

# InPower Custom Product Abstract

## PCM804 Dual 150 Amp Electronic Power Switch

**InPower Model:** PCM804

**Application:** School Bus Body and Chassis

**Key Features:**

- Dual Master Battery Cutoff Switch (Body and Chassis)
- Programmed Over Current and Surge Protection
- Multi-Level Current/Time Protection Profile
- Over Voltage and Under Voltage Shutdown
- Over Temperature Shutdown
- Remote Input Control
- Status Indicator Outputs



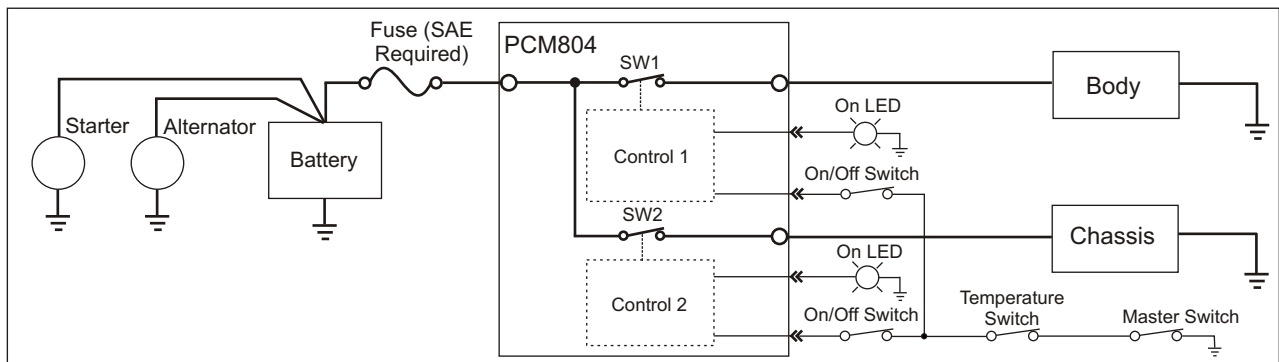
**Product Description:**

The InPower Model PCM804 is a 150 amp dual solid state dc power switch with electronic overload protection and remote control capability. Two solid state power switches are provided that have a total continuous current capacity of 200 amps (300 amps for 10 minutes). Connections for the high current dc cables utilize 3/8 -16 stainless steel threaded studs. Control wiring connections utilize a 4-pin sealed automotive connector. The dc power switches will automatically interrupt power under fault conditions such as over current, over voltage, under voltage and high temperature.

**Over Current Protection**

Over current protection employs a sophisticated software-controlled scheme that incorporates a multi-level current/time profile, unlike fuses and mechanical circuit breakers that have one fixed curve determined by their thermal characteristics. The benefits of the multi-level approach is that over current shutdown protection can match more closely the characteristics of the various loads which have different turn-on surge and running amperages. For example, an analysis of a vehicle's dc loads that would require a steady state current of 145 amps could have a surge current of 495 amps due to motor and lamp surge profiles. This surge current decays in about 200 milliseconds to the steady state value. The PCM804 dc power switch provides three levels of interrupt protection to match the possible fault conditions. First, for "hard short" faults producing extremely high current levels, current is limited to a range of 500 amps (80 microseconds) to 1350 amps (300 microseconds), depending on temperature. The second level for "soft shorts" provides protection of up to 500 amps for a period of up to 350 milliseconds. The third level provides continuous protection that is in the range of 150 to 160 amps. This multi-level interrupt profile is shown in Figure 1.

**System Diagram**



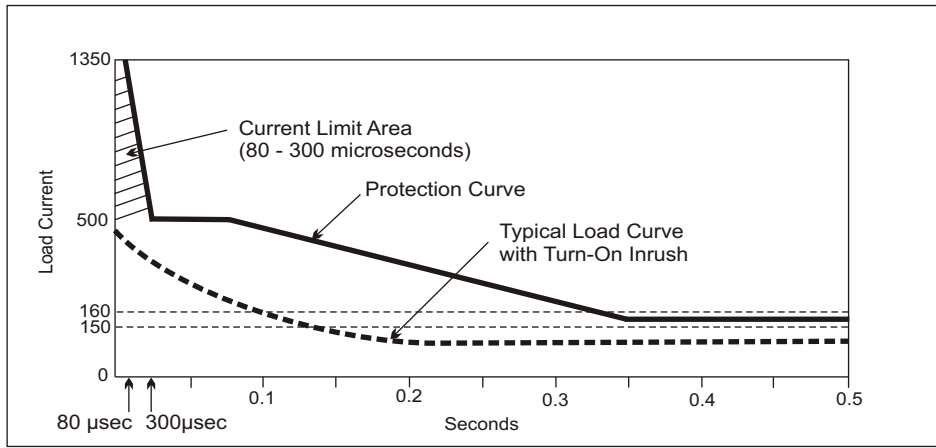


Figure 1

### Remote Control and Indication

Each of the dc current power switches in the dual PCM804 contains an output to operate a remote LED that is powered (on) to indicate that the power switch is in the on condition (supplying dc power to the loads). Each power switch also has an input from a remote control switch. In the closed position the control switch will enable the power switch to turn on. Opening the remote control switch will cause the power switch to turn off, interrupting dc power to the loads. Note that the remote control switch must be opened, then closed again to reset (and turn on) the power switch after it has opened due to a fault condition (e.g., overload, over temperature, etc.). As the remote control switch is closed in the run condition, multiple control switches may be wired in series to offer shut down/reset control from different locations.

### Over and Under Voltage Protection

Over and under voltage protection will shut off the PCM804 dc power switch if the input voltage increases to above 18.5 volts or decreases to below 7.5 volts for more than 20 milliseconds. This provides protection from fault conditions, such as a jump start from a 24 volt source, regulator faults, defective batteries or high resistance connections.

### Over Temperature Protection

The PCM804 dc power switch contains internal temperature sensing that will turn off the power switch if the internal temperature increases to 150 C. This could be caused by a high load condition and the PCM804 module being unattached from its mounting surface which is required to sink heat.

### Mechanical

Dimensions:

- Length: 6.5 inches
- Width: 4.0 inches
- Height: 1.9 inches (to top of stud)
- Weight: 1.80 lbs.

#### Mounting Details

