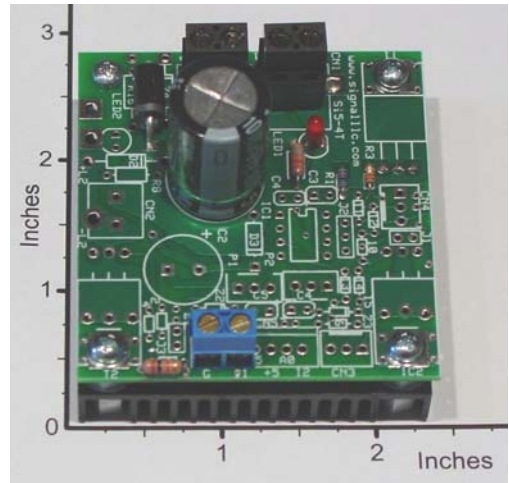




## Si5SD1-50V-20A, Single, 50V 20A Solenoid Driver with Integrated Heat Sink

The **Si4SD1-50V-20A** is a Single, 50V 20A Solenoid Driver with an integrated heat sink that uses a digital control voltage  $V_{I1,Gr}$  (0 to 5V) to turn a load-current on or off. This board requires a single 6V to 50V DC power source (unregulated and unfiltered) at a 0A to 20A current range to operate normally with a wide range of inductive loads (coils or Solenoids). The digital control input (**I1**) is zener-diode protected and requires only **2mA** input current (at  $V_{I1,G}=5V$ ) to turn the load current fully on. The load current is **off** (zero) when  $0 < V_{I1,G} < 2.5V$  and the load current is fully **on** (max.) when  $2.5V < V_{I1,G} < 5V$ . Snubbing circuits and filter capacitors are included to suppress inductive switching transients. An onboard LED (red) is used to monitor the load-voltage. A small (2.3"x2.4"x0.45") finned integrated heat sink is included with mounting hardware (as shown on the photograph) to operate at 20A or 600W power levels. Higher power-levels (30V, 30A or 900W) can be achieved with more efficient heat-sinks. Please click on this link and read the [Board Mounting Instructions and Heat Sink Selection Guide](#). Typical applications are: Inductive-Plunger Driver, SPST Solid State Relay, etc. This board can be configured to perform efficiently in many customized applications.



### Specification and Application for **Si5SD1-50V-20A**

- **Typical Operating Temperature at 20A:** 45<sup>0</sup>C with the Metal Heat-Ring Bolted to a small (2.3"x2.4"x0.45") finned Aluminum Heat-Sink, while exposed to air at 25<sup>0</sup>C (as shown on photograph).
- **Source-Voltage Requirement:  $V_P$  (from pin +P to pin -P):** 6V to 50V unregulated and unfiltered DC.
- **Load-Voltage,  $v_{L1}(t)$ :** 0V when  $0 < V_{I1,G} < 2.5V$  and  $V_P$  when  $2.5V < V_{I1,G} < 5V$ .
- **Load-Current,  $i_{L1}(t)$ :** 0A when  $0 < V_{I1,G} < 2.5V$  and **20A max** when  $2.5V < V_{I1,G} < 5V$ .
- **Load Isolation:** The Load or coil must be isolated from the source voltage ( $V_P$ ).
- **Power-Conversion Efficiency:** Approximately 98.5% at full-load (50V and 20A).
- **Switching Frequency:** 20kHz (or switching period is 50  $\mu$ Sec).
- **Load-Voltage Indicator and Board Protection:** An onboard LED (red) is used to monitor the load voltage

**About the Voltage Requirement:** The Si5 will work with any DC motor or load in the 6 V to 50 V voltage range. In addition, the power filters are included on this board, consequently, only unfiltered (full-wave rectified) DC input power is required in most applications.



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## A Typical Application of the Si5SD1-50V-20A

In this application, a high-current (20A at 50V) inductive load (coil or solenoid) is turned on and off by the Digital Control Voltage  $V_{I1,G}$ . The load current is **off** (zero) when  $0 < V_{I1,G} < 2.5V$  and the load current is **on** (max.) when  $2.5V < V_{I1,G} < 5V$ .

