - 265 VAC INPUT, SINGLE-STAGE PFC, FLYBACK, PAR38 POWER SUPPLY

AC–DC LED Driver ICs
TRIAC Dimmable, Bulb Replacement Designs

LinkSwitch-PH – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-314)

15.3 W, 36 V, 425 mA OUTPUT, 185 - 265 VAC INPUT, SINGLE-STAGE PFC, FLYBACK, PAR30/38 POWER SUPPLY
LYTSwitch-4 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-350)
20 W, 36 V, 550 mA OUTPUT, 90 - 132 VAC INPUT, SINGLE-STAGE PFC, ISOLATED FLYBACK CONVERTER, PAR38 POWER SUPPLY
LYTSwitch-4 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-396)

20 W, 36 V, 550 mA OUTPUT, 185 - 265 VAC INPUT, SINGLE-STAGE PFC, ISOLATED FLYBACK, PAR38 POWER SUPPLY
LYTSwitch-4 – High-Efficiency, High Power Factor, Analog Dimmable LED Driver (DER-427)

33 W, 45 V – 95 V, 350 mA OUTPUT, 170 - 300 VAC INPUT, SINGLE-STAGE PFC, ISOLATED FLYBACK, DC T8 TUBE POWER SUPPLY
Non-Dimmable Bulb Replacement Designs

LYTSwitch-0 – Isolated, High-Efficiency, High Power Factor, LED Driver (DER-528)

14 W, 20 V - 40 V, 350 mA, 90 - 265 VAC INPUT, ISOLATED FLYBACK, DOWN LIGHT POWER SUPPLY
**LinkSwitch-PH – High-Efficiency, High Power Factor, LED Driver (DER-256)**

15 W, 50 V, 300 mA OUTPUT, 90 – 265 VAC INPUT, SINGLE-STAGE PFC, FLYBACK, T8 POWER SUPPLY

**LinkSwitch-PH – High-Efficiency, High Power Factor, LED Driver (DER-278)**

15 W, 30 V, 500 mA OUTPUT, 90 – 265 VAC INPUT, SINGLE-STAGE PFC, FLYBACK, LAMP POWER SUPPLY
LinkSwitch-PH – High-Efficiency, High Power Factor, LED Driver (DER-284)

15 W, 30 V, 500 mA OUTPUT, 90 – 265 VAC INPUT, SINGLE-STAGE PFC, FLYBACK, BALLAST POWER SUPPLY

LinkSwitch-PH – High-Efficiency, High Power Factor, LED Driver (DER-288)

15 W, 30 V, 500 mA OUTPUT, 90 – 265 VAC INPUT, SINGLE-STAGE PFC, FLYBACK, BALLAST POWER SUPPLY
LYTSwitch-4 – High-Efficiency, High Power Factor, Isolated LED Driver (DER-338)

23 W, 50 V, 430 mA OUTPUT, 90 - 135 VAC INPUT, SINGLE-STAGE PFC, FLYBACK, 78 POWER SUPPLY

*RV1 is needed for >500 V surge
LinkSwitch-PH – High-Efficiency, High Power Factor, LED Driver (DER-318)

23 W, 50 V, 430 mA OUTPUT, 185 - 265 VAC INPUT, SINGLE-STAGE PFC, FLYBACK, T8 POWER SUPPLY
LYTSwitch-4 – High-Efficiency, High Power Factor, CV/CC LED Driver (DER-429)
25 W, 24 V, 1.04 A OUTPUT, 195 – 265 VAC INPUT, SINGLE-STAGE PFC, ISOLATED FLYBACK, BALLAST POWER SUPPLY

Tube Replacement Designs

AC-DC LED Driver ICs
Tube Replacement Designs

LinkSwitch-PH – High-Efficiency, High Power Factor, LED Driver (DER-286)

30 W, 30 V, 1 A OUTPUT, 90 - 308 VAC INPUT, SINGLE-STAGE PFC, FLYBACK, BALLAST POWER SUPPLY
LYTSwitch-4 - Wide Output Voltage Range, Single-Stage Power Factor, LED Driver (DER-442)

30 W, 30 V - 60 V, 0.50 A OUTPUT, 90 - 132 VAC INPUT, SINGLE-STAGE PFC, ISOLATED FLYBACK, BALLAST POWER SUPPLY
**Down Light Designs**

**LYTSwitch-3 – High-Efficiency, Accurate, Constant Current, LED Driver (DER-502)**

9.5 W, 27 V, 350 mA OUTPUT, 90 – 132 VAC INPUT, ISOLATED FLYBACK, DOWN LIGHT POWER SUPPLY
High Power LED Designs

LinkSwitch-PH – High-Efficiency, High Power Factor, LED Driver (RDK-290)

75 W, 29 – 36 V, 2.1 A, 180 – 300 VAC INPUT, SINGLE-STAGE PFC, FLYBACK, STREET LIGHT POWER SUPPLY

![LinkSwitch-PH Circuit Diagram](image-url)
High Power LED Designs

HiperLCS – High-Efficiency, High Power Factor, LED Driver (RDK-382)

150 W, 43 V, 3.5 A OUTPUT, 90 – 265 VAC INPUT, INTEGRATED PFC AND LLC LED STREET LIGHT POWER SUPPLY

PFC STAGE
HiperLCS – High-Efficiency, High Power Factor, LED Driver (RDK-382)

150 W, 43 V, 3.5 A OUTPUT, 90 - 265 VAC INPUT, INTEGRATED PFC AND LLC LED STREET LIGHT POWER SUPPLY

LLC STAGE
High Power LED Designs

HiperPFS-3 - PFC Front-End for LED Street Light Designs (RDK-394)

275 W, 385 VDC, 710 mA OUTPUT, 90 - 264 VAC INPUT, INTEGRATED PFC FRONT-END POWER SUPPLY
## Non-Isolated IC Product Tables

### LYTSwitch-0 – Lowest Component Count, Off-Line Switcher IC for Non-Isolated LED Lighting Applications

<table>
<thead>
<tr>
<th>Product</th>
<th>PF&lt;sub&gt;5.5&lt;/sub&gt;</th>
<th>230 VAC ±15%</th>
<th>85-308 VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MDCM&lt;sup&gt;1&lt;/sup&gt; (mA)</td>
<td>CCM&lt;sup&gt;1&lt;/sup&gt; (mA)</td>
<td>MDCM&lt;sup&gt;2&lt;/sup&gt; (mA)</td>
</tr>
<tr>
<td>LYT0002D/P</td>
<td>High 45</td>
<td>65</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Low 63</td>
<td>80</td>
<td>63</td>
</tr>
<tr>
<td>LYT0004D/P</td>
<td>High 85</td>
<td>110</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Low 98</td>
<td>139</td>
<td>98</td>
</tr>
<tr>
<td>LYT0005D/P</td>
<td>High 100</td>
<td>140</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Low 120</td>
<td>170</td>
<td>120</td>
</tr>
<tr>
<td>LYT0006D/P</td>
<td>High 165</td>
<td>220</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Low 200</td>
<td>280</td>
<td>200</td>
</tr>
</tbody>
</table>

**Additional Features:**
- High power factor meeting EU and USA requirements
- Very low component count
- Frequency jitter reduces EMI
- No bias winding or transformer required

**Notes:**
1. Typical output current in a non-isolated buck converter. See Key Applications Considerations section in data sheet for more information.
2. MDCM – mostly discontinuous mode.
3. CCM – continuous conduction mode.
4. PF high: >0.7 @ 120 VAC and >0.5 @ 230 VAC.
5. PF low: for non-PF application where C<sub>IN</sub> > 5 µF minimum.

### LYTSwitch-1 – Single-Stage LED Driver IC with Combined PFC and Constant Current Output for Buck Topology

<table>
<thead>
<tr>
<th>Product</th>
<th>Optimized for Smallest Components</th>
<th>Optimized for Lowest THD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>45 V ≤ V&lt;sub&gt;out&lt;/sub&gt; ≤ 55 V&lt;sup&gt;2&lt;/sup&gt;</td>
<td>45 V ≤ V&lt;sub&gt;out&lt;/sub&gt; ≤ 55 V&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>LYT1402D</td>
<td>4.0 W</td>
<td>8.0 W</td>
</tr>
<tr>
<td>LYT1403D</td>
<td>7.5 W</td>
<td>15 W</td>
</tr>
<tr>
<td>LYT1404D</td>
<td>11 W</td>
<td>22 W</td>
</tr>
<tr>
<td>LYT1602D</td>
<td>4.0 W</td>
<td>8.0 W</td>
</tr>
<tr>
<td>LYT1603D</td>
<td>7.5 W</td>
<td>15 W</td>
</tr>
<tr>
<td>LYT1604D</td>
<td>11 W</td>
<td>22 W</td>
</tr>
</tbody>
</table>

**Additional Features:**
- CC regulation better than ±5%
- Power factor >0.9
- High efficiency >93%
- Critical Conduction Mode (CrM) buck, low EMI
- Excellent line noise and transient rejection

**Notes:**
1. Maximum practical continuous power in an open frame design with adequate heat sinking, measured at 50°C ambient.
2. Output power scales linearly if VOUT falls in between the specified voltages.

### LYTSwitch-3 – Single-Stage LED Driver IC with Combined PFC and Constant Current Output for Outstanding TRIAC Dimming in Isolated and Non-Isolated Topologies

<table>
<thead>
<tr>
<th>Product</th>
<th>Output Power&lt;sup&gt;4&lt;/sup&gt; (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>85-132 VAC or 185-265 VAC</td>
</tr>
<tr>
<td>LYT33x4D&lt;sup&gt;2&lt;/sup&gt;</td>
<td>5.7</td>
</tr>
<tr>
<td>LYT33x5D</td>
<td>8.8</td>
</tr>
<tr>
<td>LYT33x6D</td>
<td>12.6</td>
</tr>
<tr>
<td>LYT33x8D</td>
<td>20.4</td>
</tr>
</tbody>
</table>

**Additional Features:**
- Less than ±3% CC regulation over line and load
- Power Factor >0.9
- Ensures monotonic VA reduction with TRIAC phase angle
- Low THD, 15% typical for dimmable bulbs, as low as 7% in optimized designs

**Notes:**
1. Maximum practical continuous power in an open frame design with adequate heat sinking, measured at 50°C ambient (see Key Applications Considerations for more information).
2. "x" digit describes V<sub>DS(max)</sub> of the integrated switching MOSFET; 650 V = 1, 725 V = 2.
3. Package: D: SO-16B.
## Additional Features:
- Accurate CC, better than ±3%
- Power Factor >0.9
- Low THD, <10% with typical input and output conditions
- >90% efficient in optimized designs
- High switching frequency and DCM allow compact magnetics
- Supports buck, buck-boost, tapped-buck, boost, isolated and non-isolated flyback topologies
- 2 MOSFET voltage options and 3 power levels for optimum device selection
- No electrolytic bulk capacitors or optoisolators for increased lifetime
- Comprehensive protection features
- Input and output overvoltage
- Open-loop protection
- Advanced thermal control
- Thermal foldback allows output light delivery at normally high ambient temperatures
- Hysteretic shutdown provides protection during fault conditions

## LYTswitch-4 – Single-Stage Accurate Primary-Side Constant Current (CC) Controller with PFC for Applications with TRIAC Dimming and Non-Dimming Options¹²

<table>
<thead>
<tr>
<th>Product¹</th>
<th>Minimum Output Power² (W)</th>
<th>Maximum Output Power⁴ (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LYT4x11E³</td>
<td>2.5</td>
<td>12</td>
</tr>
<tr>
<td>LYT4x12E</td>
<td>2.5</td>
<td>15</td>
</tr>
<tr>
<td>LYT4x13E</td>
<td>3.8</td>
<td>18</td>
</tr>
<tr>
<td>LYT4x14E</td>
<td>4.5</td>
<td>22</td>
</tr>
<tr>
<td>LYT4x15E</td>
<td>5.5</td>
<td>25</td>
</tr>
<tr>
<td>LYT4x16E</td>
<td>6.8</td>
<td>35</td>
</tr>
<tr>
<td>LYT4x17E</td>
<td>8.0</td>
<td>50</td>
</tr>
<tr>
<td>LYT4x18E</td>
<td>18</td>
<td>78</td>
</tr>
</tbody>
</table>

Notes:
1. Performance for typical design. See Applications Note.
2. Continuous power in open-frame design with adequate heat sinking; device local ambient of 70 °C. Power level calculated assuming a typical LED string voltage and efficiency >80%.
3. Minimum output power requires C_BP = 47 µF.
4. Maximum output power requires C_BP = 4.7 µF.
5. LYT4311 C_BP = 47 µF, LYT4211 C_BP = 4.7 µF.
6. LYT4321 C_BP = 47 µF, LYT4221 C_BP = 4.7 µF.
7. Package: eSIP-7C.

## LYTswitch-5 – Single-Stage LED Driver IC with Combined PFC and Constant Current Output in Isolated and Non-Isolated Topologies

<table>
<thead>
<tr>
<th>Product²</th>
<th>Output Power³ (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LYT5225D</td>
<td>9</td>
</tr>
<tr>
<td>LYT5216D, LYT5226D</td>
<td>16</td>
</tr>
<tr>
<td>LYT5218D, LYT5228D</td>
<td>25</td>
</tr>
</tbody>
</table>

Notes:
1. Maximum practical continuous power in an open frame design with adequate heat sinking, measured at 50 °C ambient (see Key Applications Considerations section in data sheet for more information).
2. Package: D: SO-16B.
LYTSwitch-7 - Single-Stage LED Driver IC with Combined PFC and Constant Current Output for Non-Isolated Buck Topologies

Additional Features:
- ±3% CC regulation in single line input voltage applications
- Power factor >0.9
- High efficiency >85%
- Robust 725 V MOSFET for increased line voltage surge resistance
- Critical Conduction Mode (CrM) buck
- Low EMI
- Excellent line noise and transient rejection
- Comprehensive protection features with auto-restart
  - Input and output overvoltage protection (OVP)
  - Output short-circuit protection
  - Open-loop protection
- Advanced thermal control
  - Thermal foldback ensures that light continues to be delivered at elevated temperatures
  - Over-temperature shutdown provides protection during fault conditions

Notes:
1. Maximum practical continuous power in an open frame design with adequate heat sinking, measured at 50°C ambient.
2. Output power graph based on typical values for inductance, $I_{\text{LIMIT(AR)}}$, $T_{\text{ON(MAX)}}$ and package thermal limits.
## Non-Isolated Reference Designs

<table>
<thead>
<tr>
<th>Product Family</th>
<th>AC Input Voltage (V)</th>
<th>Output Power (W)</th>
<th>Output Current (A)</th>
<th>TRIAC Dimming</th>
<th>Power Factor</th>
<th>Efficiency (%)</th>
<th>Topology</th>
<th>Document</th>
<th>RDK</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TRIAC Dimmable, Bulb Replacement Designs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-3</td>
<td>185-256</td>
<td>4.5</td>
<td>0.15</td>
<td>✓</td>
<td>&gt;0.70</td>
<td>84</td>
<td>Buck</td>
<td>DER-498</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-7</td>
<td>90-132</td>
<td>4.68</td>
<td>0.090</td>
<td>✓</td>
<td>&gt;0.93</td>
<td>85</td>
<td>Buck</td>
<td>DER-540</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>185-265</td>
<td>4.9</td>
<td>0.175</td>
<td>✓</td>
<td>&gt;0.70</td>
<td>75</td>
<td>Buck-Boost</td>
<td>DER-369</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>186-265</td>
<td>5.76</td>
<td>0.12</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>83</td>
<td>Buck-Boost</td>
<td>DER-406</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>90-132</td>
<td>5.76</td>
<td>0.12</td>
<td>✓</td>
<td>&gt;0.96</td>
<td>83</td>
<td>Buck-Boost</td>
<td>DER-407</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>185-264</td>
<td>6</td>
<td>0.26</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>78</td>
<td>Flyback</td>
<td>DER-269</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-7</td>
<td>90-132</td>
<td>6.5</td>
<td>0.125</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>86</td>
<td>Buck</td>
<td>DER-539</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>90-265</td>
<td>7</td>
<td>0.38</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>85</td>
<td>Flyback</td>
<td>DER-277</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-3</td>
<td>90-132</td>
<td>7</td>
<td>0.165</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>87</td>
<td>Buck</td>
<td>DER-511</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>176-265</td>
<td>7.4</td>
<td>0.112</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>87</td>
<td>Flyback</td>
<td>DER-296</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>90-132</td>
<td>7.5</td>
<td>0.50</td>
<td>✓</td>
<td>&gt;0.95</td>
<td>85</td>
<td>Tapped-Buck</td>
<td>DER-360</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-7</td>
<td>180-265</td>
<td>7.5</td>
<td>0.150</td>
<td>✓</td>
<td>&gt;0.87</td>
<td>85</td>
<td>Buck</td>
<td>DER-558</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-7</td>
<td>90-300</td>
<td>7.5</td>
<td>0.125</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>85</td>
<td>Buck</td>
<td>DER-561</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-3</td>
<td>195-265</td>
<td>7.75</td>
<td>0.055</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>85</td>
<td>Buck-Boost</td>
<td>DER-486</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-3</td>
<td>195-265</td>
<td>8</td>
<td>0.115</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>85</td>
<td>Buck-Boost</td>
<td>DER-524</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>198-265</td>
<td>8</td>
<td>0.38</td>
<td>✓</td>
<td>&gt;0.86</td>
<td>74</td>
<td>Flyback</td>
<td>DER-264</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>90-132</td>
<td>8</td>
<td>0.23</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>85</td>
<td>Buck</td>
<td>DER-359</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>195-265</td>
<td>8.3</td>
<td>0.115</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>84</td>
<td>Buck-Boost</td>
<td>DER-404</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>195-265</td>
<td>8.5</td>
<td>0.12</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>84</td>
<td>Buck-Boost</td>
<td>DER-409</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>190-265</td>
<td>8.8</td>
<td>0.155</td>
<td>✓</td>
<td>&gt;0.91</td>
<td>86</td>
<td>Buck</td>
<td>DER-370</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-7</td>
<td>195-265</td>
<td>10</td>
<td>0.12</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>87</td>
<td>Buck</td>
<td>DER-568</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-3</td>
<td>90-132</td>
<td>10</td>
<td>0.260</td>
<td>✓</td>
<td>&gt;0.9</td>
<td>85</td>
<td>Buck-Boost</td>
<td>DER-500</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-3</td>
<td>90-132</td>
<td>11</td>
<td>0.155</td>
<td>✓</td>
<td>&gt;0.9</td>
<td>87</td>
<td>Buck-Boost</td>
<td>DER-510</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>190-265</td>
<td>12</td>
<td>0.10</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>84</td>
<td>Buck-Boost</td>
<td>DER-412</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>90-132</td>
<td>12</td>
<td>0.17</td>
<td>✓</td>
<td>&gt;0.95</td>
<td>88</td>
<td>Buck-Boost</td>
<td>DER-357</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>90-132</td>
<td>14</td>
<td>0.35</td>
<td>✓</td>
<td>&gt;0.95</td>
<td>85</td>
<td>Buck</td>
<td>DER-364</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>195-265</td>
<td>14.35</td>
<td>0.35</td>
<td>✓</td>
<td>&gt;0.95</td>
<td>86</td>
<td>Tapped-Buck</td>
<td>DER-395</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>180-265</td>
<td>15</td>
<td>0.5</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>84</td>
<td>Flyback</td>
<td>DER-281</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>185-265</td>
<td>15.3</td>
<td>0.425</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>87</td>
<td>Flyback</td>
<td>DER-314</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-3</td>
<td>90-132</td>
<td>18</td>
<td>0.26</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>85</td>
<td>Buck-Boost</td>
<td>DER-512</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-7</td>
<td>180-265</td>
<td>18.5</td>
<td>0.265</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>85</td>
<td>Buck</td>
<td>DER-563</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>90-265</td>
<td>20</td>
<td>0.210</td>
<td>✓</td>
<td>&gt;0.90</td>
<td>85</td>
<td>Buck-Boost</td>
<td>DER-445</td>
<td>65</td>
<td></td>
</tr>
</tbody>
</table>

**Non-Dimmable Bulb Replacement Designs**

<table>
<thead>
<tr>
<th>Product Family</th>
<th>AC Input Voltage (V)</th>
<th>Output Power (W)</th>
<th>Output Current (A)</th>
<th>TRIAC Dimming</th>
<th>Power Factor</th>
<th>Efficiency (%)</th>
<th>Topology</th>
<th>Document</th>
<th>RDK</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>LYTSwitch-1</td>
<td>180-265</td>
<td>4.5</td>
<td>0.052</td>
<td>&gt;0.92</td>
<td>89</td>
<td>Buck</td>
<td>DER-542</td>
<td>66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-1</td>
<td>90-300</td>
<td>4.5</td>
<td>0.096</td>
<td>&gt;0.85</td>
<td>86</td>
<td>Buck</td>
<td>RDR-465</td>
<td>RDK-465</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-0</td>
<td>90-132</td>
<td>5.1</td>
<td>0.135</td>
<td>&gt;0.70</td>
<td>85</td>
<td>Buck</td>
<td>DER-387</td>
<td>67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-0</td>
<td>90-265</td>
<td>6</td>
<td>0.35</td>
<td>&gt;0.75</td>
<td>91</td>
<td>Buck</td>
<td>RDR-355</td>
<td>RDK-355</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-0</td>
<td>190-265</td>
<td>7</td>
<td>0.082</td>
<td>&gt;0.50</td>
<td>91</td>
<td>Buck</td>
<td>RDR-378</td>
<td>RDK-378</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>90-265</td>
<td>12</td>
<td>0.33</td>
<td>&gt;0.97</td>
<td>85</td>
<td>Buck-Boost</td>
<td>DER-273</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>140-280</td>
<td>12.8</td>
<td>0.80</td>
<td>&gt;0.95</td>
<td>85</td>
<td>Tapped-Buck</td>
<td>DER-344</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>90-132</td>
<td>14.5</td>
<td>0.48</td>
<td>&gt;0.98</td>
<td>89</td>
<td>Buck</td>
<td>DER-341</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-5</td>
<td>195-265</td>
<td>18</td>
<td>0.048</td>
<td>&gt;0.90</td>
<td>90</td>
<td>Boost</td>
<td>DER-543</td>
<td>71</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Analog dimming, **See www.power.com*
## Tube Replacement Designs

<table>
<thead>
<tr>
<th>Product Family</th>
<th>AC Input Voltage (V)</th>
<th>Output Power (W)</th>
<th>Output Current (A)</th>
<th>TRIAC Dimming</th>
<th>Power Factor</th>
<th>Efficiency (%)</th>
<th>Topology</th>
<th>Document</th>
<th>RDK</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>LinkSwitch-PH</td>
<td>90-265</td>
<td>12</td>
<td>0.33</td>
<td>&gt;0.99</td>
<td>88</td>
<td>Buck</td>
<td>RDR-257</td>
<td>RDK-257</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-0</td>
<td>190-265</td>
<td>12</td>
<td>0.135</td>
<td>&gt;0.70</td>
<td>90</td>
<td>Buck</td>
<td>DER-384</td>
<td>72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-5</td>
<td>90-308</td>
<td>12</td>
<td>0.16</td>
<td>&gt;0.90</td>
<td>89</td>
<td>Buck-Boost</td>
<td>DER-515</td>
<td>73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>95-265</td>
<td>15</td>
<td>0.75</td>
<td>&gt;0.90</td>
<td>89</td>
<td>Buck-Boost</td>
<td>DER-425</td>
<td>74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>95-265</td>
<td>16</td>
<td>0.45</td>
<td>&gt;0.90</td>
<td>87</td>
<td>Tapped-Buck</td>
<td>DER-431</td>
<td>75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-1</td>
<td>90-132</td>
<td>16.75</td>
<td>0.250</td>
<td>&gt;0.90</td>
<td>90</td>
<td>Buck</td>
<td>DER-541</td>
<td>76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>90-265</td>
<td>18</td>
<td>0.09</td>
<td>&gt;0.90</td>
<td>90</td>
<td>Buck-Boost</td>
<td>DER-298</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-5</td>
<td>90-308</td>
<td>18</td>
<td>0.240</td>
<td>&gt;0.95</td>
<td>90</td>
<td>Buck-Boost</td>
<td>DER-526</td>
<td>77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-1</td>
<td>190-300</td>
<td>20</td>
<td>0.170</td>
<td>&gt;0.90</td>
<td>90</td>
<td>Buck</td>
<td>DER-548</td>
<td>78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>90-265</td>
<td>24</td>
<td>0.18</td>
<td>&gt;0.95</td>
<td>92</td>
<td>Buck-Boost</td>
<td>DER-356</td>
<td>79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>180-265</td>
<td>25</td>
<td>0.25</td>
<td>&gt;0.90</td>
<td>91.35</td>
<td>Buck-Boost</td>
<td>DER-287</td>
<td>79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LYTSwitch-4</td>
<td>195-300</td>
<td>25</td>
<td>0.175</td>
<td>&gt;0.97</td>
<td>90</td>
<td>Buck-Boost</td>
<td>DER-405</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LinkSwitch-PH</td>
<td>180-265</td>
<td>25</td>
<td>0.35</td>
<td>&gt;0.90</td>
<td>90.55</td>
<td>Buck-Boost</td>
<td>DER-285</td>
<td>**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## High Power LED Designs

<table>
<thead>
<tr>
<th>Product Family</th>
<th>AC Input Voltage (V)</th>
<th>Output Power (W)</th>
<th>Output Current (A)</th>
<th>TRIAC Dimming</th>
<th>Power Factor</th>
<th>Efficiency (%)</th>
<th>Topology</th>
<th>Document</th>
<th>RDK</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>LinkSwitch-PH</td>
<td>90-300</td>
<td>40.5</td>
<td>0.75</td>
<td>&gt;0.95</td>
<td>88</td>
<td>Buck</td>
<td>DER-340</td>
<td>81</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Analog dimming, **See www.power.com*
LYTSwitch-3 – Accurate Constant Current, TRIAC Dimmable LED Driver (DER-498)

4.5 W, 27 V - 33 V, 0.15 A OUTPUT, 185 - 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK CONVERTER, GU10 POWER SUPPLY
LYTSwitch-7 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-540)

4.68 W, 52 V, 90 mA OUTPUT, 90 - 132 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK, CANDELABRA POWER SUPPLY
TRIAC Dimmable, Bulb Replacement Designs

LYTSwitch-4 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-406)

5.76 W, 48 V, 120 mA OUTPUT, 185 - 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK-BOOST, A19 POWER SUPPLY

[Diagram of the circuit with components labeled]

F1 5 A
R1 390 Ω 3 W
C1 47 nF 400 V
C2 47 nF 400 V
C3 47 nF 400 V
C4 2.2 µF 400 V
L1 4.7 mH
D1 UFM15PL-TP
D2 MUR160T3G
D3 STPS2H100AY
D4 BAV21WS-7-F
D5 UFM15PL-TP
D6 BAV16WS-7-F
C5 309 kΩ 1/16 W
C6 4.7 µF 50 V
C7 220 µF 63 V
R1 1 kΩ 1 W
R2 1 kΩ 1 W
R3 10 kΩ 1/8 W
R4 510 kΩ 1/4 W
R5 1.80 MΩ 1%
R6 1.80 MΩ 1%
R7 24.9 kΩ 1%
R8 309 kΩ 1/16 W
R9 5.1 kΩ
R10 10 kΩ 1/10 W
R11 510 kΩ 1/8 W
R12 10 kΩ 1/10 W
VR1 EDZTE6127B
VR2 27 V
T1 EE10
DC-DC Converter
185 - 265 VAC
LYTSwitch-4 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-407)

5.76 W, 48 V, 120 mA OUTPUT, 90 – 132 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK-BOOST, A19 POWER SUPPLY

The diagram illustrates the internal components and connections of the LYTSwitch-4 circuit. It includes a variety of components such as capacitors, diodes, resistors, and integrated circuits, indicating a complex design for a high-efficiency LED driver.
TRIAC Dimmable, Bulb Replacement Designs

LYTSwitch-7 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-539)

6.5 W, 52 V, 125 mA OUTPUT, 90 - 132 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK CONVERTER, A19 POWER SUPPLY
LYTSwitch-3 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-511)

7 W, 42 V, 165 mA OUTPUT, 90 – 132 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK CONVERTER, A19 POWER SUPPLY
LYTSwitch-7 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-558)

7.5 W, 50 V, 150 mA OUTPUT, 180 - 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK CONVERTER, A19 POWER SUPPLY
TRIAC Dimmable, Bulb Replacement Designs

LYTSwitch-7 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-561)
7.5 W, 60 V, 125 mA OUTPUT, 90 - 300 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK CONVERTER, A19 POWER SUPPLY

[Diagram of the LYTSwitch-7 circuit]
LYTSwitch-3 – Accurate Constant Current, TRIAC Dimmable LED Driver (DER-486)

7.75 W, 141 V, 55 mA OUTPUT, 195 - 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK-BOOST CONVERTER, OMNI-DIRECTIONAL BULB POWER SUPPLY

AC-DC LED Driver ICs

51
LYTSwitch-4 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-359)

8 W, 36 V, 230 mA OUTPUT, 90 – 132 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK CONVERTER, BR30 POWER SUPPLY
LYTSwitch-4 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-404)

8.3 W, 72 V, 115 mA OUTPUT, 195 – 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK-BOOST, A19 POWER SUPPLY

LYTSwitch-4 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-404)
LYTSwitch-4 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-409)

8.5 W, 72 V, 115 mA OUTPUT, 195 - 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK-BOOST, A19 POWER SUPPLY

AC-DC LED Driver ICs
TRIAC Dimmable, Bulb Replacement Designs

LYTSwitch-7 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-568)
10 W, 84 V, 120 mA OUTPUT, 195 - 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK CONVERTER, A19 POWER SUPPLY
LYTSwitch-3 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-500)
10 W, 36 V - 40 V, 260 mA OUTPUT, 90 - 132 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK-BOOST CONVERTER, DOWN LIGHT POWER SUPPLY
LYTSwitch-3 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-510)
11 W, 72 V, 155 mA OUTPUT, 90 – 132 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK-BOOST CONVERTER, A19 POWER SUPPLY

TRIAC Dimmable, Bulb Replacement Designs
LYTSwitch-4 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-412)

12 W, 120 V, 100 mA OUTPUT, 190 – 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK-BOOST, A19 POWER SUPPLY
TRIAC Dimmable, Bulb Replacement Designs

LYTSwitch-4 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-357)
12 W, 72 V, 170 mA OUTPUT, 90 – 132 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK-BOOST CONVERTER, BR40 POWER SUPPLY
LYTSwitch-4 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-364)

14 W, 41 V, 350 mA OUTPUT, 90 – 132 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK CONVERTER, PAR30 POWER SUPPLY

Cree LED Solution Provider

AC-DC LED Driver ICs
LYTSwitch-4 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-395)
14.35 W, 41 V, 350 mA OUTPUT, 195 – 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED TAPPED-BUCK, PAR30 POWER SUPPLY

CREE LED Solution Provider

www.power.com
LYTSwitch-3 – Non-Isolated, High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-512)
18 W, 72 V, 260 mA Output, 90 - 132 VAC Input, Single-Stage PFC, Buck-Boost Converter, A19 Power Supply
TRIAC Dimmable, Bulb Replacement Designs

LYTSwitch-7 – High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-563)
18.5 W, 52 V, 355 mA OUTPUT, 185 - 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK CONVERTER, A19 POWER SUPPLY

![Diagram of LYTSwitch-7 circuit](image-url)
LYTSwitch-4 - High-Efficiency, High Power Factor, TRIAC Dimmable LED Driver (DER-445)

20 W, 96 V, 210 mA output, 195 - 265 VAC input, single-stage PFC, non-isolated buck-boost converter, G28 power supply.
Non-Dimmable Bulb Replacement Designs

LYTSwitch-1 – High-Efficiency, High Power Factor, Accurate Constant Current LED Driver (DER-542)
4.5 W, 90 V, 52 mA OUTPUT, 180 - 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK CONVERTER, CANDELABRA POWER SUPPLY

LYTSwitch-1 – High-Efficiency, High Power Factor, Accurate Constant Current LED Driver (RDK-465)
4.5 W, 47 V, 96 mA OUTPUT, 90 - 300 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK CONVERTER, CANDELABRA POWER SUPPLY
Non-Dimmable Bulb Replacement Designs

LYTSwitch-0 – High-Efficiency, High Power Factor, Accurate Constant Current LED Driver (DER-387)

5.1 W, 38 V, 135 mA OUTPUT, 90 - 132 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK CONVERTER, GU10 POWER SUPPLY
Non-Dimmable Bulb Replacement Designs

**LYTSwitch-0** – Power Factor Corrected, Constant Current LED Driver (RDK-355)

6 W, 54 V, 110 mA OUTPUT, 90 – 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK CONVERTER, GU10 POWER SUPPLY

---

**Circuit Diagram**

*Optional Component*
Non-Dimmable Bulb Replacement Designs

LYTSwitch-0 – High-Efficiency, High Power Factor, LED Driver (RDK-378)
7 W, 85 V, 82 mA OUTPUT, 190 – 265 VAC INPUT, NON-ISOLATED BUCK CONVERTER, GU10 POWER SUPPLY
Non-Dimmable Bulb Replacement Designs

LinkSwitch-PH - Constant Current, High Power Factor, LED Driver (DER-344)

12.8 W, 16 V, 800 mA OUTPUT, SINGLE-STAGE PFC, NON-ISOLATED TAPPED-BUCK CONVERTER, DOWN LIGHT POWER SUPPLY
Non-Dimmable Bulb Replacement Designs

LYTSwitch-5 – High-Efficiency, High Power Factor, Accurate Constant Current LED Driver (DER-543)
18 W, 385 V, 48 mA OUTPUT, 195 – 265 VAC INPUT, NON-ISOLATED BOOST CONVERTER, FLOOD LAMP POWER SUPPLY
Tube Replacement Designs

**LinkSwitch-PH – High-Efficiency, High Power Factor, LED Driver (RDK-257)**
12 W, 36 V, 330 mA OUTPUT, 90 - 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK CONVERTER, TB POWER SUPPLY

**LYTSwitch-0 – High-Efficiency, High Power Factor, LED Driver (DER-384)**
12 W, 85 V, 135 mA OUTPUT, 190 - 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK CONVERTER, TB POWER SUPPLY
LYTSwitch-5 – High-Efficiency, High Power Factor, LED Driver (DER-515)

12 W, 69 V - 82 V, 160 mA OUTPUT, 90 - 308 VAC INPUT, NON-ISOLATED TUBE REPLACEMENT POWER SUPPLY

AC-DC LED Driver ICs
LYTSwitch-4 – High-Efficiency, High Power Factor LED Driver (DER-425)
15 W, 200 V, 75 mA, 95 – 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK-BOOST CONVERTER, T8 TUBE POWER SUPPLY
**LYTSwitch-4 – High-Efficiency, High Power Factor LED Driver (DER-431)**

16.2 W, 36 V, 450 mA or 40 V, 350 mA OUTPUT, 95 – 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED TAPPED-BUCK CONVERTER, T8 TUBE POWER SUPPLY
LYTSwitch-1 – High-Efficiency, High Power Factor LED Driver (DER-541)

16.75 W, 67 V, 250 mA output; 90 - 132 VAC input; single-stage PFC, non-isolated buck converter, tube end power supply

Diagram showing the circuit diagram of the LYTSwitch-1 LED driver with component values and connections.
LYTSwitch-5 – High-Efficiency, High Power Factor LED Driver (DER-526)

18 W, 75 V, 240 mA OUTPUT, 90 - 308 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK-BOOST CONVERTER, T8 TUBE POWER SUPPLY
LYTSwitch-1 – High-Efficiency, High Power Factor LED Driver (DER-548)

20 W, 120 V, 170 mA OUTPUT, 190 - 300 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK, TUBE END POWER SUPPLY
LinkSwitch-PH – High-Efficiency, High Power Factor LED Driver (DER-356)
24 W, 134 V, 180 mA OUTPUT, 90 - 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK-BOOST, T10 POWER SUPPLY

LinkSwitch-PH – High-Efficiency, High Power Factor LED Driver (DER-287)
25 W, 100 V, 250 mA OUTPUT, 180 - 265 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK-BOOST CONVERTER, T8 POWER SUPPLY
LYTSwitch-4 – High-Efficiency, High Power Factor, Low THD LED Driver (DER-405)
25 W, 144 V, 175 mA OUTPUT, 195 - 300 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK-BOOST, T10 POWER SUPPLY
LinkSwitch-PH – High-Efficiency, High Power Factor LED Driver (DER-340)

40.5 W, 54 V, 750 mA OUTPUT, 90 - 300 VAC INPUT, SINGLE-STAGE PFC, NON-ISOLATED BUCK CONVERTER, STREET LIGHT POWER SUPPLY