

BTT6050-2EKA (Truck device) PROFET™+ 24V

Smart High-Side Power Switch for 2xP21W Lighting Load

The BTT6050-2EKA is the first device of the new PROFET™+ 24V family. It is a dual channel High-Side Power Switch (two times 50mΩ) in DSO-14 EP Package providing excellent diagnostics and protection features.

The device is specifically designed to drive light bulbs and LEDs in harsh automotive environments, for example, on trucks, farming machines or any other kind of 24V supply voltage applications.

Its benchmark short circuit robustness (min. 100k cycles) extends system lifetime and its high current sense accuracy enables it to diagnose the smallest loads such as LEDs.

Applications

- Target load: 2xP21W lighting load
- 24V grounded high-side loads
- μ C compatible with diagnostic feedback
- Suitable for automotive and industrial applications
- All types of resistive, inductive and capacitive loads
- Suitable for loads with high inrush currents, such as bulbs
- Suitable for loads with low currents such as LEDs, valves and relays
- Replaces electromechanical relays, fuses and discrete circuits

Diagnostic Functions

- Proportional load current sense
- Open load detection in ON and OFF
- Over-Temperature sense
- Stable diagnostic signal during short circuit
- Enhanced kILIS accuracy with calibration

Basic Functions

- RoHS compliant & AEC qualified
- Op. Voltage range (5.0 ... 36.0V)
- Low stand-by current ($< 0.5\mu$ A)
- ESD protection, optimized EMC
- PWM capability up to 200Hz
- 3.3V and 5V-compatible logic inputs
- Improved heat dissipation of DSO package

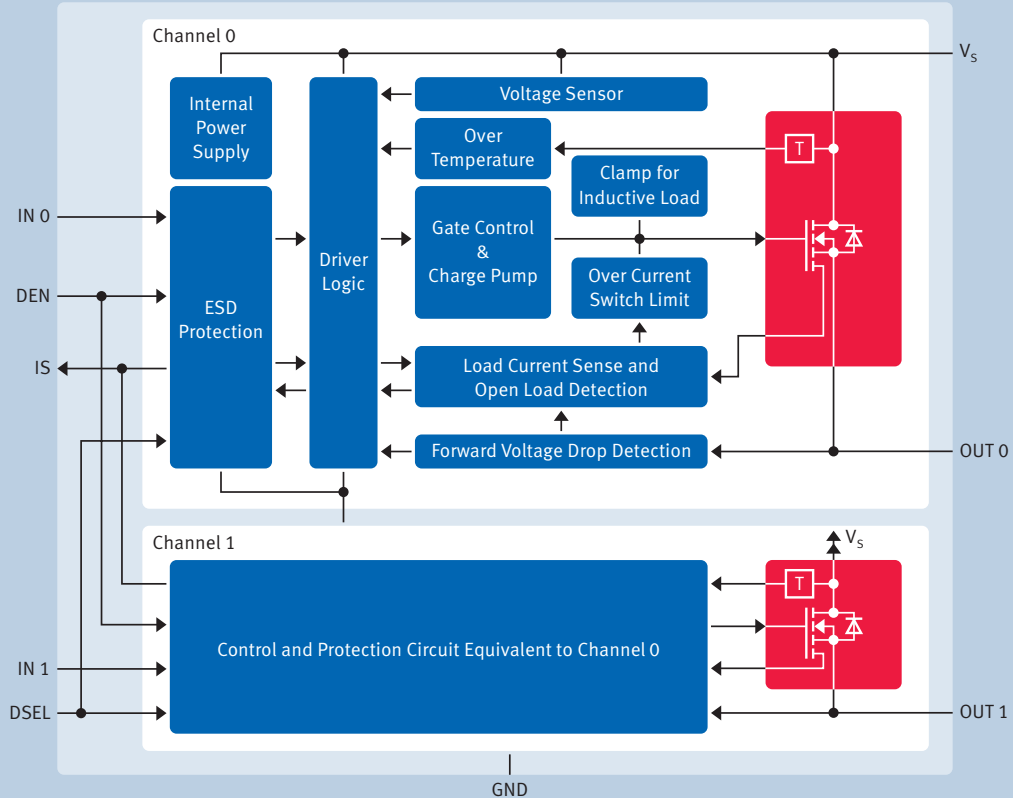
Protection Functions

- Load Dump: 65V
- Current limitation
- Thermal shutdown: Latch
- Enhanced short circuit operation: 100k cycles
- Loss of ground/battery protection
- Stable behavior at under voltage
- Overvoltage protection
- Voltage dependent current limitation

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Block Diagram



Product Summary

| Type | Description | Package |
|--|---------------|--|
| BTT6050-2EKA for target load: 2xP21W lighting load | 2x 50mΩ | PG-DSO-14-40 EP |
| Parameter | Symbol | Value |
| Operating voltage range | $V_{S(OP)}$ | 5.0 ... 36.0V |
| Maximum supply voltage | $V_{S(LD)}$ | 60V |
| Maximum ON state resistance at $T_J=150^{\circ}\text{C}$ per channel | $R_{DS(ON)}$ | 100mΩ |
| Nominal load current (on channel active) | $I_{L(NOM)1}$ | 4.5A |
| Nominal load current (both channels active) | $I_{L(NOM)2}$ | 3.0A |
| Typical current sense ratio | k_{ILS} | 1500 |
| Minimum current limitation | $I_{LS(SC)}$ | 38A |
| Maximum standby current with load at $T_J=25^{\circ}\text{C}$ | $I_{S(OFF)}$ | 500nA |
| Load 2xP21W | 12V 24V | BTS5030-2EKA (PROFET™+ 12V) BTT6050-2EKA (PROFET™+ 24V) |

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