SCE Model 2000 High Voltage Power Supply

This is a prototype, small, precision high voltage power supply designed for use in the Infrared Imaging System of the M1 tank. It is designed for survival in a high-radiation environment and employs no CMOS logic and only specially-selected or approved parts.

Power Consumption and size were the primary constraints, so this unit employs an unusual resonant push-pull converter driven from a buck regulator. A special output transformer permits resonant operation at around 20 KHz, while resonant operation recycles energy stored in the transformer's secondary stray capacitance.

SPECIFICATIONS

Electrical

Input:

- Voltage 29VDC, or +14.5V. Input voltage (s) may vary +10% without affecting output.
- Current 270mA max

Output:
Anode:

- Voltage 18KV fixed output (+0.5%)
- Current 200µA nominal, 350µA max
- Regulation +0.2% load, +0.2% line
- Ripple 12V p-p, maximum

Focus:

- Voltage 2700-3200V, adjustable
- Current 100µA nominal, 300µA max
- Regulation +0.5% load, +0.5% line
- Ripple 10V p-p, maximum

G2:

- Voltage 100-600V adjustable
- Current 0µA nominal, +5µA max
- Regulation +5% load, +0.5% line
- Ripple 0.5V p-p, maximum

Protection Circuits

- Output Overload
  Supply protected against excessive load on output
- Short Circuit
  Protected against output shorts for an indefinite time
- Reverse Polarity
  Inputs protected against reverse polarity

Environmental

- Operating Temperature -32ºC to +85ºC
- Humidity To 100%, (fully sealed construction)
- Shock 30 G's
- Vibration Per MIL-STD-810, Method 514, Category F
- Altitude 50,000 feet, tested for 200 hours

Construction: Sealed aluminum case, machined from solid billet

- Weight 1.2 lbs. max
- Marking Photo anodized onto aluminum lid
- Potting Vacuum filled silicone