

# Product Summary Sheet

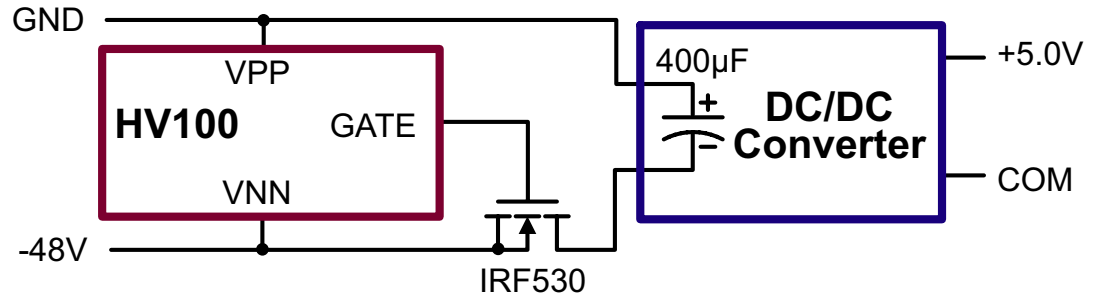
# HV100/HV101 Hotswap Controllers

## Applications:

- ▶ -48V Central Office Switching (Line Cards)
- ▶ +48V Server Networks
- ▶ +48V Storage Area Networks
- ▶ +48V Peripherals, Routers, Switches
- ▶ +24V Cellular and Fixed Wireless (Bay Stations & Line Cards)
- ▶ +24V Industrial Systems
- ▶ +24V UPS Systems
- ▶ -48V PBX & ADSL Systems (Line Cards)
- ▶ Distributed Power Systems
- ▶ Powered Ethernet for VoIP



3-Lead TO-223 (K5)



Typical Application Circuit

## Product Overview:

The HV100 and HV101 are the industry's first 3-pin hotswap controller integrated circuits (ICs). They are available in a SOT-223 package. Both ICs feature a MOSFET auto-adapting circuit that eliminates the need for programming components. With the addition of only a pass element, the HV100/HV101 assure safe hotswapping on the backplane power supply rail for positive or negative voltages applications in telecom, networking and storage applications.

The HV100/HV101 provide Supertex's patent-pending short-circuit protection that looks for the Miller effect rather than relying on an external sense resistor. This allows the ICs to detect a short circuit upon insertion while disconnecting the load before any glitches could cause damage to the system. The controller automatically retries, thereby eliminating the need for manual reinsertion. A 2.5-second retry interval allows ample time for the external MOSFET to cool down.

The ICs allow the programming of the inrush current through use of a single feedback capacitor. For additional flexibility, power good flag, enable, circuit breaker and/or disabling of auto-retry features can be easily incorporated by adding a minimum number of components. This gives increased functionality while using less space than competitive solutions. The HV100 includes a built-in -34V undervoltage (UV) threshold, the HV101 provides a -14V threshold allowing the programming of any voltage using a shunt, thus making them ideal for -48V telecom, +48V storage or +24V wireless base station applications as well as applications requiring -100V holdoff. The UV lockout works in conjunction with a built-in power on reset (POR) timer to provide debouncing and to protect during re-insertions. The patent-pending auto-adapt feature automatically configures itself to the characteristics of the external MOSFET. This assures consistent and repeatable inrush current limiting regardless of variations in pass MOSFET characteristics. Active clamping of the MOSFET gate provides freedom from spurious transients during initial insertion.

Features:	Benefits:
Low cost	Saves money in overall design cost
Only one external part (pass transistor)	Simple – no need to select component values
Auto adapts to the pass transistor	Auto-adapt provides consistent, repeatable results
Undervoltage protection and power-on-reset supervisors	Reliable debouncing and protection from rapid reinsertions
Auto-retry (2.5s interval)	No manual intervention required. Provides sufficient time for FET cool-down between retry attempts.
Low quiescent current	Higher system efficiency and cooler operation
Two undervoltage options (14V & 34V)	Extended application - supports both 48 and 24V systems
Short circuit protection	Protects against insertion of shorted boards
3-pin MLP package	Smallest hot swap available – 33% smaller than SOT-23-6

**Supertex inc.**



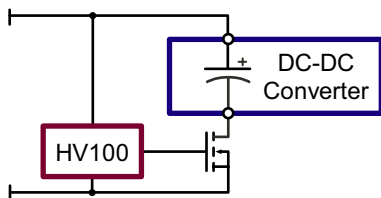
# HV100/HV101

## Hotswap Controllers

### Ordering Information / Availability

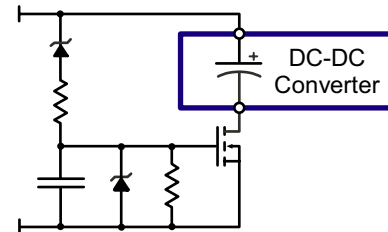
Part Number	Package Option	Samples	Product Availability	$V_{NN}$	$I_{NN}$	$V_{GATE}$	UV Options
HV100K5-G	3-Lead TO-252 (Green)	Now	4-6 Weeks ARO	75V	0.6mA	12V	34V
HV101K5-G							14V

-G indicates the part is RoHS compliant (Green).



#### HV100 Implementation Advantages:

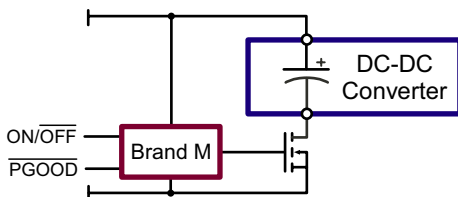
- ▶ Low parts count
- ▶ Resets on multiple bounces
- ▶ No  $V_{IN}$  danger zone
- ▶ Short circuit protection
- ▶ Accurate undervoltage lockout
- ▶ Inrush current well controlled
- ▶ Low power consumption
- ▶ Built-in gate clamp
- ▶ Auto-retry



#### Discrete Implementation Disadvantages:

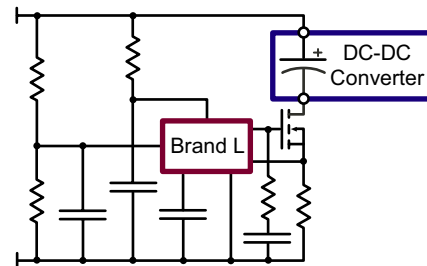
- ▶ High parts count
- ▶ Doesn't reset on bounces/fast insertions
- ▶ VIN danger zone\* where FET overheats
- ▶ No short circuit protection
- ▶ Inaccurate undervoltage lockout
- ▶ Inrush current highly variable
- ▶ No auto-retry

\*where  $V_{IN}$  is just above the FET's gate threshold



#### Brand M Implementation Disadvantages:

- ▶ No short circuit protection turn on
- ▶ Inrush current highly dependent on  $C_{LOAD}$  (can vary 8.5:1 using electrolytic capacitors)
- ▶ Inrush current highly variable even with stable  $C_{LOAD}$  (3.8:1 ratio)
- ▶ SOT-23 smallest package
- ▶ 34V UV threshold not suitable for 24V systems
- ▶ Short (150ms) circuit breaker auto-retry interval causes FET overheating



#### Brand L Implementation Disadvantages:

- ▶ High parts count
- ▶ SOT-23 smallest package
- ▶ Shunt regulator wastes power
- ▶ UV hysteresis varies with temperature
- ▶ Fixed inrush / circuit breaker ratio
- ▶ No auto-retry

### Product Contact

For any questions regarding the GN2470 please contact your local area Supertex sales office, or contact the main office in the US at:

Telephone: 800-222-9883  
 Fax: 408-222-4895  
 E-mail: [mktg@supertex.com](mailto:mktg@supertex.com)  
 Web site: [www.supertex.com](http://www.supertex.com)

**Supertex inc.**

1235 Bordeaux Drive, Sunnyvale, CA 94089