# LED Drivers

## Built-in Step-up Circuit

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Function</th>
<th>Features</th>
<th>No. of output circuits</th>
<th>Number of LEDs</th>
<th>Booster method</th>
<th>Constant current circuit</th>
<th>Switching transistor</th>
<th>Input voltage range (V)</th>
<th>Output(^1) current (mA) MAX.</th>
<th>Oscillation frequency (Hz) TYP.</th>
<th>Package</th>
</tr>
</thead>
</table>
| IR2E58U   | White LED driver for backlight | • Capable of driving a maximum of 96 LEDs with 12 LEDs (in series) per channel  
• Built-in step-up DC-DC converter  
• High oscillation frequency (1.5 MHz) makes use of a small coil possible  
• Capable of controlling brightness using PWM control  
• Step-up output control according to LED-Vf | 8 | 96 | PWM | ○ | ○ | 4.5 to 28 | 40/ch | 500 k to 1.5 M | 24HQFN |
| IR2E71Y   | LED driver for backlight and call alert display (auto brightness adjustment) | • 2 ch (11 LEDs x 2 ch) LED driver for backlight  
• Auto brightness adjustment backlight LED  
• 6 ch RGB LED driver for illumination  
• Built-in switching regulator for LCD backlight  
• Built-in LED controller power supply (+5.8 V / −5.8 V MAX.)  
• LDO 1 ch  
• Interface for digital output proximity sensor with ambient light sensor  
• Built-in general purpose input/output port (7 ch MAX.) | Backlight 2  
RGB 6 | Backlight 2  
RGB 6 | PWM | ○ | ○ | 3.0 to 4.5 | Backlight 25.5ch RGB 12.7ch | 10 k to 1 M | 35WL-CSP |
| IR2E70N   | White LED driver for backlight | • Built-in step-up DC-DC controller for 2 ch individual control  
• Capable of 2 ch individual PWM brightness control  
• LED current value adjustable by external signal (voltage input / PWM signal)  
• Brightness control possible at high contrast ratio 3000:1  
• Step-up output control according to LED-Vf | 2 | \(^2\) | PWM \(^3\) | External | 4.5 to 5.5  
8 to 28 | \(^4\) | 100 k to 500 k | 24SSOP |

---

\(^1\) Constant current (MAX.)  
\(^2\) Determined by external transistor voltage limit.  
\(^3\) Constant current can be controlled by LED anode voltage control.  
\(^4\) Determined by external resistor.

### Notice

In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that may occur in equipment using any SHARP devices shown in catalogs, data books, etc. Except where specially indicated, models listed on this page comply with the RoHS Directive*. For details, please contact SHARP.  
*RoHS Directive: Prohibits use of lead, cadmium, hexavalent chromium, mercury and specific brominated flame retardants (PBBs and PBDEs), with certain exceptions. Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device.
# AC-DC Conversion Type ICs for LED Lighting

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Features</th>
<th>Operating temperature range (°C)</th>
<th>Supply voltage range (V)</th>
<th>Dissipation current (mA) TYP.</th>
<th>Switching frequency (kHz)(^1) TYP.</th>
<th>Gate driver capacity Low (Ω)</th>
<th>High (mA)</th>
<th>System</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR3M92N4</td>
<td>Overvoltage/overheat/overcurrent circuits, high-speed activation, stand-by feature, PWM brightness control</td>
<td>−30 to +100</td>
<td>10 to 18</td>
<td>1</td>
<td>160</td>
<td>MAX. 15</td>
<td>MIN. 40</td>
<td>Flyback Step-down</td>
<td>SOP-8</td>
</tr>
</tbody>
</table>

\(^1\) When operating a flyback converter