

## オン/オフ制御、調光制御の可能な 車載LEDドライバ



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### DESIGN NOTE

#### 回路説明

このデザイン・ノートでは、2種類のIC (NCV7680, NCV7608)を組み合わせて車載LEDを駆動する回路について説明します。両方のICの持つ一番の特長を組み合わせます。

NCV7680は、8本のLEDストリングを駆動するのに必要な電流源として使います。NCV7608により各出力がセグメント化できるため、LEDストリングは1本ずつ個別にオン/オフ制御、調光制御ができます。

NCV7680は、設定用抵抗 $R_{STOP}$ によりDC電流の設定が可能です。電流値(最大75 mA)を設定するためのチャートはデータシートに記載されています。

NCV7608のオン/オフ調光制御は、SPI入力でも4本の並列入力でも行えます。

#### 主な特長

- 8本のLEDストリングを制御
- 個別にオン/オフ制御
- 個別に調光制御
- 断線検出
- 短絡検出

Table 1. DEVICE DETAILS

Device	Application	Load Dump	Channel Count	Output LED Current per Channel	Miscellaneous
NCV7680, NCV7608	Automotive Lighting	40 V	8	75 mA	Waveshaping

Table 2. OTHER SPECIFICATIONS

NCV7608 Output Current	800 mA	Max
NCV7608 SPI Frequency	5 MHz	Max
NCV7608 Frame Length	16	Bits

Open Load Detection	Yes, via NCV7608
Parallel Input for PWM	Yes, via NCV7608
Slew Rate Control	Yes, via NCV7608 & NCV7680
Current Programming	Yes, via NCV7680
3.3 V/5 V Compatible Logic	Yes, on the NCV7608
Daisy Chain Compatible	Yes, on the NCV7608
AEC Q10X-12-REV A Compatible	Yes, on the NCV7608

Others	When less than 8 strings of LEDs are utilized, the additional outputs on the NCV7608 can be used as either high-side or low-side drivers.
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## SCHEMATIC

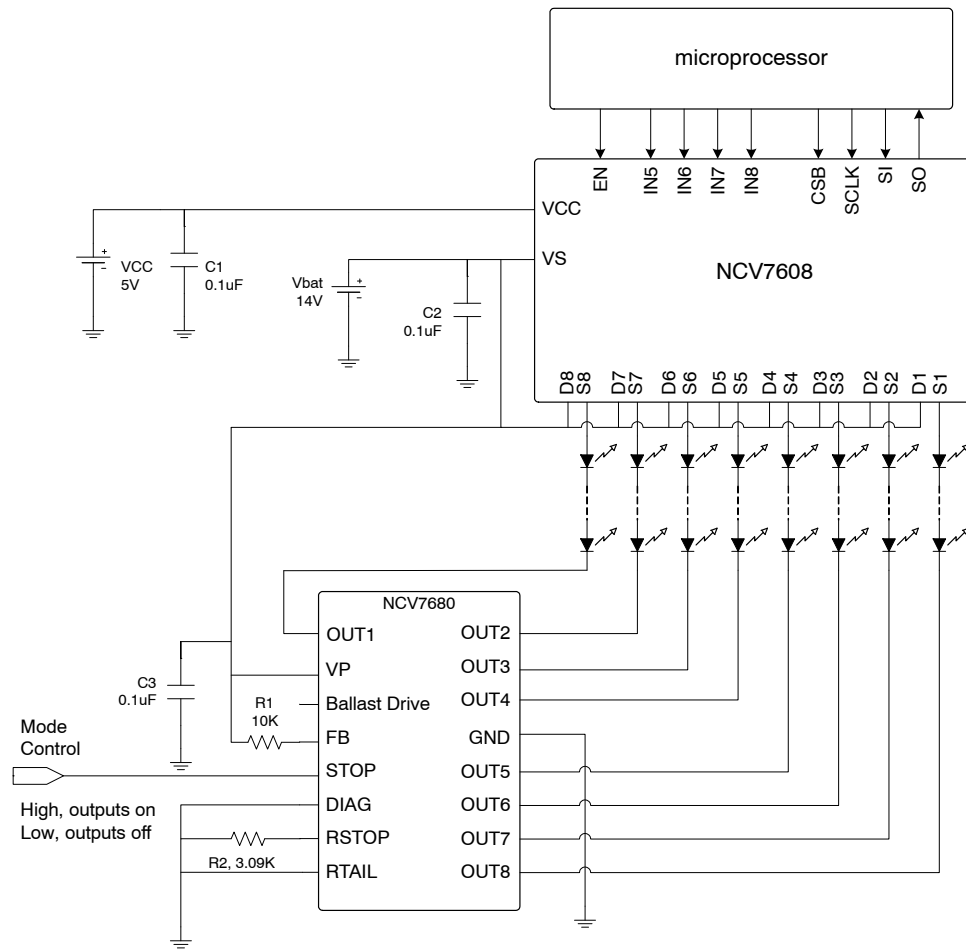
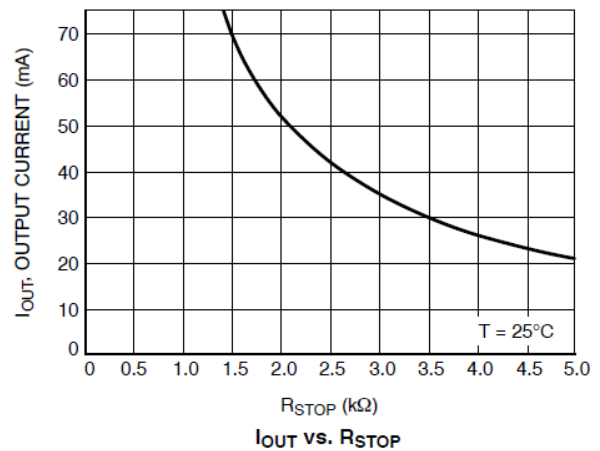


Figure 1. Complete Schematic

1. The number of diodes in each string is determined by the users choice of component and current used.
2. Mode Control can also be used as a modulating source for contiguous usage of LEDs.
3. Power supply capacitors may need to be increased depending on the current level and duty cycle used.

## NCV7680のDC電流の設定

各LEDストリングのDC電流は、NCV7680のR<sub>STOP</sub>ピンに接続する設定用抵抗(Figure 1の3.09K)で決まります。

Figure 2. NCV7680 I<sub>OUT</sub> vs R<sub>STOP</sub>

## NCV7608のSPIフレーム

NCV7608のSPIフレームは、各出力の入力制御信号と、断線診断を有効にするための制御信号とで構成されます。

出力フレームには、ドライバごとの出力状態、並列入力の状態、バッテリー電源の状態が示されます。

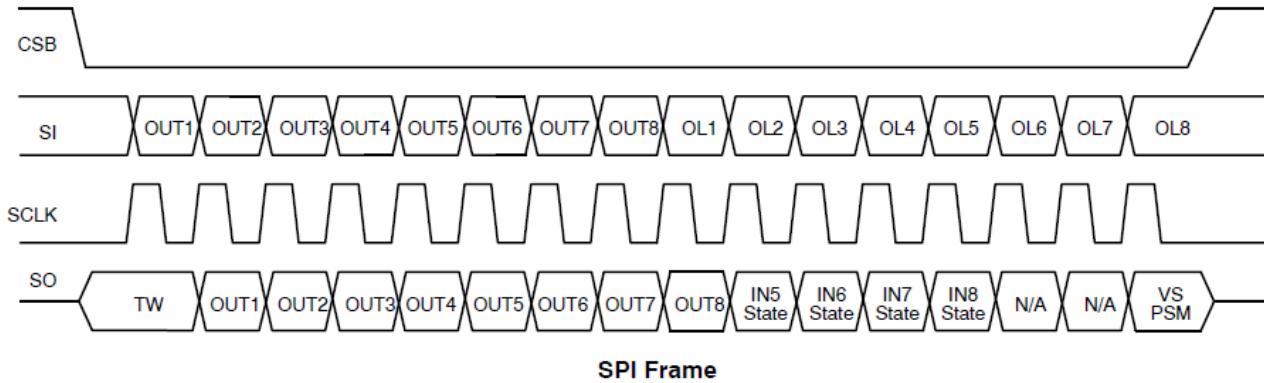



Figure 3. NCV7608 SPI Frame

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