1 Introduction
The LM3492 demonstration board included in this package is designed for converting nominal 12VAC from electronic transformer output to drive seven series connected LEDs at 360mA average current. The end user can directly light up a LED string through the demonstration board from an electronic transformer to test out the performance. With the demonstration board, the LED string not only runs at a constant current but also flicker free operation. The LM3492 switching frequency is set at a nominal 1MHz. This is a two layer board using the top layer for component placement and both layers for trace routing. A bill of materials describes the parts used on the demonstration board. A schematic and layouts have also been included. For detailed information regarding the LM3492 device, please refer to LM3492/LM3492Q Two-Channel Individual Dimmable LED Driver with Boost Converter and Fast Current Regulator (SNVS656).

2 Adaptive Peak Current Limit
Thanks to the Adaptive Peak Current Limit circuitry, the compatibility of the demonstration board with electronic transformers is greatly enhanced. This circuitry minimizes the peak current limit dynamically according to the loading and input profile. Thus, the input current is continuous throughout every AC half-cycle.

3 Key Features
• Drop-in compatible with electronic transformers
• Excellent compatibility with various electronic transformers
• Regulated LED current
• Flicker free operation

4 Applications
• AR111 Retrofit
• Industrial and Commercial Lighting
• Residential Lighting

5 Operating Conditions
• $V_{in} = 12VAC$ from electronic transformer
• Seven series connected single-die white LEDs
• $I_{LED} = 360$ mA
Demonstration Board Schematic

Figure 1. Demonstration Board Schematic Diagram
## Bill of Materials

<table>
<thead>
<tr>
<th>Ref Designators</th>
<th>Descriptions</th>
<th>Packages</th>
<th>Manufacturers</th>
<th>Manufacturer Part #</th>
</tr>
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<tbody>
<tr>
<td>U1</td>
<td>LM3492</td>
<td>HTSSOP-20</td>
<td>TI</td>
<td>LM3492</td>
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<td>L1</td>
<td>Power Inductor, 15uH</td>
<td></td>
<td>Sumida</td>
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<td>Q5, Q6</td>
<td>NPN, 40V, 200mA</td>
<td>SOT-23</td>
<td>Central Semi</td>
<td>CMPT3904</td>
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<td>D1, D2, D3, D4, D6</td>
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<td>SMA</td>
<td>Diodes</td>
<td>B360A-13-F</td>
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<tr>
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<td>Central Semi</td>
<td>CMOSH-3</td>
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<td>Vishay</td>
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<td>1206</td>
<td>Murata</td>
<td>GRM188R60J475KE19D</td>
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<td>RILIM</td>
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<tr>
<td>Wire +</td>
<td>Red, AWG#22, L = 10cm, 105°C</td>
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<td></td>
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</tr>
<tr>
<td>Wire -</td>
<td>Black, AWG#22, L = 10cm, 105°C</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Terminal Designation | Description
--- | ---
AC1, AC2 | 12V\text{AC} supply from electronic transformer
+ | LED string positive (+ve) connection
- | LED string negative (-ve) connection

Figure 2. Evaluation Setup Connection Diagram
9 Typical Performance and Waveform

All curves taken at $V_{IN} = 8$~14VAC, 50Hz for driving a LED string (Philips Lumileds Luxeon Rebel White LED) under $T_A = 25^\circ$C, unless otherwise specified. Details of Modification A and Modification B are shown in the Modification List table.

The waveform taken at VLINE = 220VAC, 50Hz with configuration according to Figure 2 with OSRAM ET-PARROT electronic transformer for driving seven series connected LEDs (Philips Lumileds Luxeon Rebel White LED) with 20V forward voltage under $T_A = 25^\circ$C.

![Figure 3. LED Current vs $V_{IN} @ T_A = 25^\circ$C](image)

![Figure 4. Efficiency vs $V_{IN} @ T_A = 25^\circ$C](image)

![Figure 5. Steady State Operation (2ms/DIV)](image)

<table>
<thead>
<tr>
<th>Modification List</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version</td>
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<tr>
<td>Original</td>
</tr>
<tr>
<td>Mod A</td>
</tr>
<tr>
<td>Mod B</td>
</tr>
</tbody>
</table>
10 Compatible Electronic Transformer List

All tests were conducted at VLINE = 220VAC, 50Hz with configuration according to Figure 2 for driving seven series connected LEDs (Philips Lumileds Luxeon Rebel White LED) with 20V forward voltage under $T_A = 25^\circ C$, unless otherwise specified.

This Demonstration Board was designed to operate with various electronic transformers. The following listed electronic transformers were tested with and compatible with the demonstration board. The demonstration board is not ensured to be compatible with the listed electronic transformers owning to the manufacturing variation of electronic transformers.

- PHILIPS ET-E 50
- PHILIPS ET-E 60
- OSRAM ET-PARROT
- OSRAM ET-P60
- OSRAM ET-Z60
- OPPLE DB35-220
- OPPLE DB602-220
- NVC ET50S
- CDN CS60

11 PCB Layout

![Figure 6. Top Overlay](image-url)
Figure 7. Top Layer

Figure 8. Bottom Overlay
Figure 9. Bottom Layer

Ø 40 mm
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