POWER-GATE™ Solid-State Devices
Uni-Directional Relay
Voltage Sensitive Relay / Low Voltage Disconnect

POWER-GATE solid state uni-directional relays can be programmed to behave as Voltage Sensitive Relays (VSR) or Low Voltage Disconnects (LVD) and are designed to monitor source (battery) voltage while providing current to a load (accessory) as long as the battery voltage stays above a particular preset level. An integrated microcontroller is factory programmed to cause the device to open or close by constantly monitoring battery voltage, load current, internal temperature, and timing cues. It is truly a Perfect Switch capable of responding exactly how the user requires, all in a single high current module capable of handling all high-current and low-current accessories.

Devices are strictly DC, and have no mechanical contacts or moving parts which means no arcing or degradation in performance over time.

By melding the worlds of electronic and mechanical design, our internationally patented large MOSFET arrays provide smart, reliable, unidirectional switching of high current.

- Highest Current LVD on the planet.
- Automatically disconnects loads preventing battery drain.
- Automatically reconnects loads to the battery when a charging source is applied.
- Automatically prevents loads from being disconnected from the battery during momentary dips in voltage due to high current draw like engine starting.
- Prolongs battery life by preventing deep battery discharge.
- Manual override option allows the user to close the relay even if device senses a low voltage condition.
- Sleep Mode insures minimal quiescent current draw.
- Overcurrent, short circuit, and over-temperature protections provide safe and reliable operation.
- Tested to >1,000,000 on-off cycles and perfectly suited for high-reliability applications.
- Easy to install with no external mechanical relays or wiring to fuss with.
- Ultra-fast over-voltage response protects sensitive equipment like computers, GPS modules, and computers.
- Fully sealed electronics well suited for harsh environments.

APPLICATIONS:

An arrayed MOSFET SSR designed to switch and control DC.

POWER-GATE is factory programmable to behave as follows:

- Manually triggered relay
- Low Voltage Disconnect (fully autonomous)
- Combination of manual and automatic response
- Precision Circuit Breaker

Common uses include military, aeronautic, automotive, marine, industrial machinery, photovoltaic, and fleet utility.

FEATURES and BENEFITS:

- Low voltage, high current capability
- Internationally patented arrayed MOSFET technology
- MIL-STD-461E Compliant
- Optional sleep mode for ultra-low current draw
- 99.9% efficiency at max. current
- Fully Encapsulated solid state design
- Light weight
- Dramatically smaller than conventional devices
- Market-leading, ultra-low on-state resistance
- No heat sinks or airflow required
- Quik-turn capability
- Recommended by top battery manufacturers

- Low voltage cutoff
- High voltage cutoff
- Overcurrent protection
- Overtemperature protection
- Timers
- Delays
- Manual override trigger
- Manual activation trigger
- Short circuit protection
- Voltage transient self-protection
- Fully autonomous operation
- On-board fault diagnostics

Specifications subject to change without notice.

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(858) 530-8656 fax
www.perfectswitch.com
MECHANICAL SPECIFICATIONS:

**POWER-GATE Multi-Battery Power Gate**

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Ground Receptacle 3/16-6-32

MILLIMETERS

SAMPLE APPLICATION:

PACKAGE CHARACTERISTICS:

- Vacuum-formed Acrylonitrile Butadiene Styrene (ABS)
- Black 2-part, flame retardant filled epoxy - electronics grade
- Three integrated LED's for visual status and diagnostics
- Four .250" integrated mounting holes
- 5/16-18 x .500" machined brass connection posts
- 6-32 brass ground post with provided ring terminal
- 10-pin Molex control harness
- Vinyl post insulators
- Weight: approximately 14 ounces (0.396kg)

Quick Specs:

Supply Voltage 6.5 to 18 VDC (12 volt device)  
6.5 to 36 VDC (24 volt device)

Ambient Temperature -40 to +105 °C

Trigger Voltage 3.3 to 36 VDC

Maximum Continuous Load Current 50 to 300 amps DC

Input-to-Output Voltage Drop 30 to 50 mVDC Typical

Trigger Current 2.8 mA DC (12 volt device)  
4.2 mA DC (24 volt device)

Operating Current 32.3 mA DC (12 volt device, trigger at 10 VDC)  
33.5 mA DC (24 volt device, trigger at 10 VDC)

Quiescent Current Sleep Mode 650 μA DC (12 volt device)  
800 μA DC (12 volt device)

Internal Overtemp Shutdown 135 °C

Device can be controlled manually, or automatically with the on-board processor responding to high or low voltage cues, or responding to changes in current or temperature.

NOTES:

For complete specifications, please see device data sheet.

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The Secret is Out

A discharged vehicle battery will cost your Fleet far more than you think.

Fleet managers tell us a down vehicle due to a discharged battery can cost anywhere from $450 to $1,000

- Vehicle downtime
- Lost productivity - driver
- Lost productivity - rescuer
- Lost productivity - recharge dead battery
- Procurement cost, may have to buy new battery
- Labor cost, remove dead battery
- Labor cost, install fresh battery

There is one perfect solution:
POWER-GATE™ Solid-State Devices
Low Voltage Disconnect (LVD)
High Current

One perfect Low Voltage Disconnect

One module
One input from the battery
One output post for:
• all high current accessories
• all low current accessories
One device for low voltage protection
One device for high voltage protection
One device for overcurrent protection

Perfect Switch
The Power of One

All accessories
Computer
Communications
Inverter
Compressor
Lights
Pump
APU
GPS

POWER-GATE LVD
6 to 36 volts DC
25 to 300 amps continuous
5.4” x 2.8” x 1.5”

* See specification sheet for full mechanical and electrical specifications.

Everyone Else’s LVD

Most LVD’s can only handle low current accessories like a GPS or computer while high current accessories must be powered through separate, high-current contactors. This requires multiple components along with all the wiring and maintenance needed to service this additional complexity.

The POWER-GATE Low Voltage Disconnect is a MOSFET-based, high current solid state relay designed to be placed between a battery, and loads being powered from that battery. With an on-board programmable microprocessor, the device can be quickly custom programmed to meet the user’s requirements including:

- low voltage cutoff
- overcurrent protection
- timers
- manual override trigger
- short circuit protection
- splash resistant

- high voltage cutoff
- overtemperature protection
- delays
- manual activation trigger
- transient self-protection
- fully autonomous operation

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