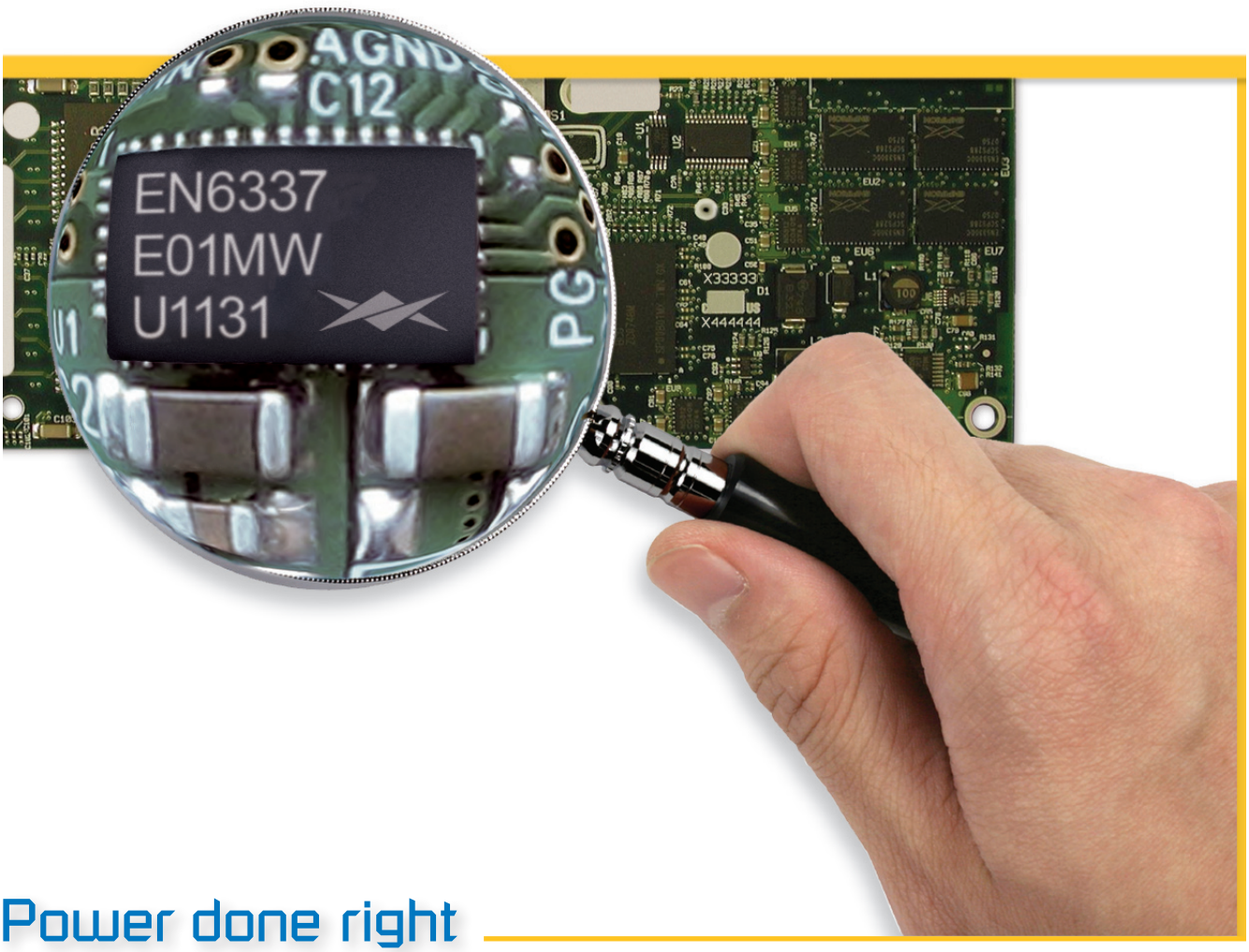
ENPIRION



Power done right

Highly Integrated DC-DC Conversion Solutions with Uncompromised Performance

2012

Integrated DC-DC Switching Solutions **"Power done right"**

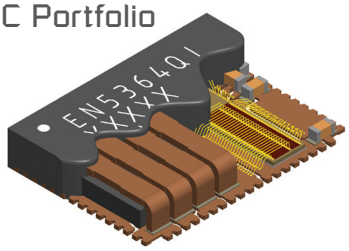
Enpirion Technology

Technical Expertise

- High Frequency Power Conversion
- Magnetics Engineering
- Power Packaging and Construction

Complete Power Management Systems

- Broadest Integrated, DC-DC Portfolio



Engineered Turnkey Solutions

- Fully simulated. . .
  . . . characterized
  . . . validated
- Production tested
- Eliminates inductor, capacitor selection

Benefits

Highest Power Density/ Smallest Footprint

Greatly minimizes the amount of PCB space and height profile required for point-of-load regulation compared to alternative discrete switching regulators and modules.

High Efficiency/ Robust Thermal Performance

Optimized with up to 97 percent efficiency. High efficiency devices are truly industrial graded not requiring load de-rating or air flow at 85 °C ambient temperature.

Fewer Parts/8x Higher Reliability

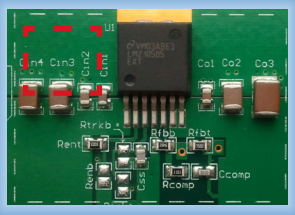
PowerSoCs are specified, simulated, characterized, validated and manufacturing-tested as a complete power system. Fewer components and tightly controlled IC manufacturing processes permit an unsurpassed 28,000 MTTF reliability.

Simplified Design Flow/Fastest Time to Market

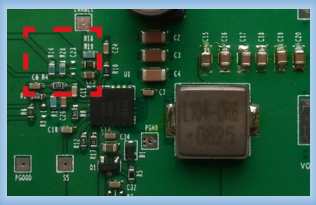
PowerSoCs integrate the inductor and compensation enabling turnkey designs. Development requires fewer design steps with significantly less exposure to design iteration versus discrete switching regulators. Fully validated PCB layout and design files enable customers nearly 100 percent first-pass success.

Enpirion PowerSoC's reduce PCB space by up to 80%

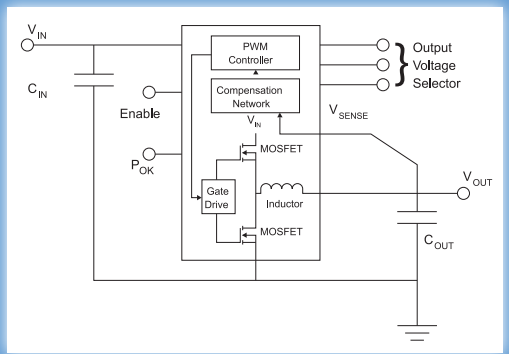
Enpirion (PowerSoC)



Competitor A (Modules)



Competitor B (Discrete Regulators)

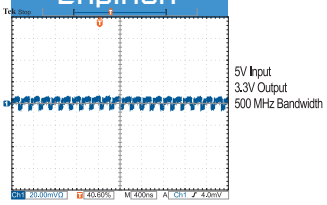


Uncompromised Performance/Total Solution Cost Reduction

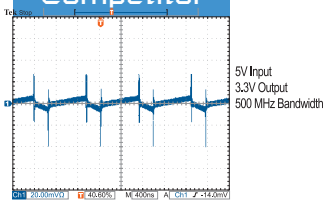
Enpirion PowerSoC solutions require fewer external components with smaller PCB footprints. Inherent low ripple, fast response, and low EMI (i.e. CISPR 22 Class B compliant) eliminate the need for external noise filters/LDO, while the added cost of heatsink, airflow, and de-rating are also avoided.

Low Ripple

Enpirion

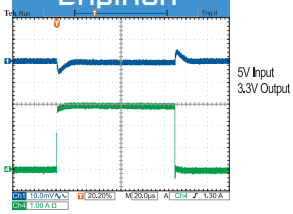


Competitor

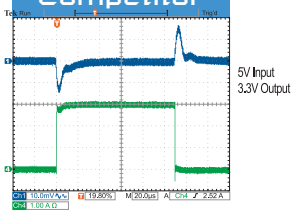


Fast Dynamic Response

Enpirion

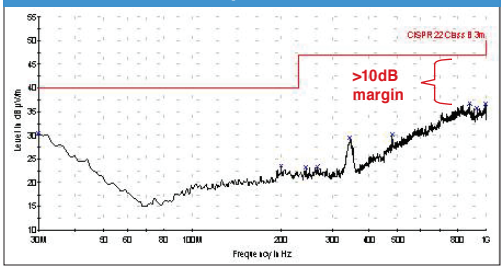


Competitor

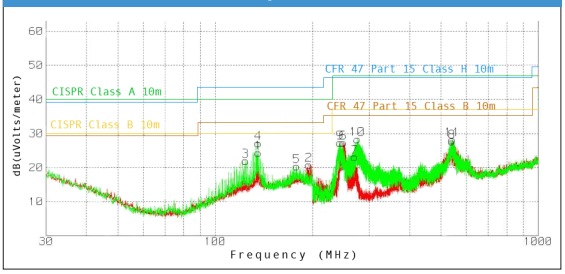


Low Radiated Noise

Enpirion



Competitor



Enabled Applications

Market pressures are driving equipment manufacturers to add more features, functionality and higher bandwidth while moving to smaller form factors and improved energy efficiency. Nano-meter process technology has enabled complex digital SoCs that have an increasing number of power rails and tighter noise tolerances. Enpirion SoCs meet these power design challenges and are broadly used to power FPGAs, ASICS, DSPs, processors, memory, and high speed I/O.

Enterprise

- Server Motherboards
- NIC and HBA Cards
- RAID Controllers
- Multi-function printer

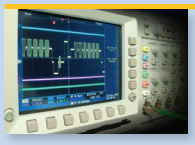
Storage

- Solid State Drives (SSD):
  - SATA, SAS, mSATA, USB3.0, PCIe
- Storage Systems
- Advanced USB Drives

Networking and Telecommunications

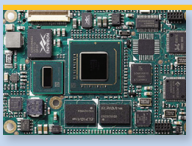
- Radio BTS (Macro, Pico, Femto)
- Backhaul (Microwave, Wireline)
- Media Gateway (ATCA/AMC)
- CPE/Broadband Modems

Test and Measurement



- Network analyzers
- Hand-held test equipment
- Data Acquisition
- Scopes, analyzers, signal generators

Industrial and Embedded



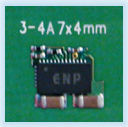
- Security Systems/PVR
- Industrial Computing (IPC,SBC)
- Handheld POS terminals
- Industrial Communication Modules

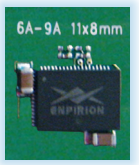
Optical Networking

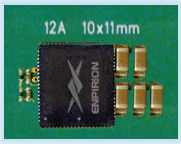
- Optical Modules:
  - SFP, XFP, CXP, CFP
- Active Optical Cable
- Reprogrammable Add/Drop Mux

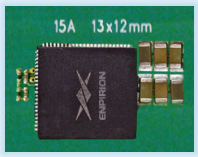
Optimizing size and reliability **without** compromising efficiency, noise & cost.

Smallest Solution Footprints (shown at actual size)









Select Featured Products

Part Number	Iout (A)	Vin (VDC)	Vo Range (VDC)[2]	Pkg (pins)	Pkg Size (mm) L	W	H	Solution Size mm2[7]	Ext. Components	XFB V Adjust	VID V Adjust[4]	POK (Power OK)	Program Soft Start	Margining[5]	Input sync[6]	Output Sync[6]	Parallel Capability	Light Load Mode
5300 5V Buck Family																		
EP5348QI	0.4	2.400 - 5.5	0.60 - 3.7	uQFN14	2.0	1.75	0.9	21	5	•								
EP535[x]HUI[3]	0.6	2.400 - 5.5	1.80 - 3.3	uQFN16	2.5	2.25	1.1	14	2		3-pin							•
EP535[x]LUI[3]	0.6	2.400 - 5.5	0.60 - 1.5[4] (3.7)	uQFN16	2.5	2.25	1.1	14	3	•	3-pin							•
EP5388QI	0.8	2.400 - 5.5	0.60 - 3.7	QFN16	3.0	3.0	1.1	28	2	•	3-pin							
EP53A[x]HQI[3]	1.0	2.400 - 5.5	1.80 - 3.3	QFN16	3.0	3.0	1.1	21	2		3-pin							•
EP53A[x]LQI[3]	1.0	2.400 - 5.5	0.60 - 1.5[4] (3.7)	QFN16	3.0	3.0	1.1	21	3	•	3-pin							•
EP53F8QI	1.5	2.400 - 5.5	0.60 - 3.7	QFN16	3.0	3.0	1.1	40	5	•		•						
EN5322QI	2.0	2.400 - 5.5	0.60 - 3.7	QFN24	4.0	6.0	1.1	58	3	•	3-pin	•						
EN5339QI	3.0	2.375 - 5.5	0.60 - 3.7	QFN24	4.0	6.0	1.1	60	7	•		•						
EN5364QI	6.0	2.375 - 6.6	0.60 - 3.3	QFN68	8.0	11.0	1.85	160	5	•		•	•	•	•	•	•	
EN5367QI	6.0	2.375 - 5.5	0.60 - 3.3	QFN54	10.0	5.5	3.0	160	9	•		•	•		•			
EN5394QI	9.0	2.375 - 6.6	0.60 - 3.3	QFN68	8.0	11.0	1.85	190	5	•		•	•	•	•	•	•	
6300 Efficiency Optimized Buck Family																		
EN6337QI	3.0	2.375 - 6.6	0.60 - 3.3	QFN38	4.0	7.0	1.85	75	6	•		•	•		•			•
EN6347QI	4.0	2.375 - 6.6	0.60 - 3.3	QFN38	4.0	7.0	1.85	75	6	•		•	•		•			•
EN6360QI	8.0	2.375 - 6.6	0.60 - 3.3	QFN68	8.0	11.0	3.0	190	10	•		•	•	•	•	•	•	
EN63A0QI	12.0	2.375 - 6.6	0.60 - 3.3	QFN76	10.0	11.0	3.0	227	11	•		•	•	•	•	•	•	
2300 12V Buck Family																		
EN2340QI	4.0	2.900 - 15.0	0.75 - 5.0	QFN68	8.0	11.0	3.0	200	7	•		•	•	•	•	•		
EN2360QI	6.0	2.900 - 15.0	0.75 - 5.0	QFN68	8.0	11.0	3.0	212	9	•		•	•	•	•	•		
EN2390QI	9.0	2.900 - 15.0	0.75 - 5.0	QFN76	10.0	11.0	3.0	254	9	•		•	•	•	•	•		
EN23F0QI	15.0	2.900 - 15.0	0.60 - 5.0	QFN88	13.0	12.0	3.0	340	13	•		•	•	•	•	•	•	
EV1300 Source/Sink DDR VTT Converter Family																		
EV1320QI	2.0	1.200 - 1.8	0.60 - 0.9	QFN16	3.0	3.0	0.55	80	13			•	•				•	
EV1340QI	5.0	1.000 - 1.8	0.50 - 0.9	QFN54	5.5	10.0	3.0	125	14	•		•	•				•	
EV1380QI	8.0	1.000 - 1.8	0.50 - 0.9	QFN68	8.0	11.0	3.0	200	14	•		•	•				•	

Definitions/Notes:

1. Solutions qualified to Industrial (I) temperature Range: -40°C to +85°C
2. For extended output voltage ranges, see datasheet.
3. [x] = "8" for PWM only; "7" for Light-Load mode
4. VID = Output voltage programming using Voltage ID code pins
5. Margining = The ability to force VOUT out of regulation by a selectable percentage (via 2-pins).
6. Input/Output Synch = ability to control frequency of the regulator(s) to reduce input/output voltage ripple.
7. Size estimate for single-sided PCB including all suggested external components.

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