FAN7311
LCD Backlight Inverter Drive IC

Features
- High-Efficiency Single-Stage Power Conversion
- Wide Input Voltage Range: 5V to 25.5V
- Backlight Lamp Ballast and Soft Dimming
- Reduced Number of Required External Components
- Precision Voltage Reference Trimmed to 2%
- ZVS Full-Bridge Topology
- Soft-Start Capability
- PWM Control at Fixed Frequency
- Analog and Burst Dimming Function
- Programmable Striking Frequency
- Open-Lamp Protection
- Open-Lamp Regulation
- 20-Pin SSOP/SOIC/DIP

Description
The FAN7311 provides all the control functions for a series parallel resonant converter as well as a pulse width modulation (PWM) controller to develop a supply voltage. Typical operating frequency range is between 30kHz and 250kHz, depending on the cold cathode fluorescent lamp (CCFL) and the transformer’s characteristics. FAN7311 uses a new patented phase-shift control.

Applications
- LCD TV
- LCD Monitor

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
<th>Operating Temperature Range</th>
<th>Packing Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAN7311G</td>
<td>20-SSOP</td>
<td>-25°C to 85°C</td>
<td>Rail</td>
</tr>
<tr>
<td>FAN7311GX</td>
<td>20-SSOP</td>
<td>-25°C to 85°C</td>
<td>Tape &amp; Reel</td>
</tr>
<tr>
<td>FAN7311M</td>
<td>20-SOIC</td>
<td>-25°C to 85°C</td>
<td>Rail</td>
</tr>
<tr>
<td>FAN7311MX</td>
<td>20-SOIC</td>
<td>-25°C to 85°C</td>
<td>Tape &amp; Reel</td>
</tr>
<tr>
<td>FAN7311N</td>
<td>20-DIP</td>
<td>-25°C to 85°C</td>
<td>Rail</td>
</tr>
</tbody>
</table>

All packages are lead free per JEDEC: J-STD-020B standard.

Protected by U.S. Patent: 5,652,479; 7,158,390.
Typical Application Circuits

<table>
<thead>
<tr>
<th>Application</th>
<th>Lamps</th>
<th>Input Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>19-inch LCD Monitor</td>
<td>4</td>
<td>13V</td>
</tr>
</tbody>
</table>

1. Schematic

![Figure 10. Typical Application Circuit](image)

2. Transformer Schematic Diagram

- Supported by Namyang electronics (http://www.namyangelec.co.kr)

![Figure 11. Transformer Schematic](image)

3. Core & Bobbin

- Core: EFD2124
- Material: PL7
- Bobbin: EFE2124

4. Winding Specification

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Wire</th>
<th>Turns</th>
<th>Inductance</th>
<th>Leakage Inductance</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 --&gt; 2</td>
<td>1 UEW 0.45 φ</td>
<td>19</td>
<td>115 µH</td>
<td>21.5µH</td>
<td>1KHz, 1V</td>
</tr>
<tr>
<td>7 --&gt; 9</td>
<td>1 UEW 0.04 φ</td>
<td>2300</td>
<td>1.5 H</td>
<td>280mH</td>
<td>1KHz, 1V</td>
</tr>
</tbody>
</table>
TRADEMARKS
The following includes registered and unregistered trademarks and service marks, owned by Fairchild Semiconductor and/or its global subsidiaries, and is not intended to be an exhaustive list of all such trademarks.

ACEX®, Build it Now™, CorePLUS™, CROSSVOLT™, CTL™, Current Transfer Logic™, EcoSPARK®, EZSWITCH™, Fairchild®, Fairchild Semiconductor®, FACT Quiet Series™, FACT®, FAST®, FlashCore™, FlashWriter®, FPS™, FRFET®, Global Power Resource™, Green FPS™, Green FPS™ e-Series™, GTO™, IGBT™, IntelliMAX™, ISOFABAR™, Megabuck™, MICROCOUPLER™, MicroFET™, MicroPAK™, Millipower™, Motion-SPM™, OPTOLOGIC®, OPTOPLANAR®, PDP-SPM™, Power200®, Power4™, PowerEDGE®, Power-SR™, Power-Trend®, Programmable Active Droop™, OFET™, QS™, QT Optoelectronics™, Quiet Series™, RapidConfigure™, SMART START™, SPM®, STEALTH™, SuperFETX™, SupraSOT™-3, SupraSOT™-6, SupraSOT™-8, SyncFET™, SYSTEM GENERAL, The Power Franchise®, TinyBoost™, TinyFETX™, TinyLogic®, TinyOPTO™, TinyPower™, TinyPWR™, Ultra® Ultra FRFET™, UniFET™, VCX™

*EZSWITCH™ and FlashWriter® are trademarks of System General Corporation, used under license by Fairchild Semiconductor.

DISCLAIMER
FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION, OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS. THESE SPECIFICATIONS DO NOT EXCLUDE THE IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

LIFE SUPPORT POLICY
FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used herein:
1. Life support devices or systems are devices or systems which, [a] are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component in any component of a life support device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

PRODUCT STATUS DEFINITIONS
Definition of Terms

<table>
<thead>
<tr>
<th>Datasheet Identification</th>
<th>Product Status</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance Information</td>
<td>Formative or In Design</td>
<td>This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.</td>
</tr>
<tr>
<td>Preliminary</td>
<td>First Production</td>
<td>This datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.</td>
</tr>
<tr>
<td>No Identification Needed</td>
<td>Full Production</td>
<td>This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.</td>
</tr>
<tr>
<td>Obsolete</td>
<td>Not In Production</td>
<td>This datasheet contains specifications on a product that has been discontinued by Fairchild Semiconductor. The datasheet is printed for reference information only.</td>
</tr>
</tbody>
</table>