## DESCRIPTION

DC796 mates the highly integrated LT®3468ES5-1 with components that create a complete photoflash solution. This application shows how easy it is to manufacture a complete photoflash solution in a very small area. To simplify the demonstration an on-board µcontroller generates the signals required to charge and refresh the photoflash capacitor, flash the lamp on demand or simulate a redeye reduction sequence. The user need only connect a single cell Li-Ion battery or a power supply that will provide the proper input voltage.

**Design files for this circuit board are available. Call the LTC factory.**



**Table 1. Performance Summary ($T_A$ = 25°C)**

| PARAMETER | CONDITION | VALUE |
|---|---|---|
| Minimum Input Voltage | | 2.5V |
| Maximum Input Voltage | Abs. Max of the µcontroller. | 5V |
| Output Voltage $V_{OUT}$ | | 320V |

## OPERATING PRINCIPLES

Warning- The nature of this circuit is to generate and store high potential electrical energy. Do not assume this energy is discharged with the power source disconnected. Lethal high voltages are present.

Theory of operation regarding the LT3468ES5-1 and xenon illumination have been thoroughly discussed in the LT3468 data sheet and Linear Technology Application Note AN95 and the reader is referred to these documents, available online at http://linear.com.

## QUICK START PROCEDURE

The quickest and easiest way to get started with this demonstration is to connect a single cell Li-Ion battery to the input terminals (+ to Vin and – to Gnd). With the battery, or a suitable power supply connected, press the on/off button and the LT3468ES5-1 will begin to charge the strobe capacitor. This is indicated by the red charge LED. When the output voltage has been reached, the red led will go out and the green ready LED will light. Pressing the flash button now will flash the strobe once or press the redeye button to start a

simulated redeye reduction sequence. During the time the charge LED is lit, the flash and redeye buttons are disabled. The green ready LED must be lit for the flash or redeye button to operate.

Some users may wish to disable the µcontroller and connect signals of their own. In anticipation of this, we have provided a simple solution. To suspend operation of the µcontroller, use the provided jumper on JP1 and connect the CLK signal to GND as shown in figure 1. The ready and charge indicators will alternate green and red at a one Hertz rate to provide a visual confirmation that you have correctly suspended operation of the µcontroller. You may now monitor the done pin and drive the trigger and charge pin with signals generated by your own chip set. Make certain that you do not exceed 5 Volts peak with these signals; this is the abs. max. value for any pin on the µcontroller even when operating in high impedance mode. To charge the strobe capacitor, clock the charge pin from low to high. The charge pin must then remain high until the strobe capacitor is fully charged. If this signal is taken low prematurely the strobe capacitor will not fully charge. The done pin is an open collector and will pull low when the output voltage has been reached. At this time you can take the charge pin back low. During the charge cycle, the Trigger signal should be held high. Trigger the flash strobe with a high to low level signal on the trigger pin. In the previous discussion low is $\leq 0.3V$ and high is $\cong 4V$. You may experiment with pulse widths to vary the intensity of the light created by the flash tube. Intense heat is created in the flash lamp when it is conducting. This effect is negligible when operating at low duty cycles but should be given careful consideration during experimentation.

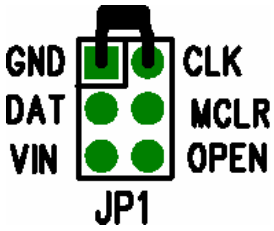
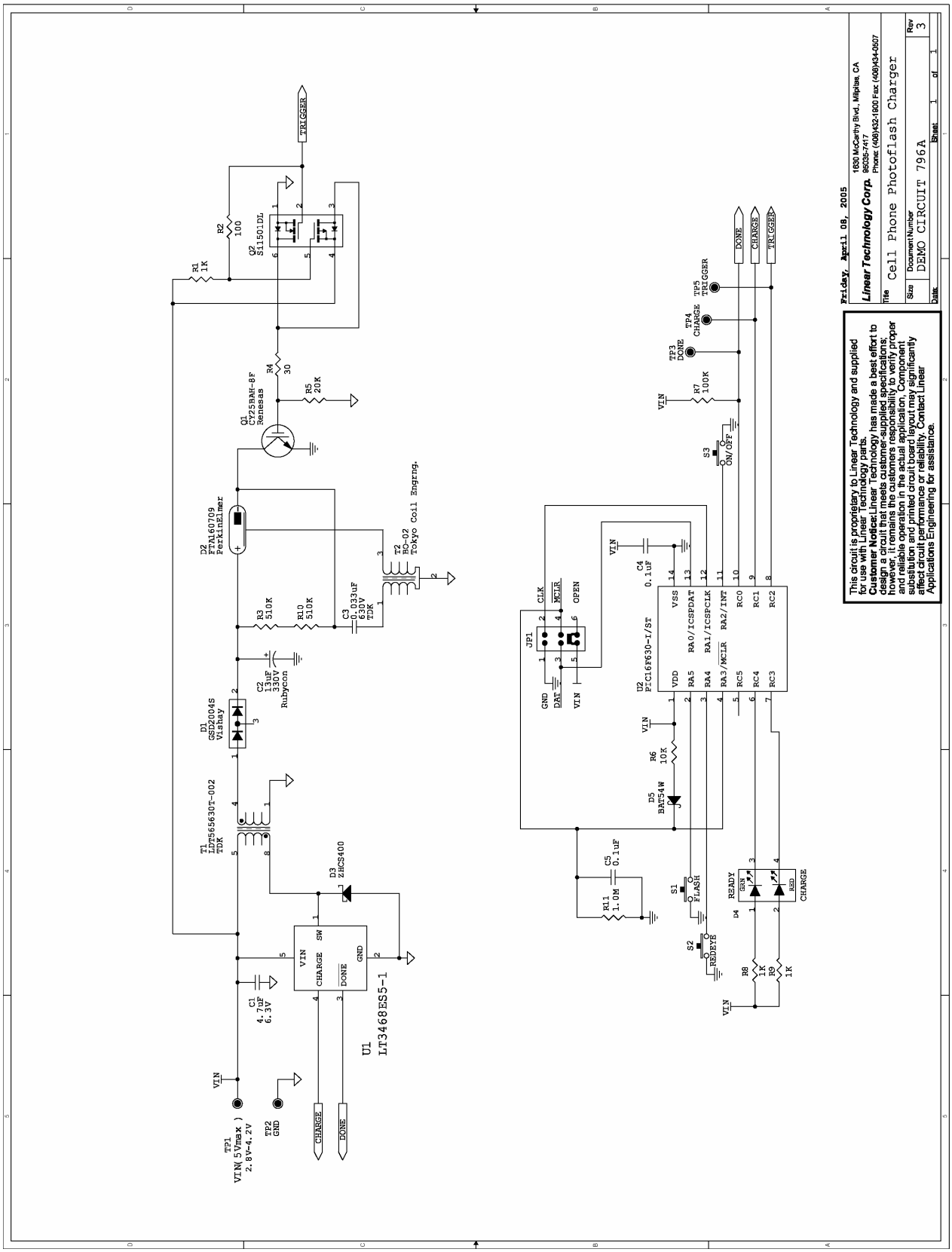



**Figure 1. Jumper selection to suspend µcontroller operation**


TRIGGER
R2 100
Q2 Si1501DL
R1 1K
R4 30
R5 20K
Q1 CY25BAH-8F Renesas
D2 PTA160709 PerkinElmer
T2 BO-02 Tokyo Coil Engrng.
R3 510K
R10 510K
C3 0.033uF 600V T3K
C2 13uF 330V Rubycon
D1 GSD2004S Vishay
T1 LDT565630T-002 TDK
D3 ZHCS400
C1 4.7uF 6.3V
U1 LT3468ES5-1
VIN CHARGE SW GND DONE
TP1 VIN 5Vmax ) 2.8V~4.2V
TP2 GND
CHARGE
DONE
JP1 CLK MCLR OPEN GND DAT VIN
U2 PIC16F630-I/ST
VDD VSS RA5 RA0/ICSPDAT RA4 RA1/ICSPCLK RA3/MCLR RA2/INT RC5 RC0 RC4 RC1 RC3 RC2
C4 0.1uF
C5 0.1uF
R11 1.0M
R6 10K
D5 BAT54W
S1 FLASH
S2 REDEYE
S3 ON/OFF
R7 100K
TP3 DONE
TP4 CHARGE
TP5 TRIGGER
READY GRN
CHARGE RED
D4
R8 1K
R9 1K
Friday, April 08, 2005
Linear Technology Corp.
1630 McCarthy Blvd., Milpitas, CA 95035-7417 Phone: (408)432-1900 Fax: (408)434-0507
Title: Cell Phone Photoflash Charger
Size: Document Number: DEMO CIRCUIT 796A
Rev: 3
Date: Sheet 1 of 1
This circuit is proprietary to Linear Technology and supplied for use with Linear Technology parts.
Customer Notice: Linear Technology has made a best effort to design a circuit that meets customer-supplied specifications; however, it remains the customers responsibility to verify proper and reliable operation in the actual application. Component substitution and printed circuit board layout may significantly affect circuit performance or reliability. Contact Linear Applications Engineering for assistance.