

Signal Consulting, LLC

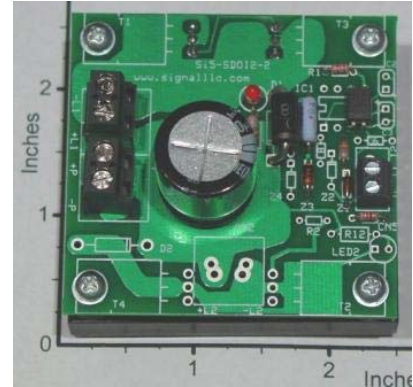
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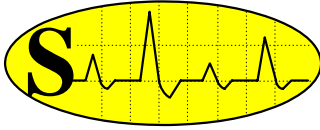
Si5SDOI1-50V-20A, Single, 50V 20A Solenoid Driver with Optically Isolated Control Input and with Integrated Heat Sink

The **Si5SDOI1-50V-20A** is a Single, 50V 20A Solenoid Driver with an integrated heat sink that uses an optically isolated digital control voltage $V_{I1,G}$ (0 to 15V) 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 is zener-diode protected and optically isolated from the power source V_p (with a breakdown voltage of 1000V); this input requires only **2mA** current at ($V_{In,G}=5V$) to fully turn on the load current. This current is **off** (zero) when $0 < V_{I1,G} < 2.5V$ and the load current is fully **on** (max.) when $2.5V < V_{I1,G} < 15V$. 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 Si5SDOI1-50V-20A

- **Typical Operating Temperature at 20A:** 45⁰C with the Metal Heat-Ring Bolted to Bolted to a small (2.3"x2.4"x0.45") finned Aluminum Heat-Sink, while it is exposed to air at 25⁰C (as shown on photograph).
- **Control- Input I1:** This digital control input is optically isolated from the power source V_p (Isolation Breakdown Voltage of 1000V). In addition, the 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. This load-current is **off** (zero) when $0 < V_{I1,G} < 2.5V$ and the load current is **on** (max.) when $2.5V < V_{I1,G} < 15V$.
- **Source-Voltage Requirement: V_p (from pin +P to pin -P):** 6V to 50V unregulated DC.
- **Load-Voltage, $v_{L1}(t)$:** 0V when $0 < V_{I1,G} < 2.5V$ and V_p when $2.5V < V_{I1,G} < 15V$.
- **Max. Continuous Average Load-Current:** 20A with the heat-sink (as shown).
- **Max. Load-Current for 5sec:** 60A at 100% duty-cycle, with heat-sink (as shown).
- **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:** 0 to 2kHz (or min. switching period is 500 μ Sec).
- **Load-Voltage Indicator and Board Protection:** An onboard LED (red) is used to monitor the load voltage.



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- About the Voltage Requirement:** The Si5 will work with any DC source 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.

A Typical Application of the Si5SDO11-50V-20A

In this application, a high-current (20A at 50V) inductive load (coil or solenoid) is turned on and off by the optically isolated Digital Control Voltage $V_{H,G}$. The load current is **off** (zero) when $0 < V_{H,G} < 2.5V$ and the load current is **on** (max.) when $2.5V < V_{H,G} < 15V$.

