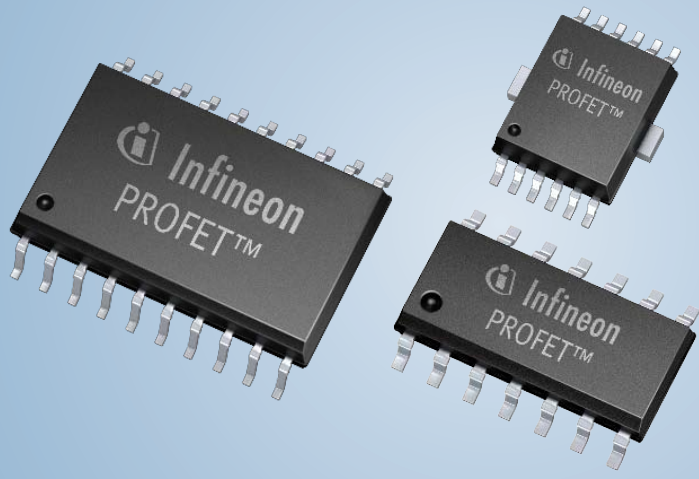




**THE DATASHEET OF  
BTT60502EKAXUMA1**





## Product Brief

# BTT6020-1EKA, BTT6030-1EKA, BTT6050-1EKA (Truck devices)

## New Smart High-Side Switches for 24V Applications

Infineon's new pin-compatible Single Channel 24V High-Side Switches of the PROFET™+ 24V family in DSO-14 EP package provide embedded diagnostic and protective functions. The power transistor is built by a N-channel vertical power MOSFET with charge pump. The device are especially designed to drive lamps as well as LEDs in the harsh automotive environment.

The high current sense accuracy ( $k_{ILIS}$ ) is able to diagnose even the smallest loads, such as LEDs. The high short-circuit robustness sets the market benchmark. Infineon is the first company to specify the short-circuit robustness of a device in the datasheet: Min. 100k SC cycles for family members of PROFET™+ 24V.

### Applications

- 24V grounded high-side loads,
- $\mu$ 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 lamps
- Suitable for loads with low currents such as LEDs
- Replaces electromechanical relays, fuses and discrete circuits

### Diagnostic Functions

- Proportional load current sense
- Open load in ON and OFF
- Short circuit to battery and ground
- Overtemperature sense
- Current sense matching between channels
- Stable diagnostic signal during short circuit
- Enhanced  $k_{ILIS}$  accuracy with calibration

### Basic Functions

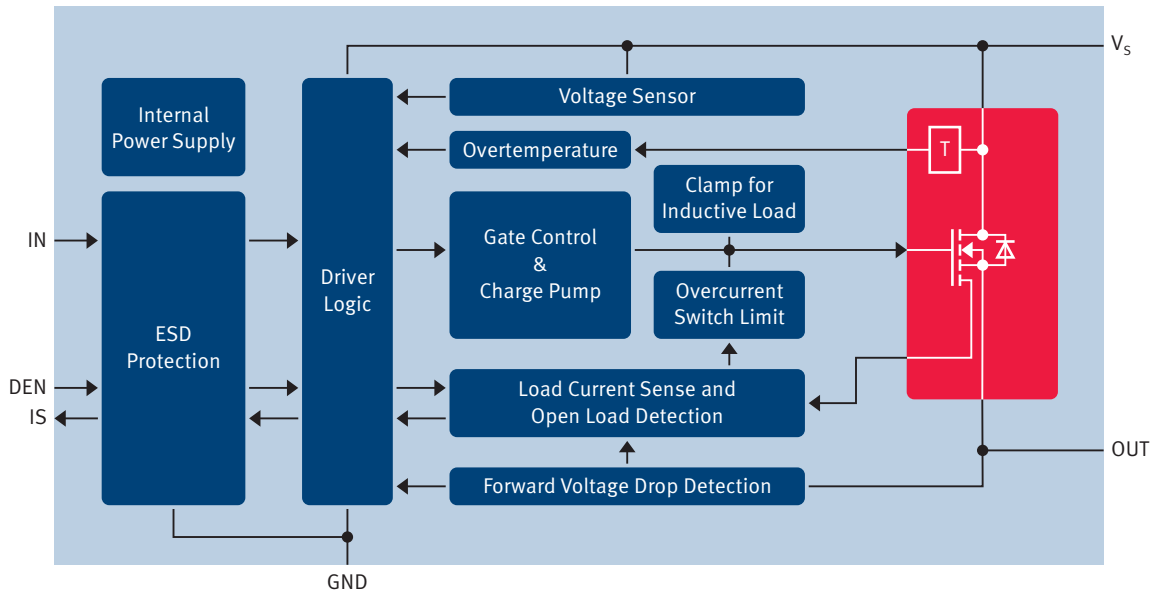
- RoHS compliant & AEC qualified
- Op. Voltage range (5 – 36V)
- Low stand-by current (< 0.5 $\mu$ A)
- ESD protection, optimized EMC
- PWM capability up to 500Hz
- Very low leakage current in OFF
- 3.3V and 5V – compatible logic inputs
- Improved heat dissipation of DSO – package

### Protection Functions

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

# BTT6020-1EKA, BTT6030-1EKA, BTT6050-1EKA (Truck devices)

Block Diagram (BTT6020-1EKA)



## Product Summary (BTT6020-1EKA)

| Type   | Description | Packsges        |
|--|-------------|-----------------|
| BTT6020-1EKA for target load: 4x 21W lighting load | 1x 20mΩ     | PG-DSO-14-40 EP |

| Parameter  | Symbol       | Value                       |
|--|--------------|-----------------------------|
| Operating voltage range  | $V_{S(OP)}$  | 5 – 36V                     |
| Maximum supply voltage   | $V_{S(LD)}$  | 65V                         |
| Maximum ON state resistance at $T_j = 150^\circ\text{C}$ per channel | $R_{DS(on)}$ | 42mΩ                        |
| Nominal load current (one channel active)                            | $I_{L(NOM)}$ | 7A                          |
| Typical current sense ratio  | $k_{ILIS}$   | 3000                        |
| Minimum current limitation   | $I_{LS(SC)}$ | 70A                         |
| Maximum standby current with load at $T_j = 25^\circ\text{C}$        | $I_{S(OFF)}$ | 500nA                       |
| Load 4x 21W (24V) / Load 4x 27W (12V)                                | 12V          | BTS5008-1EKB (PROFET™+ 12V) |
|  | 24V          | BTT6020-1EKA (PROFET™+ 24V) |

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