Power Management & Supply

AC/DC Selection Guide

www.infineon.com/power

Never stop thinking

Introduction

TODAY'S MODERN LIFESTYLE leads to a fast-growing energy requirement as more and more people are able to afford electronic equipment. Consumers can select from an ever-growing range of cellular phones, PDAs, digital cameras, cordless phones, DVD players, VCRs, TV sets, LCD monitors, notebook and desktop computers, and home appliances, to mention only a few. The power consumption of these electronic devices continues to rise as a result of ever-increasing functions.

ENERGY GENERATION FREQUENTLY pollutes the environment through radioactive waste and CO_2. In order to compensate and reduce the pace of these overly proportional growing energy requirements, we must use energy more efficiently.

SWITCH MODE POWER SUPPLIES (SMPS) represent today's most efficient energy conversion approach for electronic equipment. Increasing the SMPS efficiency directly leads to energy savings during the equipment's operational time.

SOME ELECTRONIC DEVICES operate only for a few hours during the day, and are consequently in standby mode during the rest of the day. Lowering the standby power consumption will save a considerable amount of energy.

A CONTINUOUS TREND towards system miniaturization has accompanied the development of electronic equipment from the very beginning. Simultaneously, the power rating of the devices increases. This means more power in a smaller space – high-power density is the operative word.

THE "POWER & SUPPLY" group of Infineon Technologies focuses its R&D activities on cost effectiveness, low standby power consumption, high efficiency and power density. Today we are proud to serve our customers with technologically leading products in many areas of an off-line SMPS, power MOSFETs (CoolMOS™, OptiMOS®2), Silicon Carbide Schottky diodes (thinQ!™), IGBTs, intelligent SMPS and PFC control ICs, and CoolSET™ (SMPS control IC and CoolMOS™ in one package).

Applications, Requirements and Solutions

Charger

- Cost effectiveness
  Integrated solution CoolSET™
- Low standby
  Active burst mode of CoolSET

LCD Monitor

- High-power density
  CoolMOS™ and CoolSET
- Low standby
  Active burst mode of CoolSET
  and ICE3 series controller

Adapter

- High-power density
  CoolMOS and CoolSET
- Low standby
  Active burst mode of CoolSET
  and ICE3 series controller

Lamp Ballast

- Cost-effectiveness
  TDA486x series
  PFC controller
  Integrated solution PFC CoolSET

Personal computer

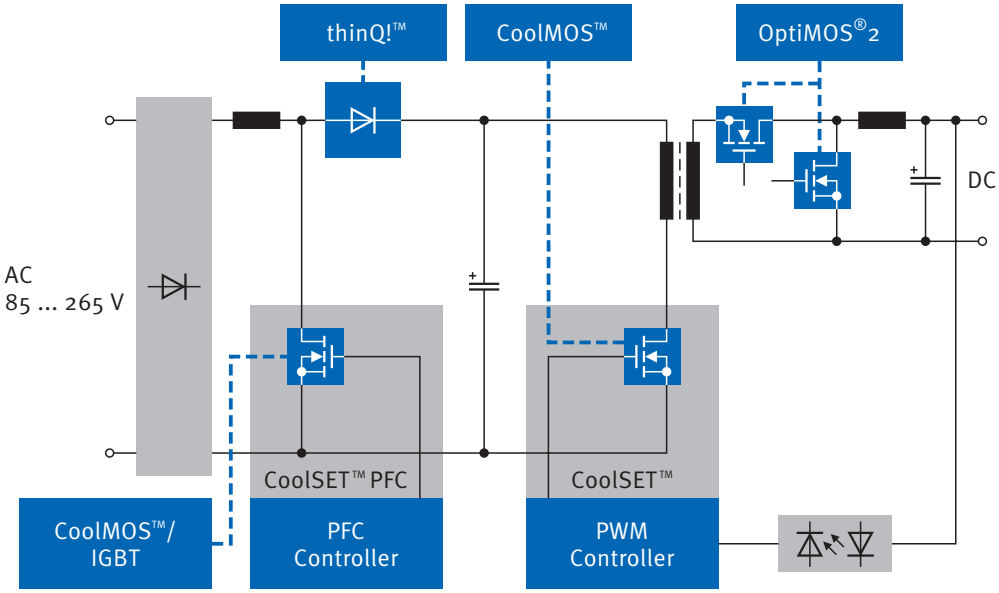
- High-power density
  CoolMOS
  thinQ!™ Schottky diodes
  OptiMOS®2
  TDA16888
  ICE1PC series PFC controller
- Low standby
  Active burst mode of CoolSET
  and ICE3 series controller

Server

- Ultra-high-power density
  CoolMOS
  thinQ! Schottky diodes
  OptiMOS®2
  TDA16888
  ICE1PC series PFC controller

TV, DVD, VCR, Set-top Box

- Cost-effectiveness
  Integrated solution CoolSET
  Charge pump PFC
  Peak load function of ICE3 series
- Low standby
  Active burst mode of ICE3 series
  Frequency reduction of ICE1QS01
- Low EMI
  Quasi-resonant switching



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TDA21801 – Fan Speed Controller

WITH THE NEW fans peed controller TDA21801, essential system monitoring features of switched mode power supplies (SMPS) such as adjustable minimum fan speed, fan ON/OFF and over-temperature protection (OTP) can be easily implemented. Only few external components added to the IC are necessary for it.

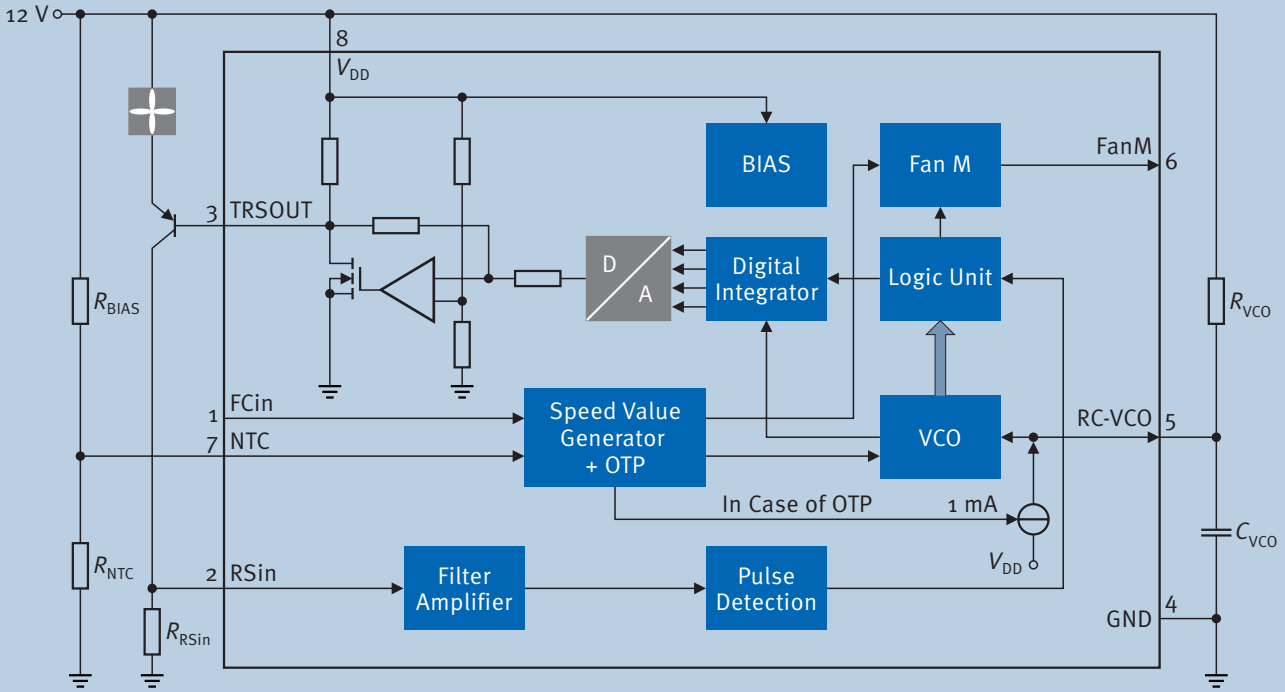
THE TDA21801 is designed for applications using 3- or 4-wire fan solutions like PC silver boxes, Server silver box AC/DC converter and industrial/medical power supplies.

Benefits

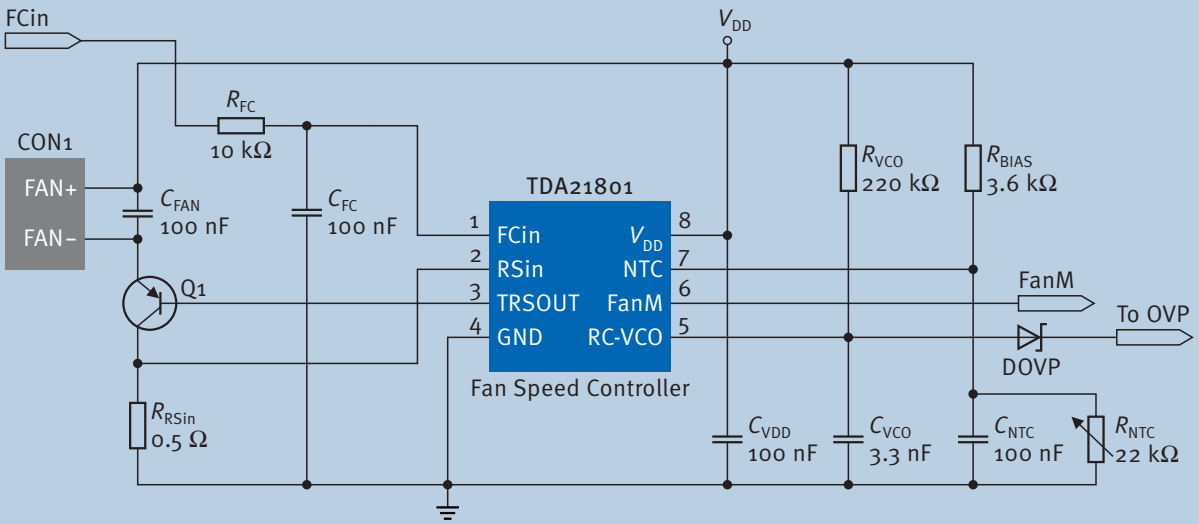
- Full control over fan speed due to precision reference
- Low system cost when replacing 4-wire fans
- Reduced noise level
- Increased safety of power supplies

Features

- In combination with 2-wire fans same functionality as 4-wire fan solution
- Overtemperature protection feature to protect system and power supply
- Adjustable minimum fan speed (750 rpm to 4000 rpm)
- Fan speed can be increased by external PWM or analogue signal
- DSO-8 Package / ROHS compliant



Block Diagram



Typical Application Circuit

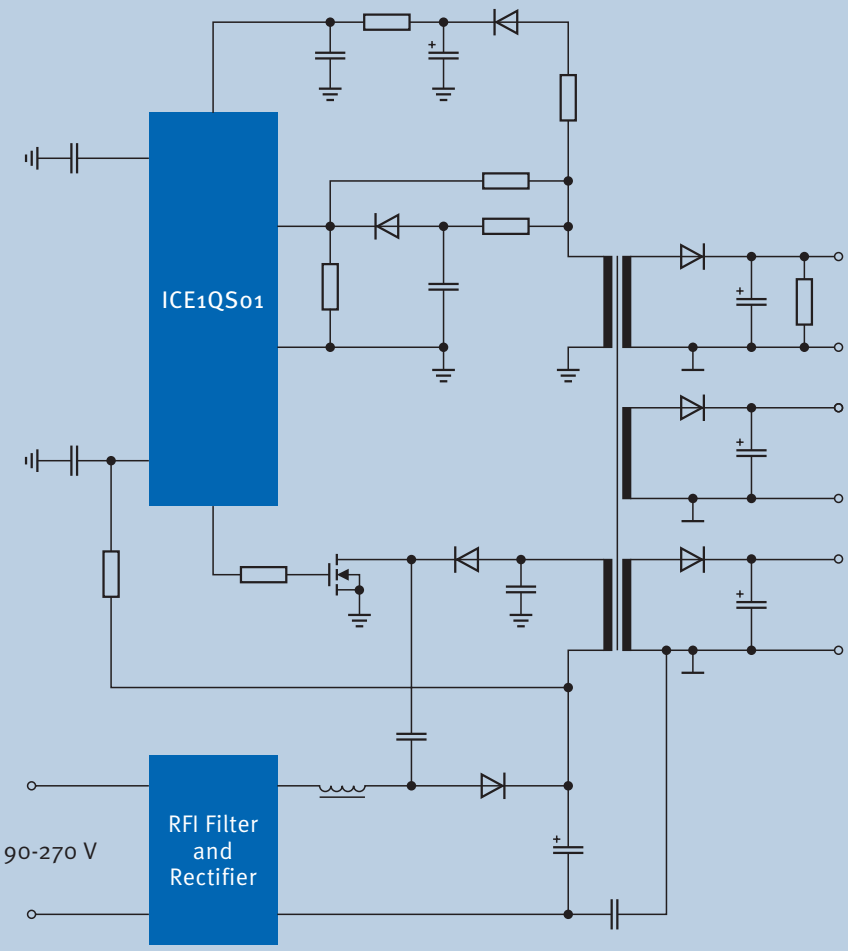
SMPS IC Overview

	PWM Controller					
	Quasiresonant			Fixed Frequency		
	TDA4605-2 TDA4605-3	TDA16846 TDA16847	ICE1QS01 ICE1QS02	ICE2A(B)S01 ICE3A(B)S02 ICE3BS02L	ICE3DS01	TDA16850-2
	General purpose control IC	Universal, high performance control IC including low-power standby and power factor correction	PWM Control IC including advanced burst mode, PFC and frequency reduction for best-in-class efficiency ratings + active burst mode + start up cell	General purpose Control IC	General purpose Control IC with enhanced ICE2A(B)S01 features	Control with special features for CRT monitor applications
Typical Application	CVT, VCR, adapter	CTV, VCR, set-top-box, adapter	CTV, VCR, adapter	Applications exceeding the max. power range of CoolSET: charger, adapter, auxiliary power supplies, low end CTV, set-top-box, DVD	Applications exceeding the max. power range of CoolSET: charger, adapter, auxiliary power supplies, low end CTV, set-top-box, DVD, LCD	Monitors, CTVs, adapters, chargers
General Features						
Operating mode	Quasiresonant	Quasiresonant Fixed Frequency Synchronized	Quasiresonant	Fixed Frequency	Fixed Frequency	Fixed Frequency synchronized
Switching frequency	< 200 kHz	< 250 kHz adjustable in fixed frequency mode	< 250 kHz	100 kHz (67kHz)	110 kHz	60 kHz fixed < 130 kHz synchr.
Standby frequency	approx. 20 kHz	adjustable	20 kHz	21 kHz	–	20 kHz
Maximum duty cycle	unlimited	unlimited	unlimited	72%	72%	60%
Primary regulation without additional components	✓	✓	✓	–	–	–
Standby power	5 W / 400 mW	< 1 W / 400 mW	< 1 W / 400 mW	< 1 W / no load	100 mW / no load	< 1 W / no load
Low standby power mode active burst mode	–	–	–	–	480 mW / 300 mW	–
Soft switching for low EMI	–	–	–	✓	✓	✓
Maximum drain-source voltage @ 125°C T_j	*	*	*	*	*	–
Power range (85 ... 270 V) without heat sink	*	*	*	*	*	–
Power range (190 ... 270 V) without heat sink	–	–	–	–	–	–
Integrated auxiliary power supply	–	–	–	–	–	✓
Integrated 500V start-up cell	–	–	–	–	✓	–
PFC functionality	–	Charge Pump	Charge Pump	–	–	–
Protection Features						
Undervoltage lock-out	✓	✓	✓	✓	✓	✓
Overload and open loop correction	✓	✓	✓	✓	✓	✓
Overload protection	✓	✓	✓	✓	✓	–
Secondary undervoltage	✓	✓	✓	–	–	–
Cycle by cycle current limitation	✓	✓	✓	✓	✓	✓
Sophisticated power limitation management	✓	✓	✓	✓	✓	✓
Temporary high-power circuit	–	TDA16847	–	–	✓	–
Adjustable peak current limitation via external resistor	✓	✓	✓	✓	✓	✓
Current limitation via internal sense field	–	–	–	–	–	–
Demagnetization protection	✓	✓	✓	–	–	–
Thermal shut-down (with auto-restart)	–	–	–	✓	✓	✓
Auto restart mode for all protection features	✓	✓	✓	–	✓	–
Latch-off mode	–	–	–	–	✓	–
Brown out protection	–	–	–	–	–	–
Supply current with active gate (typ.)	11 mA	5 mA	10 mA	6.5 mA	7.2 mA	3 ... 10 mA
VCC operating range	7.5 ... 15.5 V	8 ... 16 V	9 ... 20 V	8.5 ... 21 V	8.5 ... 21 V	8.5 ... 22 V
DIP-package	DIP-8	DIP-14	DIP-8	DIP-8	DIP-8	DIP-8
SMD-package	–	DSO-14	DSO-8	DSO-8	DSO-8	–
ISODRAIN-package	–	–	–	–	–	–

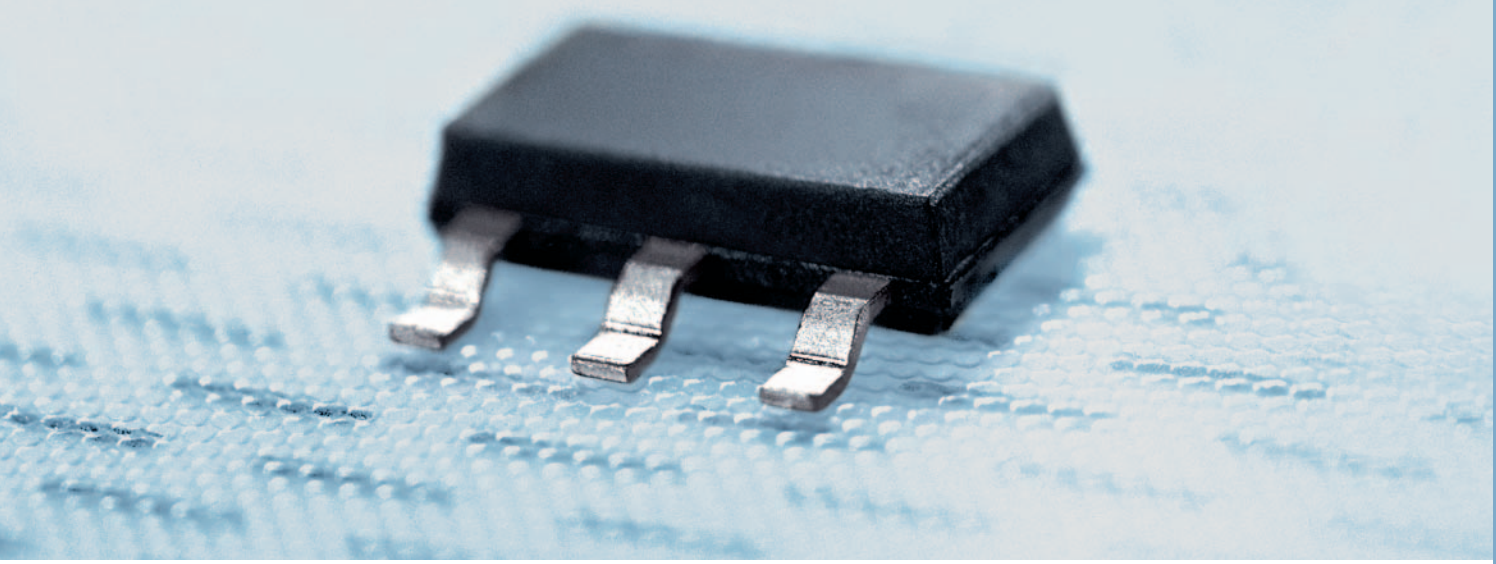
* Depending on topology and switching transistor
** Only available in ISODRAIN package

Combo	PFC Controller		CoolSET™: Controller with CoolMOS™ in one Package				
PWM+CCM PFC	CCM	DCM	Fixed Frequency				
TDA16888	**ICE1PCS01 ICE1PCS02**	**TDA4862 TDA4863 TDA4863-2**	**F3 Series** ICE3A(B)0365 ICE3A(B)0565 ICE3A(B)1065 ICE3A(B)1565 ICE3A(B)2065 ICE3A(B)2565 ICE3A0365L ICE3A1065L ICE3A1565L	**F3 Jitter Series** ICE3B0365(J) ICE3B0565(J) ICE3B1065(J) ICE3B1565(J)	**F3 Isodrain** ICE3A(B)2065P ICE3A(B)3065P ICE3A(B)3565P ICE3A(B)5065P ICE3A(B)5565P	**F2 650V Series** ICE2A(B)0565 ICE2A0565 ICE2A0565 ICE2A(B)165 ICE2A(B)265 ICE2A(B)365 ICE2A(B)765**	**F2 800V Series** ICE2A180 ICE2A280 ICE2A380**
High performance power combi controller including PFC and PWM stage	Standalone PFC controller for boost topology with advanced diode protection	PFC Controller for high-power factor and active harmonic filter	Full protection features + low power standby mode and internal leading edge blanking + softstart + active burst mode + startup cell + built-in blanking window + latch-off mode	Full protection features + low power standby mode and internal leading edge blanking + softstart + active burst mode + startup cell + built-in blanking window + jittering	Full protection features + low power standby mode and internal leading edge blanking + softstart + active burst mode + startup cell + built-in blanking window	Full protection features + low power standby mode and internal leading edge blanking + softstart	Full protection features + low power standby mode and internal leading edge blanking + softstart
Industrial aircon, motor drive, PC, server, adapter	Industrial, PC, motor drive, white goods	Ballast, CTV, PC monitor, adapter	Charger, auxiliary supplies, PC & Display standby supply, adapter,STB, DVD,VCR	Charger, auxiliary supplies, PC & Display standby supply, adapter,STB, DVD,VCR	Charger, auxiliary supplies, PC & Display standby supply, adapter,STB, DVD,VCR	Charger, auxiliary supplies, PC & Display standby supply, adapter,STB, DVD,VCR	Charger, auxiliary supplies PC & Display standby supply, adapter,STB, DVD,VCR
Fixed Frequency Continuous Conduction Mode	Fixed Frequency	Discontinuous Conduction Mode	Fixed Frequency	Fixed Frequency	Fixed Frequency	Fixed Frequency	Fixed Frequency
up to 200 kHz	up to 250 kHz 67 kHz	Free-running 30 ... 300 kHz	100 kHz (67)	67 kHz	100 kHz (67)	100 kHz (67)	100 kHz
PWM 0 kHz / PFC 50%	–	–	–	–	–	down to 21 kHz	down to 21 kHz
PWM 50% / PFC 94%	95% @ 125 kHz	98%	50%	50%	72%	72%	72%
–	–	–	–	–	–	–	–
< 1 W / no load	–	n/a	✓	✓	–	–	–
–	–	✓	✓	✓	–	–	–
✓	–	–	✓	✓	✓	✓	✓
✓	–	–	650 V	650 V	650 V	650 V	800 V
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
✓	–	–	650 V startup cell	650 V startup cell	650 V startup cell	–	–
–	–	–	–	–	–	–	–
✓	✓	✓	–	–	–	–	–
✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓**	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓
output undervoltage protection			✓	✓	✓	✓	✓
PWM ✓ PFC ✓	✓	✓	✓	✓	✓	✓	✓
–	✓	–	✓	✓	✓	✓	✓
–	–	–	–	–	–	–	–
✓	✓	✓	✓	✓	✓	✓	✓
–	–	–	✓	✓	✓	–	–
–	–	✓	–	–	–	–	–
–	–	–	✓	✓	✓	✓	✓
–	–	–	✓	✓	✓	✓	✓
–	–	–	✓	–	–	–	–
–	✓	–	–	–	–	–	–
15 ... 40 mA	18 @ 125 kHz	4 mA	5.5 ... 8.1 mA	2.5 mA	5.7 ...7.6 mA	5.3 ... 8.5 mA	6.5 ... 8.5 mA
14 ... 19 V	10 ... 22 V	12.5 ... 20 V	8.5 ... 21 V	10.3 ... 261 V	8.5 ... 21 V	8.5 ... 21 V	8.5 ... 21 V
DIP-20	DIP-8	DIP-8	DIP-8/DIP-7	DIP-8/DIP-7	–	DIP-8/DIP-7	DIP-7
DSO-20	DSO-8	DSO-8	DSO-16-12	DSO-16-12	–	DSO-16/12	–
–	–	–	–	–	TO220-6	–	TO220-6

PWM Controller



Application Example: 80 W Demoboard with ICE1QS01 and Primary Regulation



TDA4605-2 / TDA4605-3

Control IC for Switched-Mode Power Supplies using MOS Transistor

- Fold-back characteristic protects external components
- Burst mode at secondary short-circuit
- Protection against open or a short of the control loop
- Mains undervoltage lock-out
- Soft-start for quiet start-up without noise
- Chip-over temperature protection
- Not for new designs, replaced by TDA16846

TDA16846 / TDA16847

SMPS Controller Supporting Low-power Standby and Power Factor Correction

- Line current consumption with PFC
- Stable and adjustable standby frequency
- Very low start-up current
- Soft-start for quiet start-up
- Freely usable fault comparators
- Synchronization and fixed frequency facility
- Over and undervoltage lock-out
- Switch off at mains undervoltage
- Temporary high-power circuit (only TDA16847)
- Mains voltage dependent fold-back point correction
- Continuous frequency reduction with decreasing load
- Adjustable ringing suppression time

ICE1QS01

SMPS Controller with very few peripheral components, featuring Advanced Burst Mode, Frequency Reduction and Power Factor Correction

- Line current consumption with PFC
- Stable standby frequency of 20 kHz
- Advanced burst mode < 1 W @ 350 mW sec. power
- Soft-start for noiseless start-up
- Digital frequency reduction for higher efficiency and no-jitter designs
- Over and undervoltage protection
- Fold-back point correction for stable output power independent of line voltage variations
- Ringing suppression time controlled by output power
- Additional fault comparator optionally useable

TDA16850-2

SMPS Controller for CRT Monitors

- Controller for fly-back topology
- Current mode PWM with spike blanking
- Leading edge triggered pulse with modulation
- Fast, soft switching totem pole gate drive (1 A)
- Soft-start management for safe start-up
- Off mode with power consumption less than 1 W
- Fast and slow peak current limitation
- All protection features available

PWM Controller

ICE2XS01

Off-line SMPS Current Mode Controller

- PWM – Current Mode Controller
- 67 kHz and 100 kHz fixed frequency operation
- Max duty cycle up to 72%
- Frequency reduction for low standby
- Adjustable soft-start
- Propagation delay compensation
- Internal leading edge blanking
- Fully protected
- DIP-8 / DSO-8

ICE3DS01

Off-line SMPS Current Mode Controller

- PWM and 500 V start-up cell in one package
- Active burst mode for ultra-low standby power (P_{IN} < 100 mW)
- Short-term overload function
- New protection: latched OFF or auto restart
- 100 kHz fixed frequency operation
- May duty cycle up to 72%
- Adjustable soft-start
- Propagation delay compensation
- Internal leading edge blanking
- Fully protected
- DIP-8 / DSO-8

ICE3AS02

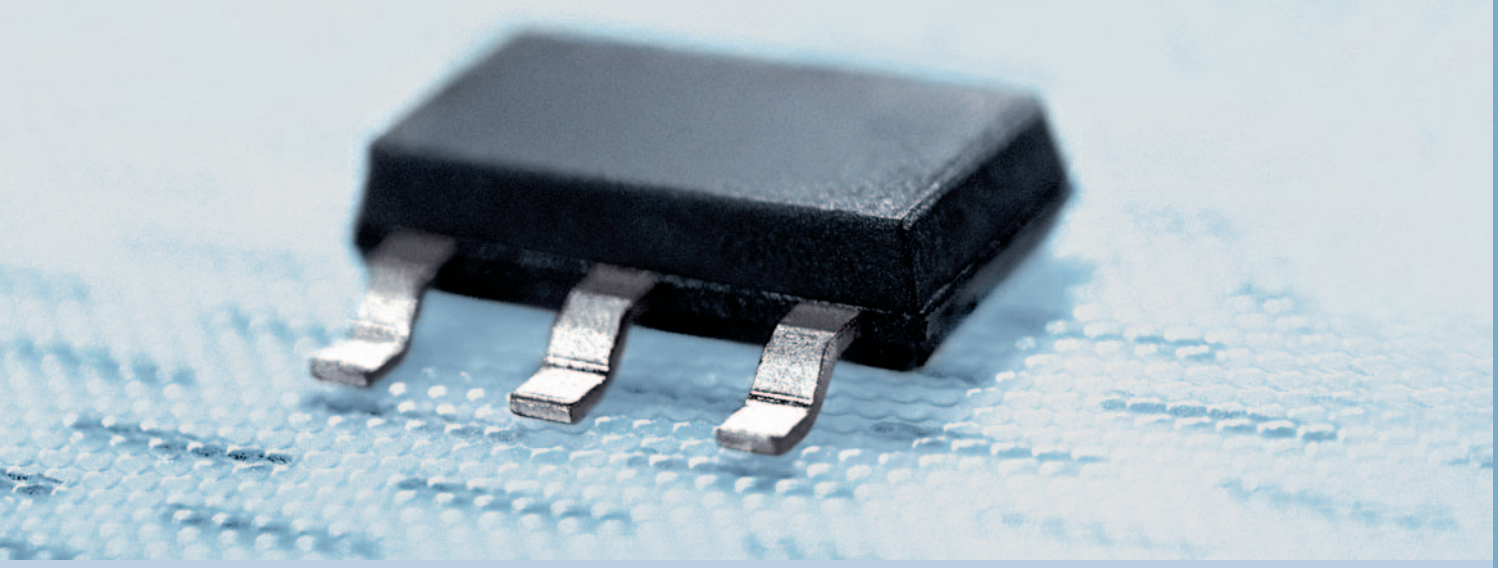
Additional features to ICE3DS01

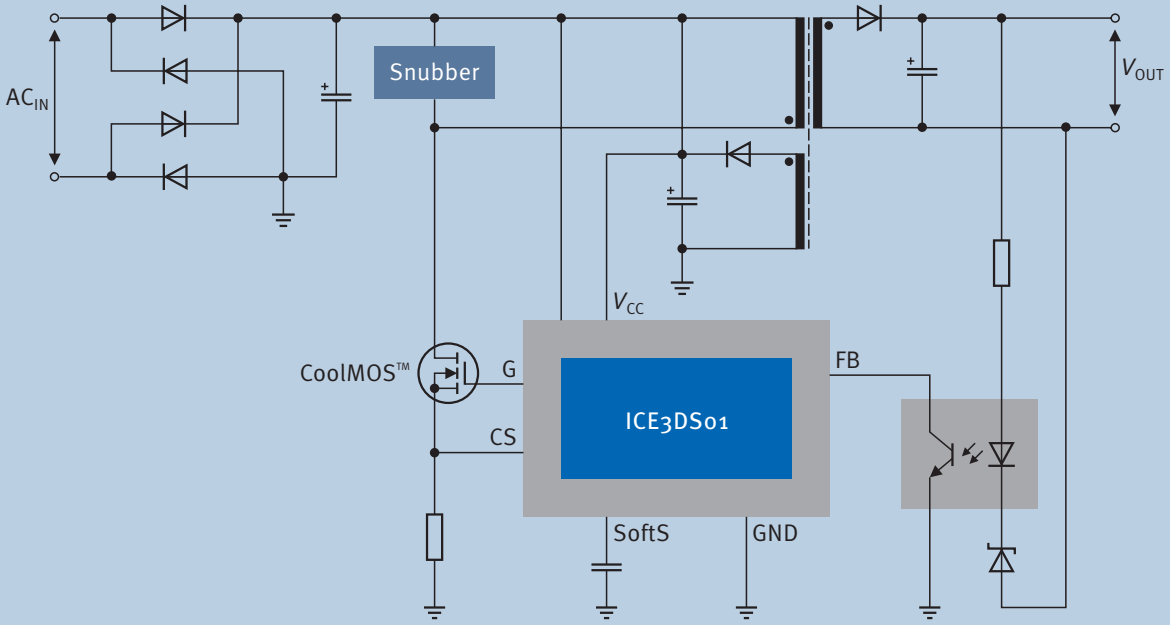
- 100 kHz

ICE3BS02

Additional features to ICE3DS01

- 67 kHz





Application Example: Circuit Diagram for PWM Fly-back Converter

Smart Ballast Controller

ICB1FL02G

Smart Ballast Controller ICB1FL02G is designed to control a Fluorescent Lamp Ballast including

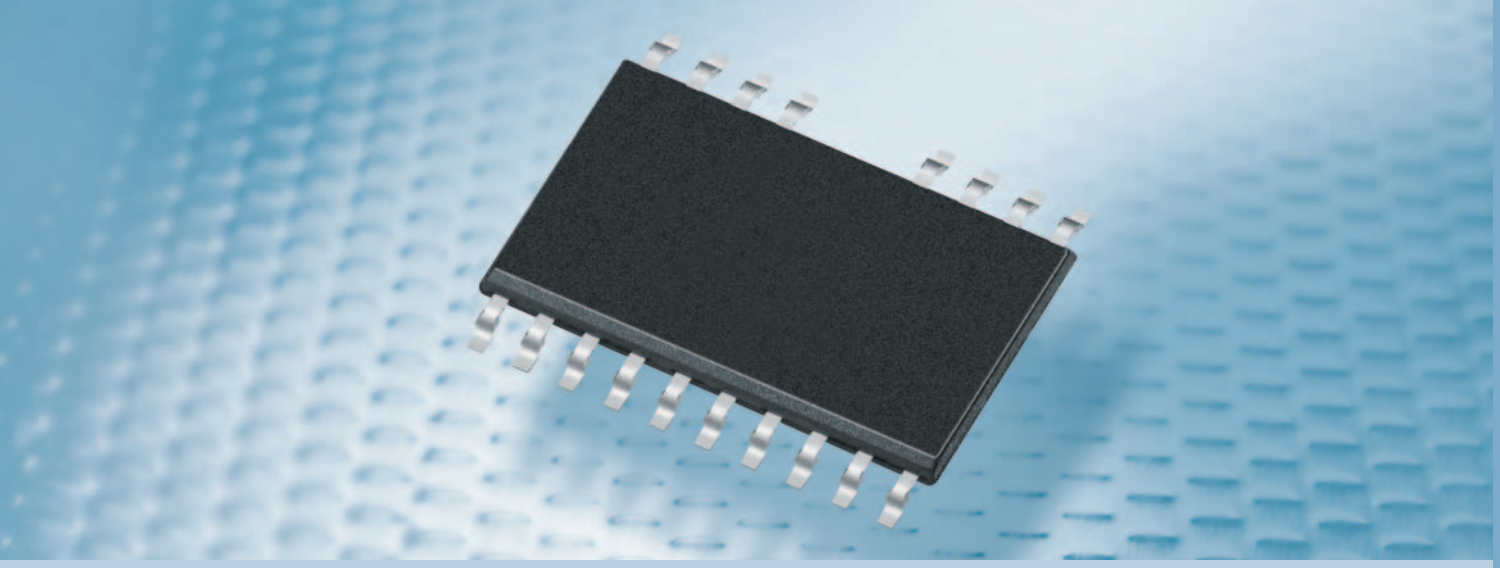
- Discontinuous Conduction Mode Power Factor Correction (PFC)
- Lamp Inverter Control and
- High Voltage Level-Shift Half Bridge Driver with Coreless Transformer Technology in one package.

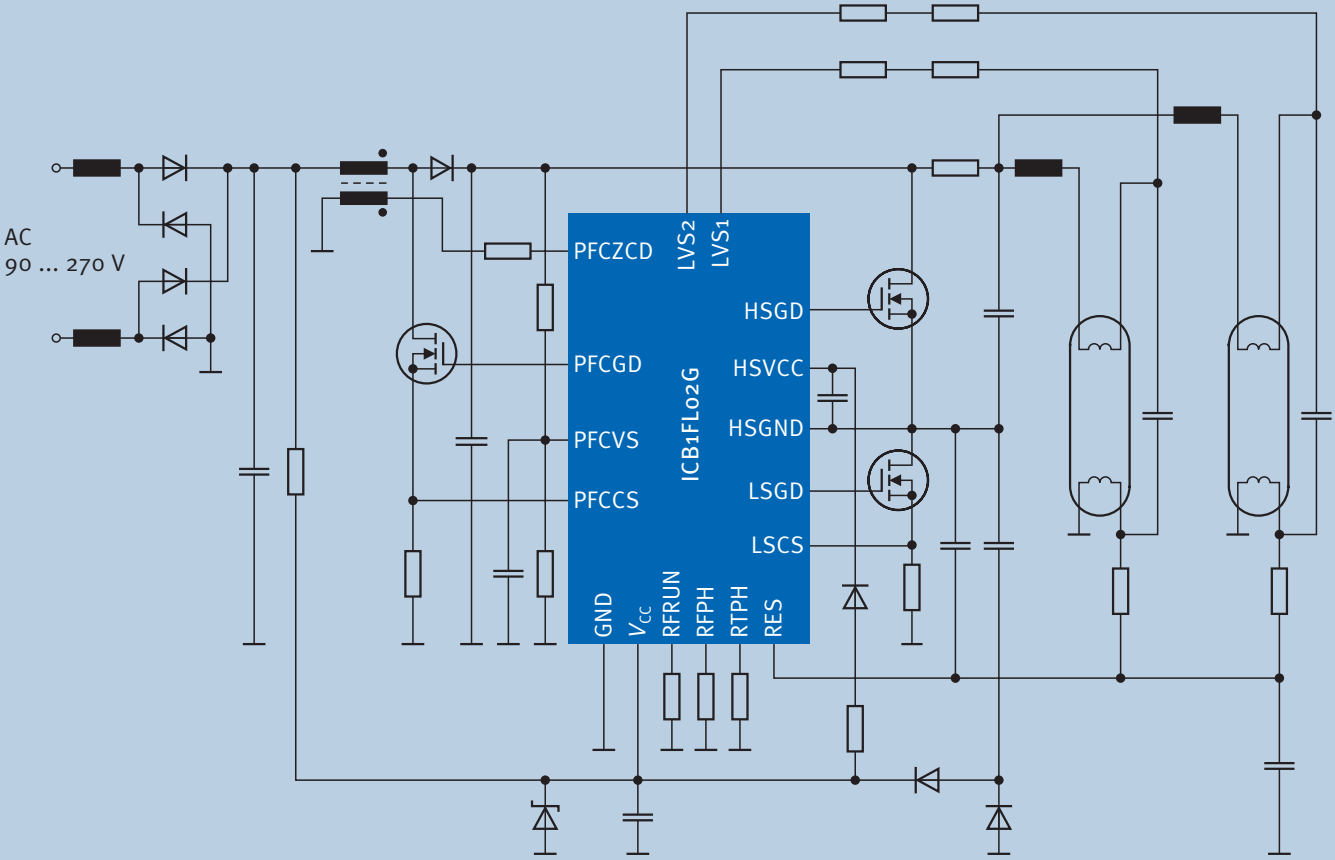
Product Highlights

- Critical conduction mode PFC with overcurrent and overvoltage protection and internal loop compensation
- End-of-life detection in multilamp topologies and detection of capacitive mode operation in T5 designs
- Improved reliability and minimized spread due to digital and optimized analog control functions

Short Form Data	min.	typ.	max.
Operating Voltage Range	10.5 V	–	17 V
Turn-on Threshold	–	14 V	–
Supply Current during UVLO and Fault Mode	–	–	150 µA
Operating Frequency of Inverter during Run Mode	20 kHz	–	100 kHz
Operating Frequency of Inverter during Preheating Mode	Run Frequency	–	150 kHz
Preheating Time	0	–	2000 ms
Dead Time between LS and HS Gate drive	–	1750 ns	–
Operating Voltage Range of floating HS Gate Drive	-900 V	–	+900 V
LS Current Limitation Threshold during Ignition	–	0.8 V	–
LS Current Protection Threshold	–	1.6 V	–
End-of-Life Detection Threshold	-230 µA	–	+230 µA
Amplitude Ratio for Detection of Rectifier Effect	0.85	–	1.15
Detection of non-ZVS Operation CapMode 1 & 2	–	–	–
PFC Preconverter control with critical and discontinuous CM	–	–	–
Maximum controlled on-time	–	23.5 µs	–
Hysteresis of Zero Current Detector	–	1 V	–
PFC current Limitation Threshold	–	1 V	–
Reference voltage for control of Bus Voltage	2.47 V	2.50 V	2.53 V
Overvoltage Detection Threshold	–	2.75 V	–
Undervoltage Detection Threshold	–	1.83 V	–
Open Loop Detection	–	0.375 V	
Junction Operating Temperature Range	-25°C	–	+125°C
Pb-free Lead Plating; ROHS compliant	–	–	–

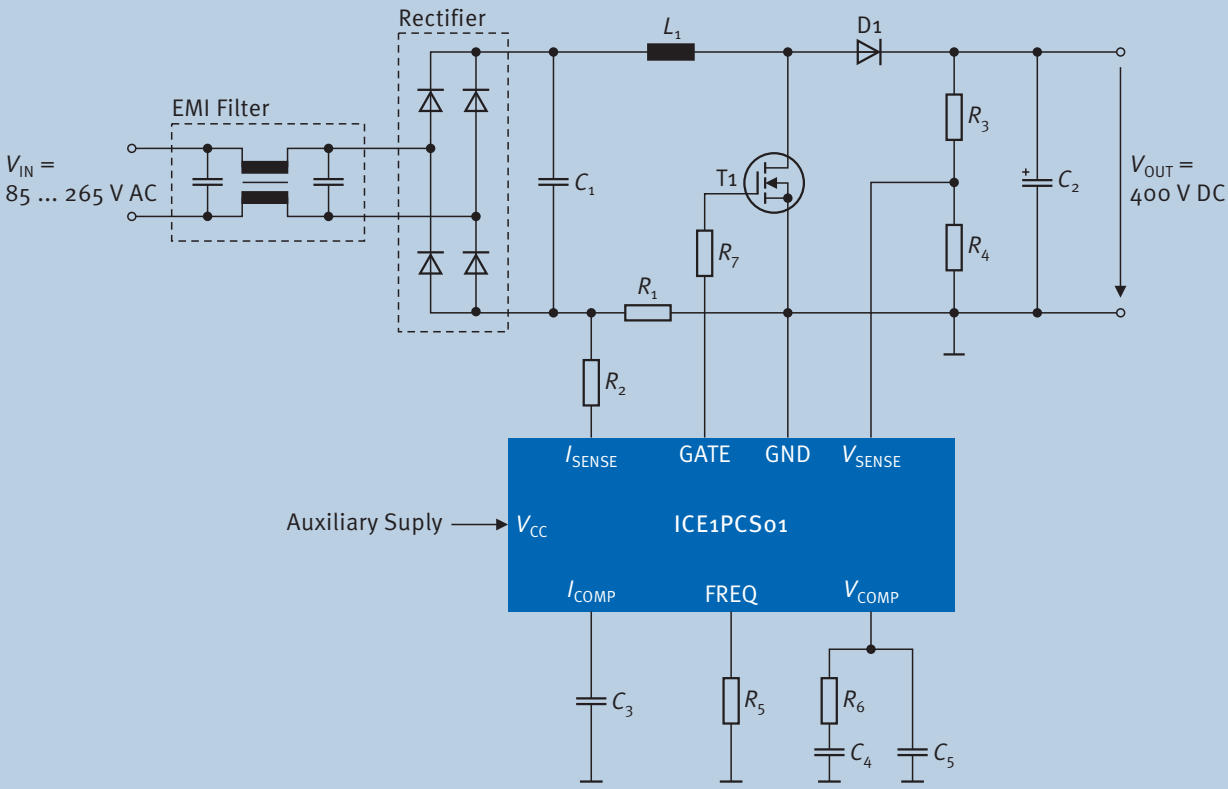
Due to a minimum number of external components necessary, system costs can be brought down significantly. ICB1FL02G can be used and designed easily and is therefore a basis for cost effective ballast solutions of the future.



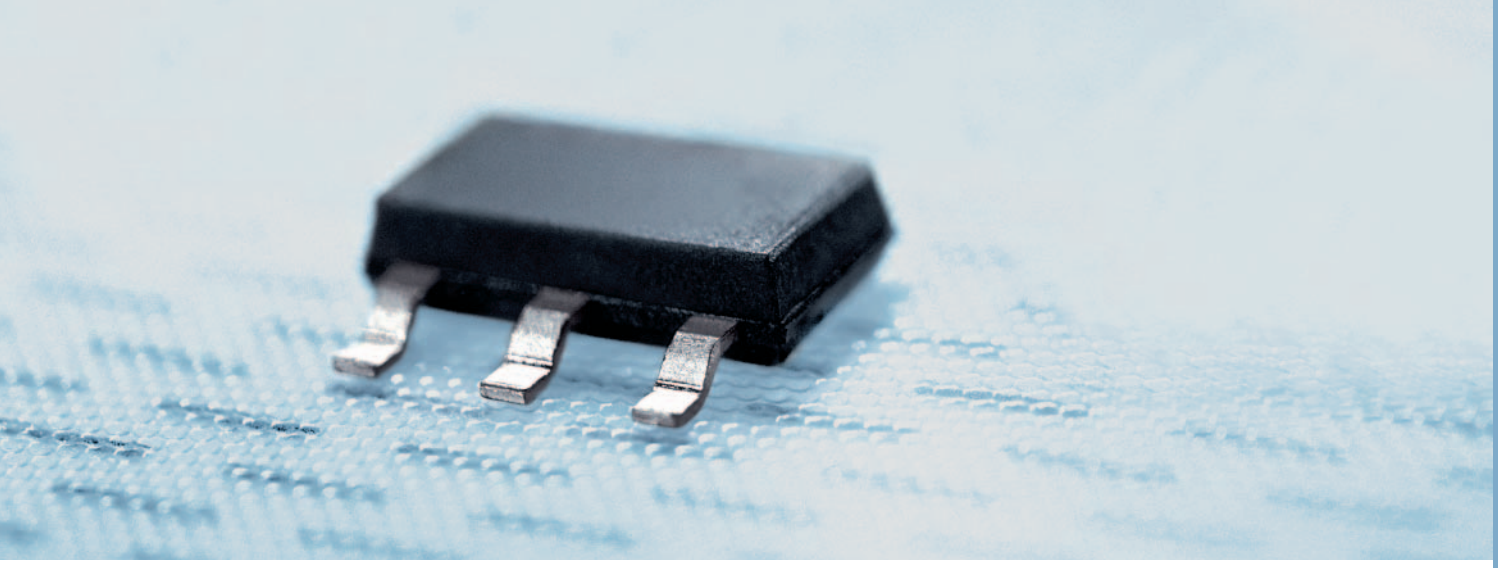


Smart Ballast Controller – ICB1FL02G – Block Biagram

PFC and Combo Controller



Application Example: Circuit Diagram for PFC Boost Converter



ICE1PCS01

Stand-alone Power Factor Correction (PFC) Controller in Continuous Conduction Mode

- Easy to use with very few external components
- Average current control
- Programmable operating frequency (50 to 250 kHz)
- Unique set of protection features including brown-out protection and boost diode protection
- Precise internal reference voltage
- Unique soft-start
- Enhanced dynamic response
- Leading edge modulation

ICE1PCS02

Additional features to ICE1PCS01

- Brown out protection
- Fixed Frequency 67 kHz

TDA4862

Power Factor Controller (PFC) IC for High-power Factor and Active Harmonic Filter

- IC for sinusoidal line-current consumption
- Power factor approaching 1
- Controls boost converter as an active harmonics filter
- Internal start-up with low current consumption
- Zero current detector for discontinuous operation mode
- High current totem pole gate driver
- Trimmed ±1.4% internal reference
- Undervoltage lock out with hysteresis
- Very low start-up current consumption
- Pin compatible with world standard
- Output overvoltage protection
- Current sense input with internal low pass filter
- Totem pole output with active shutdown during UVLO
- Junction temperature range -40°C to +150°C
- Available in DIP-8 and DSO-8 packages

TDA4863 / TDA4863-2

Power Factor Controller IC for High-power Factor and Low THD
Additional Features to TDA4862

- Reduced tolerance of signal levels
- Improved light load behavior
- Open loop protection
- Current sense input with leading edge blanking LEB
- Undervoltage protection

ICE1PD265

PFC CoolSET™ version of TDA4863

- 650 V avalanche rugged CoolMOS™
- $R_{DS(on)}$ = 1.1 Ω
- DSO-16 package
- PFC output power
  55 W @ V_{IN} = 90 V (T_A = 70°C)
  140 W @ V_{IN} = 180 V (T_A = 70°C)
- Reduced size and assembling costs
- Highest efficiency due to lower power dissipation

TDA16888

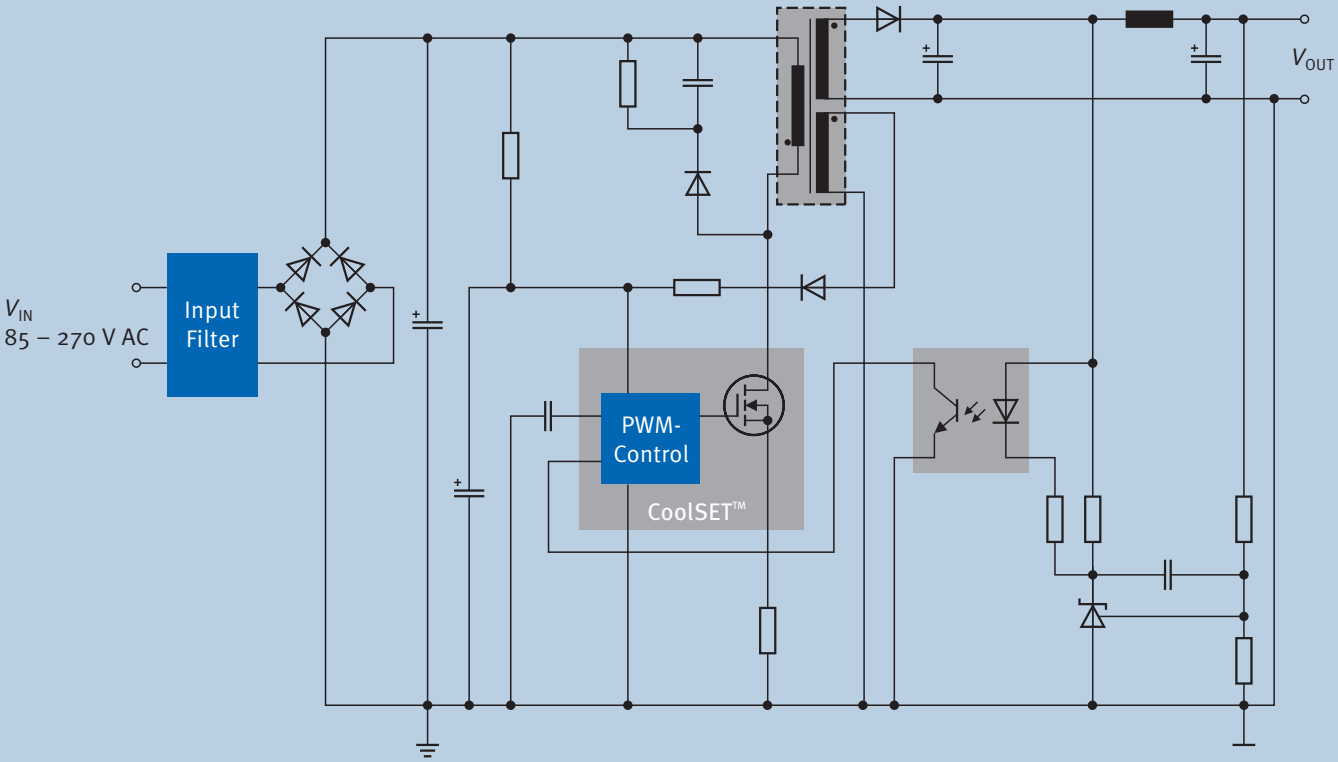
High-performance Power Combi Controller
PFC Section

- IEC 1000-3 compliant
- Additional operation mode as auxiliary power supply
- Fast, soft switching totem pole gate drive (1 A)
- Leading edge triggered pulse width modulation
- Peak current limitation
- Continuous/discontinuous mode possible
- 94% maximum duty cycle

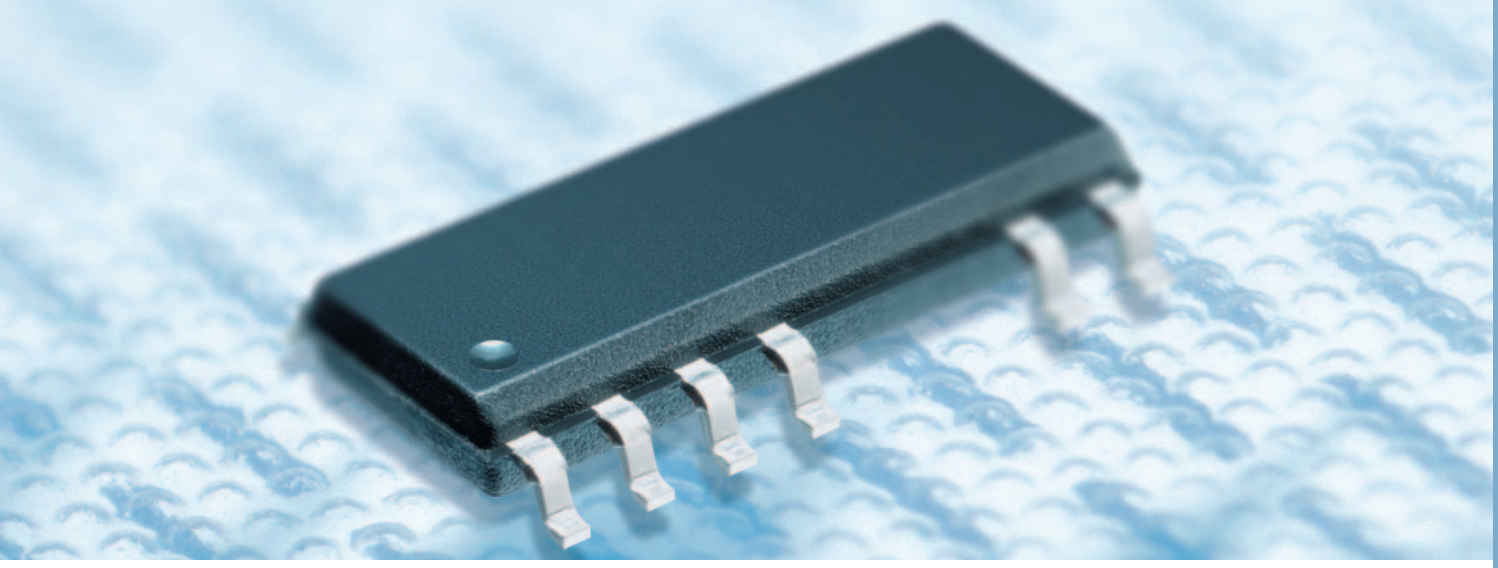
PWM Section

- Improved current mode control
- Fast, soft switching totem pole gate drive (1 A)
- Soft-start management
- Topologies are forward or fly back
- 50% maximum duty cycle

CoolSET™



Application Example: CoolSET™ for Off-line Switch Mode Power Supplies



ICE2Axxx / ICE2Bxxx

Off-line SMPS Controller with 650 V / 800 V CoolMOS™
on Board (High Protection & Energy Saving Solution)

- 650 V or 800 V avalanche rugged CoolMOS
- Typical $R_{DS(on)}$ = 0.45 Ω ... 4.7 Ω at T_j = 25°C

General Features

- Frequency reduction for lowest standby power (below 1 W) to meet European requirements 100 kHz / 67 kHz switching frequency
- Internal leading edge blanking
- Modulated gate drive for soft switching
- High peak power accuracy
- DIP-7, DIP-8 or P-TO220-6, I^2-PAK package

ICE3Axxxx / ICE3Bxxxx

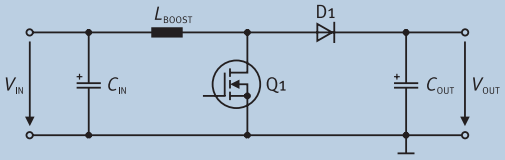
Off-line SMPS Controller with 650 V CoolMOS on Board
(High Protection & Energy Saving Solution)

Additional Features to ICE2Axxx / ICE2Bxxx

- Startup cell
- Active burst mode
- Adjustable blanking window for load jump

SMPS Topologies

Boost Converter

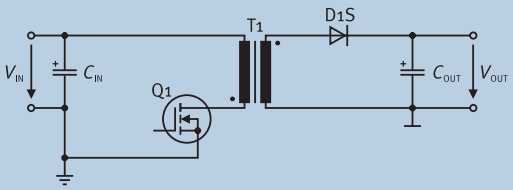


Advantages
- Simple choke
- No problems with magnetic coupling
- Cheap solution

Disadvantages
- Power transistor drain-source voltage $V_{DS} = V_O > V_I$
- No galvanic isolation between input and output voltage
- Medium loading of the output capacitor

Infineon Parts
TDA16888, TDA4862, TDA4863, TDA4863-2, CoolSET™, ICE1PD265, ICE1PCS01, ICE2xS01, ICE3DS01

Fly-back Converter

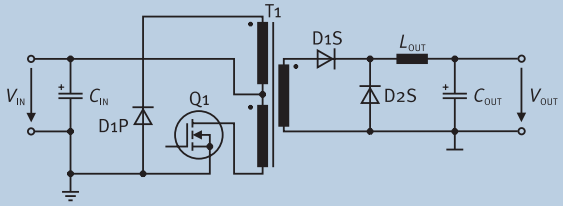


Advantages
- Simple, low part count
- Several output voltages can be regulated simultaneously
- Wide control range for operating voltage changes

Disadvantages
- Power transistor drain-source voltage $V_{DS} = V_{IN} + n \times (V_{OUT} + V_{D1S})$
- Heavy loading to output capacitor and diode

Infineon Parts
TDA16888, TDA16846, TDA16850, CoolSET™, ICE2xS01, ICE3OS01, ICE1QS01

Forward Converter
Single Transistor Forward Converter
Single-ended Forward Converter

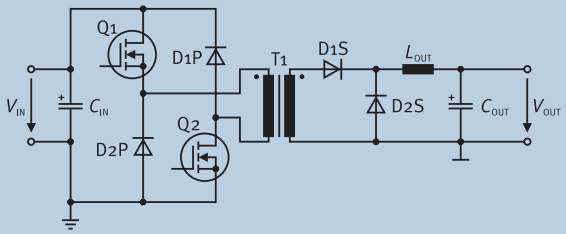


Advantages
- Demagnetizing the core is no problem
- Simple circuitry

Disadvantages
- Power transistor drain-source voltage $V_{DS} > 2V_I$
- Demagnetizing winding is necessary
- Good magnetic coupling is necessary between primary and demagnetizing windings

Infineon Parts
TDA16888, TDA4916GG

Two-Transistor Forward Converter
Diagonal Half-bridge Converter
Dual-ended Forward Converter

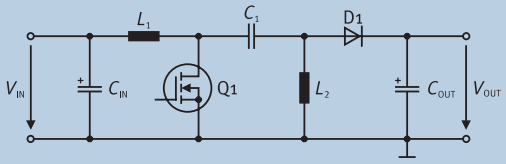


Advantages
- MOSFET drain-source voltage $V_{DS} = V_I$
- Core demagnetization is no problem
- The transformer may have a high level of stray inductance

Disadvantages
- Galvanic-isolated driving is necessary

Infineon Parts
TDA16888, TDA4916GG

Basic Non-isolated Sepic Converter

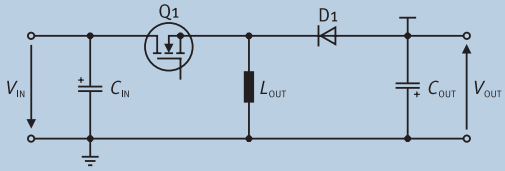


Advantages
- Transformer is replaced by two chokes
- Common ground connection
- No polarity inversion low voltage stress for the MOSFET
- Output voltage is above or below the input voltage

Disadvantages
- Voltage at the diode is $V_{IN} + V_{OUT} + V_{D1}$

Infineon Parts
TDA16888, CoolSET™, ICE2xS01, ICE3DS01

Buck-boost Converter
Single Transistor
Buck-boost Converter

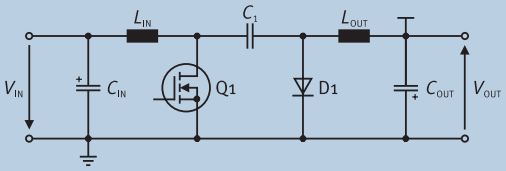


Advantages
- Simple choke
- No problems with magnetic coupling

Disadvantages
- Power transistor drain-source voltage $V_{DS} = V_I + V_O$
- No galvanic isolation between input and output voltage
- Heavy loading of output capacitor
- Input must “float”
- Output voltage negative in relation to input voltage

Infineon Parts
CoolSET™, ICE2xS01, ICE3DS01

Basic Non-isolated Cuk Converter



Advantages
- High efficiency
- Input / output current continuous
- Output voltage is inverse to input voltage

Disadvantages
- High peak currents in power components
- High ripple current in capacitor

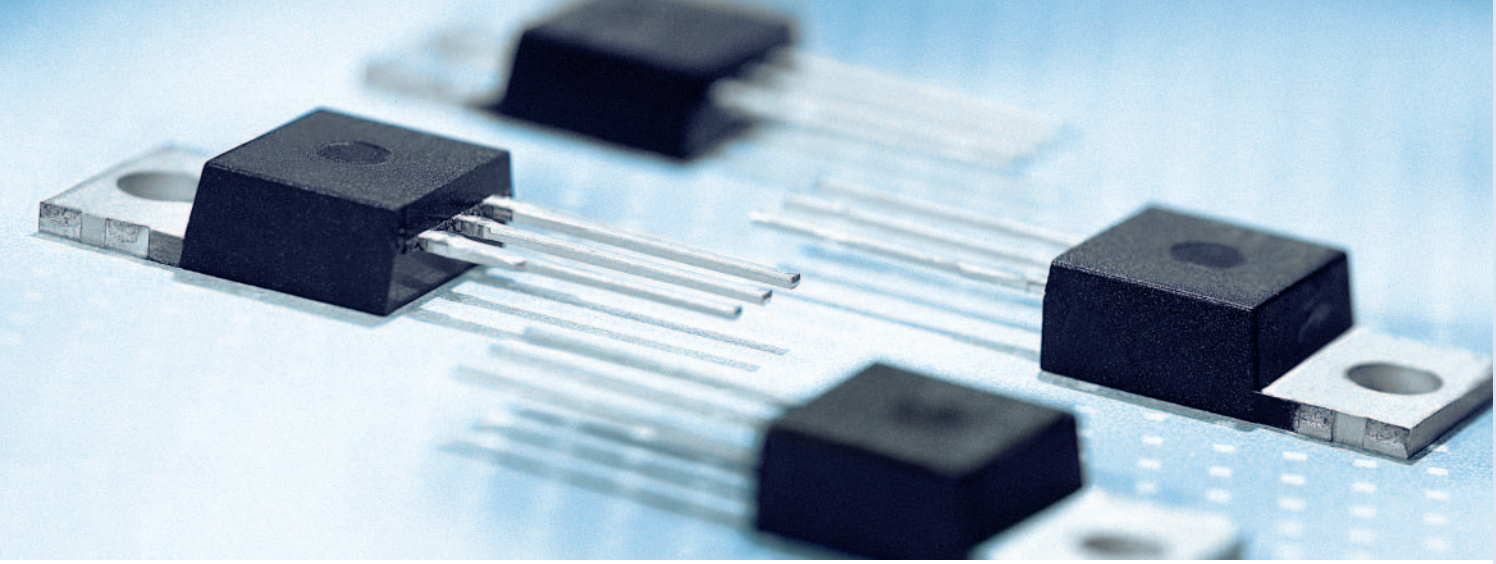
Infineon Parts
TDA16888, CoolSET™, ICE2xSO1, ICE3DS01

N-Channel MOSFETs

N-Channel 500 V CoolMOS™

Package	$R_{DS(on)\ max.}$ [Ω] @ V_{GS} = 10 V	$V_{GS(th)}$ [V]	I_D [A]	typ. Q_g [nC]	Type
I²-PAK	0.19	2.1 ... 3.9	21	95	SPI21N50C3
	0.28	2.1 ... 3.9	16	66	SPI16N50C3
	0.38	2.1 ... 3.9	11.6	49	SPI12N50C3
	0.6	2.1 ... 3.9	7.6	32	SPI08N50C3
TO247	0.07	2.1 ... 3.9	52	290	SPW52N50C3
	0.11	2.1 ... 3.9	32	170	SPW32N50C3
	0.19	2.1 ... 3.9	21	95	SPW21N50C3
	0.28	2.1 ... 3.9	16	66	SPW16N50C3
	0.38	2.1 ... 3.9	11.6	49	SPW12N50C3
D-PAK	0.6	2.1 ... 3.9	7.6	32	SPD08N50C3
	0.95	2.1 ... 3.9	4.5	22	SPD04N50C3
	1.4	2.1 ... 3.9	3.2	15	SPD03N50C3
	3	2.1 ... 3.9	1.8	9	SPD02N50C3
TO220 FullPAK	0.19	2.1 ... 3.9	21	95	SPA21N50C3
	0.28	2.1 ... 3.9	16	66	SPA16N50C3
	0.38	2.1 ... 3.9	11.6	49	SPA12N50C3
	0.6	2.1 ... 3.9	7.6	32	SPA08N50C3
	0.95	2.1 ... 3.9	4.5	22	SPA04N50C3
TO220 (3-leg)	0.19	2.1 ... 3.9	21	95	SPP21N50C3
	0.28	2.1 ... 3.9	16	66	SPP16N50C3
	0.38	2.1 ... 3.9	11.6	49	SPP12N50C3
	0.6	2.1 ... 3.9	7.6	32	SPP08N50C3
	0.95	2.1 ... 3.9	4.5	22	SPP04N50C3
D²-PAK	0.19	2.1 ... 3.9	21	95	SPB21N50C3
	0.28	2.1 ... 3.9	16	66	SPB16N50C3
	0.38	2.1 ... 3.9	11.6	49	SPB12N50C3
	0.95	2.1 ... 3.9	4.5	22	SPB04N50C3
I-PAK Short Leads	0.95	2.1 ... 3.9	4.5	22	SPS04N50C3
	1.4	2.1 ... 3.9	3.2	15	SPS03N50C3
	3	2.1 ... 3.9	1.8	9	SPS02N50C3

For an overview about ROHS-compliant products please go to www.infineon.com/greenproducts



N-Channel 500 V CoolMOS™ CP Series

Package	$R_{DS(on)\ max.}$ [Ω] @ V_{GS} = 10 V	$V_{GS(th)}$ [V]	I_D [A]	typ. Q_g [nC]	Type
TO220 (3-leg)	0.520	2.5 ... 3.5	7	13	IPP50R520CP
	0.399	2.5 ... 3.5	9	17	IPP50R399CP
	0.350	2.5 ... 3.5	10	19	IPP50R350CP
	0.299	2.5 ... 3.5	12	23	IPP50R299CP
	0.250	2.5 ... 3.5	13	27	IPP50R250CP
	0.199	2.5 ... 3.5	17	34	IPP50R199CP
	0.140	2.5 ... 3.5	23	48	IPP50R140CP
TO220-FullPAK	0.520	2.5 ... 3.5	7	13	IPA50R520CP
	0.399	2.5 ... 3.5	9	17	IPA50R399CP
	0.350	2.5 ... 3.5	10	19	IPA50R350CP
	0.299	2.5 ... 3.5	12	23	IPA50R299CP
	0.250	2.5 ... 3.5	13	27	IPA50R250CP
	0.199	2.5 ... 3.5	17	34	IPA50R199CP
	0.140	2.5 ... 3.5	23	48	IPA50R140CP
TO247	0.199	2.5 ... 3.5	17	34	IPW50R199CP
	0.140	2.5 ... 3.5	23	48	IPW50R140CP
	0.450	2.5 ... 3.5	62	150	IPW50R045CP
D-PAK	0.520	2.5 ... 3.5	7	13	IPD50R520CP
	0.399	2.5 ... 3.5	9	17	IPD50R399CP
D^2-PAK	0.299	2.5 ... 3.5	12	23	IPB50R299CP
	0.250	2.5 ... 3.5	13	27	IPB50R250CP
	0.199	2.5 ... 3.5	17	34	IPB50R199CP
	0.140	2.5 ... 3.5	23	48	IPB50R140CP
I^2-PAK	0.399	2.5 ... 3.5	9	17	IPI50R399CP
	0.350	2.5 ... 3.5	10	19	IPI50R350CP
I-PAK Short Lead	0.520	2.5 ... 3.5	7	13	IPS50R520CP

For an overview about ROHS-compliant products please go to www.infineon.com/greenproducts

N-Channel 600 V CoolMOS™

Package	$R_{DS(on)\ max.}$ [Ω] @ V_{GS} = 10 V	$V_{GS(th)}$ [V]	I_D [A]	typ. Q_g [nC]	Type
I²-PAK	0.19	2.1 ... 3.9	20.7	87	SPI20N60C3
	0.28	2.1 ... 3.9	15	63	SPI15N60C3
	0.38	3.5 ... 5.5	11	41.5	SPI11N60S5
	0.38	2.1 ... 3.9	11	45	SPI11N60C3
	0.6	3.5 ... 5.5	7.3	27	SPI07N60S5
	0.6	2.1 ... 3.9	7.3	21	SPI07N60C3
TO247	0.07	2.1 ... 3.9	47	252	SPW47N60C3
	0.10	2.1 ... 3.9	34.6	150	SPW35N60C3
	0.16	2.1 ... 3.9	24.3	104.9	SPW24N60C3
	0.19	3.5 ... 5.5	20	79	SPW20N60S5
	0.19	2.1 ... 3.9	20.7	87	SPW20N60C3
	0.28	2.1 ... 3.9	15	63	SPW15N60C3
	0.38	3.5 ... 5.5	11	41.5	SPW11N60S5
	0.38	2.1 ... 3.9	11	45	SPW11N60C3
D-PAK	0.60	2.1 ... 3.9	7.3	21	SPD07N60C3
	0.60	3.5 ... 5.5	7.3	27	SPD07N60S5
	0.75	2.1 ... 3.9	6.2	24	SPD06N60C3
	0.95	3.5 ... 5.5	4.5	17.6	SPD04N60S5
	0.95	2.1 ... 3.9	4.5	19	SPD4N60C3
	1.40	3.5 ... 5.5	3.2	12.4	SPD03N60S5
	1.40	2.1 ... 3.9	3.2	13	SPD03N60C3
	3	3.5 ... 5.5	1.8	7.3	SPD02N60S5
	3	2.1 ... 3.9	1.8	9.5	SPD02N60C3
	6	2.1 ... 3.9	0.8	3.9	SPD01N60C3
I-PAK	0.60	3.5 ... 5.5	7.3	27	SPU07N60S5
	0.95	3.5 ... 5.5	4.5	17.6	SPU04N60S5
	1.40	3.5 ... 5.5	3.2	12.4	SPU03N60S5
	3	3.5 ... 5.5	1.8	7.3	SPU02N60S5
	3	2.1 ... 3.9	1.8	9.5	SPU02N60C3
	6	2.1 ... 3.9	0.8	3.9	SPU01N60C3
SOT223	0.95	3.5 ... 5.5	0.8	17	SPN04N60S5
	1.40	3.5 ... 5.5	0.7	12.8	SPN03N60S5
	1.40	2.1 ... 3.9	0.7	13	SPN03N60C3
	3	3.5 ... 5.5	0.4	7.4	SPN02N60S5
	2.5	2.1 ... 3.9	0.4	10	SPN02N60C3
	6	2.1 ... 3.9	0.3	3.9	SPN01N60C3
I-PAK Short Leads	0.95	2.1...3.9	4.5	19	SPS04N60C3
	1.40	2.1...3.9	3.2	13	SPS03N60C3
	3	2.1...3.9	1.8	9.5	SPS02N60C3
	6	2.1...3.9	0.8	3.9	SPS01N60C3

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N-Channel 600 V CoolMOS™

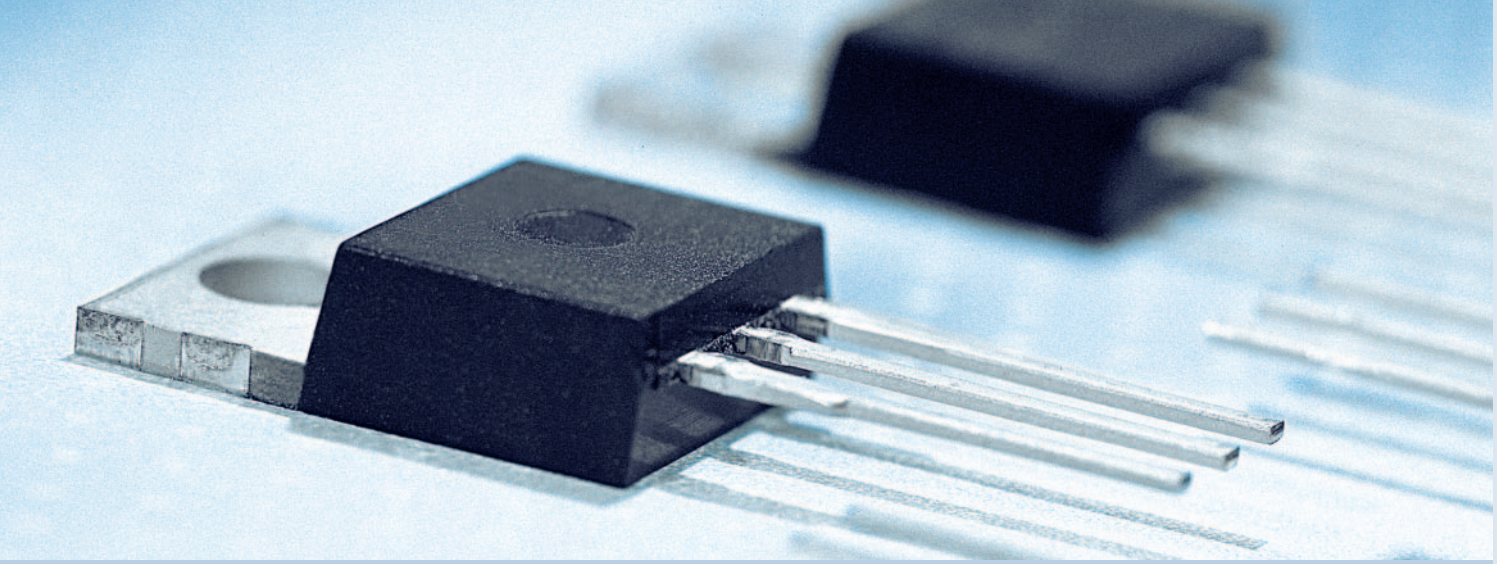
Package	$R_{DS(on)\ max.}$ [Ω] @ V_{GS} = 10 V	$V_{GS(th)}$ [V]	I_D [A]	typ. Q_g [nC]	Type
TO220 FullPAK	0.19	2.1 ... 3.9	20.7	87	SPA20N60C3
	0.28	2.1 ... 3.9	15	63	SPA15N60C3
	0.38	2.1 ... 3.9	11	45	SPA11N60C3
	0.60	2.1 ... 3.9	7.3	21	SPA07N60C3
	0.75	2.1 ... 3.9	6.2	24	SPA06N60C3
	0.95	2.1 ... 3.9	4.5	19	SPA04N60C3
	1.40	2.1 ... 3.9	3.2	13	SPA03N60C3
TO220 (3-leg)	0.16	2.1...3.9	24.3	104.9	SPP24N60C3
	0.19	2.1...3.9	20.7	87	SPP20N60C3
	0.19	3.5 ... 5.5	20.7	79	SPP20N60S5
	0.28	2.1...3.9	15	63	SPP15N60C3
	0.38	2.1...3.9	11	45	SPP11N60C3
	0.38	3.5 ... 5.5	11	41.5	SPP11N60S5
	0.6	2.1...3.9	7.3	21	SPP07N60C3
	0.60	3.5 ... 5.5	7.3	27	SPP07N60S5
	0.75	2.1...3.9	6.2	24	SPP06N60C3
	0.95	2.1...3.9	4.5	19	SPP04N60C3
	0.95	3.5 ... 5.5	4.5	17.6	SPP04N60S5
	1.4	2.1...3.9	3.2	13	SPP03N60C3
	1.40	3.5 ... 5.5	3.2	12.4	SPP03N60S5
	3	2.1...3.9	1.8	9.5	SPP02N60C3
	3	3.5 ... 5.5	1.8	7.3	SPP02N60S5
D^2-PAK	0.19	3.5 ... 5.5	20.7	79	SPB20N60S5
	0.19	2.1...3.9	20.7	87	SPB20N60C3
	0.38	3.5 ... 5.5	11	41.5	SPB11N60S5
	0.38	2.1...3.9	11	45	SPP11N60C3
	0.60	3.5 ... 5.5	7.3	27	SPB07N60S5
	0.60	2.1...3.9	7.3	21	SPB07N60C3
	0.95	3.5 ... 5.5	4.5	17.6	SPB04N60S5
	0.95	2.1...3.9	4.5	19	SPB04N60C3
	1.40	3.5 ... 5.5	3.2	12.4	SPB03N60S5
	1.40	2.1...3.9	3.2	13	SPB03N60C3
	3	3.5 ... 5.5	1.8	7.3	SPB02N60S5
	3	2.1...3.9	1.8	9.5	SPB02N60C3

For an overview about ROHS-compliant products please go to www.infineon.com/greenproducts

N-Channel 600 V CoolMOS™ CP Series 600 V

Package	$R_{DS(on)\ max.}$ [Ω] @ V_{GS} = 10 V	$V_{GS(th)}$ [V]	I_D [A]	typ. Q_g [nC]	Type
TO220 (3-leg)	0.385	2.5 ... 3.5	9	17	IPP60R385CP
	0.299	2.5 ... 3.5	11	22	IPP60R299CP
	0.199	2.5 ... 3.5	16	33	IPP60R199CP
	0.165	2.5 ... 3.5	21	39	IPP60R165CP
	0.125	2.5 ... 3.5	25	53	IPP60R125CP
	0.099	2.5 ... 3.5	31	60	IPP60R099CP
TO247	0.299	2.5 ... 3.5	11	22	IPW60R299CP
	0.199	2.5 ... 3.5	16	33	IPW60R199CP
	0.165	2.5 ... 3.5	21	39	IPW60R165CP
	0.125	2.5 ... 3.5	25	53	IPW60R125CP
	0.099	2.5 ... 3.5	31	60	IPW60R099CP
	0.045	2.5 ... 3.5	60	150	IPW60R045CP
TO220 FullPAK	0.385	2.5 ... 3.5	9	17	IPA60R385CP
	0.299	2.5 ... 3.5	11	22	IPA60R299CP
	0.199	2.5 ... 3.5	16	33	IPA60R199CP
	0.165	2.5 ... 3.5	21	39	IPA60R165CP
	0.125	2.5 ... 3.5	25	53	IPA60R125CP
I^2-PAK	0.385	2.5 ... 3.5	9	17	IPI60R385CP
	0.299	2.5 ... 3.5	11	22	IPI60R299CP
	0.199	2.5 ... 3.5	16	33	IPI60R199CP
D-PAK	0.385	2.5 ... 3.5	9	17	IPD60R385CP
D^2-PAK	0.165	2.5 ... 3.5	21	39	IPB60R165CP
	0.099	2.5 ... 3.5	31	60	IPB60R099CP

For an overview about ROHS-compliant products please go to www.infineon.com/greenproducts



N-Channel 600 V CFD CoolMOS™ with Fast Body Diode

Package	$R_{DS(on)\ max.}$ [Ω] @ V_{GS} = 10 V	$V_{GS(th)}$ [V]	I_D [A]	typ. Q_g [nC]	Type
TO220 (3-leg)	0.22	3.0 ... 5.0	20	95	SPP20N60CFD
	0.44	3.0 ... 5.0	11	48	SPP11N60CFD
TO247	0.08	3.0 ... 5.0	46	248	SPW47N60CFD
	0.118	3.0 ... 5.0	34	163	SPW35N60CFD
	0.22	3.0 ... 5.0	20	95	SPW20N60CFD
	0.44	3.0 ... 5.0	11	48	SPW11N60CFD

For an overview about ROHS-compliant products please go to www.infineon.com/greenproducts

N-Channel 650 V CoolMOS™

Package	$R_{DS(on)\ max.}$ [Ω] @ V_{GS} = 10 V	$V_{GS(th)}$ [V]	I_D [A]	typ. Q_g [nC]	Type
TO220 FullPAK	0.19	2.1 ... 3.9	20.7	87	SPA20N65C3
	0.38	2.1 ... 3.9	11	45	SPA11N65C3
	0.6	2.1 ... 3.9	7.3	21	SPA07N65C3
I^2-PAK	0.19	2.1 ... 3.9	20.7	87	SPI20N65C3
	0.38	2.1 ... 3.9	11	45	SPI11N65C3
	0.6	2.1 ... 3.9	7.3	21	SPI07N65C3
TO220 (3-leg)	0.19	2.1 ... 3.9	20.7	87	SPP20N65C3
	0.38	2.1 ... 3.9	11	45	SPP11N65C3
	0.6	2.1 ... 3.9	7.3	21	SPP07N65C3

N-Channel 800 V CoolMOS™

Package	$R_{DS(on)\ max.}$ [Ω] @ V_{GS} = 10 V	$V_{GS(th)}$ [V]	I_D [A]	typ. Q_g [nC]	Type
TO220 (3-leg)	0.29	2.1 ... 3.9	17	91	SPP17N80C3
	0.45	2.1 ... 3.9	11	50	SPP11N80C3
	0.65	2.1 ... 3.9	8	40	SPP08N80C3
	0.9	2.1 ... 3.9	6	27	SPP06N80C3
	1.3	2.1 ... 3.9	4	20	SPP04N80C3
	2.7	2.1 ... 3.9	2	9	SPP02N80C3
TO220 FullPAK	0.29	2.1 ... 3.9	17	91	SPA17N80C3
	0.45	2.1 ... 3.9	11	50	SPA11N80C3
	0.65	2.1 ... 3.9	8	40	SPA08N80C3
	0.9	2.1 ... 3.9	6	27	SPA06N80C3
	1.3	2.1 ... 3.9	4	20	SPA04N80C3
	2.7	2.1 ... 3.9	2	9	SPA02N80C3
D^2-PAK	0.29	2.1 ... 3.9	17	91	SPB17N80C3
TO247	0.29	2.1 ... 3.9	17	91	SPW17N80C3
	0.45	2.1 ... 3.9	11	58	SPW11N80C3
D-PAK	0.9	2.1 ... 3.9	6	27	SPD06N80C3
	1.3	2.1 ... 3.9	4	20	SPD04N80C3
	2.7	2.1 ... 3.9	2	9	SPD02N80C3
I^2-PAK	0.65	2.1 ... 3.9	8	40	SPI08N80C3

For an overview about ROHS-compliant products please go to www.infineon.com/greenproducts

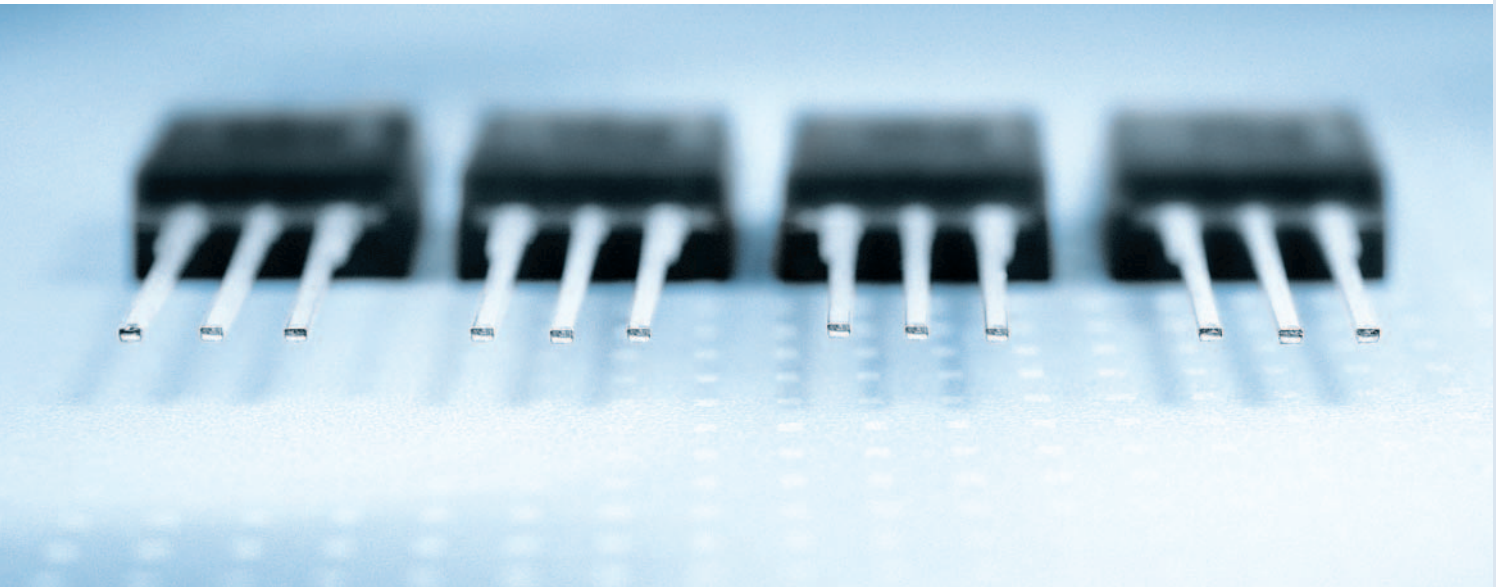
N-Channel Enhancement

Package	V_{BRDSS} [V]	$R_{DS(on)\ max.}$ [Ω] @ V_{GS} = 10 V	$V_{GS(th)}$ [V]	I_D [A]	typ. Q_g [nC]	Type
SOT223	400	3	2.1 ... 4.0	0.36	–	BSP298
	400	25	1.5 ... 2.5	0.32	–	BSP324
	500	4	2.1 ... 4.0	0.4	–	BSP299
	600	45	1.5 ... 2.5	0.12	3.9	BSP125
SOT23	600	500	1.4 ... 2.6	0.023	1.4	BSS127
SOT89	600	45	1.3 ... 2.3	0.09	3.9	BSS225
SOT223	800	20	2.1 ... 4.0	0.19	–	BSP300

Standard N-Channel Depletion

Package	V_{DS} [V]	$R_{DS(on)}$ [Ω]	$V_{GS(th)}$ [V]	I_D [A]	Type
SOT23	60	8	-3.5 ... -2.4	0.230	BSS159N
	100	12	-2.9 ... -1.8	0.170	BSS169
	250	30	-2.1 ... -1.0	0.100	BSS139
	600	700	-2.7 ... -1.6	0.016	BSS126
SOT223	200	3.5	-2.1 ... -1.0	0.660	BSP149
	240	6	-2.1 ... -1.0	0.350	BSP129
	600	60	-2.1 ... -1.0	0.120	BSP135

For an overview about ROHS-compliant products please go to www.infineon.com/greenproducts



Silicon Carbide Schottky Diodes (thinQ!™ Family)

thinQ!™ 300 V

Package	V_{DC} [V]	I_F [A]	$I_{F\,SM}$ [A]	Q_C [nC]	Type
D^2-PAK	300	2 x 10	36	23	SDB20S30
TO220 (2-leg)	300	10	36	23	SDT10S30
TO220 (3-leg)	300	10	36	23	SDP10S30
	300	2 x 10	36	23	SDP20S30

thinQ!™ 600 V

Package	V_{DC} [V]	I_F [A]	$I_{F\,SM}$ [A]	Q_C [nC]	Type
D^2-PAK	600	6	21.5	21	SDB06S60
TO220 (2-leg)	600	4	12.5	13	SDT04S60
	600	5	18.5	14	SDT05S60
	600	6	21.5	21	SDT06S60
	600	2 x 6	36.0	30	SDT12S60
	600	8	26.0	24	SDT08S60
	600	2 x 5	31.0	29	SDT10S60
D-PAK	600	4	12.5	13	SDD04S60

thinQ!™ 2G 600 V

Package	V_{DC} [V]	I_F [A]	$I_{F\,SM}$ [A]	typ. Q_C [nC]	Type
TO220 (2-leg)	600	4	32	8	IDT04S60C
	600	5	42	12	IDT05S60C
	600	2 x 5	84	24	IDT10S60C
	600	6	49	15	IDT06S60C
	600	2 x 6	98	30	IDT12S60C
	600	8	59	19	IDT08S60C
	600	2 x 8	118	38	IDT16S60C
D-PAK	600	4	32	8	IDD04S60C

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Alphanumeric Listing

Product Name	Product Description	Voltage Class	Page
BSP125	N-Channel Enhancement MOSFET	600 V	29
BSP129	N-Channel Depletion MOSFET	240 V	29
BSP135	N-Channel Depletion MOSFET	600 V	29
BSP149	N-Channel Depletion MOSFET	200 V	29
BSP298	N-Channel Enhancement MOSFET	400 V	29
BSP299	N-Channel Enhancement MOSFET	500 V	29
BSP300	N-Channel Enhancement MOSFET	800 V	29
BSP324	N-Channel Enhancement MOSFET	400 V	29
BSS126	N-Channel Depletion MOSFET	600 V	29
BSS127	N-Channel Enhancement MOSFET	600 V	29
BSS139	N-Channel Depletion MOSFET	250 V	29
BSS159N	N-Channel Depletion MOSFET	60 V	29
BSS169	N-Channel Depletion MOSFET	100 V	29
BSS225	N-Channel Enhancement MOSFET	600 V	29
IDD04S60C	thinQ! 2G	600 V	30
IDT04S60C	thinQ! 2G	600 V	30
IDT05S60C	thinQ! 2G	600 V	30
IDT06S60C	thinQ! 2G	600 V	30
IDT08S60C	thinQ! 2G	600 V	30
IDT10S60C	thinQ! 2G	600 V	30
IDT12S60C	thinQ! 2G	600 V	30
IDT16S60C	thinQ! 2G	600 V	30
IPA50R140CP	CoolMOS Transistor	500 V	23
IPA50R199CP	CoolMOS Transistor	500 V	23
IPA50R250CP	CoolMOS Transistor	500 V	23
IPA50R299CP	CoolMOS Transistor	500 V	23
IPA50R350CP	CoolMOS Transistor	500 V	23
IPA50R399CP	CoolMOS Transistor	500 V	23
IPA50R520CP	CoolMOS Transistor	500 V	23
IPA60R125CP	CoolMOS Transistor	600 V	26
IPA60R165CP	CoolMOS Transistor	600 V	26
IPA60R199CP	CoolMOS Transistor	600 V	26
IPA60R299CP	CoolMOS Transistor	600 V	26
IPA60R385CP	CoolMOS Transistor	600 V	26
IPB50R140CP	CoolMOS Transistor	500 V	23
IPB50R199CP	CoolMOS Transistor	500 V	23
IPB50R250CP	CoolMOS Transistor	500 V	23
IPB50R299CP	CoolMOS Transistor	500 V	23
IPB60R099CP	CoolMOS Transistor	600 V	26
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IPW50R199CP	CoolMOS Transistor	500 V	23
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IPW60R199CP	CoolMOS Transistor	600 V	26
IPW60R299CP	CoolMOS Transistor	600 V	26
SDB06S30	thinQ!	600 V	30
SDB20S30	thinQ!	300 V	30
SDD04S60	thinQ!	600 V	30
SDP10S30	thinQ!	300 V	30
SDP20S30	thinQ!	300 V	30
SDT04S60	thinQ!	600 V	30
SDT05S60	thinQ!	600 V	30
SDT06S60	thinQ!	600 V	30
SDT08S60	thinQ!	600 V	30
SDT10S30	thinQ!	300 V	30
SDT10S60	thinQ!	600 V	30
SDT12S60	thinQ!	600 V	30
SPA02N80C3	CoolMOS Transistor	800 V	28
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SPB04N60S5	CoolMOS Transistor	600 V	25
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SPD4N60C3	CoolMOS Transistor	600 V	24
SPI07N60C3	CoolMOS Transistor	600 V	24
SPI07N60S5	CoolMOS Transistor	600 V	24
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SPI08N50C3	CoolMOS Transistor	500 V	22
SPI08N80C3	CoolMOS Transistor	800 V	28
SPI11N60C3	CoolMOS Transistor	600 V	24
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SPI12N50C3	CoolMOS Transistor	500 V	22
SPI15N60C3	CoolMOS Transistor	600 V	24
SPI16N50C3	CoolMOS Transistor	500 V	22
SPI20N60C3	CoolMOS Transistor	600 V	24
SPI20N65C3	CoolMOS Transistor	650 V	28
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SPN03N60C3	CoolMOS Transistor	600 V	24
SPN03N60S5	CoolMOS Transistor	600 V	24
SPN04N60S5	CoolMOS Transistor	600 V	24
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SPS04N50C3	CoolMOS Transistor	500 V	22
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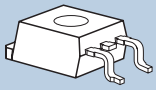
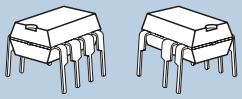
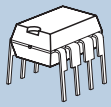
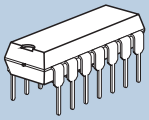
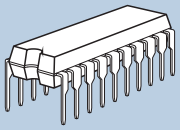
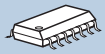
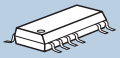
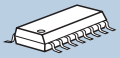
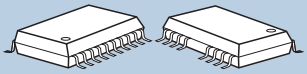
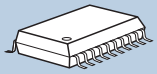
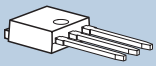
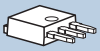
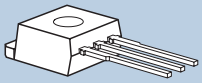
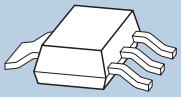
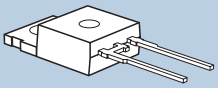
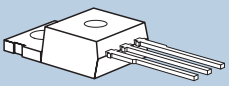
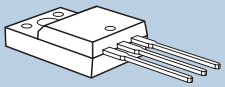
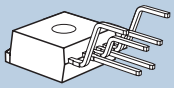
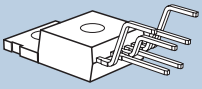
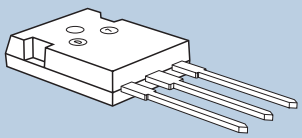
SPW24N60C3	CoolMOS Transistor	600 V	24
SPW32N50C3	CoolMOS Transistor	500 V	22
SPW35N60C3	CoolMOS Transistor	600 V	24
SPW35N60CFD	CoolMOS Transistor	600 V	27
SPW47N60C3	CoolMOS Transistor	600 V	24
SPW47N60CFD	CoolMOS Transistor	600 V	27
SPW52N50C3	CoolMOS Transistor	500 V	22

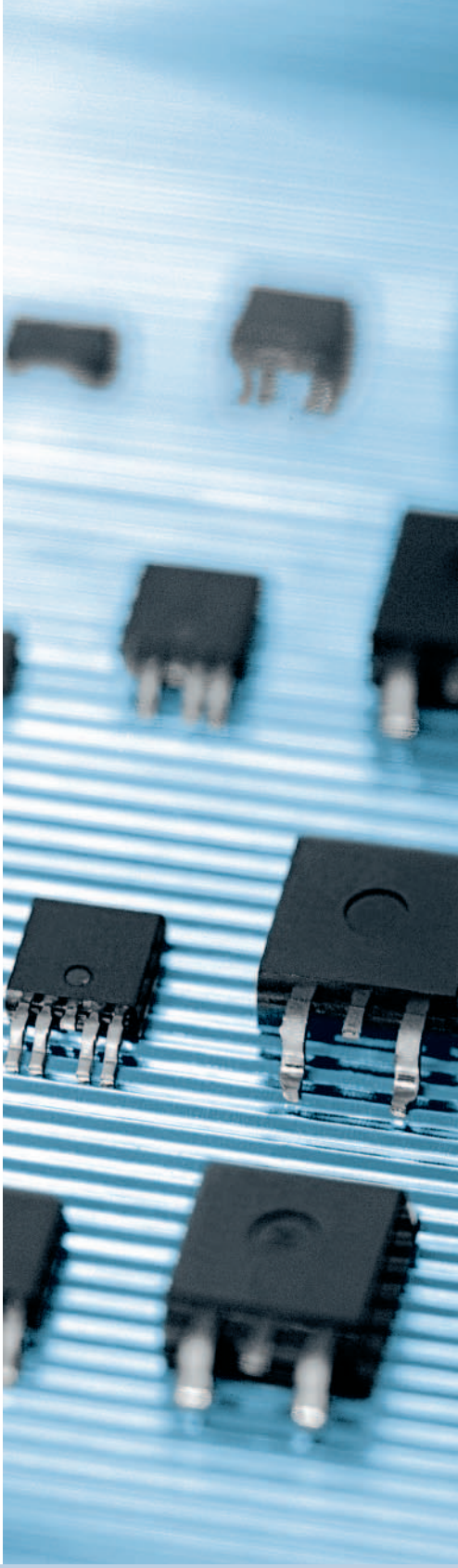
Packages

D-PAK 	D²-PAK 	DIP-7 	DIP-8 
DIP-14 	DIP-20 	DSO-8 	DSO-14 
DSO-16/12 	DSO-16 	DSO-18 	DSO-20 
I-PAK 	I-PAK Short Leads 	I²-PAK (TO262) 	SOT23 
SOT223 	TO220 (2-leg) 	TO220 (3-leg) 	TO220 FullPAK 
TO220-6-46 	TO220-6-47 	TO247 	

More Detailed Information on Power Management and Supply is Available

On our website:
www.infineon.com/power

- Data sheets
- Application notes
- Technical articles
- Simulation models
- Literature order codes



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