Keywords: step-up controller, input converter, transformer flyback, flyback converter

APPLICATION NOTE 529

15V Input Converter Generates -185V at 50mA

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Abstract: This design note shows how a 15V input flyback converter generates -185V at 50mA. The circuit uses the MAX668 step-up controller and a transformer to make a flyback converter.

Additional information:

- Data sheet for the MAX668
- Data sheet for the MAX4130
- Technical support: power

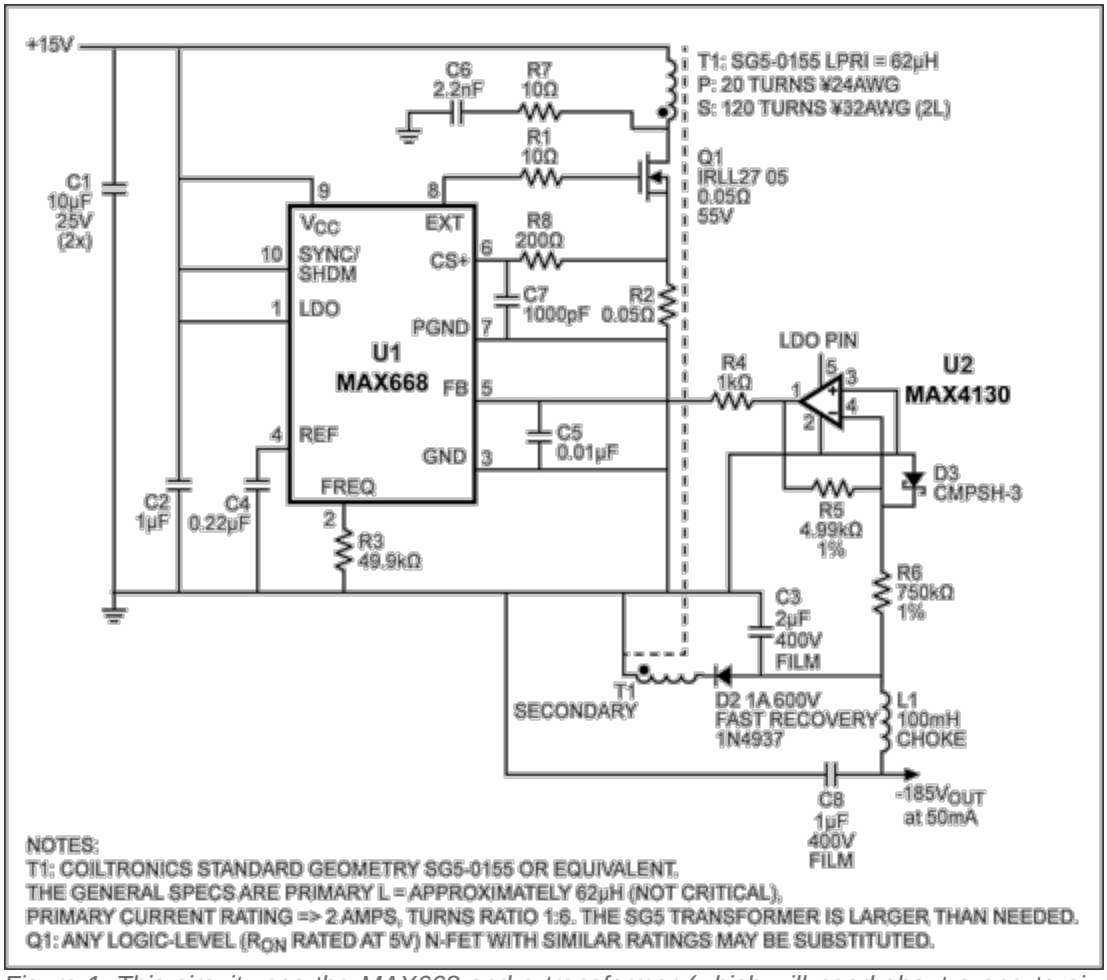

Figure 1. This circuit uses the MAX668 and a transformer (which will need about a one-to-six turns ratio) to make a flyback converter. The op amp inverts the feedback from the negative output voltage.

The circuit above generates -185V at 50mA from a +15V input. Based on a MAX668 transformer flyback application, the circuit employs a custom transformer to generate -185V through a combination of turns ratio and duty cycle. The transformer is designed on an SG5-size bobbin to facilitate the winding and to decrease the leakage inductance.

D2 is chosen as a fast-recovery diode to moderate the cost for a high-breakdown voltage part. Because the diode will see 185V + (6 × V_{IN}) + flyback due to leakage inductance, a 600V rating is necessary. C3 is chosen as a film capacitor to get high voltage rating and high ripple-current capacity. A secondary LC (L1 and C8) reduces output ripple from 100mV_{P-P} to less than 5mV_{P-P}.

Related Parts		
MAX4130	Single/Dual/Quad, Wide-Bandwidth, Low-Power, Single-Supply Rail-to-Rail I/O Op Amps	Free Samples
MAX668	1.8V to 28V Input, PWM Step-Up Controllers in µMAX	Free Samples

More Information
For Technical Support: http://www.maximintegrated.com/support
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