VIPower™ 24 V
High reliability
smart power switches

24 V APPLICATION ENVIRONMENTS
Specifically designed for harsh 24 V operating environments, VIPower™ M0-5T products guarantee a very long application lifetime and can operate in a wide supply voltage range, including jump start and load dump conditions as well as ISO transients.
Furthermore they offer a high ruggedness against short circuits and the inductive flyback energy caused by long wire harnesses or inductive loads.

VIPower™ M0-5T ADVANCED PROTECTION STRATEGY
In order to protect the device against fast thermal transients during overload or heavy short circuit conditions, the M0-5T products adopt a power limitation circuitry.
In addition, a hysteresis current limitation is provided: the higher one during load inrush, the lower one during thermal cycling.
On top of above protections, devices are equipped with output Latch-off.

VIPower™ for 24 V – Output current profile in heavy short circuit condition

Latch-off
Auto-restart

- As soon as a fault is detected, the output is switched off and kept low until the device receives a Fault Reset signal.
- When chip temperature quickly rises, Power Limitation activity manages inrush phase (high current limitation)
- When thermal shutdown temperature is reached, thermal cycling begins (low current limitation).

The combination of the two protection modes allows a flexible and reliable protection strategy that can be customized according to the application and car maker requirements.

24 V APPLICATION REQUIREMENTS
- Lifetime: up to 30,000 hours
- Supply voltage: 8 V to 36 V
- Jump start voltage: 48 V
- Clamping voltage: > 58 V
- High ruggedness

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Smart High Side Switches with advanced diagnostic and protections designed for long-term mission profile

The VIPower™ M0-5T products are specifically designated for vehicles with 24 V Board Net. Like trucks, buses, tractors for agricultural usage, boats, snow mobiles, jet ski and others. They can be used to drive most common loads found in any of the above applications. This family of products has been designated for wide voltage operating range and long-term mission profile required by this specific environment.

Vehicle with 24 V board net

**APPLICATION DOMAIN**

Applications are driven by 24 V environment: trucks, buses, construction vehicles, tractors and other agricultural vehicles, popular hobbies requiring boats, snow mobiles, jet ski.

VIPower™ M0-5T for 24 V Board Net have been designed for driving most common loads found in any of the above applications.

**Interior and exterior lighting**

VIPower™ M0-5T product family is best suited for driving different types of lights, including headlamps, blinkers, position, fog and brake lights, vehicule fenders, instrument clusters, and others.

**Other applications**

On top of the standard lighting application, the M0-5T products can be successfully used for driving many other types of loads. They can drive complex, resistive or capacitive loads, such as valves, pumps, headers, motors and many more.

**CURRENT SENSE**

High and Low beam

**PowerSO-16**

2 to 36 V

**M0-5T technology**

Leadfree

**PowerSO-10/16**

XXX

YY

Snow mobiles

Fog lights

100

Flashing lights

2 to 36 V

35

HPAK

Package

PowerSSO-24

X

Thermal Shutdown

42

1 channel

Optimized for LED applications

To handle massive voltage spikes and

2-step current limitation

Current sense

50

34

PowerSSO-24

22

HPAK

PowerSSO-24

8 to 36 V

2

Open load detection in ON and OFF

PowerSSO-24

PowerSSO-12

6

PowerSO-10

Overload, short to V

Programmable Latch-off

100

(*). Reverse battery protection, recommended for higher R

DS(on)

environment.

**DEVICE AND APPLICATION BLOCK DIAGRAM**

VIPower™ M0-5T High Side Switches for 24 V Board Net are designed to drive loads having one side connected to ground.

**KEY FEATURES**

- Advanced protection strategy
- Self-limiting of fast thermal transients (Power Limitation)
- Thermal Shutdown
- Programmable Latch-off
- Reverse battery protection
- Internally limited supply current
- 2-Step Current Limitation
- Powerful diagnostic:
  - Programmable lead current sense
  - Open load detection in ON and OFF state
  - Overload, short to V and shorts to ground detection

**KEY BENEFITS**

- State of the art silicon and package technology
- High durability in harsh operating environments
- Lifetime against voltage spikes and high surge tolerances coming from significant wire harness lengths
- Extended diagnostics and sophisticated protection concepts
- Programmable Latch-off and programmable Latch-off are able to secure undersized piggyback traces.
- Enhanced thermal stability
- Short circuit capabilities up to 32 V with 40-pF output diode

**DEVELOPMENT SUPPORT TOOLS**

The user manual presents applications hints, user manual including applications hints, choice of components, and much more.

Easy board:

Evaluation boards for VIPower 24 V products are available at STMicroelectronics partner distributors.

These boards allow electrical connectivity and thermal loading for easy prototyping.

**PRODUCT PORTFOLIO**

VIPower™ 24 V product family includes single- and dual-channel devices in a very broad R

range, all assembled in lead-free packages.

This product family includes devices especially optimized for LED applications, which guarantees a very precise sourcing of a dual current.