DC296 INTRODUCTION

DESCRIPTION

Demo board DC296 is an interface board that allows mobile Pentium® VRMs to be evaluated without the Intel CPU evaluation kit for which they were designed. DC296 provides the 80-pin mating connector required for these VRMs, plus terminals for connecting external power supplies, loads, scopes and DVMs. An adjustable dynamic load is also supplied so the user can pulse the core voltage output.

This demo board is intended for notebook power supply designers who want to evaluate mobile Pentium VRMs without using the Intel CPU evaluation kit. Currently, DC251, DC279, DC295, and DC302 can be evaluated using DC296. Additional VRM demo boards may be available in the future.

QUICK START GUIDE

It is easy to set up DC296 to evaluate mobile CPU VRMs. Follow the procedure outlined below for proper operation.

1. Before turning on power, connect the input power supplies, output loads, oscilloscope and meters, as shown in Figure 1. For best accuracy, it is important to connect true-RMS reading voltmeters directly to the PCB terminals where the input and output voltages are connected. True-RMS reading ammeters should be used for current measurements.

2. Ensure that the dynamic load is off by verifying that SW1 is in the OFF position.

3. Program the required core voltage level with jumpers at JP1. Each VID line will be high unless a jumper forces it low.

4. Turn on the power supplies and adjust them to the required voltage. CAUTION: ensure that each applied voltage does not exceed the input voltage rating of the VRM being tested.

5. The dynamic load can be used to pulse the core voltage output. Switch SW1 turns the dynamic load on and off while resistor R6 adjusts the pulse current amplitude from zero to more than 15A. Connector J1 monitors the pulse current with a scale factor of 0.1A/mV. The pulsed current slew rate is about 20A/μs. The pulse frequency and duty cycle are fixed to avoid overheating the MOSFET and PCB.

6. To prepare for pulsed load testing, remove the static load from the core voltage output and set SW1 to the ON position. Verify that all power supplies are turned on. For best results with transient voltage measurements, remove the "grabber" and ground lead from the scope probe so the ground ring and probe tip are exposed. Carefully touch the probe tip to the CORE voltage terminal and touch the ground ring to the GND terminal when making measurements.

7. Terminals VRON and V_GATE are 3V logic compatible. A logic 1 on VRON will enable all three outputs, whereas a logic 0 will turn off all three outputs. Many VRMs have an internal pull-up resistor, so an external signal is not required to enable the outputs for initial testing. The V_GATE signal is a logic 1 if all three outputs are in regulation. If one output falls out of regulation, V_GATE will be a logic 0.
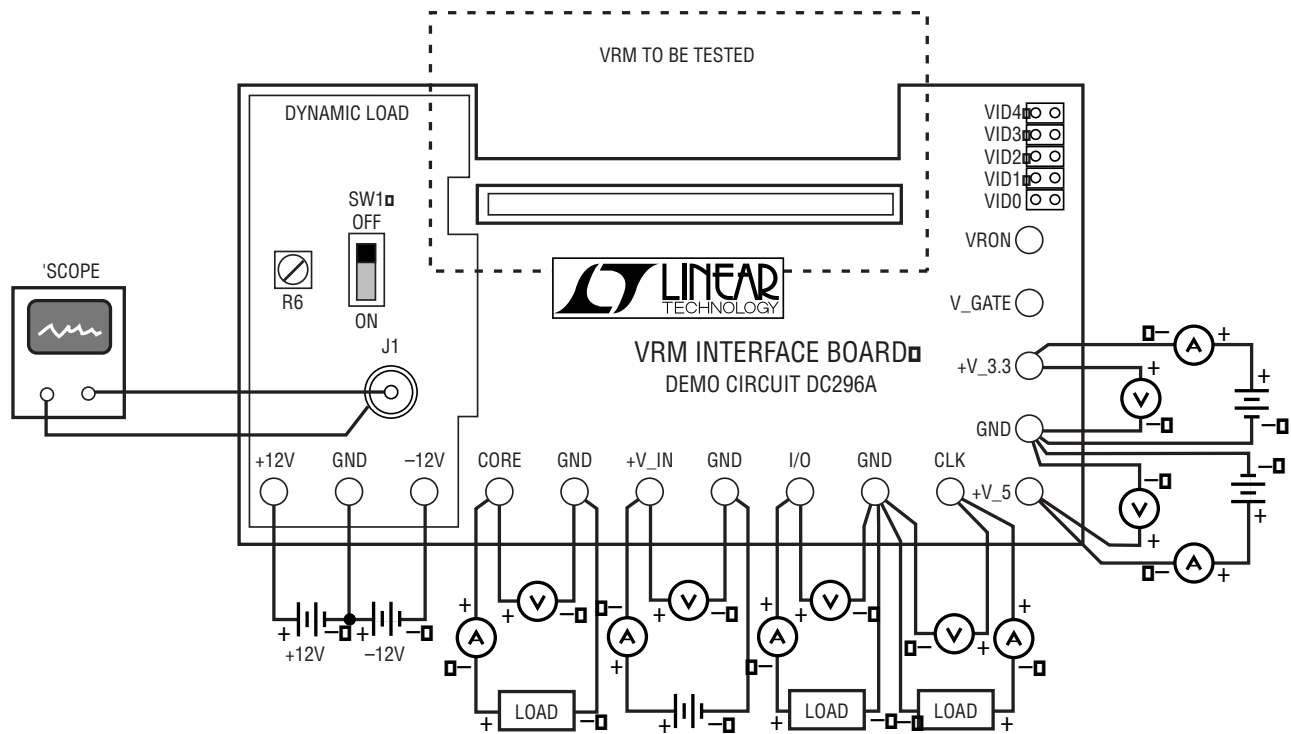

Figure 1. DC296A Hookup Diagram