



LITIX™ Basic

Family Demoboards

LITIX_V1

08.02.2014

ATV BP LI

www.infineon.com/litix-basic-demoboards



■ LITIX™ Basic – Family Product Overview

■ LITIX™ Basic – Family Demoboards

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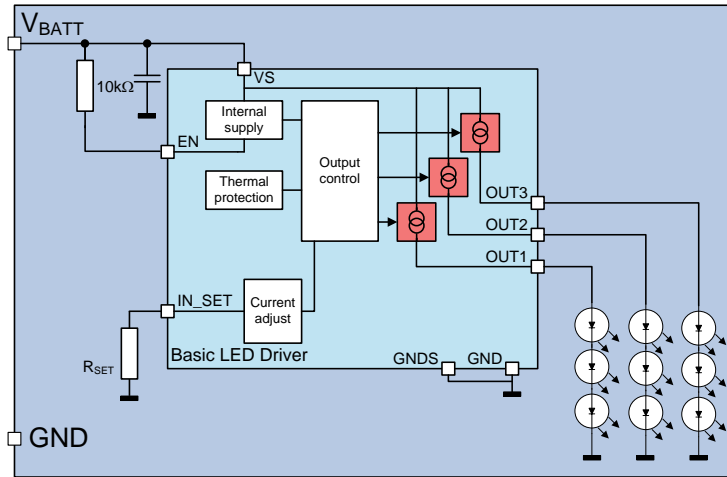
■ LITIX™ Basic – Family Demoboards

Infineon® Basic LED Driver Family

15 linear current sources with scalable feature set



Block diagram



Example TLD1310EL

Feature Set

Basic features

- 1 to 3 output channels; typ. 60 to 180mA
- Output current adjustable (ext. low power R_{set})
- Wide supply voltage range 5.5...40V
- Over Load and Over Temperature protection
- PWM via external PWM signal via EN or VS

Optional features

- N-1 or Open Load and Short Circuit detection
- Diagnosis enable feature
- Integrated PWM dimming engine to provide two LED brightness levels only with RC-network
- Matrix setup with DC/DC buck or boost converter – Infineon® Dynamic Overhead Control

System Benefits

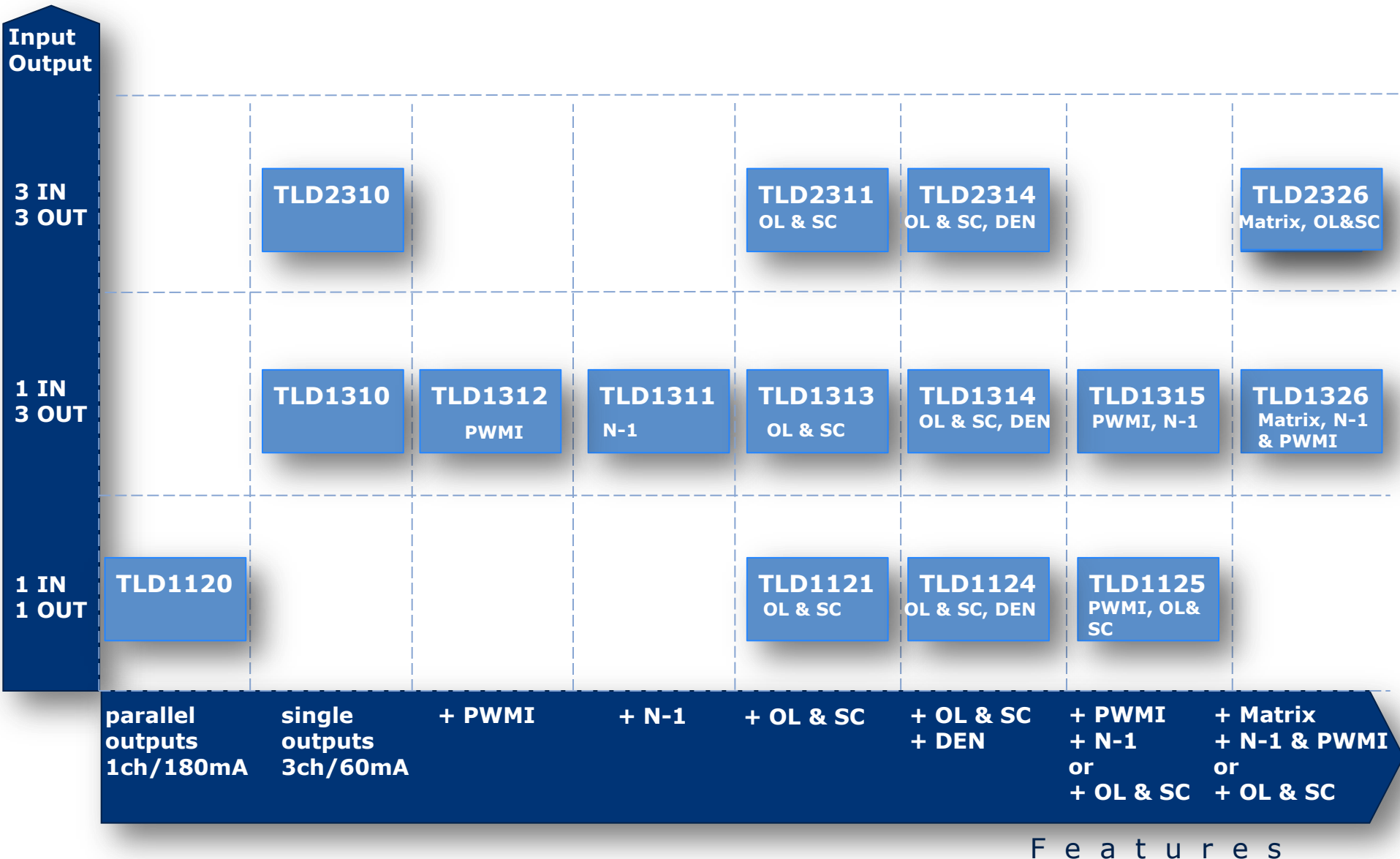
- Scalable feature set for dimming and diagnosis
- Pin-to-pin footprint compatibility
- Reduced system complexity
- Reduced effort for design adaptations
- Increased lifetime for LED and driver by integrated protection

Package

- PG-SSOP14 Exposed Pad

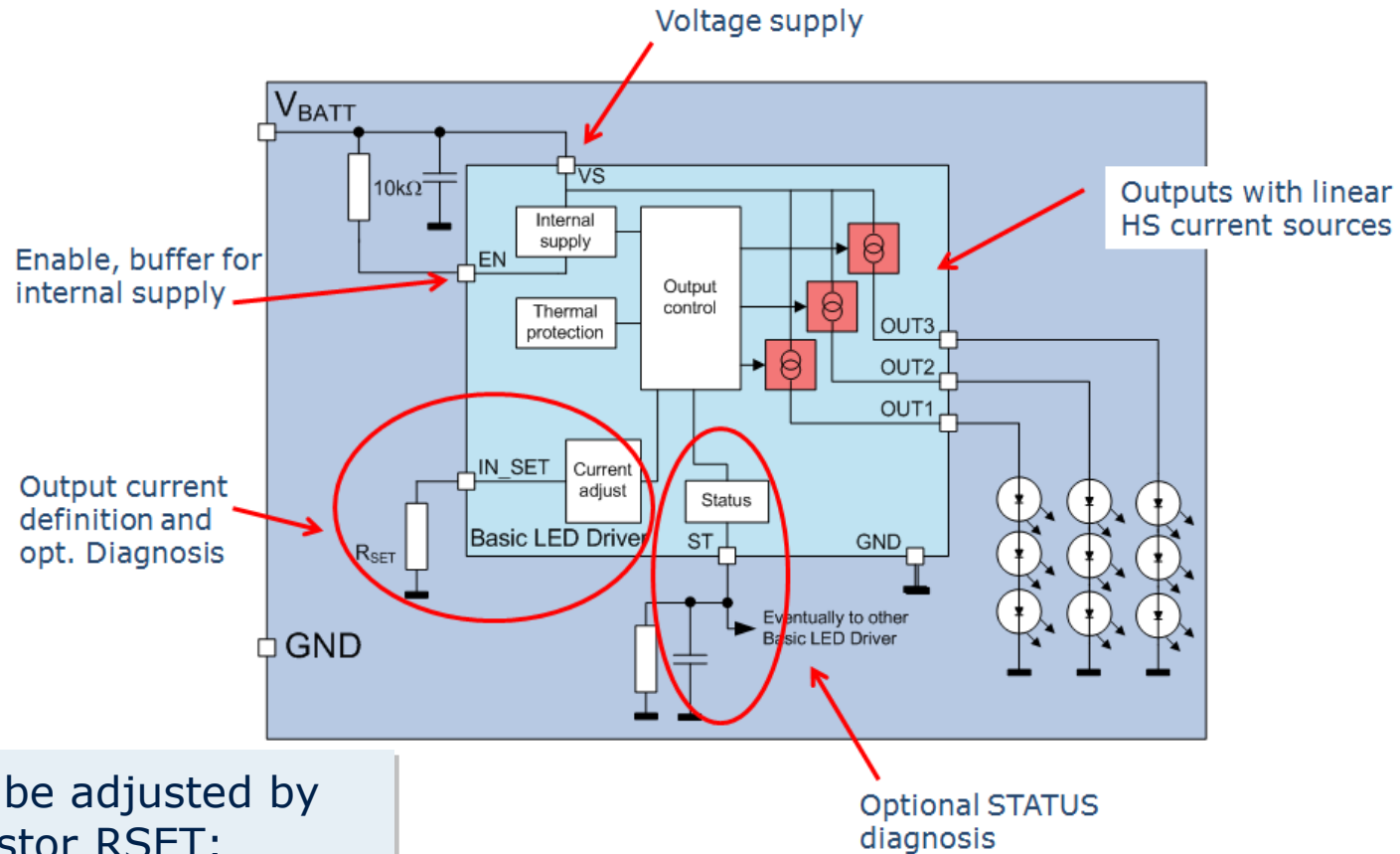


Infineon® Basic LED Driver - a modular & flexible family of 15 devices with scalable feature set



Infineon® Basic LED Driver Family

Block Diagram Overview



- Load current can be adjusted by external SET-resistor R_{SET}:

$$I_{OUT} = \frac{k^*}{R_{SET}}$$

* According to data sheet parameter "I_{OUT} * R_{SET} gain factor", typ. 750 for 3 channel devices, typ. 2250 for single channel devices

Per channel up to 120mA!
Thermal limits to be considered!

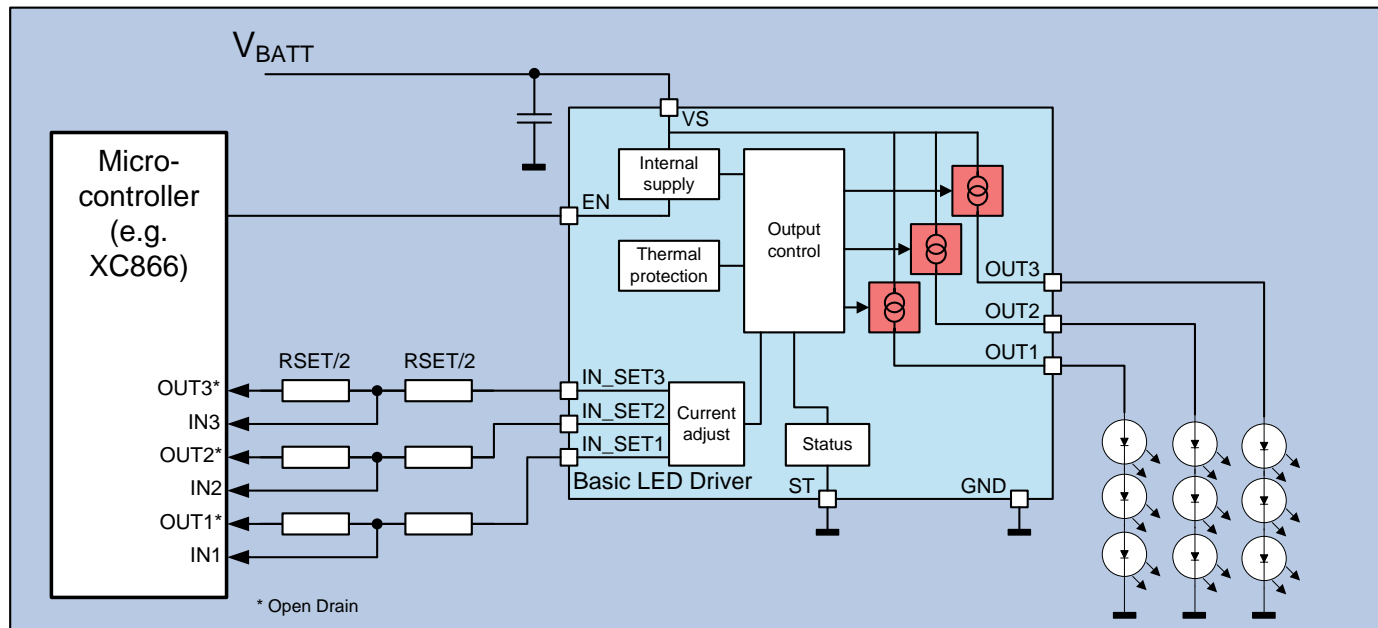
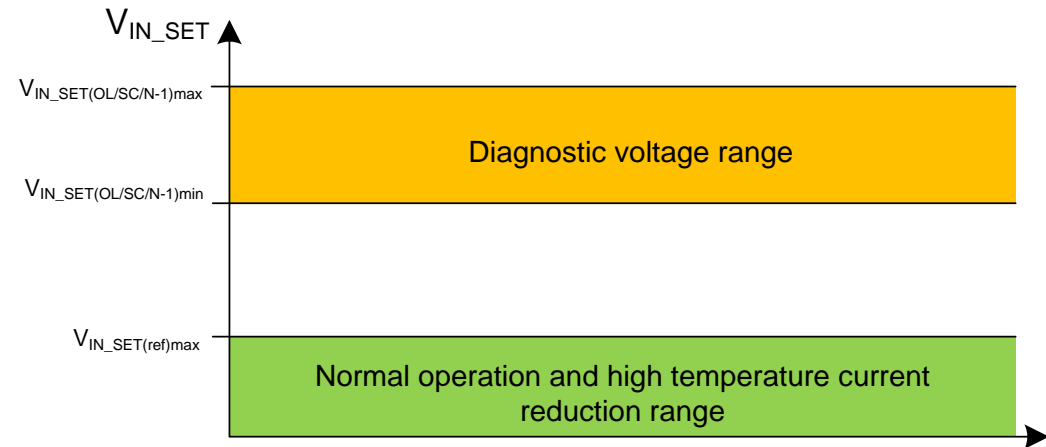
Infineon® Basic LED Driver Family

Diagnosis via SMART IN_SET-Pin



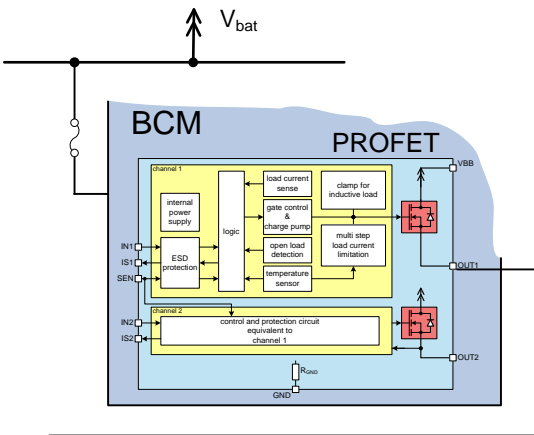
■ SMART IN_SET - Dual Function Pin

- Output current setting
- Diagnostic feedback

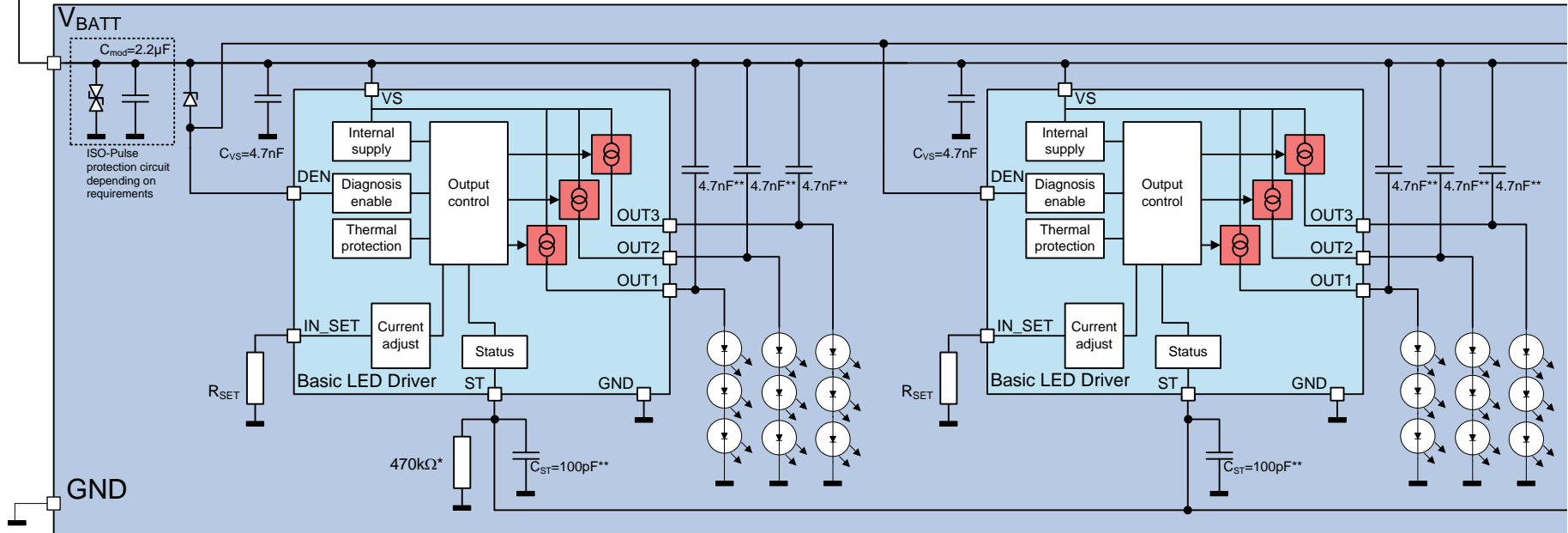


Infineon® Basic LED Driver Family

Diagnosis via ST-Pin and N-1 Diagnosis



- From BCM one wire for each function
- No Bus interface
- For diagnosis purpose LED module current consumption needs to be very low (typ. <10mA)
- Solution: Infineon® Basic LED N-1 or OL & SC Diagnosis



* In case PWM via VS or EN is performed.

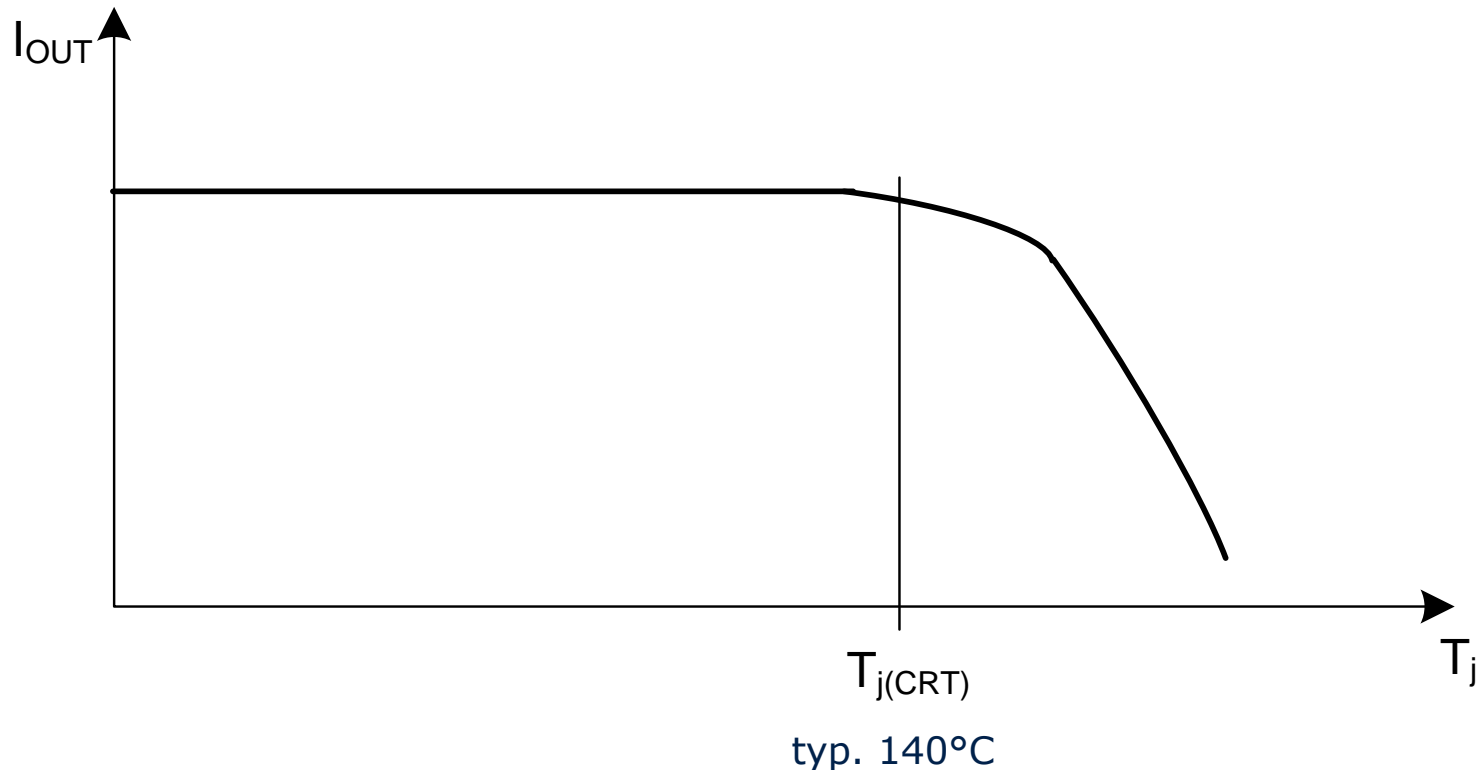
** For EMI improvement, if required.

Infineon® Basic LED Driver Family

High temperature current reduction



- If junction temperature becomes too high, device protects itself and LEDs by reducing the output current
- Slight reduction of LED brightness, but no flickering of LEDs



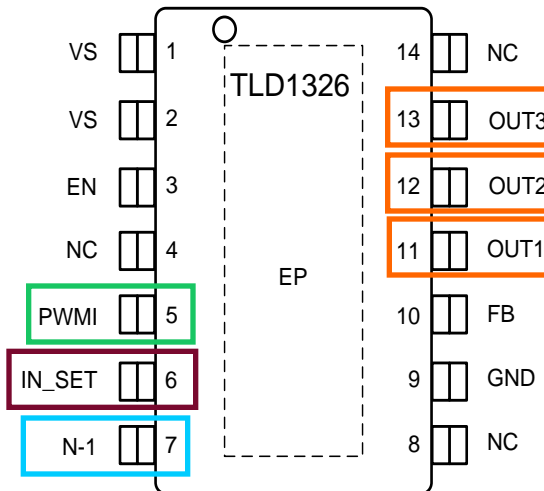
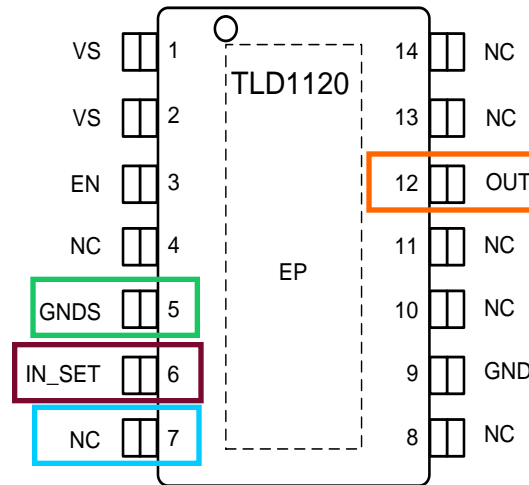
Maximum Design Flexibility by Cross-Device Feature & Pin-Out Compatibility



Pin Compatibility



PG-SSOP14EP



Identical Feature Set

- All members of the family provide the same features on the Supply / EN pin (+ identical pin-out)
- Family members with / without PWMI functionality can use the same PCB design
- Same IN_SET behavior / pin-out for all devices in the family
- Family members with / without N-1 or OL functionality can use the same PCB design
- 1 channel / 3 channel devices can use the same PCB design (using 0Ohm resistor)

→ **If you know 1 device,
you know the whole family!**

Reliable Control of low to medium Power LEDs by IFXs new Basic LED Driver Family



Driving low to medium Power LEDs



Discrete



Integration



- resistors
- OP amps
- zener diodes

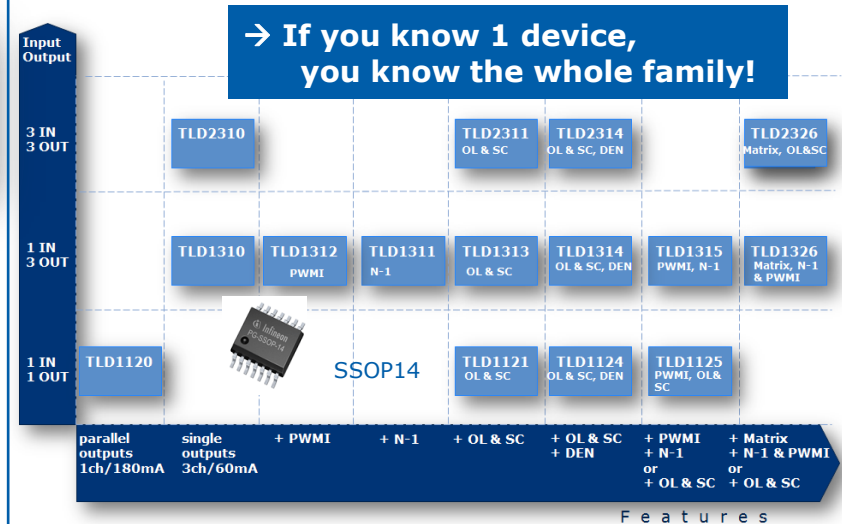
- Basic LED Driver

Customer Benefits

- Stable and reliable LED brightness by precise current control
- Improved system reliability by significant component reduction (from discrete to integrated) on board level
- Improved system protection (e.g. against ISO pulses)
- Enabling energy optimized system solution (DCDC control)
- Design flexibility

Infineon® Basic LED Driver

→ If you know 1 device, you know the whole family!



Product USPs

- Footprint compatibility of whole family ranging from 1 to 3ch and 60 to 180mA
- Diagnostics optimized for automotive LED requirements
- PWM via external PWM signal and optional via integrated PWM engine
- Feedback pin for optimized DCDC control

■ LITIX™ Basic – Family Product Overview

■ LITIX™ Basic – Family Demoboards

Available Demoboards

- | | |
|-------------|-------------|
| ■ TLD1121EL | ■ TLD1314EL |
| ■ TLD1124EL | ■ TLD1315EL |
| ■ TLD1125EL | ■ TLD1326EL |
| ■ TLD1311EL | ■ TLD2311EL |
| ■ TLD1313EL | ■ TLD2314EL |



www.infineon.com/LITIX-Basic-demoboards

Demoboards can be used for all other products of the Basic LED Driver Family as well!

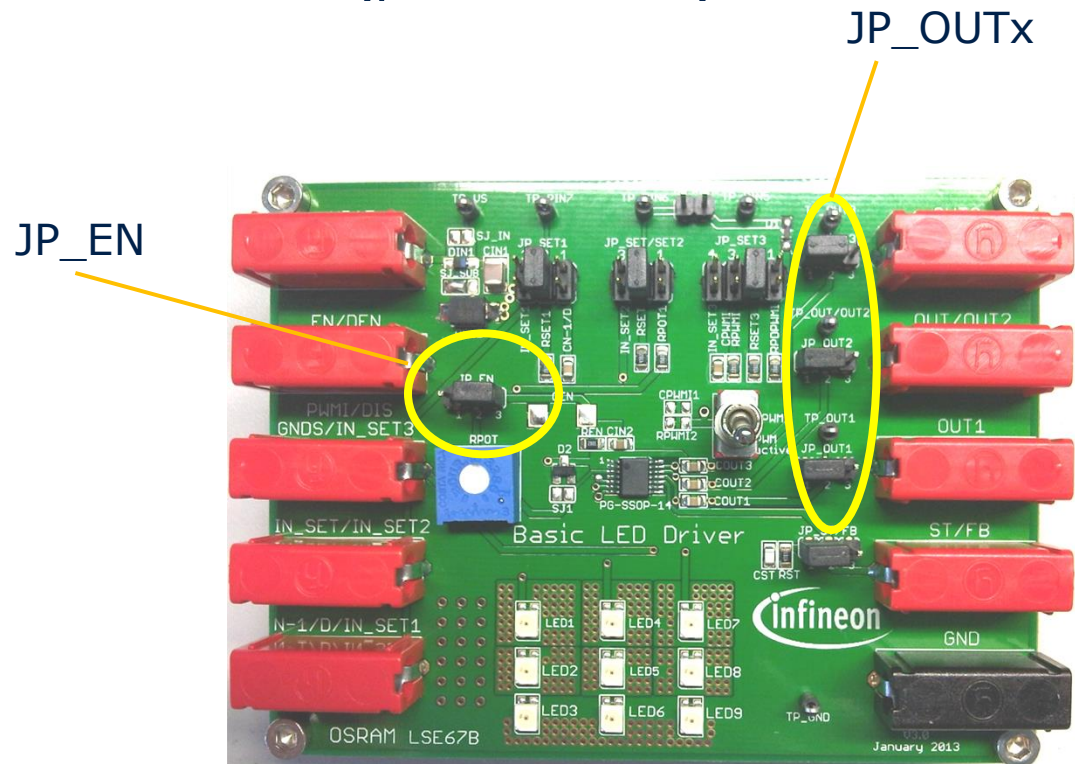
Demo Boards Connectors

- All required device pins can be connected via test sockets
- One PCB can be used for all device types. Therefore, test sockets have multiple names
 - E.g. device pin 6 is used as IN_SET-pin for the TLD1311EL and as IN_SET2-pin for TLD2311EL



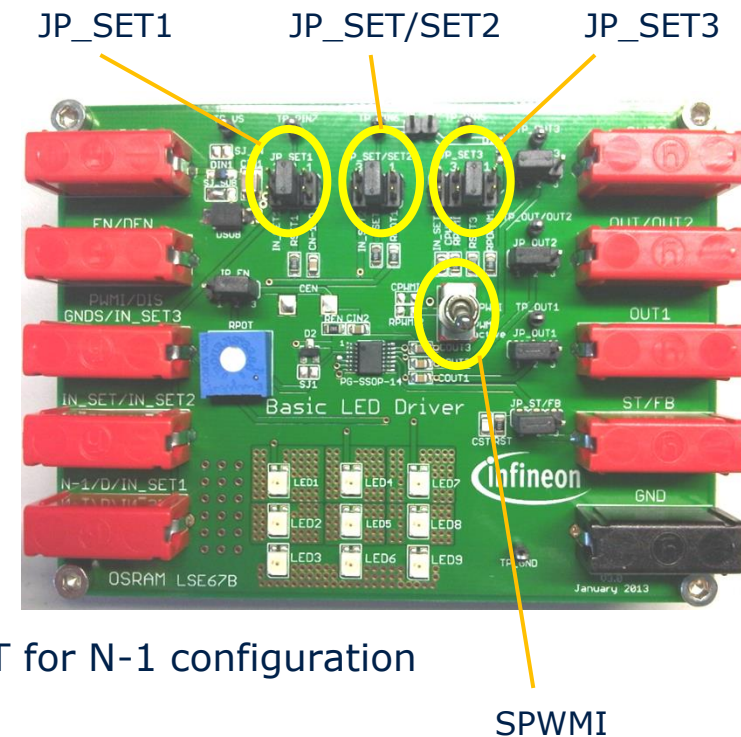
Demo Boards Jumpers

- JP_EN: Connects the device's enable or DEN-pin to VS (position 2-3) or to EN-test socket (position 1-2)
- JP_OUTx: Connects the device's OUT-pins to on board LEDs (position 1-2) or OUTx-test sockets (position 2-3)



Demo Boards Jumpers cont'd

- JP_SET1: Connects the device's pin 7 to
 - 1: C_{N-1}/D capacitor
 - 2: R_{SET1} resistor 47k Ω
 - 3: test socket
- JP_SET/SET2: Connects the device's pin 6 to
 - 1: R_{SET} potentiometer 15k...200k Ω
 - 2: R_{SET2} resistor 47k Ω
 - 3: test socket
- JP_SET3: Connects the device's pin 5 to
 - 1: R_{PWMI} pull down resistor and connection to IN_SET for N-1 configuration
 - 2: R_{SET3} resistor 47k Ω
 - 3: PWMI circuit (R_{PWMI} and C_{PWMI}), deactivation of PWMI via switch SPWMI
 - 4: test socket
- Switch SPWMI: Activates or deactivates internal PWM generation (only for devices with PWMI-feature and jumper JP_SET3 in position 3)



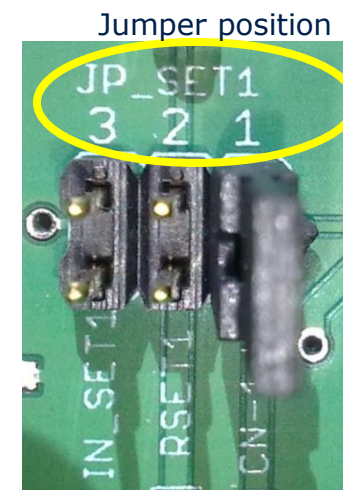
Jumper Settings using onboard Components

Device	Jumper JP_EN	Jumper JP_SET1	Jumper JP_SET/SET2	Jumper JP_SET3
TLD1124EL	1-2	Not required	1 or 2	Not required
TLD1125EL	1-2 or 2-3*	1	1 or 2	3
TLD1311EL	1-2 or 2-3*	1	1 or 2	1
TLD1314EL	1-2	Not required	1 or 2	Not required
TLD1315EL	1-2 or 2-3*	1	1 or 2	3**
TLD1326EL	1-2 or 2-3*	1	1 or 2	3**
TLD2311EL	1-2 or 2-3*	2	1 or 2	2
TLD2314EL	1-2	2	1 or 2	2

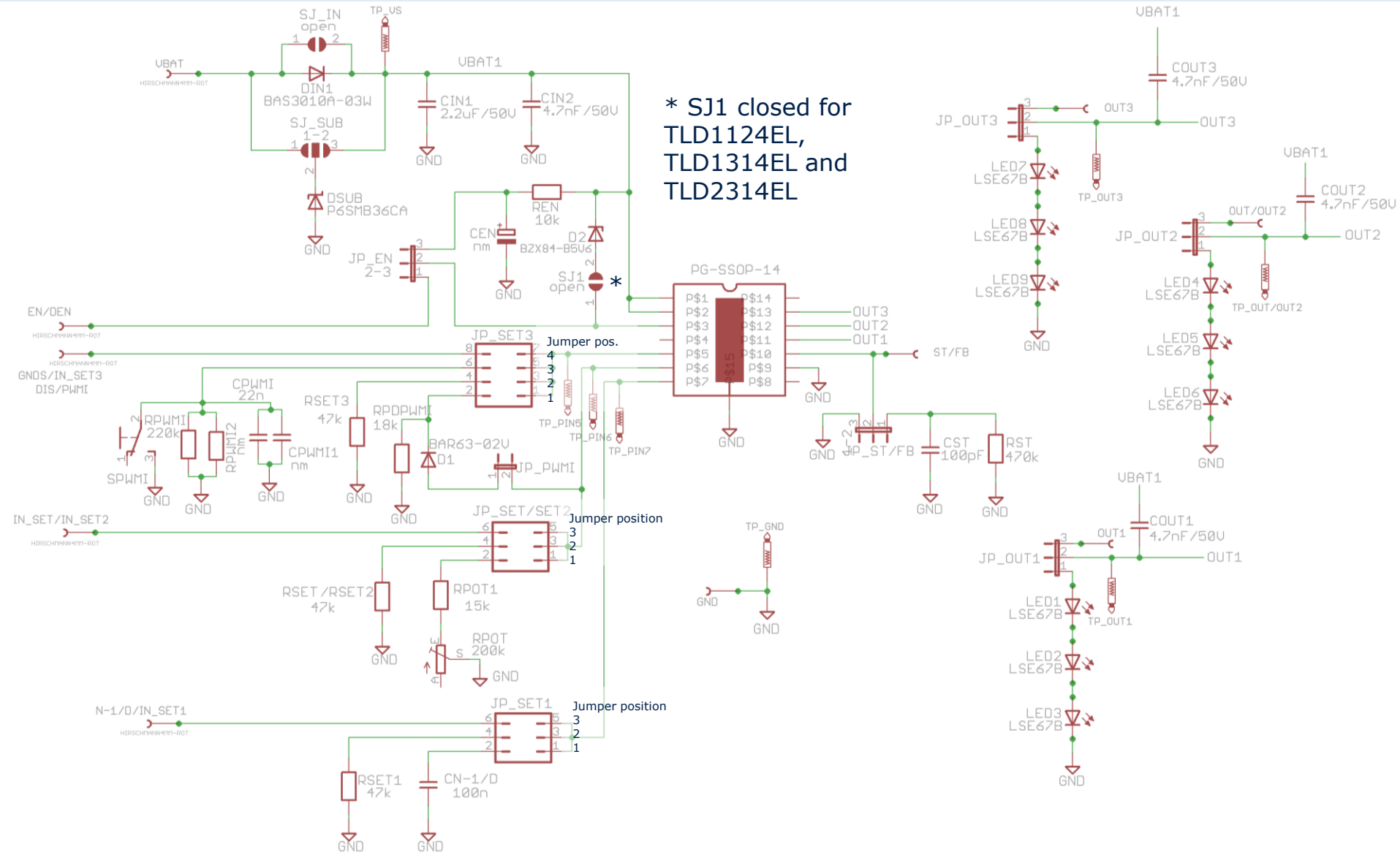
* EN connected to onboard VS in position 2-3

** For PWMI feature use jumper position 3, for N-1 feature use position 1

The numbers in the table above indicate the jumper position as written on the demo board. The picture shows jumper position 1:



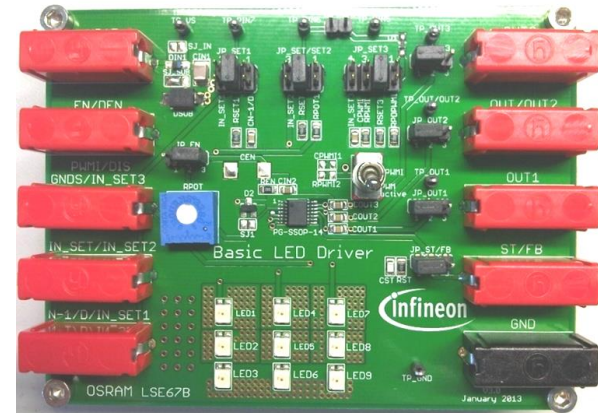
Demo Board Schematic



Available Demoboards

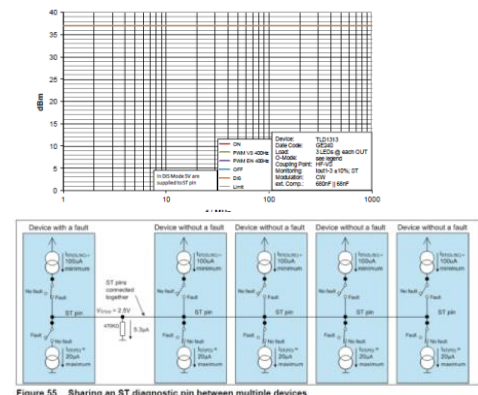
- TLD1121EL
- TLD1124EL
- TLD1125EL
- TLD1311EL
- TLD1313EL
- TLD1314EL
- TLD1315EL
- TLD1326EL
- TLD2311EL
- TLD2314EL

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Other design in support material

- Data Sheets
- Application Note incl. Design Recommendations
- Simulation Models
- EMC Test Reports



Thank you very much for your attention

For more information, please visit:

<http://www.infineon.com/LITIX>

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