life.augmented

Digital Power Guide

Introduction

Digital power is an energy conversion system in which digital control techniques are applied to power management applications, providing a large number of advantages such as increased power density, faster control loops, complex topologies management and design flexibility.

KEY FEATURES & BENEFITS

- Demand for higher system efficiency, exceeding the most stringent energy requirements
- Greater power density with higher switching frequency and faster control loops
- System level reliability, monitoring and safety with failure prediction in power distribution

Digital power is the perfect synergy of hardware and software ideas and solutions

It provides the possibility to build smart power systems that automatically adapt to their environmental changes and continuosly optimize the overal system efficiency.

Mostly applied to Switched-Mode Power Supplies (SMPS), the digital power focuses mainly on solutions for Server and Datacenters PSU, Telecom Power, EV Charging Stations, UPS, Energy generation systems, LED/OLED TVs and it's starting to be adopted by other power applications, in a range that goes from few tens watts up to hundreds of kilowatts.

Our products and solutions

ST's extensive digital power portfolio meets the requirements of digital power designs. Our offering includes MCUs specifically designed to address digital power conversion applications with a full digital control approach, as well as digital controllers with a dedicated ROM memory for software control algorithms.

ST's power discretes optimized for soft switching resonant and hard switching converters maximize system efficiency for low-power and high-power applications. Newest GaN-based products deliver better energy efficiency and enable more compact designs of power supplies for a broad range applications.

ST's digital power solutions can be implemented using dedicated evaluation boards, reference designs, technical documentations, and eDesignSuite software configurator and design tools.

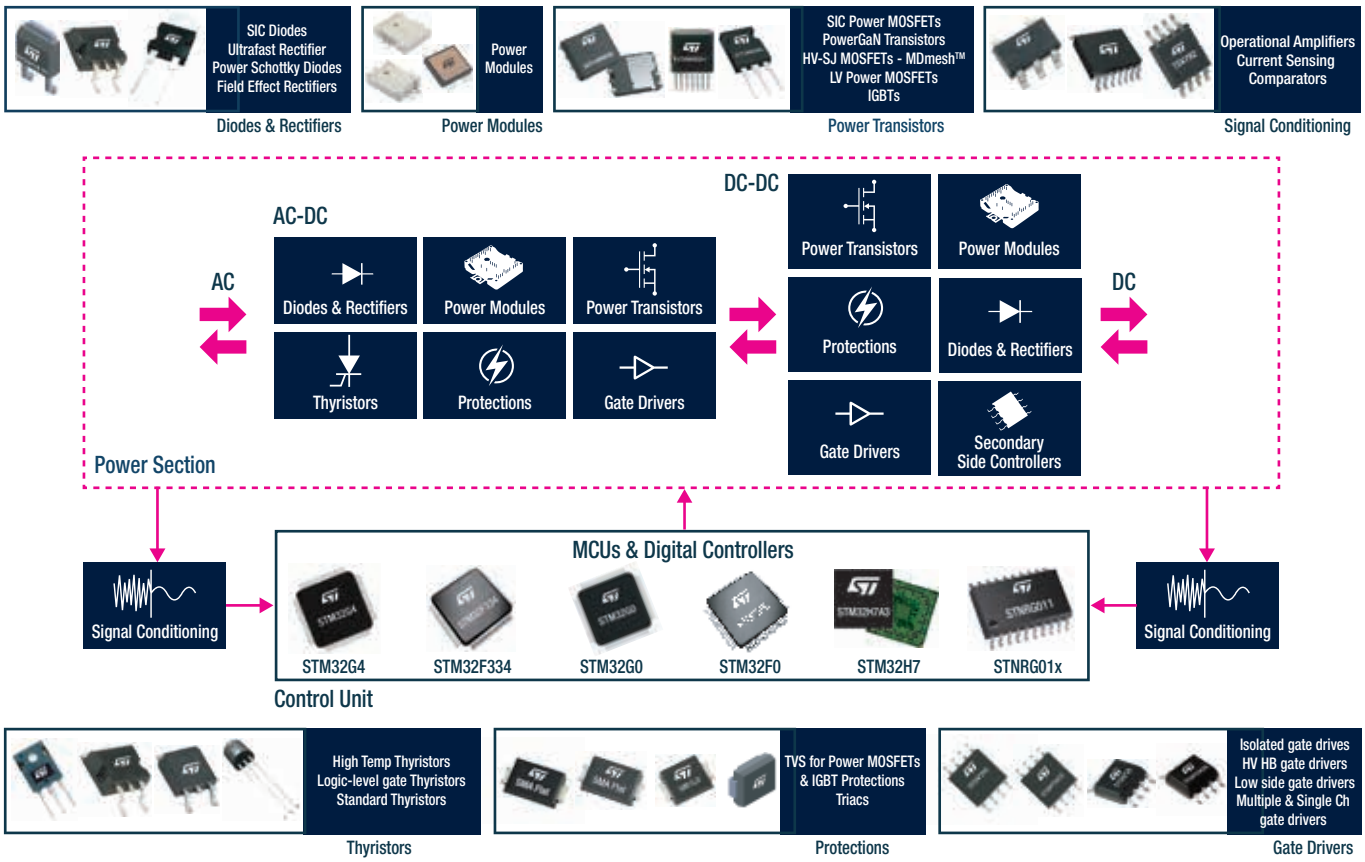


Fig1: Digital power general architcture

DIGITAL POWER MANAGEMENT ARCHITECTURE

Bulding blocks & key products

The key building blocks of a typical digital power system includes mainly two sections, the control unit section and the power stage. The control unit is addressed by our flagship family of STM32G4 and STM32F334 MCUs and also by our STNRG Digital combo controllers. The power stage implementing different topologies depending on the power level or the CTM specifications. It features our MDmesh family of super-junction Power MOSFETs addressing both soft and hard switching topologies,
SiC MOSFETs with the 650V GEN 2 series and the 1200V SiC MOSFETs, both rapidly moving to GEN3. A solid 600V to 1200V range of SiC Diodes, GaN Solutions with different level of integrations from the PowerGan discrete transistors to the MASTERGAN, combining 600 V half-bridge driver with two GaN HEMTs. Gate drivers are compulsory companion for discrete transistors and MCUs in order to accurately and efficiently activate the power stage. We offer gate drivers solutions both for SJ MOSFETs and IGBTs, as well as optimized solutions for SiC and GaN Transistors. The auxiliary power supply block is augmented by our VIPerPlus family of high voltage converters.

Product class	Product sub-class	Series	Part Number	ST Competitive Edge
Power MOSFETs & GaN Transistors	SiC Power MOSFETs	GEN1: 1200 V, 1700 V GEN2: 650 V, 1200 V GEN3: 650 V, 750 V, 900 V, 1200 V	SCT*N65G2V SCT*N120 SCT*N120G2 SCT*N170	• Flat Rds(on) over temperature • Lower switching losses • Very cost competitive • 1200V GEN2 plan tech: Best Ron*Area Die (mOhm*cm^2) FOM in the market
	PowerGaN Transistors	G-HEMT G-FET	SGT*R65A*	• Extremely low capacitances (10 times lower total QG than Si MOSFETs) • Zero reverse recovery charge (Qrr) • Innovative package technology to minimize parasitic effects • Kelvin source pin for optimum gate driving

Product class	Product sub-class	Series	Part Number	ST Competitive Edge
Power MOSFETs & GaN Transistors	HV Super-Junction MOSFETs – MDmesh™	Standard Series		
		MDmesh M5	ST*65M5	• Extremely low RDS(on) • High switching speed • Suited for hard switching topologies
		MDmesh M2	ST*60M2 ST*65M2 ST*60M2-EP	• Extremely low Qg • Optimized for light load conditions • Tailored for high-frequency applications (M2-EP) • Suited for hard switching & ZVS/LLC topologies
		MDmesh M6	ST*60M6 ST*65M6	• Developed to enhance the resonant converter performance • Low Gate Charge ➔ high frequency operation • Optimized threshold voltage ➔ reduced switching losses • Optimized Coss ➔ increased power efficiency at light load
		MDmesh K5	ST*80K5 ST*90K5 ST*105K5 ST*120K5	• Industry only super-junction technology > 1000V • 100% avalanche tested • Very wide product portfolio, up to 1700V
		Fast-recovery body diode series		
		MDmesh DM2	ST*60DM2 ST*65DM2	• Improved trr of intrinsic diode • High dV/dt capability • Suited for ZVS/LLC topologies
		MDmesh DM6	ST*60DM6 ST*65DM6	• Developed to enhance the resonant converter performance • Low Gate Charge high frequency operation • Optimized threshold voltage ➔ reduced switching losses • Optimized Coss ➔ increased power efficiency at light load • Embedded fast diode ➔ Increased safe area for diode peak recovery voltage in HB and FB topology
		MDmesh DK5	ST*95DK5	• Lowest trr @ Very High Voltage • BVDSS • High dV/dt capability • Targeting high power 3-phases • Industrial equipment
	LV Power MOSFETs	40 V - 100 V STripFET™ F7	ST*N4F7 ST*N6F7 ST*N8F7 ST*N10F7 ST*N4*F7	• Optimized body diode (low Qrr) and Crss/Ciss to reduce EMI and get an excellent switching performance

STPOWER

Product class	Product sub-class	Series	Part Number	ST Competitive Edge
IGBT & Power Modules	Trench Field-Stop IGBTs	600V V series Very high speed (50 to 100 kHz)	STG*V60DF	• Product range from 20 to 80A • Industry's lowest Eoff for increased efficiency • Positive temperature coefficient for safe paralleling of multiple IGBTs • Several package options for different application needs
		650V HB series High speed (16 to 60 kHz)	STG*H65DFB	• Product range from 20 to 80A • Optimized trade-off V_{CEsat}/E_{OFF} • Maximum junction temperature of 175°C
		650V HB2 series High speed (16 to 60 kHz)	STG*H65DFB2	• Wide product range from 15 to 100A • Optimized trade-off V_{CEsat}/E_{OFF} • Maximum junction temperature of 175°C • Lower gate charge for faster switching • Soft turn-off even with smaller gate resistance • Several package option
		1200V H series High speed (20 to 100 kHz)	STG*H120DF2	• Product range from 15 to 75A • Very low turn-off energy • Maximum junction temperature: TJ = 175 °C • Short-circuit rugged • Available in TO247, TO247 LL and MAX247
		1200V M series Low loss (2 to 20 kHz)	STG*M65DF2	• Product range from 8 to 75 • Low loss and short-circuit rugged series • Maximum junction temperature: TJ = 175 °C • Available in TO220, TO247, TO247 LL and MAX247 • Optimized tradeoff between static and dynamic loss for hard switching application
	Power Modules	ACEPACK1 ACEPACK2	A1P50S65M2 A1P25S12M3 A1P35S12M3 A2P75S12M3 A1P25M12W2-1 A1P18M65W2-1 A2F12M12W2-F1 A1F25M12W2-F1 A2U12M12W2F1	• Multi-sourced with Infineon Easy 1B • STPowerStudio for simulating thermal performance • Integrated NTC

Product class	Product sub-class	Series	Part Number	ST Competitive Edge
Diodes & Rectifiers	SiC Diodes	600 to 1200 V series	STPSC*065 STPSC*H12	• No or negligible reverse recovery • Very low forward voltage • High forward surge capability • Wide portfolio with current rating from 2A to 40A, various package offer (SMD,QFN,TH),2 Series (Low Vf, High Ifsm)
	Ultrafast Rectifiers	200-400 V Ultrafast Rectifiers	STTH*02 STTH*03 STTH*04	• Various package offer • Ultrafast diode • Low VF trade off to improve efficiency and reliability of the converter
		600 V Ultrafast Rectifiers	STTH*06 STTH*L06 STTH*R06	
		800-1200 V Ultrafast Rectifiers	STTH*08 STTH*10 STTH*12 STTH*S12	
	Field Effect Rectifiers	FERD	FERD*45 FERD*50 FERD*60 FERD*100	• Low VF/Low IR trade off • Improved runaway safety
	Power Schottky Diodes	Power Schottky High Temperature	STPS*100	• Low VF/Low IR trade off • Avalanche specification • Robust technology
		Power Schottky Low VF	STPS*30	
		Power Schottky medium VF and IR	STPS*45 STPS*200	

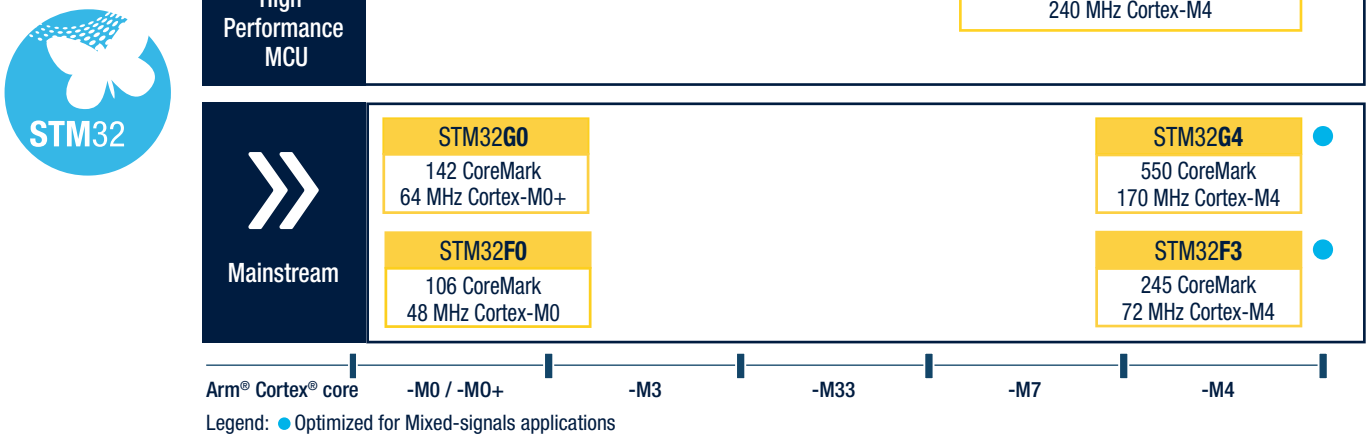
ST PROTECT

STPOWER

Product class	Product sub-class	Series	Part Number	ST Competitive Edge
Protections, Thyristors & Triacs	Protections	TVS	SMAJ	• Various package offer
			SMBJ	
			SMB15F	
			SMC30J	
		USB Port Protection	TCPP01-M12	• Integrated gate driver and CC line management with IEC61000-4-2 ESD protections • Companion chip to STM32 integrating USB-C PD controller making this combo a cost effective solution for sink devices
			TCPP02-M18	• OCP and analog current sense integrated with IEC61000-4-2 ESD protections • Companion chip to STM32G0 integrating two USB-C PD controllers making this combo a cost effective solution for dual port source applications
			TCPP03-M20	• OVP, OCP and analog current sense integrated with IEC61000-4-2 ESD protection • Two integrated gate driver manage the sink and source path for USB-C Dual Role Power applications
	Thyristors (SCR)	Standard Thyristors (SCR)	TN815-800B	• Greater robustness to surge • Higher Immunity to electrical transient • High temperature SCR TJ = 150 °C option preferred to fit higher power density SMPS • Large package offer, including SMD compact solutions : DPAK, D2PAK, D2PAK HV, D3PAK
			TN4050-12PI	
			TN6050-12PI	
		High Temp Thyristors (SCR)	TM8050H-8	
			TN4015H-6	
		Automotive Grade Thyristors	TN3050H-12W	
			TN4050HP-12W	
			TN6050HP-12W	
		Thyristors for Power Breakers	TS110-8	
			X0115	
	Triacs	High temperature Triacs	T835H-8	• ST's portfolio covers medium-power AC loads with 1 to 50 A triacs • 600 V, 800 V or 1200 V Triacs for large application field and AC voltage 1- or 3-Phase • Full rated 150°C & 800 V, up to 30 A Triac new series: 8H-Triac Txx35H-8
			T1635H-8	
			T3035H-8	
		Standard and Snubberless Triacs	T1635T-8	
			T2535T-8	
			T2550-12	
	SCR Power Modules	ACEPACK SMIT	STTD6050H-12M2Y	• STTD is full bridge 1200 V 60 A ; 2x SCRs and 2x diodes • STTN is half bridge leg 1200 V 60 A ; 2x SCR • Automotive grade products
			STTH6050H-12M1Y	

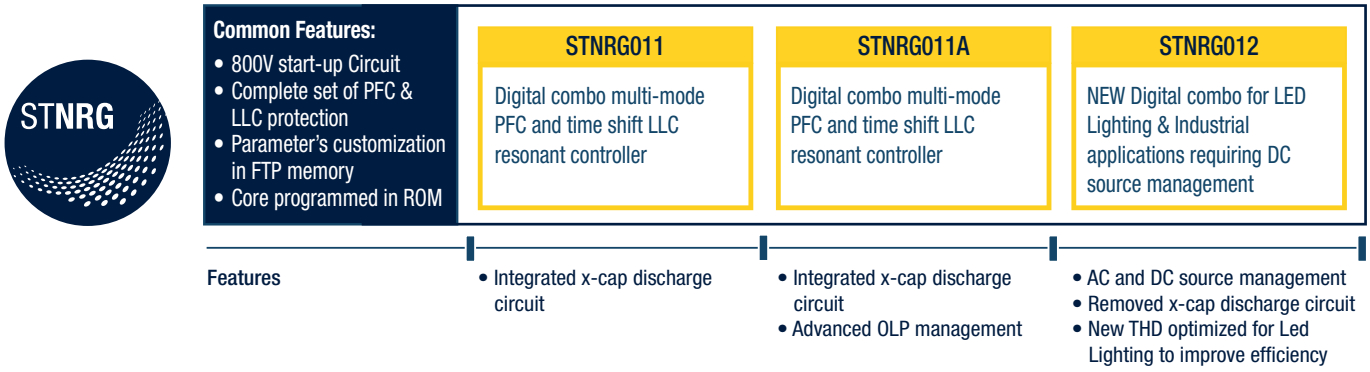
Product class	Product sub-class	Series	Part Number	ST Competitive Edge
Secondary-Side Controllers	Synchronous Rectification Controllers	Rectification controller for Flyback converter	SRK1000	• Guaranteed by maximum conduction of SR MOSFET in all load conditions, thanks to fast turn-on, with minimum delay, and to the innovative adaptive turn-off logic • Meet stringent no-load consumption SMPS requirements with low-consumption mode Iq=160 µA (typ) • Mixed DCM/CCM operation is easily managed • Automatic sleep mode at light load • Different options for blanking time after turn-off to support applications needs • No need to add any circuit for stray inductance compensation • No Schottky diode (in parallel to SR MOSFET) required for managing CC regulation
			SRK1000A	
			SRK1000B	
			SRK1001	
		Rectification controller for LLC resonant converter	SRK2000A	• Maximum conduction of SR MOSFETs in all load conditions, thanks to fast turn-on, with minimum delay and adaptive blanking time, and to the innovative adaptive turn-off logic • Meet stringent no-load consumption SMPS requirements with low-consumption mode Iq=50 µA (typ) • Programmable low-consumption operations during burst mode • Robust design preventing current inversion • Safe management of load transient, light load and startup condition • Automatic sleep mode at light load (SRK2001) • Parasitic inductance self-compensation • No need to add any circuit for stray inductance compensation • Kelvin sensing to sense the drain-source voltage of each MOSFET
			SRK2001	
			SRK2001A	

Product class	Product sub-class	Series	Part Number	ST Competitive Edge
Digital Power MCUs & Controllers	STM32 32 bit Arm Cortex MCUs	STM32G4	STM32G474	• HRTIM features • Analog IPs & GP peripherals features and larger number • Higher computational performance (Speed, FPU, FMAC, Cordic) • Better portfolio / pin-out (100 and 128-pin packages) • All products compatible up to 512K
		STM32F3	STM32F334	• HRTIMER flexibility • Higher computational performance • ARM vs proprietary core • More peripherals and PWMs
		STM32H7	STM32H725 STM32H735	• High performance up to 480 MHz • High resolution timer V1 (2.1ns resolution) for real time control • High-speed ADCs for precise and accurate control (3.6 Msps)
		STM32G0	STM32G071	• Very low power consumption • Timer frequency up to 128 Mhz resolution (8ns) • High-speed ADCs for precise and accurate control • UCPD Interface • More RAM for Flash: up to 36 KB SRAM for 128 KB and 64 KB Flash memory
		STM32F0	STM32F071	• Suited for cost-sensitive applications. • Combine real-time performance, low-power operation, and the advanced architecture and peripherals of the STM32 platform
	Digital Power Controllers	STNRG	STNRG011 STNRG011A STNRG012	• Robustness: 800V start-up circuit • Flexibility: parameter's customization in FTP memory, core programmed in ROM, high level of programmability and monitoring • Higher Efficiency (especially at light load): advanced burst mode and low quiescent current • Compactness: SO20 package for low pin count



Legend: ● Optimized for Mixed-signals applications

Integrated SMPS Digital Combo



Product class	Product sub-class	Series	Part Number	ST Competitive Edge
MOSFETs & IGBTs Gate Drivers	Galvanically-isolated single and dual gate drivers	STGAP	STGAP2S STGAP2D STGAP2HS STGAP2SICS STGAP2SICSC STGAP2HD STGAP2SICD STGAP1BS	For STGPA2SICS • High robustness: embedded isolation and protections, specific UVLO for SiC,Over Temperature protection, spike effects reduction thanks to Miller Clamp • Best in class performance: 4 A current capability, 75ns propagation delay and ±100 V/ns CMTI • 2 driving options: Miller Clamp and separated outputs • High power density and easy design: lower system size and BOM cost
	High Voltage Half Bridge Gate Drivers	HV HB Gate Drivers	L6491 L6494 L6498	• High driving current source and sink: up to 4A • Integrated bootstrap diode • Advanced features: interlocking and adjustable Dead Time • Integrated bootstrap diode, comparator for OCP with Smart Shut Down (SSD) • Shutdown and open-drain output pins
		HV HB Gate Drivers for GaNs	STDRIVEG600	
	Low side gate drivers	Single Channel Drivers	PM8841 PM8851	• 2 level turn-off • Dual independent low side driver (PM8834) • 4 A source/sink driver high current capability (PM8834) • Driver output parallel ability to support higher driving capability (PM8834) • Embedded drivers with anti cross conduction protection (PM8834)
		Multiple Channel Drivers	PM8834	
Gallium Nitride (GaN) Power ICs	Integrated Smart GaN	MASTERGAN1:150 + 150 mΩ MASTERGAN2: 150 + 225 mΩ MASTERGAN3: 225 + 450 mΩ MASTERGAN4: 225 + 225 mΩ MASTERGAN5: 450 + 450 mΩ	MASTERGAN1 MASTERGAN2 MASTERGAN3 MASTERGAN4 MASTERGAN5	• Embedded half-bridge gate driver easily supplied by the integrated bootstrap diode • Overtemperature protection • Extended 3.3 to 15 V input range with hysteresis and pull-down • Accurate internal timing match • Interlocking function • -40 to 125°C operating temperature range • High switching frequency >1 MHz • No investment to learn GaN required • Fast time-to-market

Product class	Product sub-class	Series	Part Number	ST Competitive Edge
Signal Conditioning (Amplifiers and Comparators)	Comparators	Automotive Comparators	TS3021 TS3022	• Propagation delay 38 ns • Low current consumption: 73 µA • Rail-to-rail inputs • Push-pull outputs • Supply operation from 1.8 to 5 V
		High-Speed Comparators	TS3011	• Propagation delay 8 ns • Low current consumption 470 µA • Rail-to-rail inputs • Push-pull outputs • Supply operation from 2.2 to 5 V
	Current Sense Amplifiers	Current Sensing	TSC1031	• High-side current measurement with common-mode up to 70V • Integrated amplification gain of 50V/V or 100V/V with guaranteed accuracy • Highly rugged design with tolerance to reversed battery, ESD surges, load dump
	Operational Amplifiers	Precision Op Amps	TSZ121	• Oustanding accuracy (Vio < 5µV @25°C) enabling the best signal conditioning • Excellent performance stability versus temperature changes (Vio < 8µV for -40°C<T<125°C) for hassle-free design • Rail-to-rail input and output, 1.8V to 5.5V supply for wide application range
			TSV611	• Excellent power savings with 10µA current consumption while providing 120 kHz bandwidth • Good accuracy (Vio < 800µV best performance @25°C) enabling precise signal conditioning • Minimum supply voltage (Vcc min): 1.5V, enables use with the same supply as low voltage microcontrollers
			TSV911 TSV912 TSV914	• 8MHz gain bandwidth product for high frequency signal conditioning • Good accuracy (Vio < 1.5mV best performance @25°C) enabling accurate low-side current measurement • Rail-to-rail input and output, 2.5V to 5.5V supply for wide application range

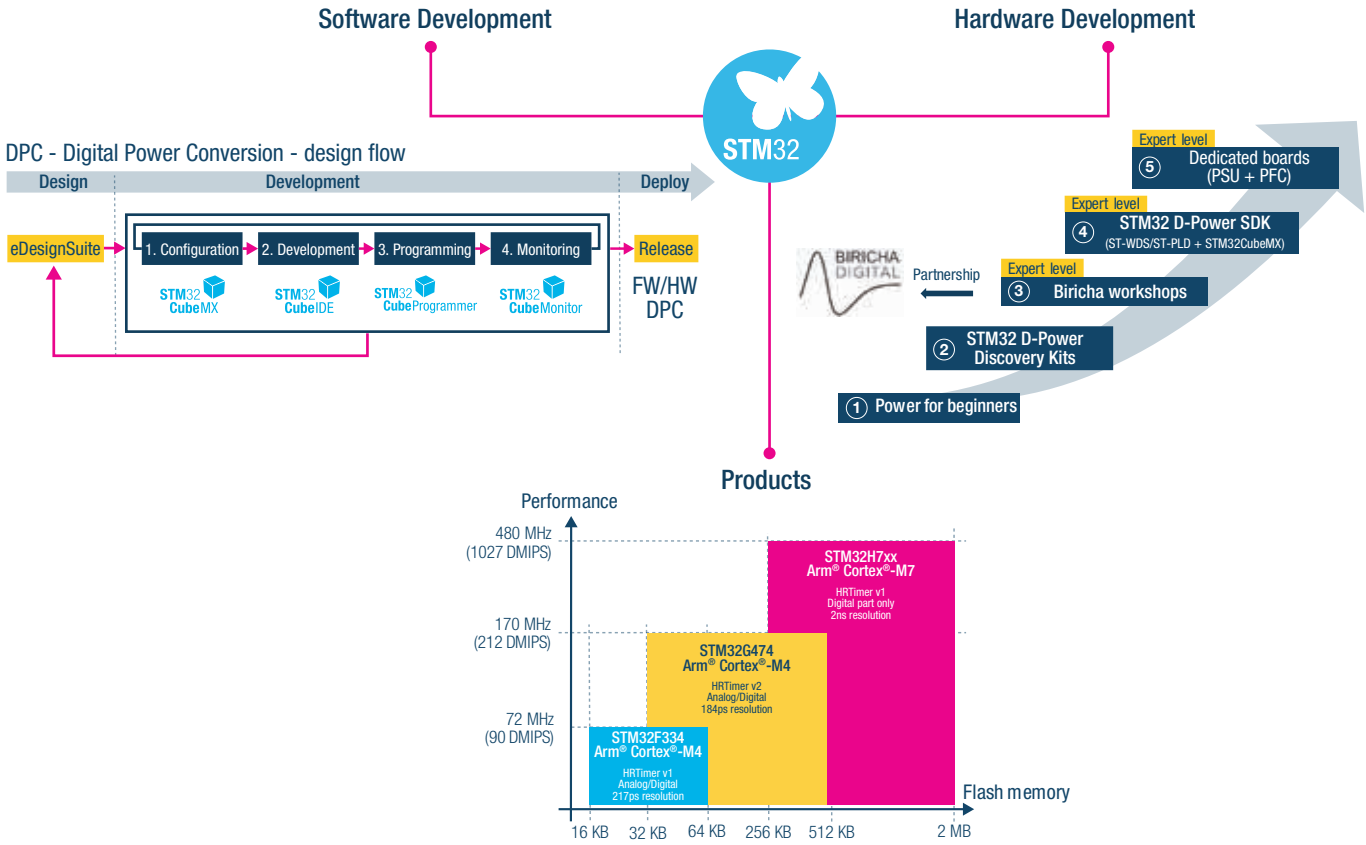
COMPREHENSIVE STM32 MCUS DIGITAL POWER DEVELOPMENT ECOSYSTEM

Overview

The STM32 Digital Power ecosystem (also referred to as D-Power) offers a complete set of materials, from hardware, software tools and embedded software to training resources and documentation, to support and accelerate the development of digital power applications, such as D-SMPS, lighting, EV charging, inverters for solar systems and wireless chargers.

STM32 D-Power product lines

STM32 D-Power product portfolio includes several lines from STM32 product series, offering maximum scalability and flexibility in terms of performance, from entry-level to high performance. STM32F3, STM32G4 and STM32H7 MCUs feature an embedded high-resolution timer (HRTimer) which is a powerful and flexible Pulse Width Modulation (PWM) generator providing a resolution of up to 184ps.



DIGITAL POWER AND eDesignSuite

eDesignSuite is a free, comprehensive, online software tool that helps design and simulate a circuit based on specific components.

In four simple steps eDesignSuite will help you to

- **Specify** your application use case
- **Select** the right IC or Discrete
- **Analyze** how it performs in the selected circuit configuration
- **Refine** the design with intuitive simulation iterations
- And finally, you will be ready to build a **prototype**.

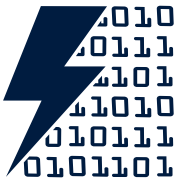
KEY FEATURES & BENEFITS

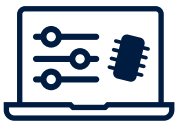
- Design of AC-DC and DC-DC power converter, digitally controlled with “standard PID model” and soon with models supported by Biricha’s software tools
- FW delivery based on user I/O specifications
- Full source code with architecture defined as application FW examples
- First project compatible with IAR Embedded Workbench toolchain
- STM32CubeMX and Biricha APIs compatibility by steps

DIGITAL POWER WORKBENCH

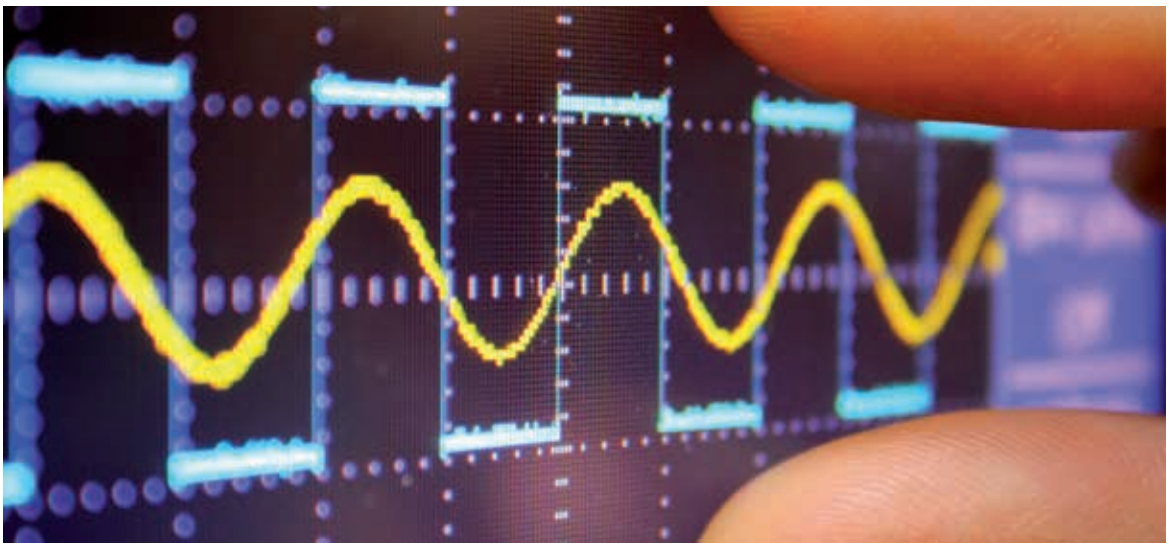
Design and simulation of digital power supply is now available on eDesignSuite thanks to our new Digital Power Workbench.

This software tool drastically reduces the effort and time for the development of digital power converters by providing a step-by-step design flow for both the power section - helping to quickly achieve desired efficiency targets – and the digital feedback network - to achieve the expected closed-loop performance, and finally generating the firmware for the target STM32 microcontrollers.





eDesignSuite



ST PLD

Digital PFC design software for STM32 from Biricha

Biricha has teamed up with STMicroelectronics to provide a special release of “PLD - PFC Loop Design Tool” for use with the STM32 range of MCUs from STMicroelectronics. This ST PLD design tool is free-to-use and allows the user to quickly stabilize their digital PFC stage controlled using an STM32 MCU.

The user simply enters their specification into ST PLD. The software will then automatically select the compensator poles and zeros and then calculate the controller coefficients while keeping you in control at every stage of the process.

KEY FEATURES & BENEFITS

- ST PLD has been created for engineers who need to design digital PFC stage
- Automatically calculates poles and zeros as well as power stage components for Boost PFC stage
- Sophisticated control algorithms stabilize digital power supplies with automatic coefficient calculations for STM32 range of MCUs

ST WDS

Power Supply Design Tool for STM32 from Biricha

Biricha has teamed up with STMicroelectronics to provide a special release of “WDS - Power Supply Design Tool” for use with the STM32 range of MCUs from STMicroelectronics. This ST WDS design tool is free-to-use and allows the user to quickly stabilize their digital power supply controlled using an STM32 MCU.

The user simply selects their topology and types in their input/output specification into ST WDS. The software will then automatically select the compensator poles, zeros and controller coefficients while keeping you in control at every stage of the process.

KEY FEATURES & BENEFITS

- ST WDS has been designed as the ultimate toolbox for the digital power supply design engineer
- Designs and stabilizes digital PSU control loops in minutes
- Automatically calculates poles and zeros as well as power stage components for the world’s most popular topologies
- Sophisticated control algorithms stabilize digital power supplies with automatic coefficient calculations for STM32 range of MCUs
- Simulations in time domain, frequency domain and ability to superimpose real measurements on simulated data

ST-WDS software for PSU

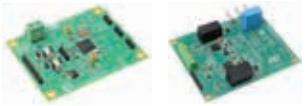
https://www.biricha.com/st-wds.html

ST-PLD software for PFC hyperlinked to:

https://www.biricha.com/st-pld.html

Evaluation Boards and Reference Designs

ST's products support complex applications with a large variety of specialized components. The comprehensive range of solutions lets you evaluate the performance and efficiency of ST's products in real life conditions with no extra effort required for designing dedicated circuit boards.

STDES – Reference Designs	STEVAL – Evaluation Boards	EVAL, EVL, EV – Evaluation Boards	Discovery Kit
			
Reference designs covering various application domains to demonstrate products capabilities and to ease development at customers	**Full feature system evaluation:** Power-dense reference boards featuring maximum of system performance	**Full feature product evaluation:** Reference board exercising maximum of product features	**Key feature prototyping:** STM32 product demonstration boards with specific application focuses

STDES-VRECTFD

15 kW Vienna PFC rectifier reference design with digital power control

This reference design is a complete solution for high-power three-phase AC/DC rectifier applications based on the Vienna topology. It features full digital control through the STM32G474RET3 MCU and provides both digital output voltage regulation and continuous conduction mode (CCM) current regulation for the maximum power quality in terms of total harmonic distortion (THD) and power factor (PF).

STDES-30KWVRECT

30 kW Vienna PFC rectifier reference design with digital power control

This reference design introduces a complete digital power solution for high power three-phase active front-end (AFE) rectifier applications based on the three-level Vienna topology. This platform achieves more than 98.5% peak efficiency using SCTWA90N65G2V-4 and STPSC40H12C SiC MOSFET and discrete. It features fully-digital control, with the STM32G474RET3 mixed-signal high performance microcontroller.

STDES-PFCBIDIR

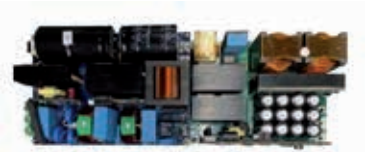
15 kW, three-phase, three-level Active Front End (AFE) bi-directional converter for industrial and electric vehicle DC fast charging applications

This reference design represents a complete solution for three-phase AC/DC and DC/AC (800 VDC to 400 VAC) applications. It is well suited for the Active Front End (AFE) stage in high power charging stations, industrial battery chargers and UPS.

STDES-3KWTLCP

3 kW telecom rectifier reference design with digital power control

The STDES-3KWTLCP is a 3 kW AC-DC converter designed for telecom rectifier applications. This reference design opens the path to a compact solution (up to 40 W/inch3), offering a high peak efficiency (96.3%), low THD distortion (less than 5% THD at full load), and a reduced bill of materials.



STEVAL-DPSTPFC1

3.6 kW Totem Pole PFC with inrush current limiter reference design using TN3050H-12WY and SCTW35N65G2V

The STEVAL-DPSTPFC1 3.6 kW bridgeless totem pole boost circuit achieves a digital power factor correction (PFC) with inrush current limiter (ICL). It helps you to design an innovative topology with the latest ST power kit devices: a silicon carbide MOSFET (SCTW35N65G2V), a thyristor SCR (TN3050H-12WY), an isolated FET driver (STGAP2S) and a 32-bit MCU (STM32F334).

STEVAL-DPSLLCK1

3 kW Full Bridge LLC resonant digital power supply evaluation kit

The STEVAL-DPSLLCK1 is a digitally controlled 3 kW full bridge LLC resonant DC-DC converter with output synchronous rectification. The kit consists of a power board, digital control board, adapter board, and firmware modules.

STEVAL-LLL009V1

300 W very high AC input voltage LED driver with digital power control

The STEVAL-LLL009V1 digitally controlled 300 W power supply consists of power factor correction (PFC) and half-bridge LCC resonant converter power stages. A STM32F334R8 microcontroller implements DC-DC and output synchronous rectification digital control, while the PFC is driven in transition mode by the L6562AT controller. The solution supports constant voltage (CV) and constant current (CC) operation.

STEVAL-DPSG474

Digital power supply control board based on STM32G474RE

The STEVAL-DPSG474 is a digital power supply control board which can be connected to a power stage, providing all the PWM control signals, sensing networks and protection features needed to control a wide range of digital power supply applications.

It includes an adapter board to provide different communication interfaces and to program the microcontroller using a standard 20-pin JTAG connector.

STEVAL-DPS334C1

Digital power supply control board based on STM32F334

The STEVAL-DPS334C1 is a digital power supply control kit, consisting of a main board based on the STM32F334R8 microcontroller from STM32F3 family and an adapter board to program the microcontroller.

STEVAL-ISA172V2

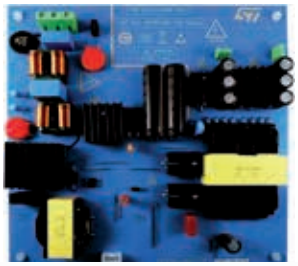
2 kW fully digital AC-DC power supply (D-SMPS) evaluation board

The STEVAL-ISA172V2 is a 2 kW fully digital switch mode AC-DC converter consisting of two power sections: a two phase interleaved power factor corrector (PFC) and a DC-DC phase-shifted full-bridge converter, controlled by a STM32F334 microcontroller for each section.

STEVAL-NRG011TV

200 W power supply based on STNRG011 digital combo for LED TV

The STEVAL-NRG011TV is a 200 W LED TV SMPS providing 12 V regulated output voltage (for MCU supply and audio system applications) and 65 V output voltage for LED back lighting. The design is based on the STNRG011 IC digital combo controller that controls a two-stage AC/DC SMPS.



EVLSTNRG011-150

12 V, 150 W power supply based on STNRG011 digital combo and SRK2001 adaptive synchronous rectifier controller

The EVLSTNRG011-150 is a 12 V, 150 W power supply demonstration board for 90 V ac to 264 V ac mains, which is representative of an AC/DC converter for an all in one (AIO) computer or a general purpose high power adapter. The design is based on the STNRG011 IC, a digital combo that controls a two-stage AC/DC SMPS.

EVALMASTERGANX

Demonstration board for MASTERGANx high power density half-bridge high voltage driver with two 650 V enhanced mode GaN HEMT

The EVALMASTERGANx board is an easy to use and quick to adapt tool to evaluate the characteristics of MASTERGANx and to quickly create new topologies without the need of complete PCB design.

EVSTDRIVEG60015*

Demonstration board for STDRIVEG600 600V high-speed HB gate driver with enhanced mode GaN HEMTs

The STDRIVEG600 is a high-speed half-bridge gate driver optimized to drive high-voltage enhanced mode GaN HEMTs or high-voltage N-channel power MOSFETs. It features an integrated bootstrap diode and allows supplying external switches up to 20 V, with undervoltage protection tailored for GaN HEMTs.

The EVSTDRIVEG60015 board is easy to use and quick and adapt for evaluating the characteristics of STDRIVEG600 driving 650 V e-Mode GaN switches.

EVSTDRIVEG600DM

Demonstration board for STDRIVEG600 600V half-bridge high-speed gate driver with Power MOSFETs

The EVSTDRIVEG600DM board is easy to use and quick and adapt for evaluating the characteristics of STDRIVEG600 driving 600V MDmesh DM2 Power MOSFET with fast recovery diode.

EVALSTGAP2SICS / EVALSTGAP2SICSC

Demonstration board for STGAP2SICS & STGAP2SICSC isolated 4 A single gate drive

The EVALSTGAP2SiCS/SC board allows evaluation of all the STGAP2SiCS/SC features while driving a half-bridge power stage with voltage rating up to 1200 V in TO-220 or TO-247 packages.

The board components are easy to access and modify in order to make driver performance evaluation easier under different application conditions and fine adjustment of final application components BOM.

* available soon

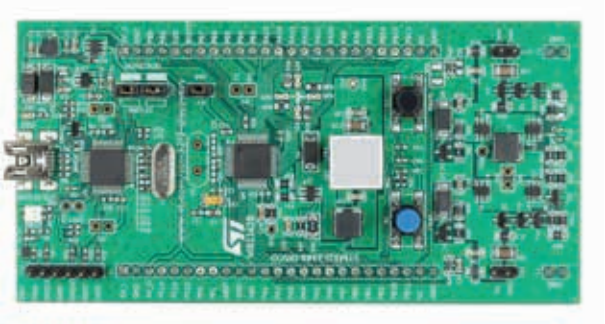
B-G474E-DPOW1

Discovery kit with STM32G474RE MCU

The B-G474E-DPOW1 Discovery kit is a digital power solution and a complete demonstration and development platform for the STMicroelectronics STM32G474RET6 microcontroller. Leveraging the new HRTimer-oriented features, 96 Kbytes of embedded RAM, math accelerator functions and USB-PD 3.0 offered by STM32G474RET6, the B-G474E-DPOW1 Discovery kit, based on the USB 2.0 FS Type-C™ connector interface, helps the user to prototype applications with digital power such as a buck-boost converter, RGB power LED lighting or a class-D audio amplifier.

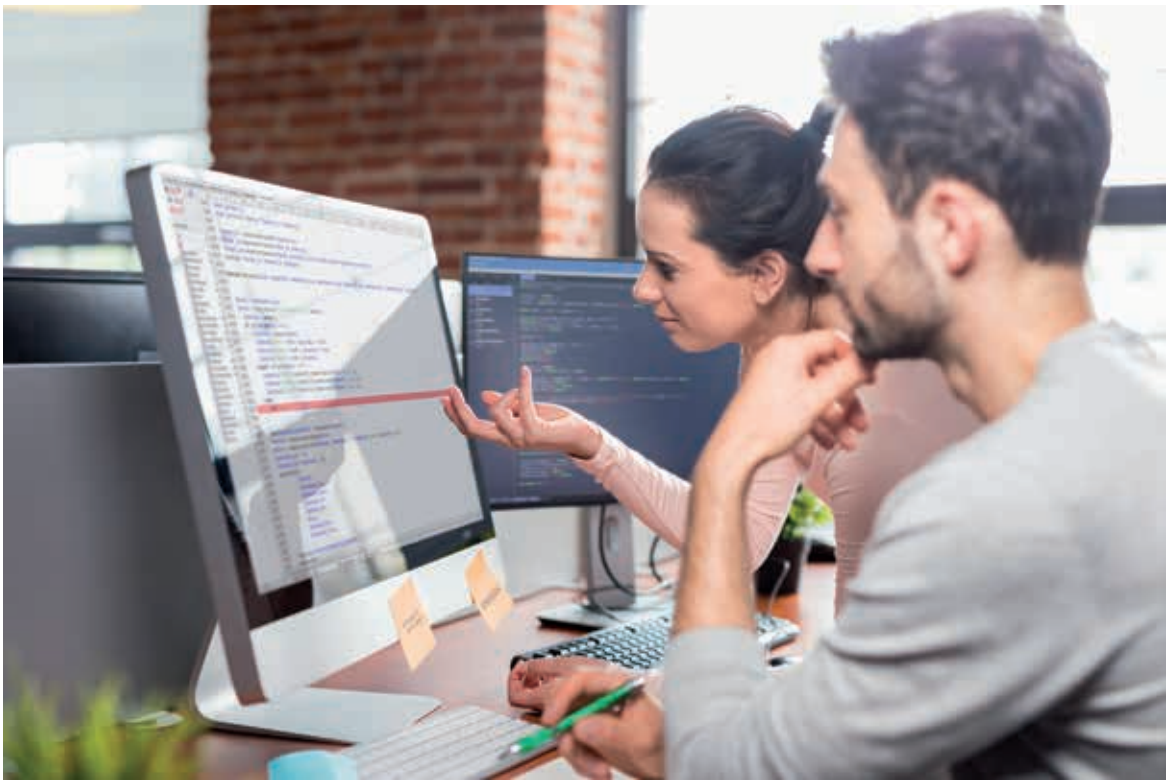
32F3348DISCOVERY

Discovery kit with STM32F334C8 MCU



The Discovery kit for STM32F334 line helps you to discover the digital power features of the STM32F334 line microcontrollers and to develop your applications easily. It offers everything required for both beginners and experienced users to get started quickly.

Based on an STM32F334C8T6, it includes an ST-LINK/V2-1 embedded debug tool interface, high brightness LED dimming with buck converter, buck/boost converter, LEDs and pushbuttons.



life.augmented

MIX
Paper from responsible sources
FSC® C003379
www.fsc.org

Order code: BR2204DIGIPOW

For more information on ST products and solutions, visit www.st.com

life.augmented