The lit bit

One of our best sources of information concerning new device applications is the literature published by semiconductor manufacturers. Despite their value and expense of preparation, these publications often are available either free or for a nominal charge.

Depending on the product and the publisher, individual publications may range from single page specification sheets to multi-page design brochures and even to thick hard-bound handbooks. In addition to basic design information, these publications frequently include complete project schematic diagrams and circuit construction hints.

The practical 28-volt switching regulator circuit illustrated in Fig. 5 is typical of the information given in some manufacturers' literature. Ab-

stracted from Application Note 49, published by the Delco Electronics Division (General Motors Corporation, Kokomo, Ind. 46901), the design features a type DTS 1020 *npn* Darlington silicon power transistor. According to Delco's 4-page application note, the circuit will furnish 28-volts dc at loads of up to 100 watts when supplied by sources of from 22 to 28 volts dc. Its output regulation and ripple are less than 1% at full output.

Aside from its general performance specifications, the design's most interesting feature is its ability to furnish a regulated output voltage *higher* than its supply voltage (28 volts out with 22 volts input) without using conventional dc-to-dc inverter circuitry and a step-up transformer.

In operation, this is achieved by the flyback action of the 0.4 mH series choke when switched at a 9 kHz rate. Voltage regulation is accomplished by sensing the circuit's output voltage and

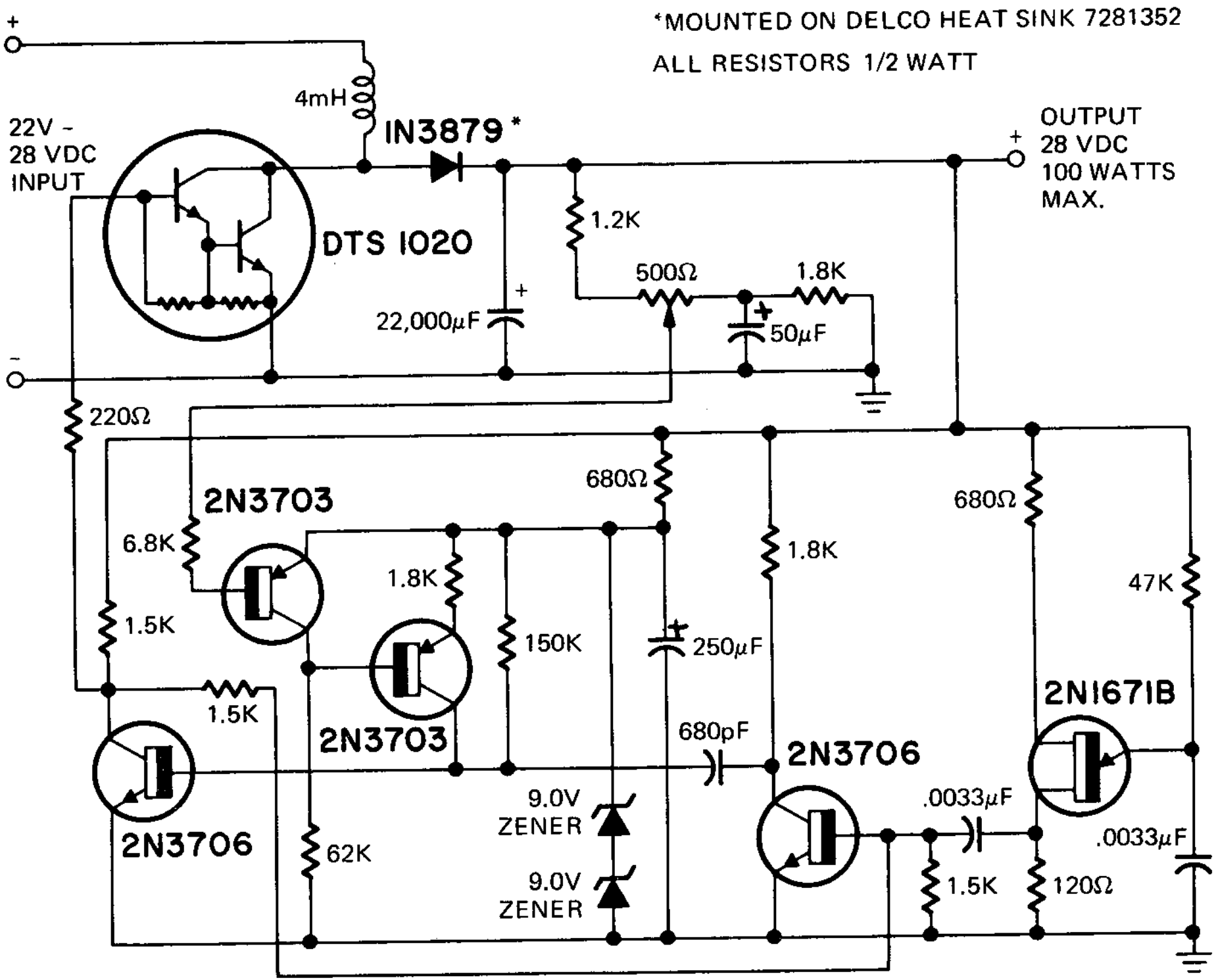

FIG. 5—28-VOLT SWITCHING regulator circuit abstracted from Delco Application Note 49.

using this for pulse-width modulation of the signal used to drive the Darlington switch. A UJT relaxation oscillator serves as the basic 9 kHz signal source.

Delco's complete application note includes not only the circuit diagram, but basic design mathematics, a dis-

cussion of circuit theory, performance curves, all parts values, and even winding details for assembling a suitable choke.

A number of useful publications are available from the Sprague Products Co. (North Adams, Mass. 01247), including a 50-page ***Semiconductor Replacement Manual,*** Manual K-500, a 40-page IC catalog, and a new series of LED Application Notes, publications SPAN-1A through SPAN-6.

Basic specifications and outline drawings of the 82 general purpose semiconductor devices in Sprague's ***Q-Line*** are provided in Manual K-500, together with replacement cross-references to over 30,000 standard industry type numbers. In addition, the manual includes a number of valuable guidelines covering semiconductor replacement techniques.

Entitled ***Sprague Integrated and Thin-Film Hybrid Circuits,*** Short-Form Catalog WR-125F covers the firm's

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line of linear and Hall Effect IC's, functional electronic circuits, thin-film resistor arrays and hybrid circuits, and digital and logic devices. The catalog includes device specifications, terminal connections, internal schematic diagrams, package outlines and suggested applications.

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