# **Bourns® Power Supply Component Guide**

Short Form Brochure





### **SELECT & DESIGN COMPONENTS**

While designing power supplies, engineers decide if custom or off-the-shelf components are necessary.

**Off-The-Shelf:** When using off-the-shelf components designers rely on recommended and tested components; for example, AEC-Q compliant for automotive applications, or inductors and transformers recommended by reference designs. Simulation software tools enable designers to vary product performance in their application. Bourns\* components are included in leading simulator tool libraries.

**Custom:** In cases where designers need to optimize performance or have specific needs, for example, resizing of inductors and transformers may require customized parts to be designed. Bourns engineering teams support all phases of the custom design cycle (specification, design, testing, and sampling).

The majority of Bourns® components are designed for production on automated lines at our TS16949 compliant factories to ensure high reliability and cost efficiency.

### **DESIGN CYCLE**

### **DEFINE REQUIREMENTS**

- Customer
- Application
- Standards & Regulations
- Power & Rectification

### **SELECT & DESIGN COMPONENTS**

- Integrated Circuits, Semiconductors

  Microcontrollers, ASICs, DSPs, ICs, FPGAs...
- Circuit Conditioning Inductors, Transformers, Fixed Resistors, Potentiometers, Ferrites, Diodes...
- Circuit Protection
  Diodes, PTCs, Thyristors, TBU® Devices,
  MOVs, Fuses...

SIMULATE, TEST & PROTOTYPE

### **FINALIZE**

### **BOURNS DESIGN CYCLE CAPABILITIES**

- Transformer Prototype service with quick turnaround
- Design support with high power Finite Element Analysis (FEA) software to optimize reliability and efficiency
- Application support, including board layout, simulation and tests
- Global safety standards compliance assistance, including compliance to IEC 61558-1 and EN600950
- Specifying and testing a robust and reliable circuit protection solution for the primary and secondary circuits
- Optimization of size, weight and efficiency of power supply through an comprehensive component portfolio offering

Visit Bourns Analysis, Modeling and Testing: http://www.bourns.com/resources/analysis-modeling-and-testing

REVISE & REDEFINE

## Overview

### STANDARDS & REGULATIONS

### Regulations Regarding Power Consumption and Efficiency Description Program Region Program driven by US Environmental Protection Agency (EPA) to US, Worldwide reduce standby power and power at light load; the program covers a ENERGY STAR wide range of industrial and consumer devices (e.g., white goods, computers, equipment). Voluntary certification program for computer power supplies to increase energy efficiency; to obtain certification, power supplies must US, 80 PLUS® Worldwide have more than 80 % energy efficiency at 20 %, 50 % and 100 % of rated load and a power factor of 0.9 or greater at 100 % load.

There are many more regulations specific to regions and/or countries.

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EMC - Compatibility		
Emissions	Reference (Standards)	
Radiated E-field Emissions (30 MHz to 40 GHz)	FCC Part 15 FCC Part 18 EN 55011 / CISPR 11 EN 55022 / CISPR 22 EN 61000-6-3 EN 61000-6-4 CNS 13438 KN22 AS/NZS CISPR 22 VCCI TCVN 7189	
Radiated H-field Emissions (9 kHz to 30 MHz)	FCC Part 15 EN 55011 / CISPR 11	
Conducted Emissions (150 kHz to 30 MHz) Note: This includes both AC and telecom, as denoted by the asterisk	FCC Part 15 FCC Part 18 EN 55011 / CISPR 11 EN 55022 / CISPR 22* EN 6100-6-3 EN6100-6-4 CNS 13438* KN22* AS/NZS CISPR 22 VCCI* TCVN 7189*	
AC Power Line Harmonics	EN 61000-3-2 / IEC 61000-3-2	
AC Power Line Flicker	EN 61000-3-3 / IEC 61000-3-3	
Immunity	Reference (Standards)	
Electrostatic Discharge	EN 61000-4-2 / IEC 61000-4-2	
Radiated RF Immunity	EN 61000-4-3 / IEC 61000-4-3	
Electrical Fast Transient	EN 61000-4-4 / IEC 61000-4-4	
Surge Immunity	EN 61000-4-5 / IEC 61000-4-5	
Conducted RF Immunity	EN 61000-4-6 / IEC 61000-4-6	
Power Frequency H-field	EN 61000-4-8 / IEC 61000-4-8	
Power Quality Failure	EN 61000-4-11 / IEC 61000-4-11	
Reference: http://www.emcintegrity.com/commercial/overview/		
Other Regulations Regarding Safety and Surge Protection IEC61643-1; EN61643-11 and EN61643-21 Telcordia Technologies ANSI/IEEE C62.xx		

Underwriters Laboratories UL1449 3rd

Standards and regulations affect and motivate the design of power supplies, specifically:

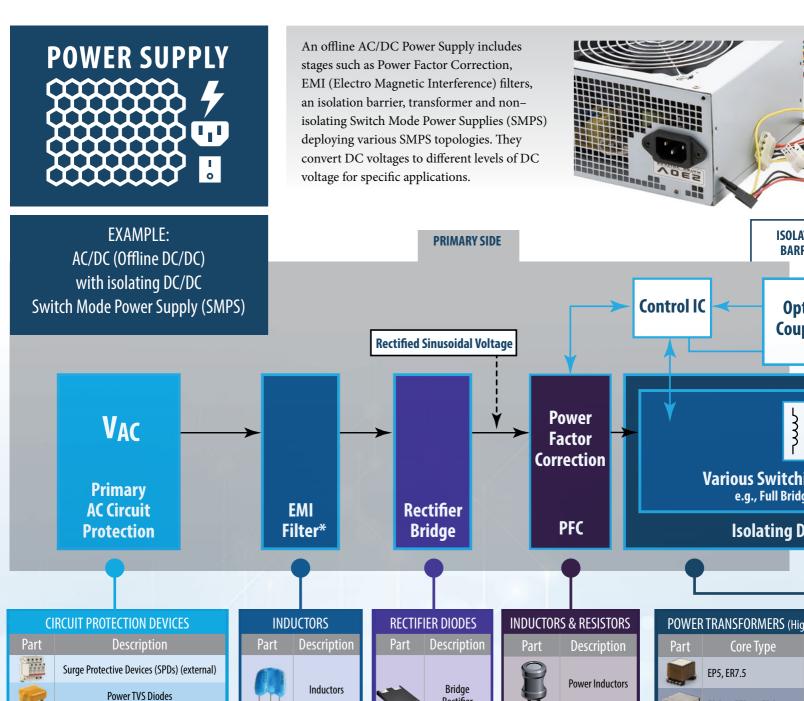
- EMC Electromagnetic Compatibility
- PFC Power Factor Correction
- Circuit Protection (Transients, Surges, Power Cross)

Whether external or internal, forward or flyback, each type of SMPS is subject to regulatory requirements. A power supply for a telecom installation must potentially comply with Telcordia or ITU requirements, depending on the target region and application. In the consumer or industrial sector, IEC, UL and CSA standards govern the equipment level. Bourns can help and advise which protection scheme may be best to comply with requirements.

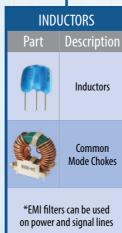




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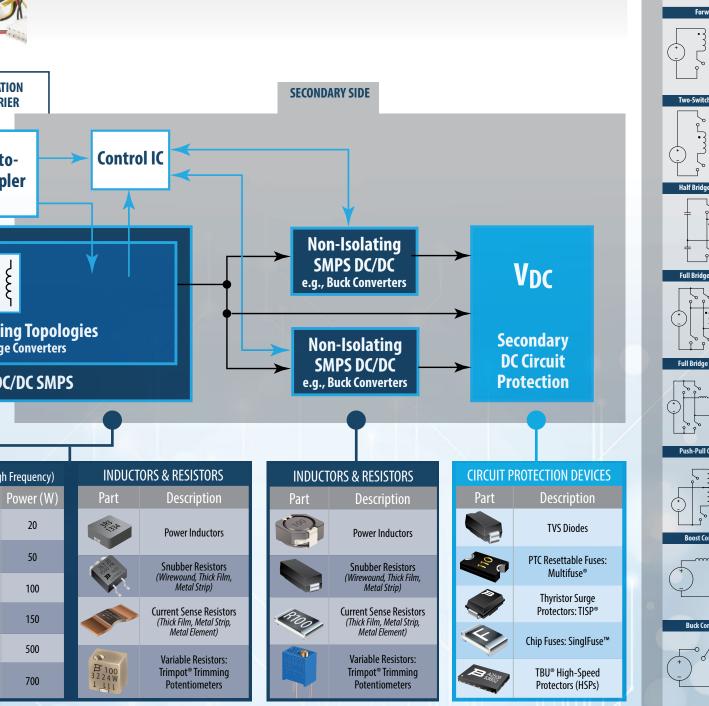






Bourns offers components for both linear power supplies and switch mode power supplies. Bourns' extensive line of electronic components and custom application solutions meet customer device requirements for high reliability performance in smaller, more compact designs.

With continuing miniaturization and packaging innovation, Bourns\* circuit protection, circuit conditioning and position control products deliver the standards-based solutions OEMs can rely on to fulfill ongoing technical demands.



# **SMPS TOPOLOGIES**

# Worldwide Sales Offices

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Americas:	+1-951-781-5500	americus@bourns.com
Brazil:	+55 11 5505 0601	americus@bourns.com
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Americas:	+1-951-781-5500	techweb@bourns.com

### www.bourns.com

Bourns® products are available through an extensive network of manufacturer's representatives, agents and distributors. To obtain technical applications assistance, a quotation, or to place an order, contact a Bourns representative in your area.

Specifications subject to change without notice. Actual performance in specific customer applications may differ due to the influence of other variables. Customers should verify actual device performance in their specific applications.

# **BOURNS**®

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