HIGH EFFICIENCY
HYBRID FORWARD CONVERTER
MODULE

R. C. Petwiler
April 19, 1994
Agenda

Module Concept
Module Capabilities
Block Diagram
Hybrid Layout
Efficiency
Module Concept

- Contains the entire converter power and signal switching circuits
- Provides high efficiency and high packaging density
- Offers flexibility in design and application
- Concept can be applied to any converter topology
- Requires only a knowledge of linear circuits and systems for design
- Converter compensation equivalent to Op-Amp stabilization
- Offers dual use technology, NASA and Commercial applications
- Provides vehicle for JPL/industrial partnership
Module Capabilities

Topology:
- Isolated low voltage single-output de-to-de converters
- Supports multiple outputs where other outputs are lower power

Applications:
- Input voltage range, 26 to 50 Vdc
- Output voltage range, 2.5 to 12 Vdc
- Output current, 0 to 10 Amperes up to 50 Watts
- Switching frequency 50 to 200kHz, Synchronized

Efficiency:
- End-to-end converter > 90%, 8 to 30 Watts
Block Diagram

INPUT FILTER → HYBRID → OUTPUT FILTER

X-FMR

CONTROL

\( I_s \) → \( V_o \)

\( \text{In} \)
Efficiency Performance

Efficiency of a 5V output dc-to-dc converter