



## New Products Introduction

February 2018

### **StrongIRFET™**

200-300V StrongIRFET™ in TO-247AC package

### **ICL5102 AC-DC LED Driver IC**

High Performance PFC + resonant controller for LCC and LLC

### **TRENCHSTOP™ advanced isolation**

Fully isolated TO-247 package with industry leading IGBTs

### **Fixed frequency flyback controller and CoolSET™ 5th generation**

Infineon's latest 5th generation fixed frequency CoolSET™

### **Infineon® Power Start**

sTT800N16P55; sTT1400N16P55; sTT1900N16P55; sTT2200N16P55

### **BGC100GN6**

Antenna centric devices

# StrongIRFET™

## 200-300V StrongIRFET™ in TO-247AC package

Infineon's latest 200-300 V StrongIRFET™ devices are optimized for both high current and low  $R_{DS(on)}$  making them the ideal solution for industrial applications. The flagship IRF200P222 offers a 40 percent increase in current carrying capability and 32 percent lower  $R_{DS(on)}$  when compared to previous generation devices leading to increased power density and reduction in  $I^2R$  losses.



### Features

- >  $R_{DS(on)}$  improvement when compared to previous generations, > 30% @ 200V
- > High-current carrying capability, up to 40% higher than previous generations
- > 175°C junction temperature rated
- > Gate, avalanche, and dynamic dV/dT ruggedness
- > Fully characterized capacitance and avalanche SOA
- > Industry standard footprint

### Benefits

- > Reduced conduction losses
- > Reduction in BOM count
- > Ideal for industrial applications
- > Rugged, reliable performance
- > Accommodates legacy designs

### Target applications

- > Uninterruptible power supply (UPS)
- > Solar power inverter
- > Class D audio amplifier
- > Switched mode power supply (SMPS)
- > Brushed and BLDC motor drive
- > Battery powered circuits

### Application examples

- > Uninterruptible power supply (UPS)
- > Telecom power supply

### Complementary products (P2S)

- > [Smart low-side & high-side switches](#)

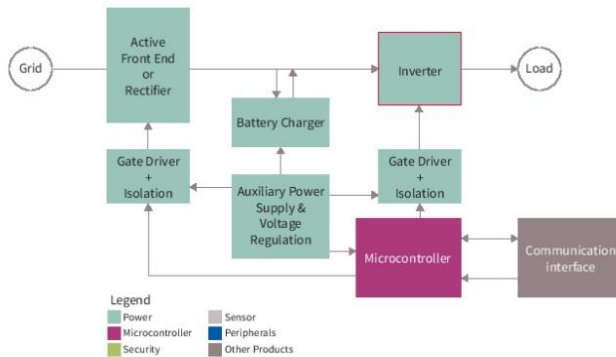
### Competitive advantage

- > Best in class silicon and packaging combined with a limited number of competitors with 200-300V TO-247 products gives us a unique advantage in markets we already serve.

### Product collaterals / online support

- > Product family [page](#)
- > IRF200P222 product [page](#)
- > IRF200P223 product [page](#)
- > IRF250P224 product [page](#)
- > IRF250P225 product [page](#)

### Block diagram / Uninterruptible power supply system diagram 10k - 50kVA



### NEW Value propositions

- > Highest efficiency
- > Highest power density
- > Highest system reliability
- > Ease of design

### Product overview incl. data sheet links

OPN	SP Number	Package
<a href="#">IRF200P222</a>	SP001582092	TO247
<a href="#">IRF200P223</a>	SP001582440	TO247
<a href="#">IRF250P224</a>	SP001582438	TO247
<a href="#">IRF250P225</a>	SP001582436	TO247
<a href="#">IRF300P226</a>	SP001582442	TO247
<a href="#">IRF300P227</a>	SP001582356	TO247

# ICL5102 AC-DC LED Driver IC

## High performance PFC + resonant controller for LCC and LLC



The ICL5102 resonant controller IC is designed specifically for power supply and lighting drivers and has integrated PFC and HB controllers. It supports universal input voltages ranging from 70 V<sub>AC</sub> to 325 V<sub>AC</sub>, and has a comparable wide output range. A low number of external components are required to configure and support this controller IC. All parameters are set by resistors. The ICL5102 supports fast startup under 500 ms at less than 100 μA. The best-in-class power factor correction (PFC) is greater than 99 % and Total Harmonic Distortion (THD) is less than 3.5 %. The controller has up to 94% efficiency by resonant topology. The active burst mode for low standby under 300 mW with an enable/disable function supports dimming.

The PFC controller features adaptive soft-start, brownout detection, improved THD and adjustable PFC. The resonant HB controller has a fully integrated 650 V high-side driver with self-adaptive dead time ranging between 250 ns and 750 ns. It can detect overload, short circuit, over voltage, and over temperature.

### Features

- > Universal input 80 -325V
- > Highest efficiency up to 94% by resonant topology
- > THD < 3.5% PF >0,95
- > Burst mode, low standby
- > Low BOM cost
  - Combo controller IC
  - 500V MOSFETs at LLC stage
  - Low cost resistors to set working points

### Benefits

- > Enables global designs
- > Best in Class PFC and THD at full and light load
- > High efficiency: more lumen output and less thermal load enabling effective design and less cost for LED's and heat sink
- > No components required to match the PFC and LLC stage
- > Protection and Auto restart
- > Less cost for product variety and stock keeping. Decrease of design variants
- > Less BOM enables cost optimized designs & higher competitiveness
- > Easy upgrade from ICL5101 to ICL5102

### Value Proposition

- > Customer can build LED driver with low THD, therefore more drivers can be installed in one grid without violating the strong European, American and Asian THD boundary values/regulations
- > The burst mode enabled low standby helps customers to meet e.g. European standby regulations better, and as such enabling truly global designs with better sales perspectives
- > Low heat dissipation enables customer to build compact LED driver, which are enabling stylish and small luminaires
- > Smaller LED build with ICL5102 driver save material such as housing size and potting glue

### Competitive advantage

- > PFC and resonant stage are integrated: no matching of these 2 stages are required compared to competitors single device approach
- > The ultra-low TDH requires less AC input filtering than competitors products
- > The device is evolved from a family of best-selling controllers, therefore well proven

### Complementary Products (P2S)

- > CoolMOS™ P7, CDM10V

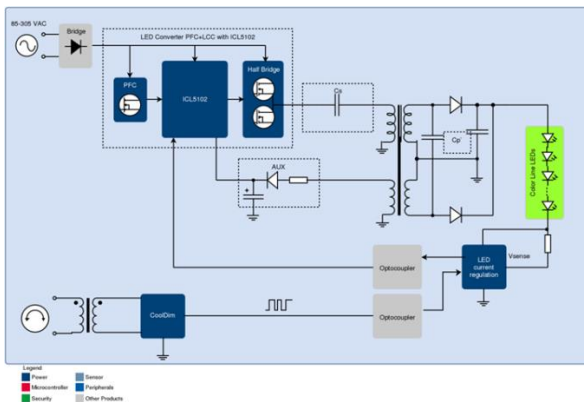
### Product collaterals / online support

- > Product family [page](#)
- > [Engineering report](#) ICL5102

### Target applications

- > LED lighting
- > Street lighting
- > LED-driver for commercial lighting

### Block diagram



### Evaluation board

#### 130 W LED Driver PFC/LLC-CC evaluation board with ICL5102

Order Code: REF-ICL5102-U130W-CC

The REF-ICL5102-U130W-CC evaluation board is a 130 W SMPS LED power supply, with constant current output in a voltage range from 76 V down to 38 V. Features include a wide output current range from 1.75 A down to 0.003 A, a wide dimming level of 100% down to 0.25% , fast time-to-light of 350 ms, a high power factor >90% @50% load at 230 V<sub>AC</sub> and an input current THD < 5% @50% load at 230 V<sub>AC</sub>. Following protection features are implemented: Output short circuit protection of the main output, LLC over current protection, capacitive mode regulation, over temperature protection (OTP), output over voltage protection (OVP), brown out detection (BO).

### Product overview incl. datasheet link

OPN	SP Number	Package
<a href="#">ICL5102XUMA1</a>	SP001609012	PG-DSO16
REFICL5102U130WCCTOBO1	SP001667160	PCB

# TRENCHSTOP™ advanced isolation

Fully isolated TO-247 package with industry leading IGBTs



This new package concept is able to match the highest requirements in terms of performance, design flexibility and ease of handling. By eliminating the need for thermal grease or thermal interface sheets the TRENCHSTOP™ Advanced Isolation is able to deliver at least 35% lower thermal resistivity and at least 10% system cost reduction, helping designers to lower system complexity, development time, and assembling costs.

Within the first wave we are launching four IGBTs with TRENCHSTOP™ HighSpeed 3 technology and one Rapid switching 650 V emitter controlled diode.

## Features

- > Fully Isolated package
  - Plug & play solution
  - 100% isolated
  - Viso: 3.0kV for 1 sec
- > Best in class  $R_{th(j-h)}$ 
  - 35% lower  $R_{th(j-h)}$  compared to Iso-foil
  - 50% lower  $R_{th(j-h)}$  compared to Full-Paks
- > Low coupling capacitance
  - 38pF
  - 36% lower than standard Isolation foils
  - 25% lower than MICA
  - Similar to  $Al_2O_3$

## Benefits

- > Lower assembly costs
  - No need to use isolation material and thermal grease
  - 35% reduction in assembling time compared to standard TO-247 with Iso-foils
- > Improved reliability
  - Increased yield eliminating misalignments of isolation foils
- > Decreased heatsink size or increased power density
  - Up to 10°C lower Tc compared to standard TO-247 with isolation material
  - Up to 20% lout increase for higher power output
- > Decreased EMI filter size & decreased system costs
- > Improved reliability
  - Complete manufacturing process control
  - Easy paralleling

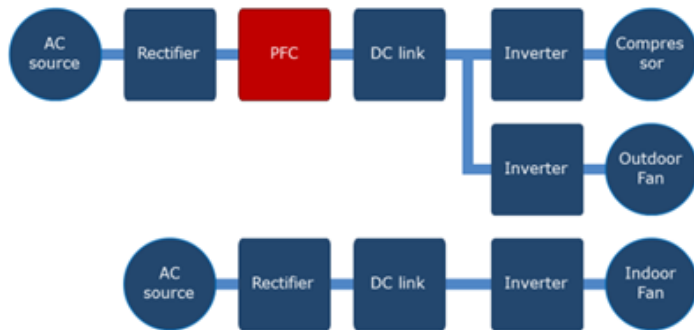
## Product collaterals / online support

- > Product [page](#)
- > IKFW40N60DH3E product [page](#)
- > IKFW50N60DH3E product [page](#)
- > IKFW50N60DH3 product [page](#)
- > IKFW50N60DH3E product [page](#)
- > IDFW40E65D1E product [page](#)

## NEW Value propositions

- > Reliable electrical insulation, good thermal conductivity, low thermal resistance, higher fsw, reduced assembly time, higher assembly yield
- > Higher reliability alternative to FullPak cost/performance insulation foil (used in MHA) or high performance isolation foil or ceramic (used in IND)

## Block diagram



## Target applications

- > AirCon, MHA, GPI, UPS, Solar, Welding

## Product overview incl. data sheet links

OPN	SP Number	Package
<a href="#">IKFW40N60DH3EXKSA1</a>	SP001502652	PG-HSIP247-3
<a href="#">IKFW50N60DH3EXKSA1</a>	SP001502656	PG-HSIP247-3
<a href="#">IKFW50N60DH3XKSA1</a>	SP001672364	PG-HSIP247-3
<a href="#">IKFW60N60DH3EXKSA1</a>	SP001502658	PG-HSIP247-3
<a href="#">IDFW40E65D1EXKSA1</a>	SP001502654	PG-HSIP247-3

# Fixed frequency flyback controller and CoolSET™ 5th generation

Infineon's latest 5th generation fixed frequency CoolSET™



Infineon's latest 5<sup>th</sup> generation fixed frequency CoolSET™ offer high performance with the integration of the latest 700 V and 800 V CoolMOS™ P7 families in both DIP-7 and DSO-12 packages. To further enhance the efficiency performance, frequency reduction operation has been implemented to achieve higher efficiency with lower switching frequency at mid and light load condition. In addition, for low AC line input operation, CCM (Continuous Current Mode) operation has been implemented to achieve lower conduction losses, thereby achieving a higher efficiency to meet international regulatory standards. To further reduce BOM count and cost of a non-isolated flyback design, an integrated error amplifier is integrated to allow a direct feedback from the primary output with minimal components and complexity. 5th generation fixed frequency CoolSET™ is targeted for SMPS applications such as auxiliary power supply for home appliances (e.g. washing machines, refrigerators and air-condition), set-top-boxes, LCD/LED monitors and general purpose power supply.

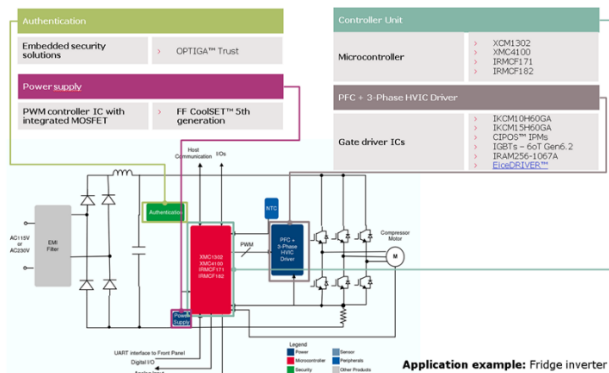
## Features

- > Integrated with 700 V and 800 V superjunction MOSFETs with avalanche capability
- > Comprehensive suite of protection
- > Fixed frequency switching scheme with eco mode
- > Support both DCM and CCM current control mode
- > Direct feedback with integrated error amplifier for non-isolated topologies

## Target applications

- > Auxiliary power supply for
  - home appliances (e.g. washing machines, refrigerators and air-condition)
  - set-top-boxes
  - LCD/LED monitors
- > General purpose power supply

## Block diagram



## Benefits

- > High efficiency with latest CoolMOS™ P7 SJ MOSFET family and fixed frequency switching scheme
- > Extensive protection coverage to increase system robustness
- > Auto-restart recovery scheme to minimize interruption to system operation
- > Single platform to support both isolated and non-isolated topologies

## Complementary products (P2S)

- > SJ MOSFET (e.g. 700V or 800V CoolMOS™ P7), Synchronous rectification controller (e.g. IR1161L or IR11688S), Microcontroller (e.g. XCM1302, XMC4100, IRMCF171 or IRMCF182), gate driver IC (IKCM10H60GA, IKCM15H60GA, CIPOS™ IPMs, IGBTs – 6oT Gen6.2, IRAM256-1067A, EiceDRIVER™), embedded security solution (OPTIGA™ Trust)

## Competitive advantage

- > Highest power delivery in the industry of up to 43 W with 800V CoolSET™
- > Selectable active burst mode entry/exit profile with the ability to disable to avoid acoustic noise
- > Integrated error amplifier to support direct feedback for non-isolated flyback design

## Products collaterals / online support

- > Product family [page](#)
- > CoolSET™ calculation [tool](#)
- > CoolSET™ [design guide](#)

## Product overview incl. data sheet links

OPN	SP Number	Package
<a href="#">ICE5ASAGXUMA1</a>	SP001602120	PG-DSO-8
<a href="#">ICE5GSAGXUMA1</a>	SP001602128	PG-DSO-8
<a href="#">ICE5AR4770AGXUMA1</a>	SP001602136	PG-DSO-12
<a href="#">ICE5GR4780AGXUMA1</a>	SP001602144	PG-DSO-12
<a href="#">ICE5GR2280AGXUMA1</a>	SP001602152	PG-DSO-12
<a href="#">ICE5GR1680AGXUMA1</a>	SP001602160	PG-DSO-12
<a href="#">ICE5AR0680AGXUMA1</a>	SP001602168	PG-DSO-12
<a href="#">ICE5AR4770BZSXKLA1</a>	SP001677144	PG-DIP-7
<a href="#">ICE5AR4780BZSXKLA1</a>	SP001677150	PG-DIP-7
<a href="#">ICE5AR0680BZSXKLA1</a>	SP001677154	PG-DIP-7

# Infineon® Power Start

sTT800N16P55; sTT1400N16P55; sTT1900N16P55; sTT2200N16P55



With the new soft starter modules Infineon Technologies Bipolar offers now the most complete portfolio for soft start applications. Main benefit of the new design concept in comparison to existing soft starter solutions is one slim foot-print (55 mm) fitting all current classes which allows contactor compatible designs (LxWxH 134x55x100 mm). Infineon® Power Start modules provide integrated heatsink and can be mounted without thermal grease.

## Features

- > One slim foot-print
- > Reduction to essential components
- > Integrated heatsink & no thermal grease
- > Thermal capacity directly coupled to silicon
- > Double side cooling

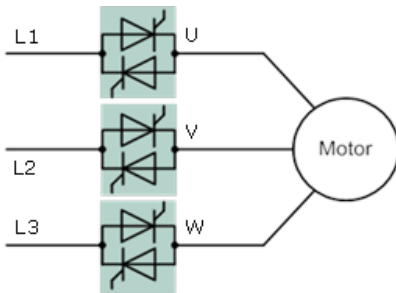
## Target applications

- > Soft Starter
- > Bypass switch
- > Power controller

## Competitive advantage

- > One foot print covers all current classes
- > Only one external housing needed

## Block diagram



## Benefits

- > Less complexity – one fits all
- > Easy mounting
- > Faster time-to-market
- > Best Power to Price Ratio for cost sensitive applications

## NEW Value propositions

- > Less complexity – one fits all
- > Easy mounting
- > Faster time-to-market
- > Best Power to Price Ratio for cost sensitive applications

## Product collaterals / online support

- > Product family [page](#)
- > STT800N16P55 product [page](#)
- > STT1400N16P55 product [page](#)
- > STT1900N16P55 product [page](#)
- > STT2200N16P55 product [page](#)

## Distribution training

- > Yearly onsite FAE training in May

## Product overview incl. datasheet link

OPN	SP Number	Package
<a href="#">sTT800N16P55XPSA1</a>	SP001630156	BG-PS55-1
<a href="#">sTT1400N16P55XPSA1</a>	SP001630148	BG-PS55-1
<a href="#">sTT1900N16P55XPSA1</a>	SP001630152	BG-PS55-1
<a href="#">sTT2200N16P55XPSA1</a>	SP001650702	BG-PS55-1

# BGC100GN6

## Antenna centric devices



BGC100GN6 is a fully integrated bi-directional coupler IC. It is designed for 2G/3G/4G RF front end applications. The device contains a bidirectional coupler operating in one or multiple bands within 0.6 GHz to 2.7 GHz frequency range. The coupled output contains a low-pass filter for 5 GHz ISM blockers suppression. It offers low insertion loss and high directivity. The coupler is controlled via a GPIO pin. This device deploying Infineon high volume RF-CMOS technology. No additional external power supply blocking or RF decoupling capacitors are required. It distinguishes with a very small size of only 1.1 x 0.7mm<sup>2</sup> and a maximum height of 0.4 mm.

### Features

- > Fully integrated coupler in RF CMOS
- > Bi-directional coupler
- > Fitted for feedback receivers to accomplish closed loop power control and antenna tuning
- > Wide frequency range: 0.6 to 2.7 GHz
- > Designed for low insertion loss and high directivity
- > Integrated low-pass filter for 5GHz WiFi jammers suppression
- > GPIO controlled
- > Small form factor 1.1mm x 0.7mm
- > RoHS and WEEE compliant package
- > Product validation: Qualified for industrial applications according to the relevant tests of JEDEC47/20/22

### Benefits

- > Compact directional coupler for cellular RF front-end applications
- > Optimized for power regulation and close loop antenna tunings
- > Addresses WiFi and cellular co-existence challenge with integrated WiFi filter in coupled path
- > Package preserves RF performance and is compatible with standard SMT lines

### Target applications

- > Mobile devices using
- > GSM
- > WCDMA
- > HSPA+
- > FDD-LTE
- > TDLTE
- > TD-SCDMA
- > CDMA

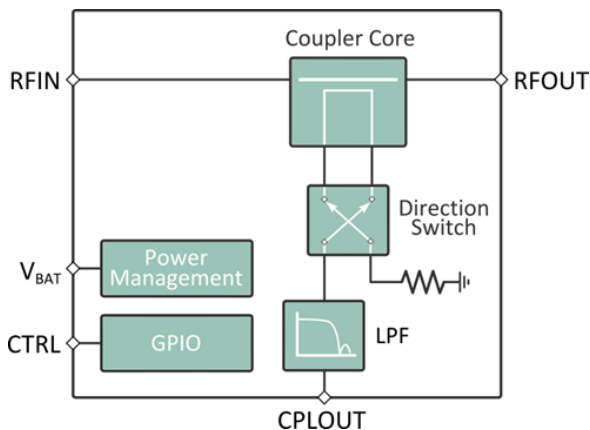
### NEW Value propositions

- > Optimized for power regulation and antenna tuning loops
- > Addresses WiFi and cellular co-existence challenge with integrated WiFi filter in coupled path
- > CA enabling, fast data rate
- > Maximizes satisfaction of engineers, operators, and end users
- > More power control and accurate antenna tuning loops
- > Reduced system power consumption through optimized technical performance
- > Lower power dissipation through the path
- > Applicable to all cellular bands

### Product collaterals / online support

- > Product family [page](#)

### Block diagram



### Product overview incl. datasheet links

OPN	SP Number	Package
<a href="#">BGC100GN6E6327XTSA1</a>	SP001637286	PG-TSNP-6