

Infineon Technologies New Products Introduction

July 2017



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Easy 1B Booster Topology with CoolSiC™ MOSFET

CoolSiC™ Schottky diode 650 V G6

Improved efficiency and price performance



The CoolSiC™ generation 6 is the leading edge technology in SiC Schottky Barrier diodes, fully leveraging all advantages of SiC over silicon. The Infineon proprietary diffusion soldering process is combined with a more compact design, thin-wafer technology and a novel Schottky metal system. The result is a family of products with improved efficiency over all load conditions, resulting from a best-in-class figure of merit ($Q_c \times V_F$). The CoolSiC™ generation 6 diodes complement Infineon's 600 V and 650 V CoolMOS™ 7 families, meeting the most stringent application requirements in this voltage range.

Features

- > The lowest V_F : 1.25 V
- > Best-in-class figure of merit ($Q_c \times V_F$)
- > No reverse recovery charge
- > Temperature independent switching behavior
- > High dv/dt ruggedness
- > Optimize thermal behavior

Benefits

- > Improved system efficiency over all load conditions
- > Increased system power density
- > Reduced cooling requirements and increased system reliability
- > Enables extremely fast switching
- > Easy and effective match with CoolMOS™ 7 families
- > Optimal price performance

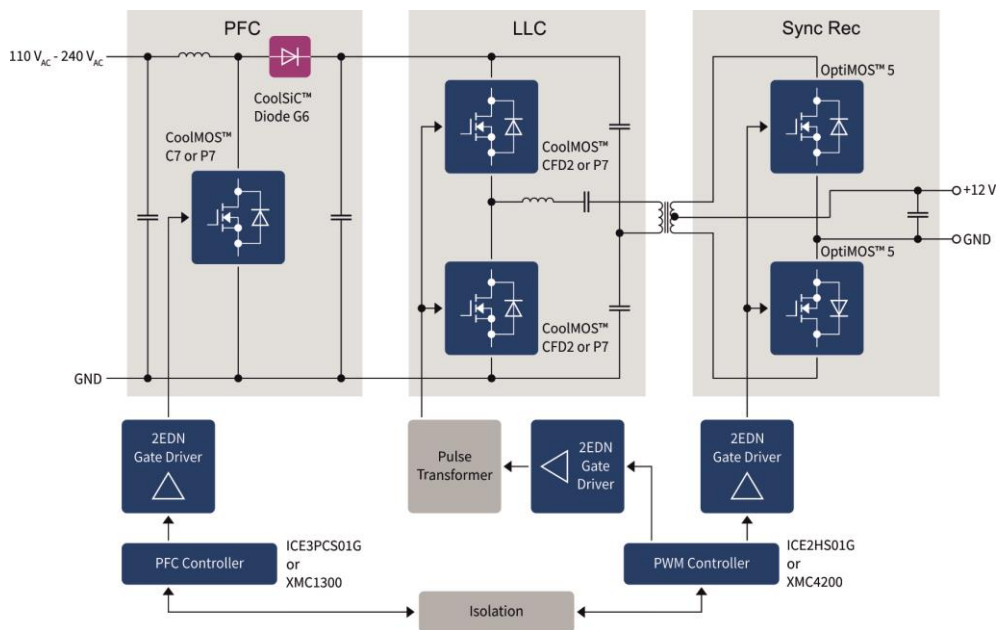
Target applications

- > PC and telecom power
- > Solar PV inverters

Product collaterals / online support

- > Product family [page](#)
- > Product pages will be available in September 2017
- > Product datasheet pages
 - [IDH04G65C6](#)
 - [IDH06G65C6](#)
 - [IDH08G65C6](#)
 - [IDH10G65C6](#)
 - [IDH12G65C6](#)
 - [IDH16G65C6](#)
 - [IDH20G65C6](#)

Block diagram - application overview 800 W 130 kHz switched mode power supply



Product overview

OPN	SP Number	Package
IDH04G65C6XKSA1	SP001600960	PG-TO220-2
IDH06G65C6XKSA1	SP001620586	PG-TO220-2
IDH08G65C6XKSA1	SP001620588	PG-TO220-2
IDH10G65C6XKSA1	SP001620590	PG-TO220-2
IDH12G65C6XKSA1	SP001595596	PG-TO220-2
IDH16G65C6XKSA1	SP001620592	PG-TO220-2
IDH20G65C6XKSA1	SP001600962	PG-TO220-2

2EDN EiceDRIVER™

Introduction of 2EDN7424F/R

The 2EDN7424x EiceDRIVER™ is a fast dual channel 4 A low-side gate driver, with an excellent price/performance ratio complementing the 2EDN EiceDRIVER™ family. 2EDN7424F is available in DSO-8 package and 2EDN7424R comes in TSSOP-8pin package – both compatible to industry standard pin-out for a 1:1 replacement.



Features

- > 2x 4_{peak} low-ohmic outputs
- > 19 ns typ. prop. delay
- > 4 V UVLO

Target applications

- > Switch mode power supplies
- > DC-DC converters
- > Motor control
- > Solar inverters
- > Industrial

Benefits

- > Highly efficient SMPS enabled by 6 ns fast slew rates and 19 ns propagation delay precision for fast MOSFET and GaN switching
- > 1 ns channel-to-channel propagation delay accuracy enables safe use of two channels in parallel
- > Two independent 4 A channels enable numerous deployment options
- > Industry standard packages and pinout enable ease system-design upgrades
- > Qualified for industrial grade applications according to JEDEC (JESD47, J-STD20 and JESD22)

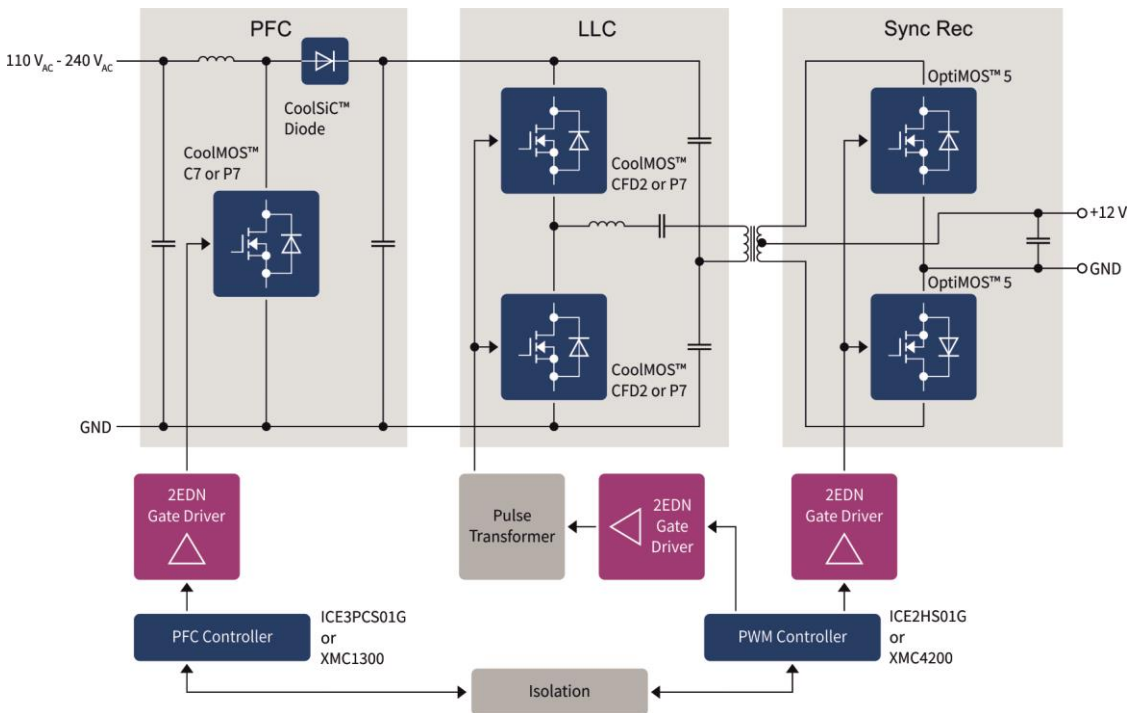
Completing products (P2S)

- > High voltage MOSFETs CoolMOS™
- > Low voltage MOSFETs OptiMOS™

Product collaterals / online support

- > [2EDN Replacement Guide](#)
- > [Cross Reference Search](#)
- > 2EDN [Application Note](#)
- > Family [landing page](#)
- > 2EDN7424F [data sheet](#)
- > 2EDN7424R [data sheet](#)
- > [Product brief](#)

Block diagram - application overview 800 W 130 kHz switched mode power supply



Product overview

OPN	SP Number	Package
2EDN7424FXTMA1	SP001648594	PG-DSO-8
2EDN7424RXUMA1	SP001648598	PG-TSSOP-8

600 V CoolMOS™ P7 power MOSFET (portfolio extension)

A new benchmark in efficiency and thermal performance



Infineon extends the large portfolio of the 600 V CoolMOS™ P7, offering a granular $R_{DS(on)}$ selection of high voltage power MOSFETs. CoolMOS™ P7 is Infineon's best balanced technology, with optimized balance of ease-of-use and highest energy efficiency.

Features

- > Outstanding commutation ruggedness
- > Optimized balance between efficiency and ease-of-use
- > Significant reduction of switching and conduction losses
- > Excellent ESD robustness >2 kV (HBM) for all products
- > Better $R_{DS(on)}$ /package products compared to competition enabled by a low $R_{DS(on)} \times A$ (below $1 \Omega \times \text{mm}^2$)
- > Large portfolio with granular $R_{DS(on)}$ selection qualified for a variety of industrial and consumer grade applications

Benefits

- > Suitable for hard and soft switching (PFC and LLC)
- > Ease-of-use and fast design-in through low ringing tendency and usage across PFC and PWM stages
- > Simplified thermal management due to low switching and conduction losses
- > Higher manufacturing quality due to >2 kV ESD protection
- > Increased power density solutions enabled by using products with smaller footprint
- > Suitable for a wide variety of applications and power ranges

Target applications

- > Server
- > Telecom
- > PC power
- > Solar
- > EV charging
- > Lighting and TV

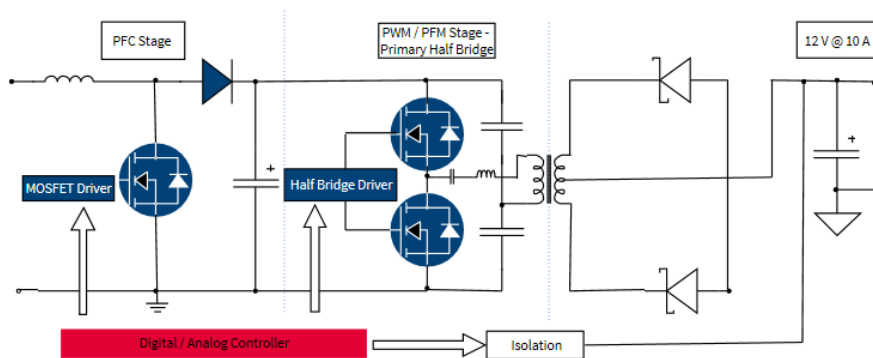
Product collaterals / online support

- > Product family [page](#)
- > 600V CoolMOS™ P7 – Infineon's most well balanced high voltage MOSFET - video
- > Getting introduced to CoolMOS™ P7 series – [on-demand webinar](#)
- > 600 V CoolMOS™ P7 power MOSFET – [product brief](#)

Completing products

- > 1EDN EiceDRIVER™, 2EDN EiceDRIVER™

Block diagram



Product overview incl. data sheets links

OPN	SP Number	Package
IPA60R180P7SXKSA1	SP001606066	PG-TO220-3
IPA60R280P7SXKSA1	SP001658160	PG-TO220-3
IPA60R360P7SXKSA1	SP001606068	PG-TO220-3
IPA60R600P7SXKSA1	SP001658294	PG-TO220-3
IPD60R180P7SAUMA1	SP001658138	PG-TO252-3
IPD60R280P7SAUMA1	SP001658154	PG-TO252-3
IPD60R360P7SAUMA1	SP001658166	TO-220 FP
IPD60R600P7SAUMA1	SP001658286	DPAK

CDM10V-2, CDM10VD, CDM10VD-2, CDM10VD-3, CDM10VD-4

Dimming Interface ICs



Infineon expands its dimming interface ICs portfolio of the existing - most flexible and configurable - dimming interface IC the CDM10V, with the new pre-configured devices CDM10V-2 and CDM10VD/-2/-3/-4. The completion of the CDM10Vxxx family offers a solution for various applications.

The CDM10Vxxx family of fully integrated 0-10 V dimming interface ICs comes all in 6pin SOT packages to cover space requirements on small PCBs. The devices are targeted for various dimming applications in lighting. The ICs can be used to transmit analog voltage based signals from a 0-10 V dimmer or potentiometer to the dimming or PWM input of a lighting controller IC in the form of a current based PWM signal to drive an external opto-coupler.

All devices out of the CDM10Vxxx family replace many components in a traditional solution and reduce BOM and PCB space significantly. They support active and passive dimming min duty cycle and dim-to-off. CDM10VDxxx devices are focused on applications with dim-to-off together with min-duty-cycle requirements and supports PWM dimming as well. One family solution for various applications.

Features CDM10V-2

- > PWM output frequency: 1 kHz
- > Dimmer/Resistor Bias Current: 200 μ A
- > Dim-to-off: enabled

Features CDM10VD/CDM10VD-2/CDM10VD-3/CDM10VD-4

- > Minimum duty cycle: 5% or 10%
- > I_{out} current to drive e.g. opto-couplers: 1 mA or 5 mA
- > PWM output frequency: 1kHz
- > Dimmer/resistor bias current: 120 μ A
- > Dim-to-off: disabled/enabled

Benefits: fully integrated 0-10 V dimming interface IC to eliminate several discretes.

Benefits CDM10V-2

- > Wide input VCC range: 11 – 25 V
- > Transparent PWM mode
- > Replaces many external components with single chip reducing BOM and PCB space
- > Minimum variation from device to device

Benefits CDM10VD/CDM10VD-2/CDM10VD-3/CDM10VD-4

- > Wide input V_{CC} range: 11 – 25 V, extended range down to 6 V
- > Variable input frequency PWM mode with fixed 1 kHz output frequency
- > Replaces many external components with single chip reducing BOM and PCB space
- > Minimum variation from device to device

Target applications

- > LED drivers needing 0 – 10 V dimming circuits
- > Luminaires
- > Troffers
- > Downlights
- > Sconces
- > Under cabinet
- > Office lighting
- > Signage applications

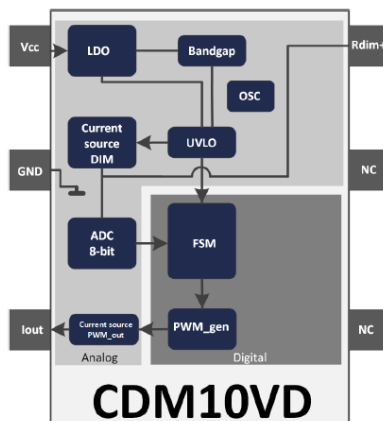
Product collaterals / online support

- > Product landing [page](#)
- > CDM10V-2 [data sheet](#)
- > CDM10VD/CDM10VD-2/CDM10VD-3/CDM10VD-4 [data sheet](#)

Completing products

- > XDPL8105

Block diagram



Product overview

OPN	SP Number	Package
CDM10V2XTSA1	SP001684884	SOT-23-6
CDM10VDXTSA1	SP001619792	SOT-23-6
CDM10VD2XTSA1	SP001619794	SOT-23-6
CDM10VD4XTSA1	SP001630006	SOT-23-6

CoolMOS™ P7 in SOT-223 package

Innovative CoolMOS™ technology meets novel package concept



The combination of the latest CoolMOS™ P7 technology with the innovative SOT-223 package brings best price/performance superjunction technology together with a cost-effective package solution. The SOT-223 package without middle pin is fully compatible to the footprint of a DPAK and therefore allows one-on-one drop-in replacements and second sourcing – benefiting from lower costs, space saving in designs with low power dissipation at a comparable thermal behavior to DPAK. The portfolio offers products in 600 V, 700 V and 800 V from an $R_{DS(on)}$ range of 360 mΩ - 4500 mΩ.

Package related features & benefits

- > Drop-in-replacement for DPAK at lower cost
- > Space savings in designs with low power dissipation
- > Comparable thermal behavior to DPAK

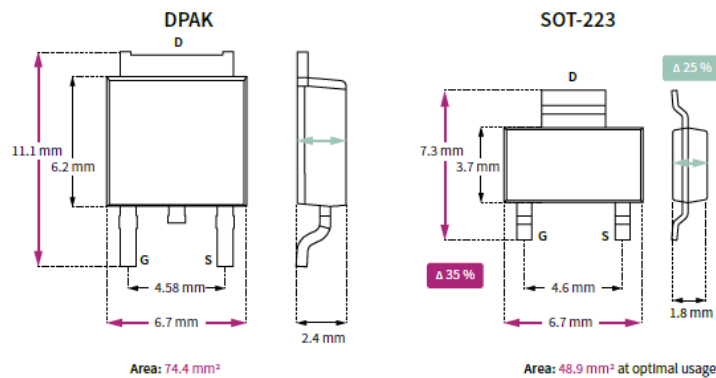
Features and benefits for each series: see product briefs [P7 600V](#), [P7 700V](#), [P7 800V](#)

Target applications

Consumer:

- > Adapter
- > Charger
- > TV
- > Lighting

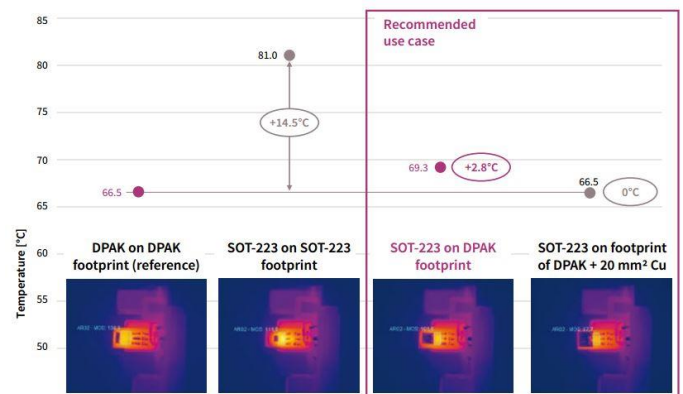
The SOT-223 package without the middle pin is fully compatible to the footprint of a DPAK and therefore allows a one-on-one drop-in replacements and second sourcing at lower cost



Benefits: CoolMOS™ P7 series related

- > Cost competitiveness compared to similar competitor technologies
- > Supports increased switching frequency to reduce magnetics
- > Best fit for target applications in terms of
 - Thermals and efficiency
 - Ease-of-use level
 - EMI behavior

Thermal behavior similar to DPAK



The thermal behavior of the SOT-223 depends on layout of the board and on the power consumed

Product landing pages (updated middle of August)

- > www.infineon.com/p7
- > www.infineon.com/sot-223

Product overview incl. data sheets link

OPN	SP Number	Package
IPN60R360P7SATMA1	SP001681928	SOT-223
IPN60R600P7SATMA1	SP001681930	SOT-223
IPN70R1K4P7SATMA1	SP001657492	SOT-223
IPN70R360P7SATMA1	SP001657468	SOT-223
IPN70R600P7SATMA1	SP001657476	SOT-223
IPN70R900P7SATMA1	SP001657482	SOT-223
IPN80R1K4P7ATMA1	SP001657528	SOT-223
IPN80R2K0P7ATMA1	SP001664996	SOT-223
IPN80R4K5P7ATMA1	SP001657536	SOT-223
IPN80R900P7ATMA1	SP001665000	SOT-223

IRS2890DS

Half-bridge gate driver



Typical appearance

The IRS2890D is a high voltage, high speed power MOSFET and IGBT half-bridge gate driver. The IRS2890D provides integrated over-current protection (OCP), fault reporting, and bootstrap functionality. Proprietary HVIC and latch immune CMOS technologies enable ruggedized monolithic construction. The logic input is compatible with standard CMOS or TTL outputs to 3.3 V, 5 V, and 15 V logic levels. The output drivers feature a high-pulse current buffer stage designed for minimum driver cross-conduction. The floating channel can be used to drive N-channel power MOSFETs or IGBTs in the high side configuration which operate up to 600 V. Propagation delays are matched to simplify the HVIC's use in high frequency applications

Features

- > Fully operational to +600 V offset voltage
- > Integrated bootstrap (bootFET) functionality
- > Overcurrent protection (ITRIP) with +/-5% reference threshold
- > Integrated, multi-function single pin fault reporting, enable, and adjustable fault clear timer
- > Advanced input noise filters
- > Negative transient voltage tolerant – dV/dt immune +/-50 V
- > I_o +220 mA/-480 mA
- > Daisy chain multiple parts
- > Deadtime & cross-conduction prevention logic
- > Undervoltage lockout for VCC and VBS
- > Logic operational for VS of -8 V
- > 14-Lead SOIC package

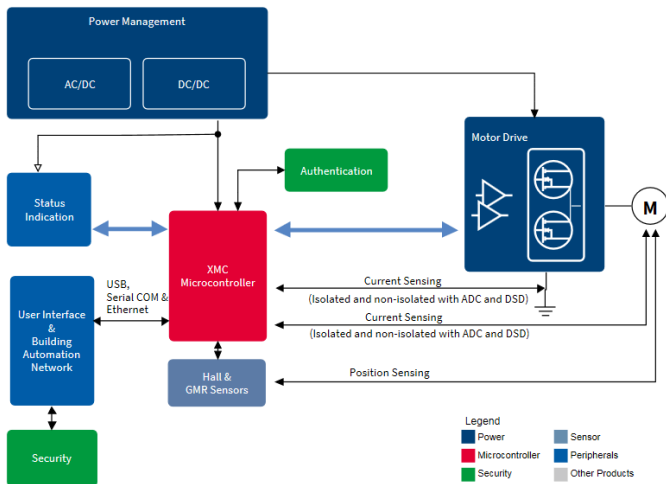
Benefits

- > Advanced input noise filters provide consistent motor control and increase reliability and prevent potential damage to MOSFETs or IGBTs
- > Integrated BootFET for simplified, low cost, and smaller PCB footprint solution
- > Integrated over-current protection (OCP) simplifies design effort, reduces PCB footprint, and overall system cost
- > OCP (ITRIP) +/-5% reference threshold ensure reliable, consistent protection to ensure robust motor control and operation
- > Reduced component count and PCB size for overall system level cost reduction

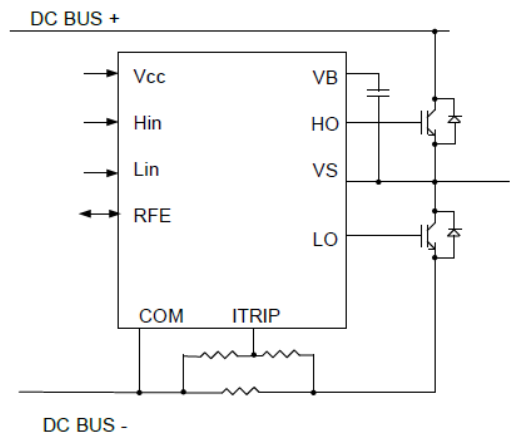
Target applications

- > Major home appliances, general purpose industrial drives, general purpose 3-phase and half-bridge inverters

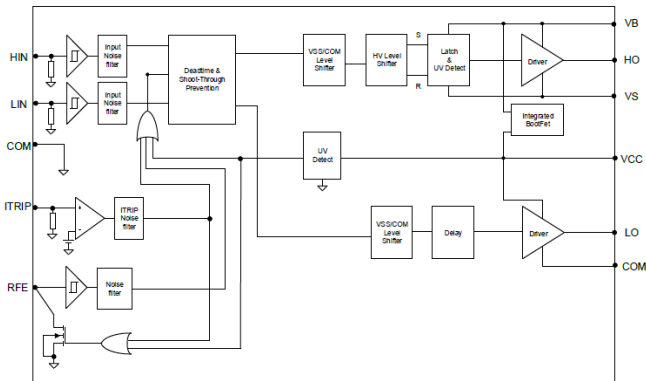
Application example: refrigerator



Typical application block diagram



Functional block diagram



Product overview

OPN	SP Number	Package
IRS2890DSPBF	SP001592208	DSO-14
IRS2890DSTRPBF	SP001592212	DSO-14

Product collaterals / online support

- > Product page: www.infineon.com/IRS2890DS
- > Infineon solution finder: www.infineon.com/driver-finder
- > Half bridge drivers family [page](#)
- > IRS2890DS [product brief](#)
- > IRS2890DS [data sheet](#)
- > Gate drivers [selection guide](#)
- > Major home appliances [brochure](#)



ESD protection diodes family

New generation TVS-Diodes for wireless, computing & consumer applications

Infineon expands its TVS Portfolio to offer best-in-class protection performance with high level of quality & robustness in super-small packages at extremely competitive price. Available in both 01005 and 0201 EIA-equivalent packages, these TVS diodes offer lowest clamping voltage combined with low parasitic capacitance for multi-purpose as well as for low capacitance series.

Features

- > ESD absorption capability of up to ± 30 kV (exceeds IEC 61000-4-2 standard)
- > Surge absorption capability of up to ± 12 A (IEC 61000-4-5 standard)
- > Ultra-low dynamic resistance
- > Safe and stable clamping voltage
- > Fast response times below 1 ns
- > For signal voltage levels of ± 3.3 V, ± 5.5 V, ± 8 V, ± 18 V, ± 22 V
- > Low capacitance series for optimal high speed signal integrity
- > Ultra-low leakage current for longer battery duration
- > Small package size down to 0.43 x 0.23 mm for optimal space saving on the PCB
- > Ultra-low profile of up to 0.15 mm height for both 01005 and 0201 packages

Benefits

- > Miniaturization, performance, costs
- > Highly ESD sensitive ICs protection
- > High-speed signal integrity
- > RF antenna signal linearity
- > Energy saving & longer battery life

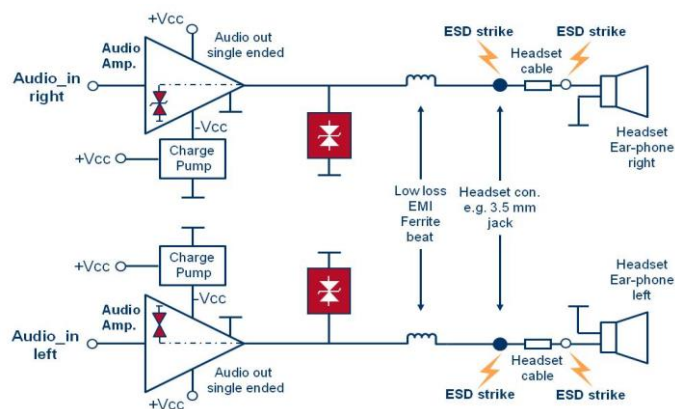
Target applications

- > Smartphones
- > Wearable devices & accessories
- > Tablet & laptop computers
- > Modules & embedded

Product collaterals / online support

- > ESD [solution finder](#)
- > ESD [forum](#)
- > ESD and surge protection [page](#)

Application example: audio interface



Product overview

OPN	SP Number	Package
ESD119B1W01005E6327XTSA1	SP001428732	SG-WLL-2
ESD128B1W0201E6327XTSA1	SP001428734	SG-WLL-2
ESD129B1W01005E6327XTSA1	SP001428736	SG-WLL-2
ESD130B1W0201E6327XTSA1	SP001594878	SG-WLL-2
ESD131B1W0201E6327XTSA1	SP001464516	SG-WLL-2
ESD202B1CSP01005XTSA1	SP001122172	SG-WLL-2
ESD230B1W0201E6327XTSA1	SP001594920	SG-WLL-2
ESD231B1W0201E6327XTSA1	SP001428738	SG-WLL-2
ESD233B1W0201E6327XTSA1	SP001642724	SG-WLL-2
ESD237B1W0201E6327XTSA1	SP001493532	SG-WLL-2
ESD239B1W0201E6327XTSA1	SP001642886	SG-WLL-2
ESD241B1W0201E6327XTSA1	SP001627440	SG-WLL-2
ESD242B1W01005E6327XTSA1	SP001627434	SG-WLL-2
ESD245B1W0201E6327XTSA1	SP001627450	SG-WLL-2
ESD246B1W01005E6327XTSA1	SP001627462	SG-WLL-2
ESD249B1W0201E6327XTSA1	SP001625362	SG-WLL-2

DF11MR12W1M1_B11 & DF23MR12W1M1_B11

Easy 1B Booster Topology with CoolSiC™ MOSFET



Features

- > Low device capacitances
- > Temperature independent switching losses
- > Intrinsic diode with low reverse recovery charge
- > Threshold-free on-state characteristics

Benefits

- > Highest efficiency for reduced cooling effort
- > Longer lifetime and higher reliability
- > Higher frequency operation
- > Reduction in system cost
- > Increased power density
- > Reduced system complexity
- > Ease of design and implementation

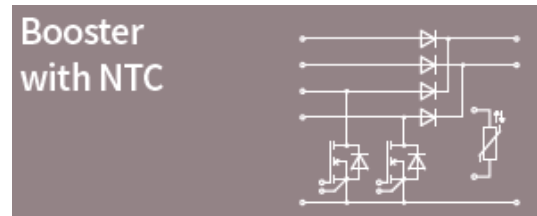
Target applications

- > Photovoltaic inverter, UPS, EV charger, energy storage / battery charging

Completing products

- > Recommended gate driver: 1EDI EiceDRIVER™ Compact family, eg. 1EDI60H12AH
- > Halfbridge FF11MR12W1M1_B11, FF23MR12W1M1_B11
- > Upcoming in 2017: Discrete: IMW120R045M1, IMZ120R045M1

Block diagram



Product collaterals / online support

- > Product family [page](#)
- > DF11MR12W1M1_B11
 - [Product page](#)
 - [Datasheet](#)
- > DF23MR12W1M1_B11
 - [Product page](#)
 - [Datasheet](#)
- > [SiC brochure](#)

Product overview

OPN	SP Number	Package
DF11MR12W1M1B11BOMA1	SP001602238	AG-EASY1B-2
DF23MR12W1M1B11BOMA1	SP001602244	AG-EASY1B-2