Product Brief 5038, Rev B

COBRA Series Programmable Multi-Channel Solid State Power Controllers

The *Cobra Series* of Programmable Multi-Channel Solid State Power Controllers (SSPC) are multi-channel, microcontroller based, Solid State Power Controller boards designed to for 28VDC applications. Each channel of the Cobra series is software programmable for rated current up to 25A and can operate grouped with other channels to support large loads up to 150A of current. The Cobra is intended to be used where multiple Solid State Power Controller channels need to be co-located on the same card or in a power distribution box. These boards have integrated current sensing, temperature and voltage sensing with no derating over the full operating temperature range and communicate with the system controller over an RS-232, RS-422, and RS-485 or CAN serial bus.

Features:

- Up to 6 channels can be grouped together
- Programmable from 1 Amp to 25 Amps
- Parallel channel capability up to 150 amps
- Trip disable and maintenance modes
- Power-up and continuous built-in test
- Non-volatile storage of parameters
- True I^2t and thermal memory protection
- Internally generated isolated supply
- High control circuit isolation
- Soft turn-on to reduce EMC issues
- Trip-free reset circuit
- Optically isolated input and outputs
- -55°C to 100°C operating temp range
- No heat sinking required

Benefits:

Sensitron's SSPC technology and products combine functionalities of electro-mechanical breakers, solid state relays and system monitors and provide the following benefits to our customers:

- Electrical load protection and monitoring - current, voltage and temperature measurements
- Operational improvements by allowing for diagnostics, prognostics and condition-based maintenance
- Life cycle cost savings and reduced cost of ownership
- Increased radius of operation through power budgeting and load shedding
- Crew offloading and network-controlled intelligent load management

Application Areas:

Sensitron's SSPC products are ideal for use in Power Management applications in the following markets:

- Military Ground Vehicles
- Unmanned Aerial Vehicles
- Marine Vessels
- Test & Industrial Equipment
- Communication and Command Centers
- Energy Exploration Equipment
- Off Highway and Heavy Duty Vehicles
- Medical Emergency Vehicles

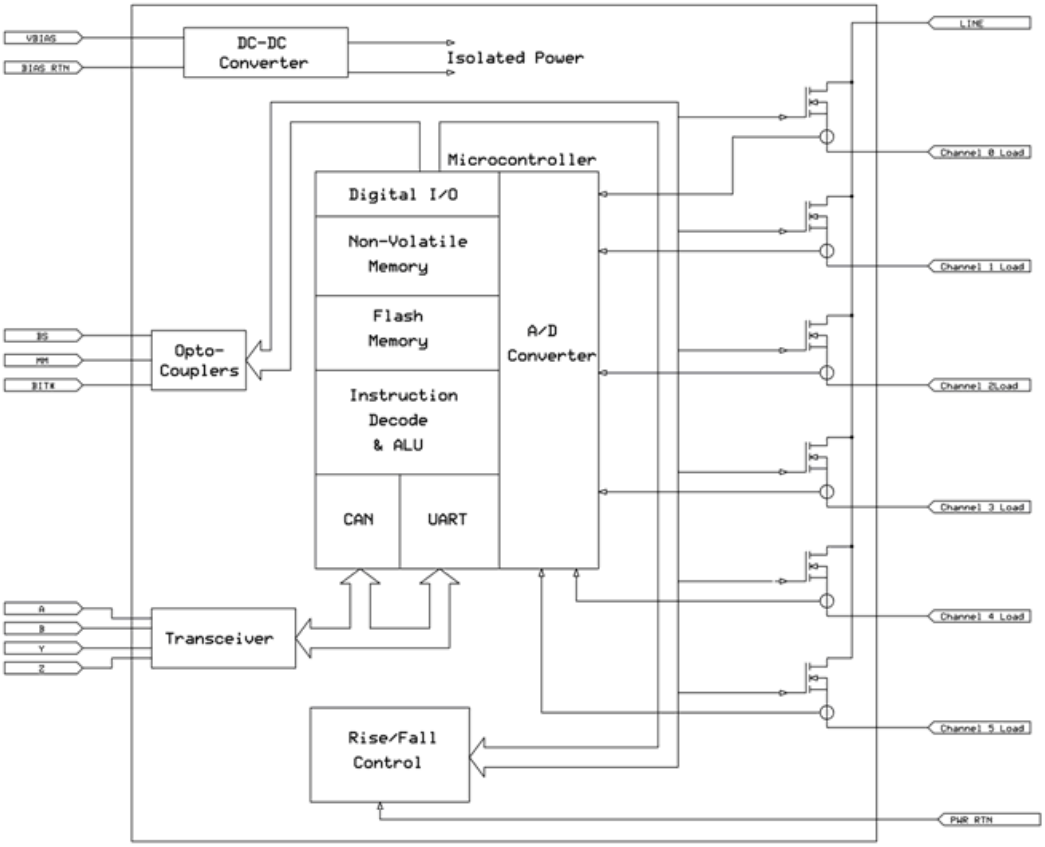


Figure 1 – Block Diagram

I/O DEFINITIONS

Control & Status (TTL/CMOS Compatible)	
BIAS (Vcc)	5.0V DC Nominal, 7.0V DC Absolute Maximum 4.5V to 5.5 VDC
BIAS (Vcc) Current	105 mA typ 150 mA, max (RS-422/RS-485 Serial I/O)
BIT* Output	V_{oh}=3.7V, min, at I_{oh}=-20mA V_{ol}=0.4V, max, at I_{ol}=20mA
MAINTENANCE MODE and **BATTLESHORT** Inputs V_{T+} (Positive-going input threshold voltage) V_{T-} (Negative-going input threshold voltage) ΔV_T Hysteresis (V_T+ V_T−)	 2.0V, min, 3.5V, max 1.2V, min, 2.3V, max 0.6V, min, 1.4V, max

Power	
Input Voltage – Continuous – Transient	0 to 40V DC, 50V DC Absolute Maximum +600V or –600V Spike (≤ 10 uS)
Power Dissipation – Single Channel[1]	< 0.68W typ @ 15A @ 25°C < 2.25W max @ 25A @ 25°C
Power Dissipation – Six Channels[1] (Each channel at indicated current)	< 4.5W typ @ 15A @ 25°C < 15.0W max @ 25A @ 25°C
Output Rise Time (turn-on)	760 μsec typ, 500 μsec, min.
Output Fall Time under normal turn-off	160 μsec typ, 100 μsec, min.
Output Fall Time under Fault	75 μsec typ
Min Load Requirement	Nil

Table 1- Electrical Characteristics

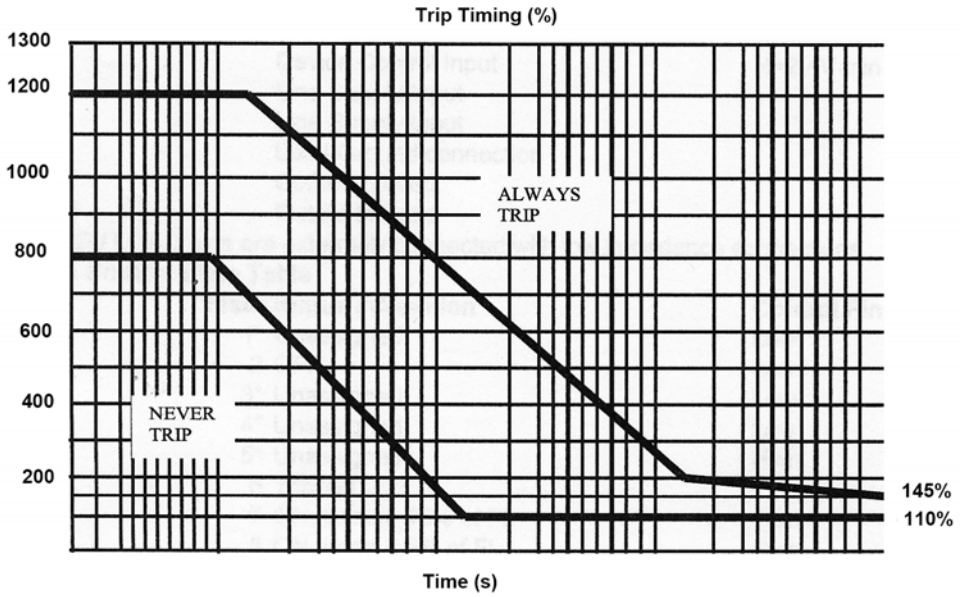


Figure 2 – Trip Times

The Cobra Series board measures current for each individual channel and calculates I2t and Instant Trip. If the trip condition is met, the channel turns of 28VDC rails from the load. This condition is stored on the board and can be queried by the Power Management Computer (PMC) via the communications interface.

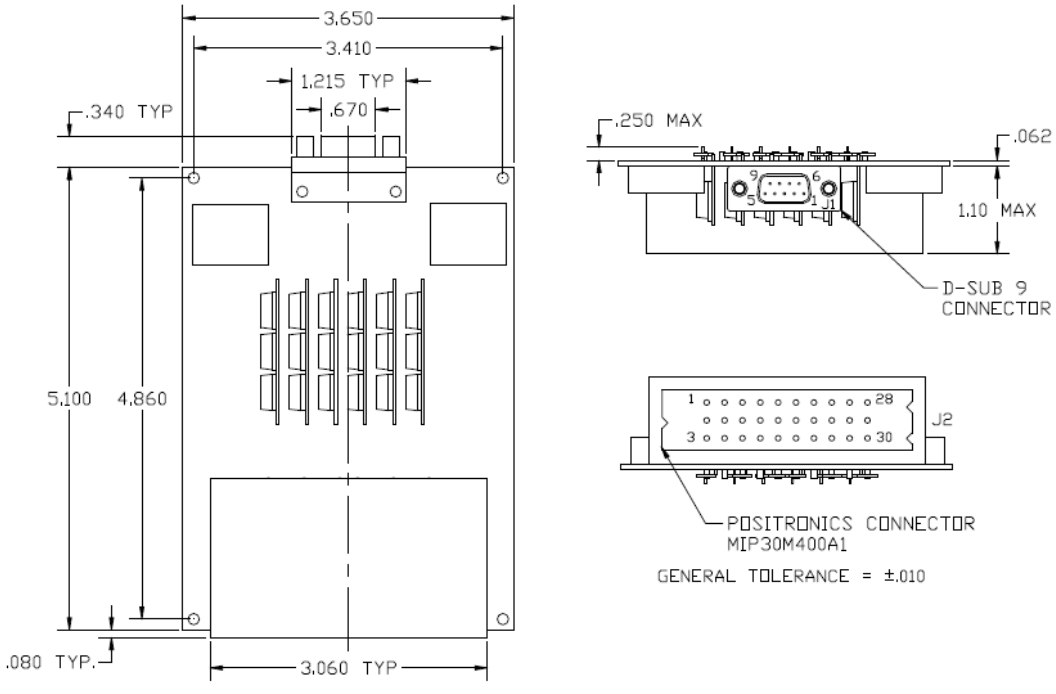


Figure 3 – Outline Drawing

SUPPORT

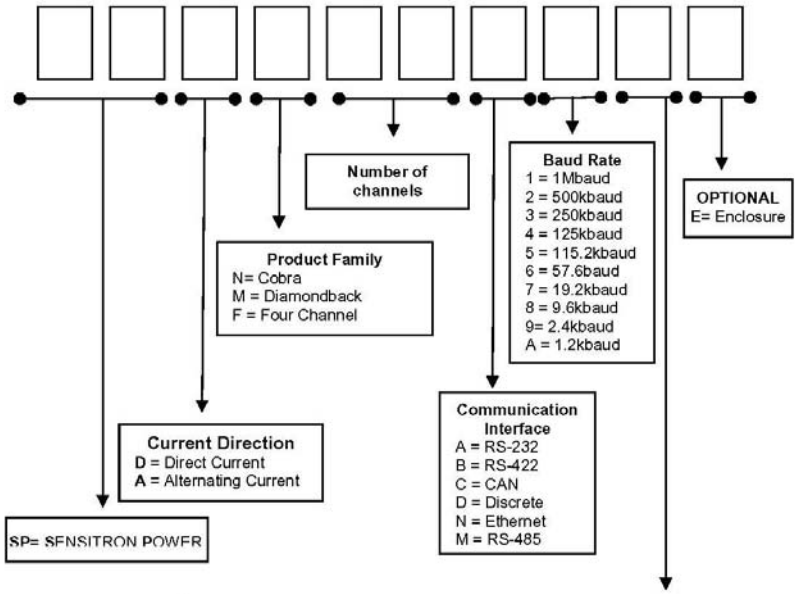
Sensitron's Graphical User Interface provides a quick way to interact with the Diamondback board. This PC- based program is designed for lab use and enables the user to evaluate the board. The GUI sends the commands to the board to perform tasks such as channel turn on/off, measurement readings, channel paralleling, etc.

Please contact the factory to obtain a copy of this program.

COMPLIANT DOCUMENTS & STANDARDS

MIL-STD-1275D	Characteristics of 28 Volt DC Electrical Systems in Military Vehicles
MIL-STD-704F	Aircraft Electrical Power Characteristics
MIL-STD-217F, Notice 2	Reliability Prediction of Electronic Equipment

PART NUMBERING ORDERING INFORMATION :



Channel Offering

Channel Combination	Group 1	Group 2	Group 3
0	8x 3A	3x 8.3A	5x 25A
1	8x 0.25A - 5A	3x 0.75A - 15A	5x 1.25A - 25A