

DESCRIPTION

Demo Board DC538A is an IMVP4 power supply for powering Intel mobile Banias CPUs (LV and ULV types). The input voltage is 7.5V to 20V, the output voltage is programmed by the 6-bit VID inputs as well as the mode signals (DPRSLPVR, STPCPU#, PSI). The maximum output current is 12A. This demo board is designed to meet Intel spec “RS-IMVP-IV Mobile Processor and

Mobile Chipset Voltage Regulation with Power Status Indicator (PSI) Specification”, Rev 1.0, REF NO. 12334. DC538A can be easily modified for a 25A single phase design to power T&L Banias CPU.

Design files for this circuit board are available. Call the LTC factory.

Table 1. Performance Summary

PARAMETER	CONDITION	VALUE
Minimum Input Voltage		7.5V
Maximum Input Voltage		21V
Maximum Output Current		12A
V _{OUT} REG		See IMVP4 spec

QUICK START PROCEDURE

Demonstration circuit DC538A is easy to set up to evaluate the performance of the LTC3734 Refer to Figure 1 for proper measurement equipment setup and follow the procedure below.

NOTE: When measuring the input or output voltage ripple, care must be taken to avoid a long ground lead on the oscilloscope probe. In this particular demo board, the output ripple voltage can be measured directly on the BNC connector **+VCC_CORE**.

1. Check the default jumper setting.

DLC	DLC BIAS	MCH_PG	CORE_VR_ON	+V5S	+V3.3S
OFF	OFF	1	OFF	INT	INT

PSI#	DPRSLPVR	STPCPU#	B5	B4	B3	B2	B1	B0	
1	0	1	1	0	0	0	0	1	

2. With all supplies off, connect the VIN (14V) power supply and output wires as shown in Figure 1. Input wires should be able to handle at least 2A dc current, and the output wires must handle at least 12A dc current. Preset the load at 0A.
3. Turn on VIN supply. Switch Jumper **CORE_VR_ON** to “ON”. Measure output voltages:
V_{out}=1.165 to 1.195 at 0A
4. Apply Load of 12A, measure output voltages to be

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Vout=1.128 to 1.160V at 12A

5. Reset load current to 0A.

6. **Deep Sleep Mode:** Switch Jumper **STPCPU#** to “0”. Measure output voltage

Vout=1.150 to 1.182V at 0A

7. **Deeper Sleep Mode:** Switch Jumpers **DPRSLPVR** to “1” and **PSI#** to “0”. Measure output voltage:

Vout=0.728V to 0.768V at 0A

8. **Boot Mode:** Switch Jumpers **STPCPU#** to “1”, **DPRSLPVR** to “0”, **PSI#** to “1”, and **MCH_PG** to “0”. Measure output voltage:

Vout=1.18-1.22V at 0A

9. Load Transient Test: Vin=14V, load current changes between 4.2 and 12A.

Measure load **change** from BNC connector IOSTEP and output voltage from BNC connector +VCC_CORE.

Change the following jumpers to obtain an output voltage of Vout=1.165 to 1.195 at 0A.

PSI#	DPRSLPVR	STPCPU#	B5	B4	B3	B2	B1	B0
1	0	1	1	0	0	0	0	1

a. Apply output load current at 4.2A

b. Change Jumpers **DLC** and **DLC BIAS** to “ON” positions.

c. Measure the load step change from BNC connector **IOSTEP**. The up-slope, down-slope and step amplitude of the load change can be varied by changing **R46**, **R40** and **R41**, respectively. Every 5mV measured on the Oscilloscope is equivalent to 1A load change.

d. Measure the output voltage from BNC connector **+VCC_CORE**.

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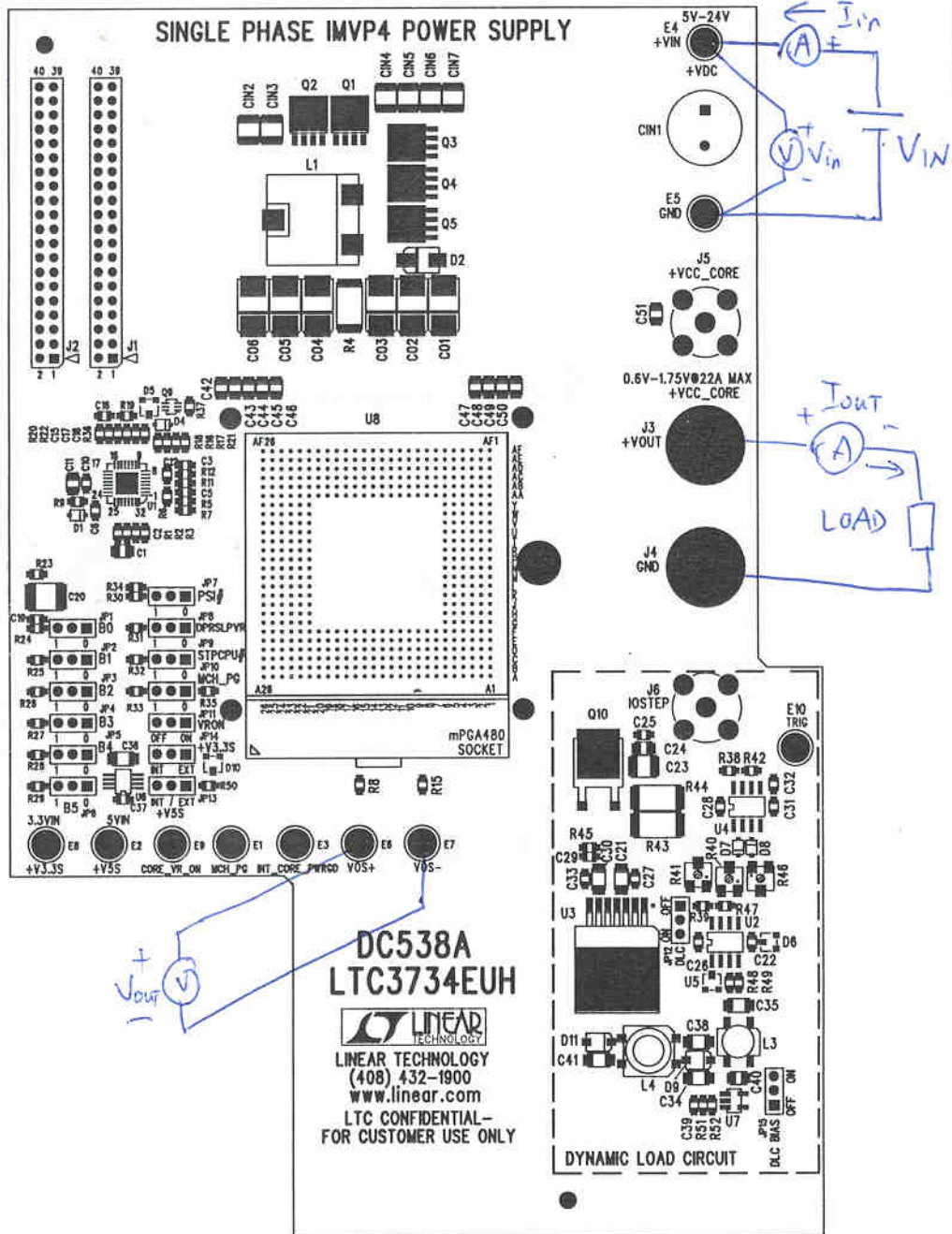
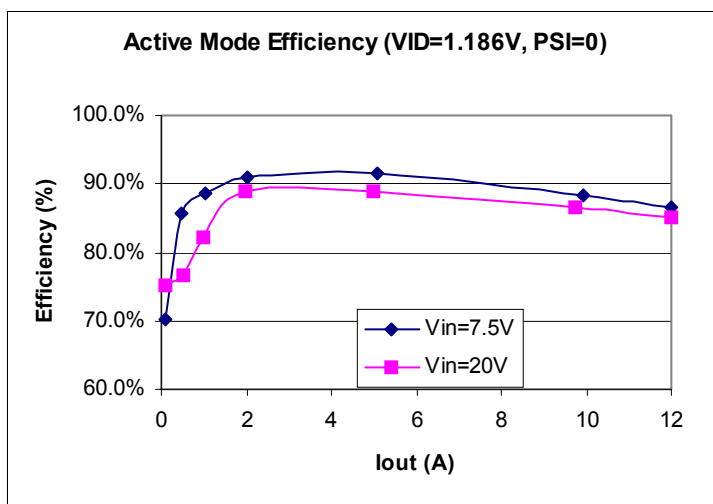
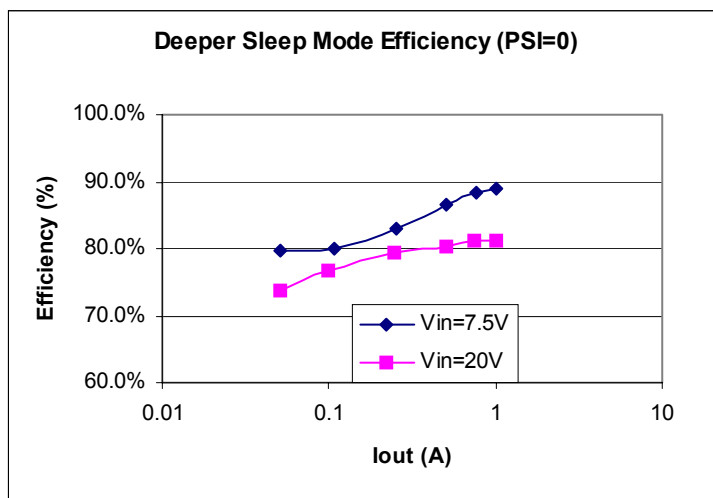


Figure 1 Test Diagram of DC538A

TEST DATA

Efficiency (LTC3734)



Measured Efficiency in LTC3734 Design. Top switch: IRF7811W, Bottom switch: 2x IRF7811W

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Load Lines

