

APPLICATION NOTE

AN126

Applications using the SG3524

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APPLICATIONS

The capacitor-diode output circuit is used in Figure 1 as a polarity converter to generate a $-5V$ supply from $+15V$. This circuit is useful for an output current of up to $20mA$ with no additional boost transistors required. Since the output transistors are current-limited, no additional protection is necessary. Also, the lack of an inductor allows the circuit to be stabilized with only the output capacitor.

Another low current supply is the flyback converter used in Figure 3 to generate $+15V$ at $20mA$ from a $+5V$ regulated line. The reference generator in the SG3524 is unused with the input voltage providing the reference. Current limiting in a flyback converter is difficult and is accomplished here by sensing current in the primary line and resetting a soft start circuit.

In the conventional single-ended regulator circuit shown in Figure 2, the two outputs of the SG3524 are connected in parallel for effective $0.0 - 90\%$ duty cycle modulation. The use of an output inductor requires an RC phase compensation network for loop stability.

Push-pull outputs are used in this transformer-coupled DC - DC regulating converter shown in Figure 4. Note that the oscillator must be set at twice the desired output frequency, as the SG3524's internal flip-flop divides the frequency by 2 as it switches the PWM signal from one output to the other. Current limiting is done here in the primary so that the pulse width will be reduced should transformer saturation occur.

SG3524 PUSH-PULL + 50V, 100W Converter (Off-Line)

A simple solution to off-line converter design for power audio amplifier circuits is shown in Figure 5. The SG3524 emitter outputs are used to drive directly a pair of BUZ41A Power FETs in the primary side of the step-down transformer at a $50kHz$ rate. (The main oscillator operates at $100kHz$.) The transformer consists of 120T of #24 wire center-tapped at 60T. This is sandwiched between two 50-turn center-tapped secondary windings of #20 wire. Diodes are fast recovery BYW30s; the output chokes, $500\mu H$ wound on

EC35 (3C8) pair Ferroxcube cores, provide adequate filtering in conjunction with the $1000\mu F$ and $0.01\mu F$ ceramic capacitors across the output.

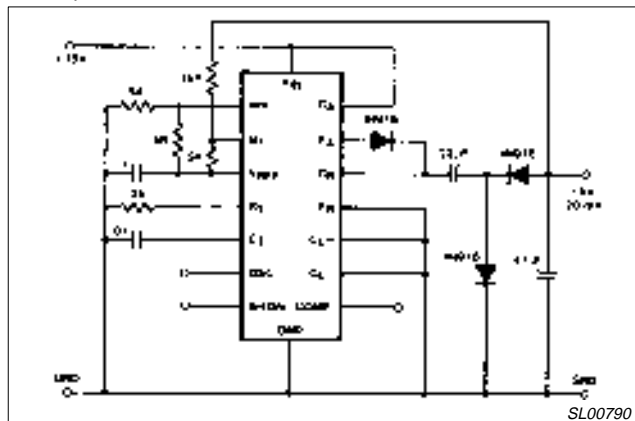


Figure 1.

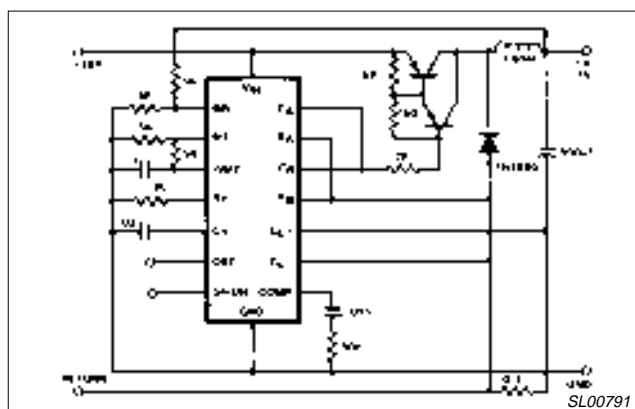


Figure 2.

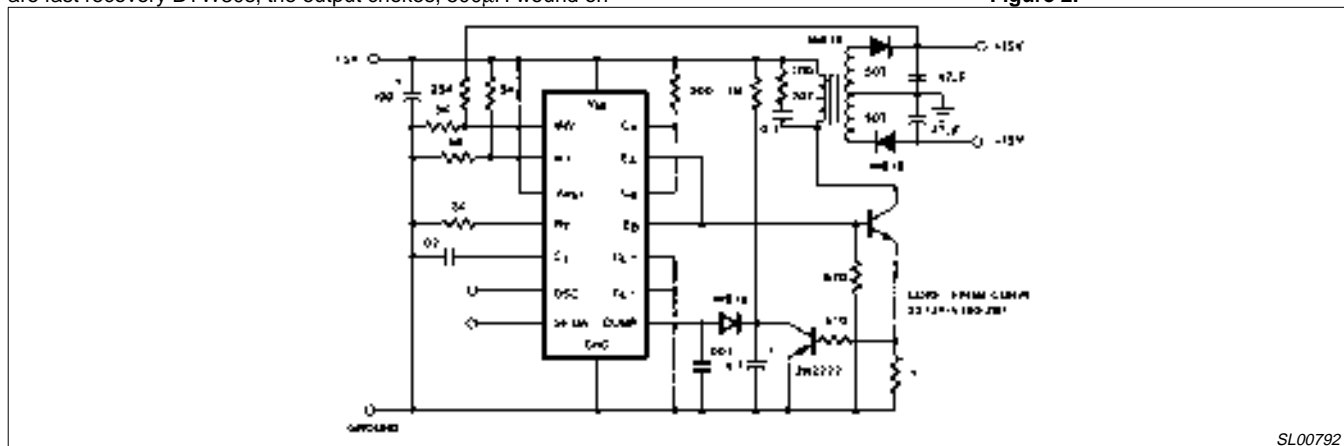


Figure 3.

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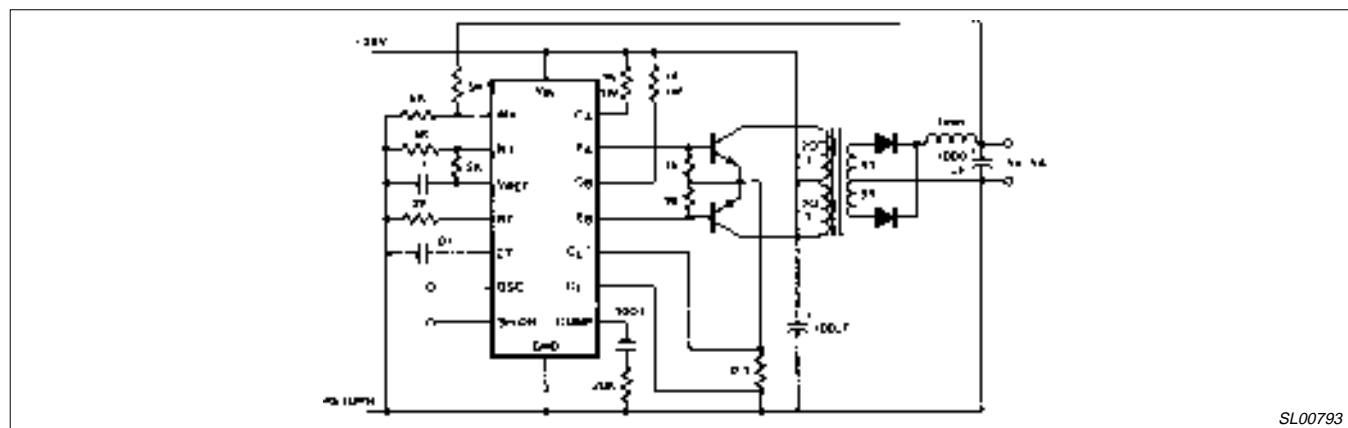


Figure 4.

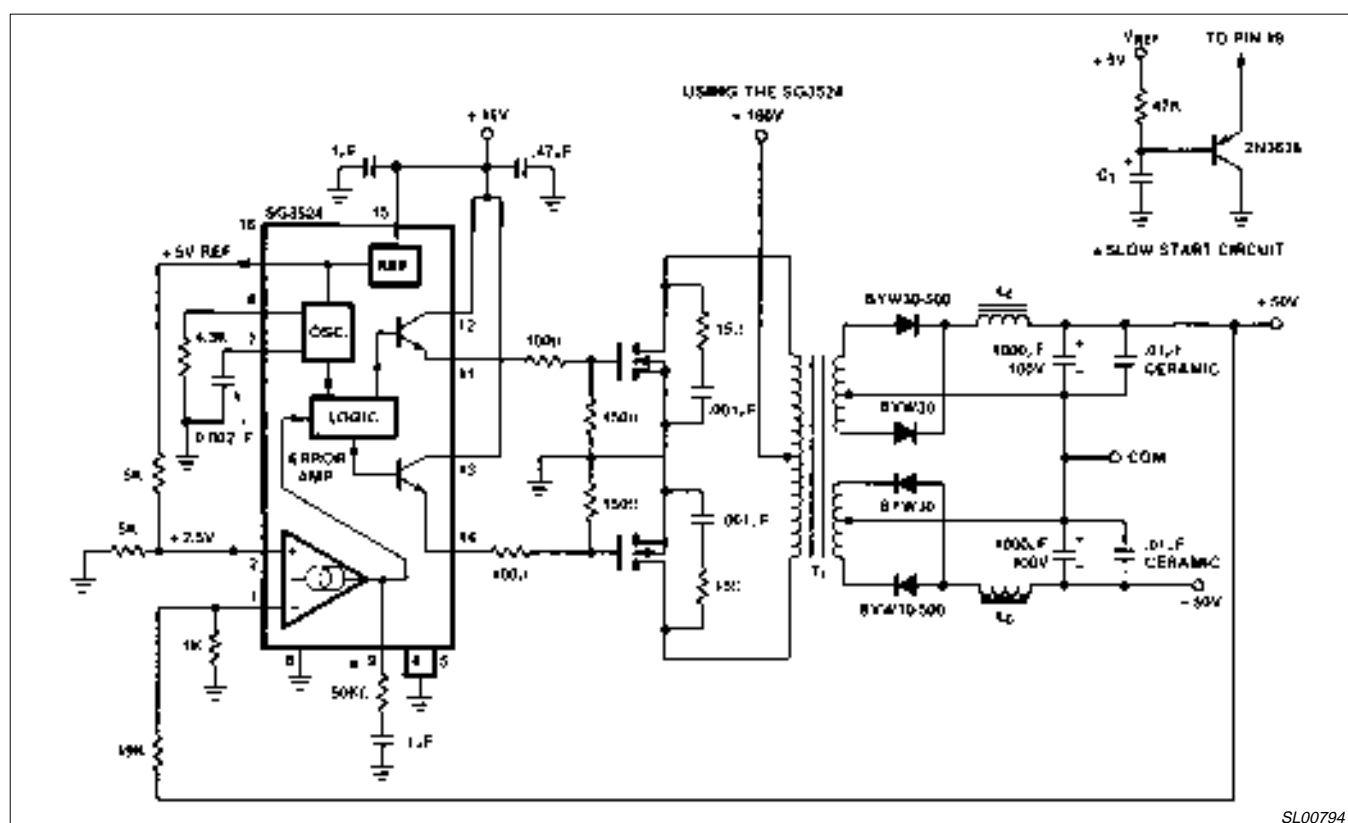


Figure 5. +50V Push-Pull Switched-Mode Converter