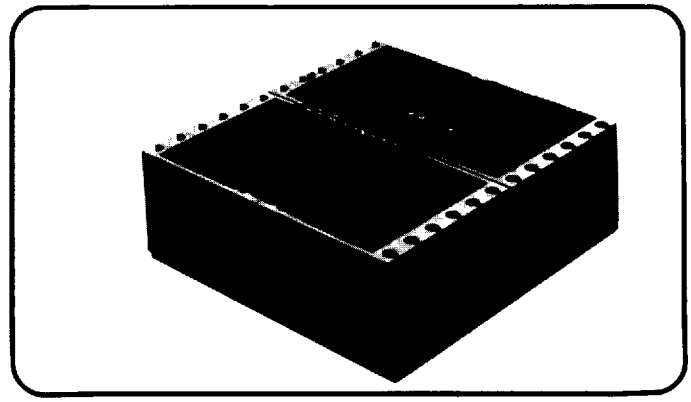
5TR200/160 Magnetic Switching Regulator

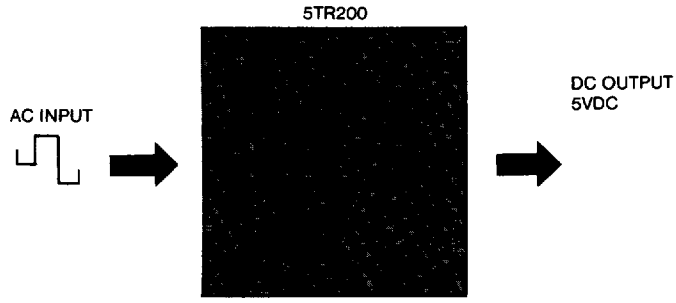
Features:

- High Efficiency
- 2 Models Available
- Internal OVP & Short Circuit Protection
- Remote Sense



Magnetic Switching Regulator

The magnetic switching regulator consists of 2 model types, the 5TR200-S1, -S2 and the 5TR160-S1, -S2, each measuring 2x4x1.3 inches high. The modules are designed to operate from a standard 40V peak, 20-40 kHz square wave with any Powercube input module or set of modules of sufficient power rating. The DC output voltage is regulated by means of magnetic switching phase control.



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Magnetic Switching Regulator

DESIGN INFORMATION

Output Voltage Min. V_{in} Nom	Max. No Load (DC)	Output Current (amperes) Max.	Line & Load Regulation (mV)	Efficiency (full load @ 25°C case temp @ V_{in} Nom	Model Number
4.870	5.050	16A	50mV	78%	5TR160-S1, -S2
4.850	5.050	20A	50mV	78%	5TR200-S1, -S2

SPECIFICATIONS

Input Voltage: 5TR200-S1, -S2: 40-44 VAC Peak (pre-regulated input sets only)
5TR160-S1, -S2: 40-55 VAC Peak (with any generator module designed to operate without pre-regulator)

Output Voltage: 5TR200-S1, -S2: 5.00 VDC ± 1% @ 20A max.
5TR160-S1, -S2: 5.00 VDC ± 1% @ 16A max.

Frequency: 20-40kHz squarewave

Current Limit: 5TR200-S1, -S2: 22-24A
5TR160-S1, -S2: 17.5-20A

Regulation (Line +Load): 50mV max. (5% to 100% load)

Ripple: 100mV max. (Basic). The addition of four feedthroughs (Powercube part number CF1005) will decrease the ripple to approximately 80mV.

Efficiency: 78% typical

Overvoltage Protection: 5.5 -6.0VDC

Isolation: Input to output and input to case: 50μA max. at 500VDC.
Output to case: 10μA at 100VDC.

Operating Temperature: -55° to +100°C (case)

Storage Temperature: −65°C to +125°C

Weight (Max.): -S1: 14 ounces (397 grams)
-S2: 16 ounces (454 grams)

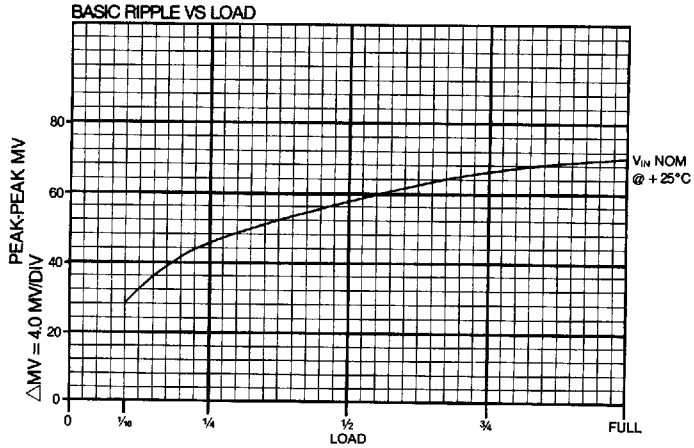
Finish: Anodize per MIL-A-8625-II, Class 2

Environment: Will meet the requirements of MIL-STD-202 and MIL-STD-810 as listed in Powercube Specification Q15-045, Qualification Test.

PART NUMBER DESIGNATION

5 TR XX0-SX

- 5 TR XX0 — NOMINAL OUTPUT VOLTAGE
- XX — OUTPUT CURRENT DESIGNATOR (16 OR 20 AMPS)
- SX — PAIR OR SET DESIGNATOR



NOTE: Data shown using CF 1005 feedthrus

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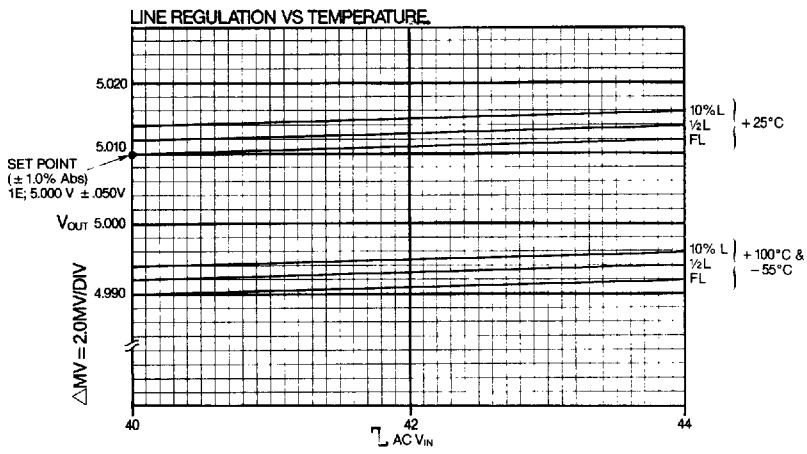
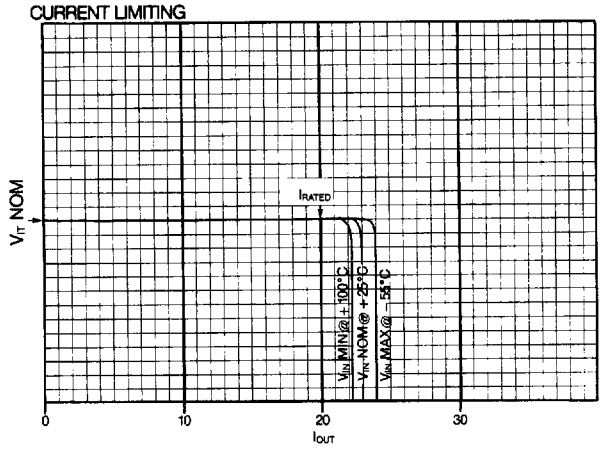
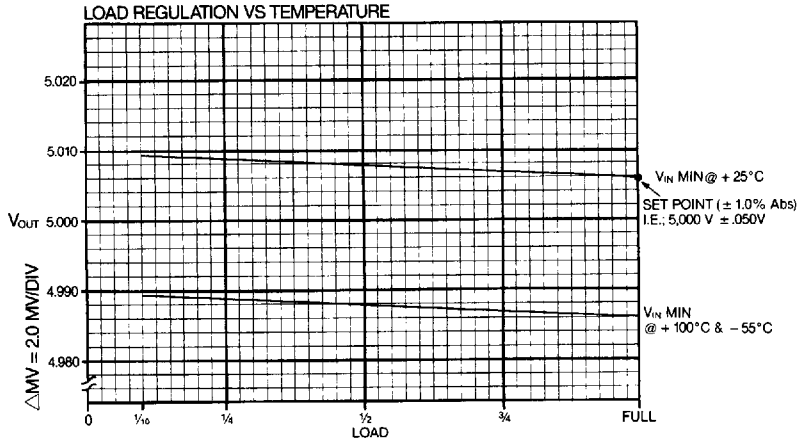
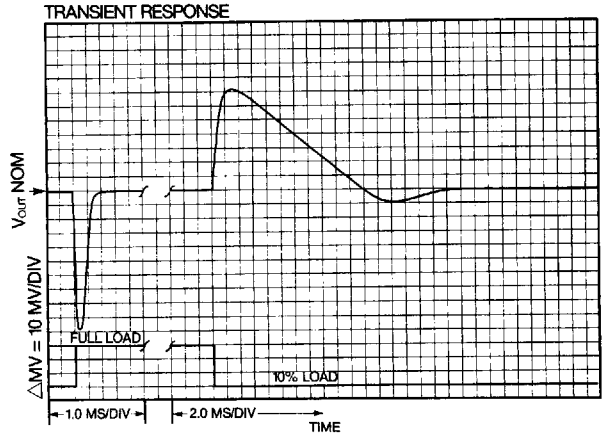
TYPICAL CHARACTERISTICS









APPLICATIONS INFORMATION

I. ELECTRICAL

Load Conditions: Below the 200mA minimum load, the output voltage may rise and be limited by the 5.75 nominal overvoltage circuit.

Output Adjustment: V_{out} may be adjusted between 4.9 and 5.5V by adding external temperature stable film resistor between the voltage trim, Terminal No. 3, and either sense terminal. The internal reference voltage is 2.75VDC. Outputs of this value or less will need an external forcing voltage applied.

Remote Sense: Terminal 2 (−) and Terminal 12 (+) provide up to 0.5V total compensation due to load-line voltage drop. DO NOT OPERATE WITHOUT REMOTE SENSE TERMINALS CONNECTED.

Current Limiting: Output limiting current may be reduced to a minimum of 13A by connecting a temperature stable film resistor between pins 7 and 11 of (−S2). A value of 700 ohms will produce a current limiting knee of approximately 10% below the factory setting.

Parallel Operation: Consult factory.

Interconnecting Leads: It is recommended that the -S1 and -S2 modules be positioned side by side as shown in the module interconnect drawing and interconnected with 18 AWG copper buss wires formed into a "U" shape, inserted from the top into the hollow terminals and soldered. Connections to the "G" module should be 18 AWG or heavier, and load wires for 20A should be parallel 14 AWG. Interconnect leads should be as short as possible.

Lead Bundling: Avoid lead bundling (use point to point wiring). As a minimum, separate AC carrying leads from DC carrying leads.

CAUTION: TO AVOID SHOCK HAZARD OR DAMAGE, DO NOT GROUND OR TOUCH THE TERMINALS WHILE THE UNIT IS OPERATING.

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APPLICATIONS INFORMATION (cont'd)

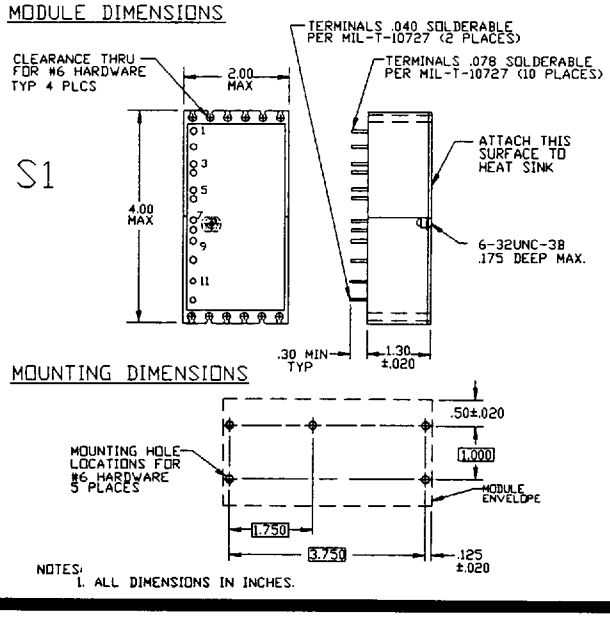
II. GENERAL

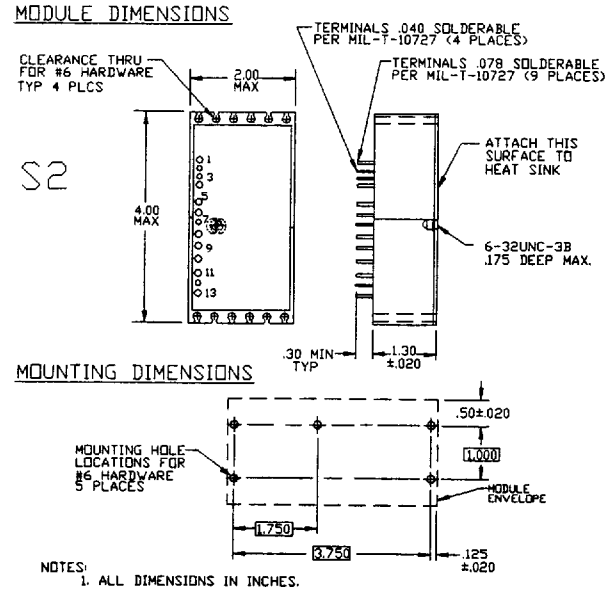
A. The modules must be mounted on a suitable flat surface, preferably aluminum, with a minimum of .090 inch thickness.

B. Secure each module to the mounting surface with four No. 6-32 screws. For mounting surfaces of less than ¼ inch thick, an additional No. 6-32 screw should be inserted up through the baseplate to the insert provided. (Insert maximum depth 0.175".)

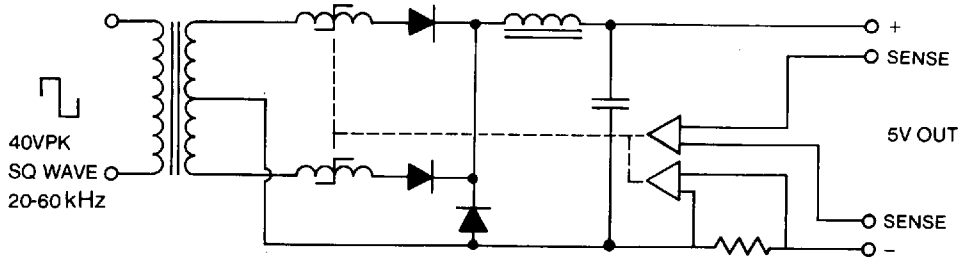
C. To calculate the necessary heat sink surface area which will prevent the module's temperature from exceeding 100°C, determine the module's dissipation for application's maximum loading condition and refer to the heat sink supplier's chart that suggests temperature rise above ambient/per square inch/per watt dissipated.

DIMENSIONAL DRAWINGS





ELECTRICAL SCHEMATIC



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