New Product Introduction

February 2021

XENSIV™ - TLE4929C-XHA Hall based crankshaft sensor for hybrid powertrains

XENSIV™ - TLE4999C8 fully ISO 26262 compliant linear Hall sensor

EiceDRIVER™ Fast level-shift 650 V

OptiMOS™ 120 V power MOSFETs in TO-Leadless (TOLL)

OptiMOS™ 5 25 V and 30 V power MOSFETs in SuperS08

650 V CoolMOS™ CFD7 superjunction MOSFETs

EVAL ICB2FL03G - Evalboard for 54W UV-C disinfection lamps

XENSIV™ - TLE4929C-XHA Hall based crankshaft sensor for hybrid powertrains

The Infineon XENSIV™ TLE4929C-XHA products address new requirements for crankshaft speed sensing from hybrid powertrains. An advanced vibration detection algorithm ensures valid sensor data for any hybrid powertrain traction mode e.g. detecting unintended movements of the crankshaft while the car is driven by the e-motor. This improves efficiency of the engine start and helps to avoid misfiring or error messages by ECU caused by wrongly calibrated sensor data.

XENSIV™ TLE4929C-XHA sensors as well feature high adaptivity to the diversity of crankshaft application. Using the adaptive K-Factor the default 50% switching threshold (Bmax – Bmin) can be trimmed to 16 values between 40 and 60% which allows to optimize phase accuracy for different encoder designs. Compared to predecessor products from Infineon also encoders with 34 or 56 teeth are supported now.

Features

- An advanced vibration detection algorithm ensures valid sensor data for any hybrid powertrain traction mode for better efficiency and reliability of hybrid powertrain engine control
- The adaptive K-Factor allows trimming of the switching threshold to 16 values between 40 and 60% to optimize phase accuracy for different encoder designs
- Enlarged coverage of encoders, now also for 34 or 56 teeth
- Package compatibility with Infineon's predecessor products (TLE4929C-XVA, TLE4929C-XAF, TLE4929C-XAN) helps to minimize design switch cost

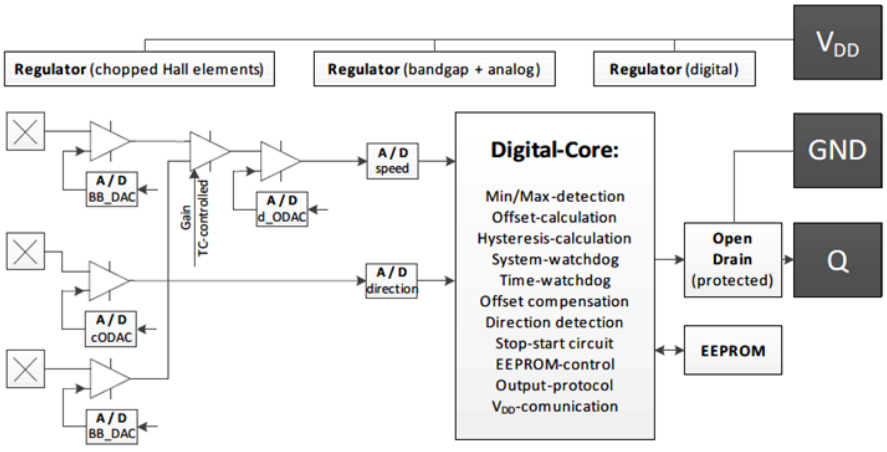
Target applications

- Crankshaft speed and direction sensing
- Miss-fire detection
- Ignition control

Benefits

- A dedicated algorithm prevents sensor miss-calibration when engine is off but Crankshaft is vibrating. In application it …
  - Prevents (at engine start) from miss-firering and potential error messages by ECU
  - Improves user experience in engine start enabling faster engine start
  - Helps to save battery resources with faster engine start
- Low design switch effort: Package compatibility with Infineon's predecessor products (TLE4929C-XVA, TLE4929C-XAF, TLE4929C-XAN)
- High adaptivity to application diversity
- This enables adjustment towards different encoders and improves phase accuracy where by geometry a 50% switching leads to poor results

Block diagram



Product collaterals / Online support

Product page, TLE4929C-XHA-M18N

Product page, TLE4929C-XHA-M38N

Product brief

Application note

Product overview incl. data sheet link

OPN	SP Number	Package
TLE4929CXHAM18NHAMA1	SP005355349	PG-SSO-3
TLE4929CXHAM38NHAMA1	SP005355351	PG-SSO-3

XENSIV™ - TLE4999C8 fully ISO 26262 compliant linear Hall sensor

The XENSIV™ magnetic position sensor TLE4999C8 is a monolithic, fully ISO 26262 compliant, programmable linear Hall sensor with a two channel redundancy architecture. The sensor enables for safety critical design up (ASIL D).

It supports fast data communication on a SPC bus with up to 10 times higher communication rate than today's standard solutions and up to 4 sensors on a busline. The excellent accuracy parameters (e.g. <2 % sensitivity drift, <100 µT offset drift) are specified over full temperature range and life time.

The Linear Hall sensor supports easy system integration by program-mability of a variety of sensors parameters.

The TLE4999C is optimum solution when it' about most challenging safety applications.

Features

- Fully ISO 262626 compliant, supports ASIL D systems
- <2 % sensitivity drift, <100 µT offset drift over temperature and life time specification
- Integrated digital temperature- and stress-compensation
- Fast digital SPC interface with a unit time down to 0.5us
- Multi-point calibration with up to 9 linearization set points
- SMD package TDSO-8, Pb-free (RoHS compliant) and halogen free package

Benefits

- High diagnostic coverage, ISO 26262-compliancy and dual sensor cell integration enable development of fail operational systems
- Multi-point calibration for better fit into various magnetic circuit designs
- Easy system integration due to programmability of several sensor parameters

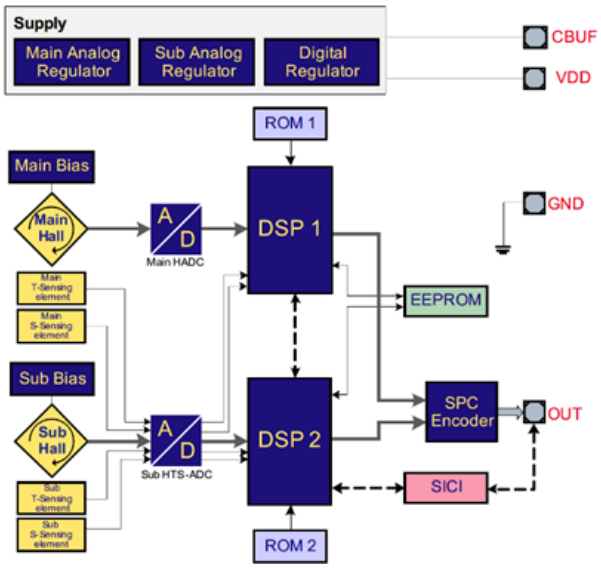
Competitive advantage

- Infineon provides excellent functional safety design support dur-ing development enabling for ASIL D systems with two sensor channels in one device
- SPC protocol enables common bus usage with angle sensors, with common timestamp for up to 4 sensors.
- Tolerance specifications over temperature and life time enable for higher tolerances of mechanical components and use of less expensive magnet Power down mode (7nA)

Target applications

- **Automotive safety critical applications**
  - Electric Power Steering
- **Linear Movement position sensing**
  - Pedal position
  - Electric throttle control
  - Seat rail adjustment
  - Headlight adjustment
- **Industrial applications**
  - Small home appliances
  - Joystick applications

Block diagram



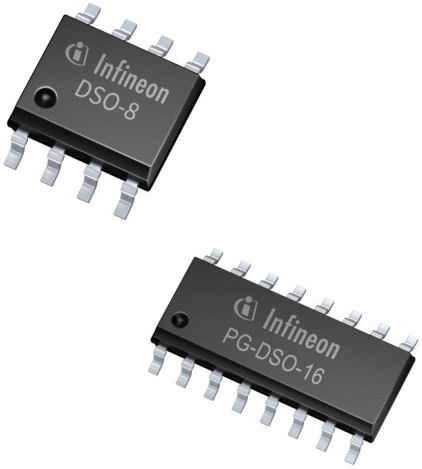
Product collaterals / Online support

Product page

Product overview incl. product page link

OPN	SP Number	Package
TLE4999C8XUMA1	SP002662500	TDSO-8-1

EiceDRIVER™ Fast level-shift 650 V



Infineon broadens its EiceDRIVER™ portfolio with the new Fast Level Shift family of 0.7A, 650 V, half-bridge and HS+LS SOI gate drivers in DSO-8 package and 2.5A HS+LS driver in DSO-16W package.

Fast 90 ns propagation delay and tight 10 ns (max) matching enables higher frequency switching to expand applications to LLC / LCC resonant ZVS topologies used in many different power conversion applications such as SMPS, UPS, eV Wall Chargers, Battery Chargers, LED lighting Luminaires to name a few.

Integrated ultra-fast bootstrap diode, excellent negative VS transient immunity and independent per channel under voltage lockouts suitable for MOSFETs and IGBTs enable superior performance and reduced BOM cost. Also suitable for typical MHA, SHA, and Drives or other motor control applications.

Features

- Operating voltages (VS node) up to + 650 V
- Negative VS transient immunity of 100 V with 300 ns repetitive pulses
- Integrated ultra-fast, low resistance bootstrap diode
- 90 ns propagation delay; 10 ns (max) matching
- Supports switching frequencies up to 500 kHz
- Shutdown input turns off both channels (2ED2110S06M)
- Separate logic and power ground, shorten the gate loop (2ED2110S06M)
- Independent under voltage lockout (UVLO) for both channels
- Maximum supply voltage of 25 V
- Logic operational up to –11 V on VS Pin
- Negative voltage tolerance on inputs of –5 V

Competitive advantage

Based on Infineon's SOI-technology, having excellent ruggedness and noise immunity against negative transient voltages on VS pin. 50% lower level-shift losses and low propagation delay and tight 10 ns (max) delay matching enables high frequency operation in the 500 kHz range. No parasitic device structures present in the device, hence no parasitic latch up at all temperature and voltage conditions. Integrated ultra-fast, low resistance bootstrap diode, lower the BOM cost.

Benefits

- Integrated bootstrap diode (BSD)- Space saving, reduced BOM cost, smaller PCB at lower cost with simpler design
- 50% lower level-shift losses with Infineon SOI technology for higher switching frequencies for SMPS and UPS applications
- Higher switching frequencies enable reduction of cost and size for resonant components used in LLC and LCC ZVS topologies by eliminating high side pulse transformer.
- Excellent ruggedness and noise immunity against negative transient voltages (-100 V) on VS pin
- No parasitic device structures present in the device, hence no parasitic latch up at all temperature and voltage conditions
- High current family - suitable for high current power device, and high frequency application

Target applications

- MHA
- Industrial drives, fans, pumps, compressors
- Motor control and drives
- Light electric vehicles (LEV)
- Switched mode power supply (SMPS)
- Uninterruptible power supply (UPS)
- Power tools, service robots, LED lighting

Product collaterals / Online support

Product family page

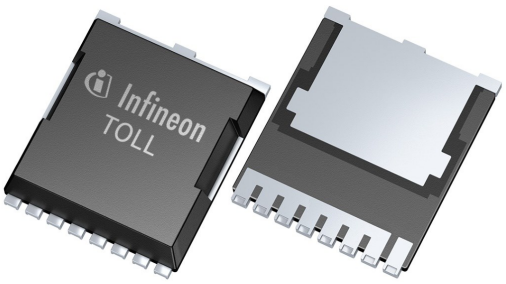
Product overview incl. data sheet link

OPN	SP Number	Package
2ED2101S06FXUMA1	SP001896440	PG-DSO-8
2ED2103S06FXUMA1	SP001896442	PG-DSO-8
2ED2104S06FXUMA1	SP001896444	PG-DSO-8
2ED2110S06MXUMA1	SP001896446	PG-DSO-16

OptiMOS™ 120 V power MOSFETs in TO-Leadless (TOLL)

Infineon's OptiMOS™ 120 V power MOSFET in TO-Leadless (TOLL) package is ideally suited for high-current applications such as power/gardening tool motor drives. This 120 V MOSFET offers optimal balance between low R_{DSon} and V_{DS} where 150 V MOSFETs are not needed, but 100 V does not provide enough margin in the application.

With 60% space reduction compared to D²PAK 7-pin package, TOLL is the perfect solution where highest efficiency, outstanding EMI behavior, best thermal performance and space reduction are required.



Features

- Low R_{DSon} where 150V MOSFETs are not needed
- More V_{DS} margin than 100V MOSFETs
- Compact package with high current capability and low R_{TH}

Benefits

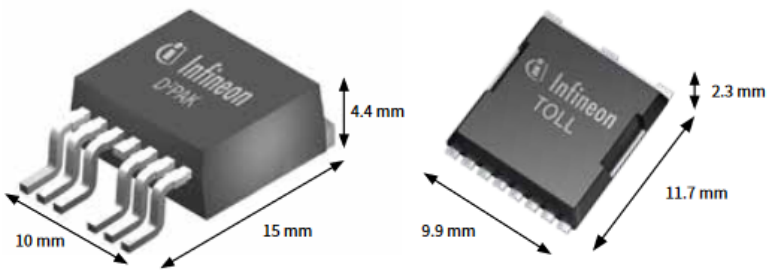
- Robustness against voltage spikes
- Minimized conduction losses
- Optimal R_{DSon} and V_{DS} balance in 72V DC applications
- Better thermal management
- Less device paralleling

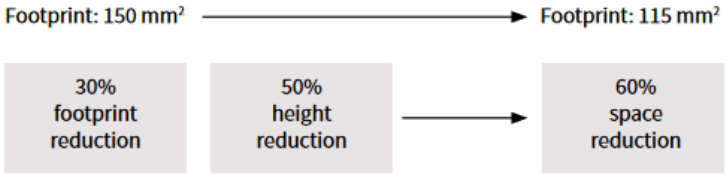
Target applications

- Power and Gardening tools
- LEV
- Server

Competitive advantage

- Low R_{DSon} for applications where 150 V MOSFETs are not needed, but 100V does not provide enough margin in the application





Product collaterals / Online support

Product page

Product brief

Application note

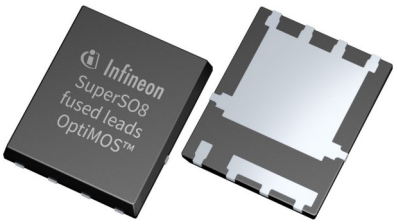
Product overview incl. data sheet link

OPN	SP Number	Package
IPT030N12N3GATMA1	SP005348026	PG-HSOF-8

OptiMOS™ 5 25 V and 30 V power MOSFETs in SuperS08 BSC004NE2LS5, BSC005N03LS5, BSC005N03LS5I

With the OptiMOS™ 5 25 V and 30 V power MOSFETs, Infineon offers benchmark solutions by enabling highest power density and energy efficiency, both in stand by and full operation.

Infineon now offers these best-in-class MOSFETs in a SuperSO8 package.



Features

- Very low on-resistance $R_{DS(on)}$
- 100% avalanche tested
- Superior thermal resistance
- N-Channel
- Pb-free lead plating: RoHS compliant
- Halogen-free according to IEC61249-2-21
- 175°C rated

Benefits

- Exchange of two parts with one for ORing applications
- Reduction in part count
- Higher power densities and efficiency

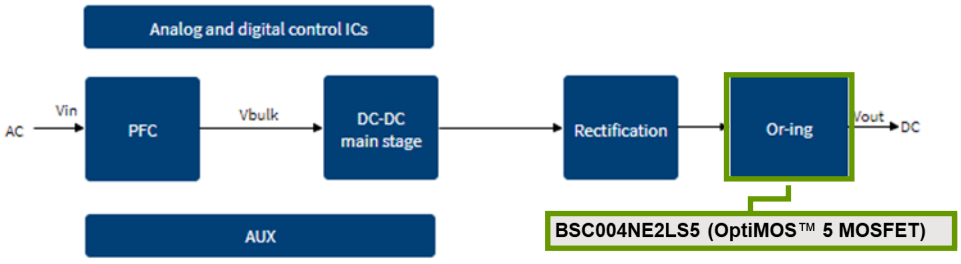
Target applications

- Drives
- SMPS
- Server
- Telecom
- Battery management

Competitive advantage

- Lowest $R_{DS(on)}$ with leading FOMs

Solution diagram—Sever power supply



Product collaterals / Online support

Product page, BSC005N03LS5

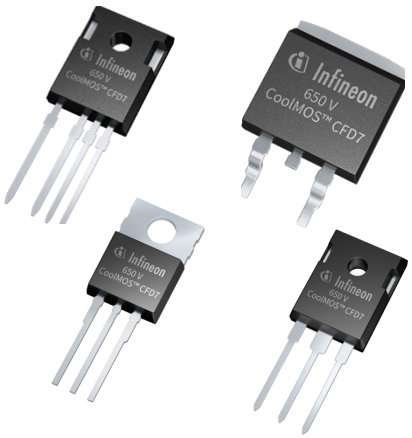
Product page, BSC005N03LS5I

Product page, BSC004NE2LS5

Product overview incl. data sheet link

OPN	SP Number	Package
BSC005N03LS5ATMA1	SP004819078	PG-TDSON-8
BSC005N03LS5IATMA1	SP004819084	PG-TDSON-8
BSC004NE2LS5ATMA1	SP004950304	PG-TDSON-8

650 V CoolMOS™ CFD7 superjunction MOSFETs



The 650V CoolMOS™ CFD7 family is the voltage-range extension of Infineon's well-established CoolMOS™ CFD7 family, the successor to the well-established CoolMOS™ CFD2. It allows for the highest efficiency and power density levels in soft-switching applications, enabled by an additional 50V breakdown voltage, an integrated fast body diode, improved switching performance, and excellent thermal behavior.

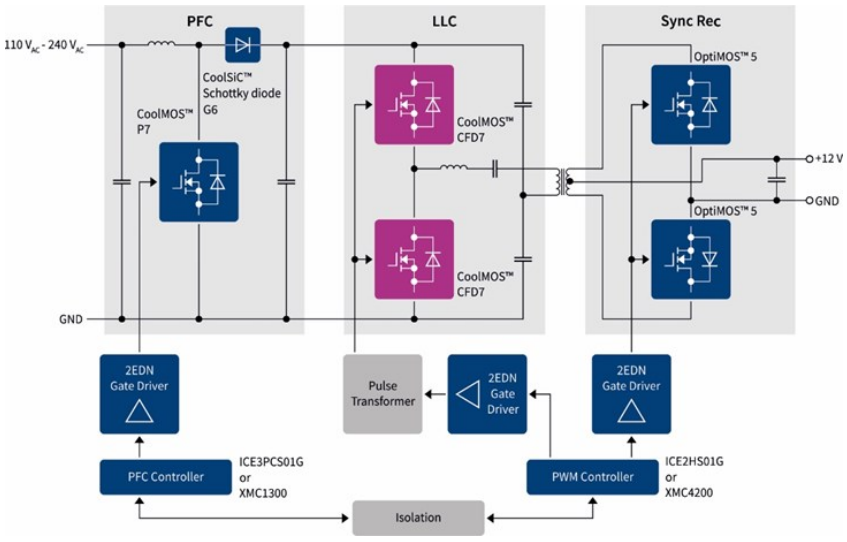
Features

- Ultrafast body diode & very low Q_{rr}
- 650V breakdown voltage
- Best-in-class $R_{DS(on)}$ / package combinations
- Significantly reduced switching losses compared to competition
- Lowest $R_{DS(on)}$ dependency over temperature

Benefits

- Excellent hard-commutation ruggedness
- Extra safety margin for designs with increased bus voltage
- Enabling increased power density
- Outstanding light-load efficiency in industrial SMPS applications
- Improved full-load efficiency in industrial SMPS applications
- Price competitiveness compared to alternative offerings in the market

Block diagram



Target applications

- Server
- Telecom
- Solar
- EV-charging

Product overview incl. product page link

OPN	SP Number	Package
IPP65R090CFD7XKSA1	SP005413363	PG-TO220-3
IPP65R110CFD7XKSA1	SP005413367	PG-TO220-3
IPP65R155CFD7XKSA1	SP005413376	PG-TO220-3
IPP65R190CFD7XKSA1	SP005413377	PG-TO220-3
IPW65R090CFD7XKSA1	SP005413364	PG-TO247-3
IPW65R110CFD7XKSA1	SP005413366	PG-TO247-3
IPW65R125CFD7XKSA1	SP005413372	PG-TO247-3
IPW65R155CFD7XKSA1	SP005413375	PG-TO247-3
IPZA65R018CFD7XKSA1	SP005413354	PG-TO247-4
IPB65R041CFD7ATMA1	SP005413357	PG-TO263-3
IPB65R090CFD7ATMA1	SP005413362	PG-TO263-3
IPB65R110CFD7ATMA1	SP005413365	PG-TO263-3
IPB65R125CFD7ATMA1	SP005413371	PG-TO263-3
IPB65R155CFD7ATMA1	SP005413374	PG-TO263-3

Product collaterals / Online support

Product family page

Product brief

Application note

EVAL ICB2FL03G - Evalboard for 54W UV-C disinfection lamps

EVAL_ICB2FL03G is a ballast design evaluation board for 54W UV-C disinfection lamps with voltage-mode preheating. It features the smart ballast controller ICB2FL03G which comes in a slim SO-16 package and the 600V CoolMOS™ PFD7 IPN60R1K5PFD7S superjunction MOSFET.

The ballast IC is designed to control a boost converter as an active power factor correction (PFC) filter in critical/discontinuous conduction mode (CritCM/DCM) and in half-bridge topologies as a lamp inverter. It enables speedy and cost-effective ballast designs with a minimum number of external components. All lamp start, run and protection features are integrated.

The 600 V CoolMOS™ PFD7 MOSFET family combines the highest efficiency with a very high level of robustness. To reduce system cost, the version in a SOT-223 package is integrated and that combines low cost with high efficiency.

Infineon's proprietary Coreless Transformer Technology (CLT) enables reliable and robust high-voltage isolation. For smooth and fast testing a customer in-circuit test mode is supported.

Features

- Optimized for UV-C ballasts
- Lowest count of external components
- Integrated high-performance PFC stage
- Numerous monitoring and protection features for highest reliability
- Integrated 650 V half-bridge driver with Coreless Transformer Technology
- Supports customer in-circuit test mode for reduced tester time

Benefits

- Enables ballast compatibility with a wide range of lamp types
- Excellent dynamic PFC performance enables very low THD across wide load ranges
- Eases design of multi-power ballasts and reduces EMI
- Halving the time for key tests (e.g. end-of-life detection and preheat/operation modes)
- Reliable, stable, and robust ballast design

Target applications

- UV-C disinfection lamps
- Fluorescent lamp ballast

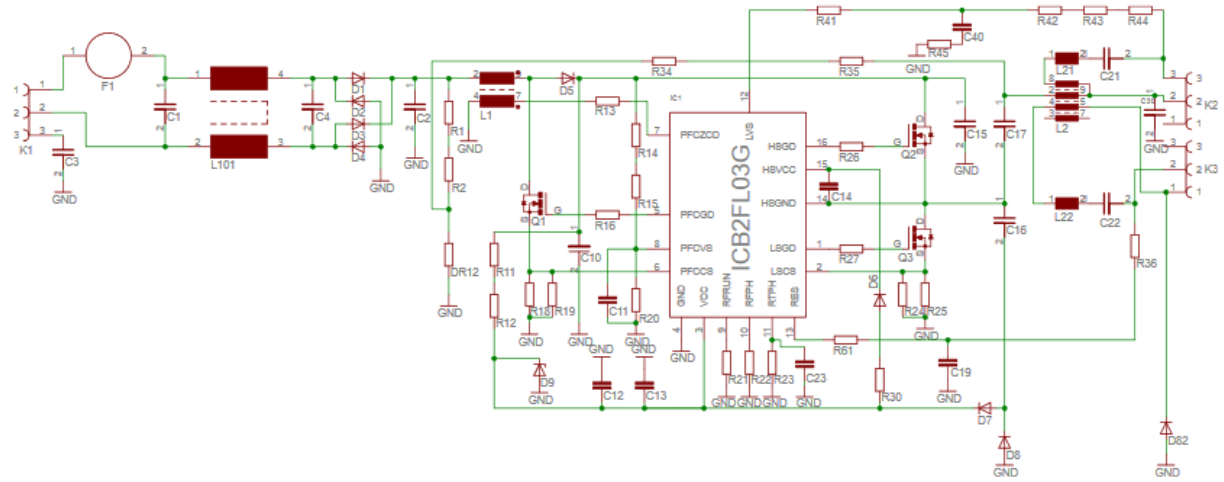
Product collaterals / Online support

Product page

Safety and operating instructions

Application note

Board schematic



Product overview incl. link to App note

OPN	SP Number	Package
EVALICB2FL03GTOBO1	SP000992690	Board