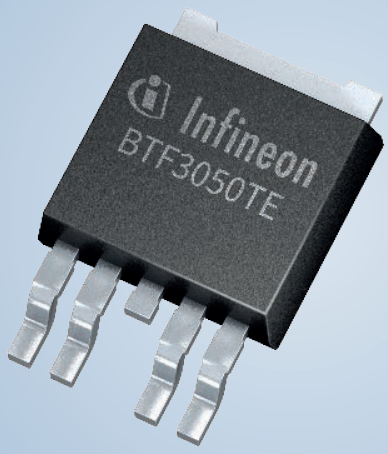


Product Brief

BTF3050TE

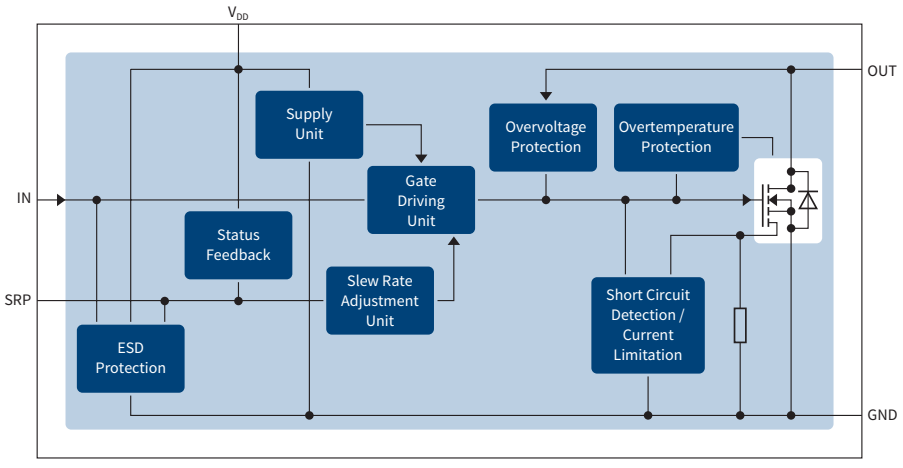
Smart Low-Side Power Switch, Single Channel 50mΩ

The BTF3050TE is a 50mΩ single channel Smart Low-Side Power Switch in a PG-TO252-5 package providing embedded protective functions. The power transistor is built by a N-channel vertical power MOSFET. The device is monolithically integrated.
The BTF3050TE is automotive qualified and is optimized for 12V automotive and industrial applications.

Applications

- Suitable for resistive, inductive and capacitive loads
- Replaces electromechanical relays, fuses and discrete circuits
- Most suitable for inductive loads as well as loads with inrush currents

Block Diagram



Basic Functions

- Adjustable switching speed
- 3.3V and 5V compatible logic inputs
- Very low power DMOS leakage current in OFF state

Protection Functions

- Overtemperature shutdown with auto-restart
- Active clamp overvoltage protection of the output
- Current limitation
- Enhanced short circuit protection

Diagnostic Functions

- Short circuit to battery
- Overtemperature
- Stable latching diagnostic signal

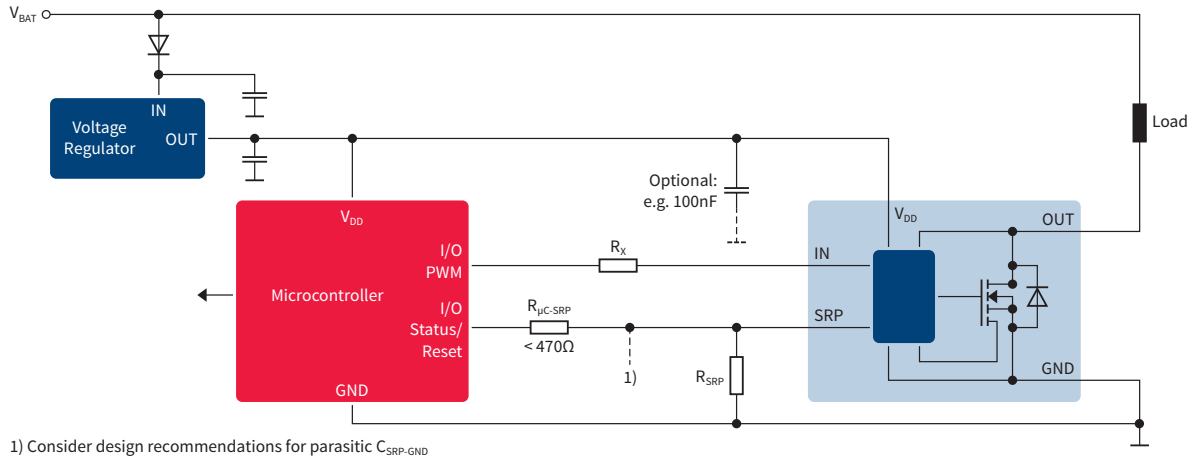
RoHS

AEC Qualified

BTF3050TE

Smart Low-Side Power Switch, Single Channel 50mΩ

Application Diagram



1) Consider design recommendations for parasitic $C_{SRP\text{-}GND}$

The device is able to switch all kind of resistive, inductive and capacitive loads, limited by clamping energy (E_{AS}) and maximum current capabilities.
The BTF3050TE offers dedicated ESD protection on the IN, V_{DD} and SRP pins which refers to the Ground pin as well as an overvoltage clamping of the output to Source/GND.
The overvoltage protection gets activated during inductive turn off conditions or other voltage events (e.g. load dump).

The power MOSFET is limiting the drain-source voltage, if it rises above the $V_{OUT(CLAMP)}$.
The overtemperature protection prevents the device from overheating due to overload and/or bad cooling conditions.
The BTF3050TE has a thermal-restart function. The device will turn on again, if input is still high, after the measured temperature has dropped below the thermal hysteresis.

Product Summary

Parameter	Symbol	BTF3050TE
Sales code		Contact Infineon sales
Package		PG-TO252-5
Clamping voltage (source-drain)	$V_{OUT(CLAMP)}$	40V
Supply voltage	V_{DD}	3 … 5.5V
Maximum input voltage	V_{IN}	5.5V
Maximum ON-state resistance (T = 150°C, V_{DD} = 5V)	$R_{DS(on)}$	100mΩ
Nominal load current	$I_{D(nom)}$	3A
Minimum current limitation trigger level	$I_{L(lim)\_TRIGGER}$	30A
Maximum OFF-state load current at $T_j \leq 85°C$	$I_{L(OFF)}$	2µA
Maximum stand-by supply current at T_j = 25°C	$I_{DD(OFF)}$	6µA

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