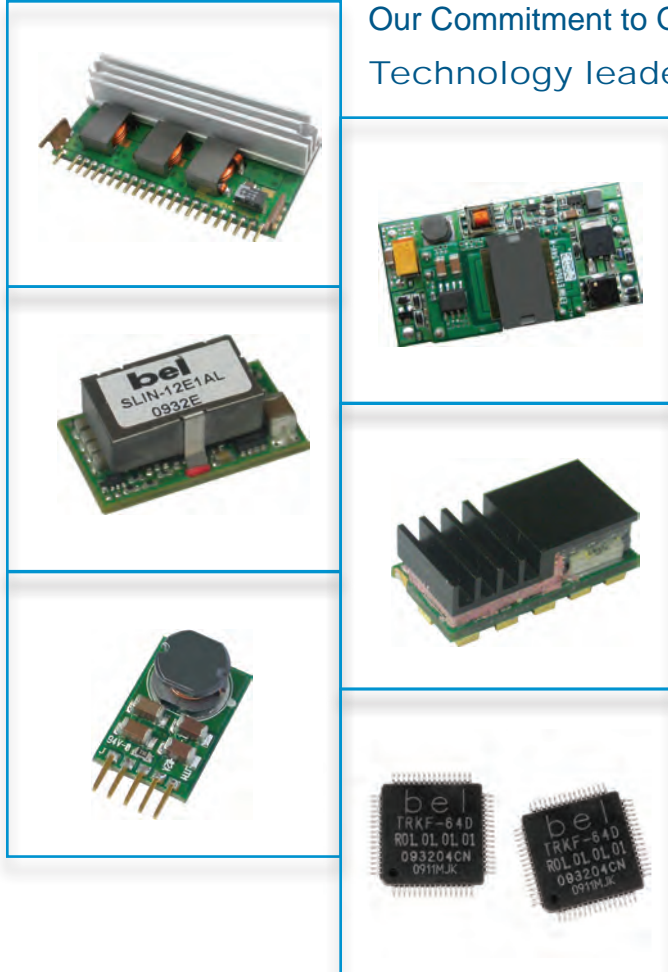


Second Edition



Worldwide Capability  
Engineering Expertise  
Leading Edge Technology  
Award Winning Support  
Our Commitment to Quality  
Technology leader in DC/DC power conversion



## Non-isolated DC/DC Converters

Point-of-Load Converters

Voltage Regulator Modules

Tunable Loop™ Converters

Power Blocks

## Isolated DC/DC Converters

Industry Standard Footprints

Non-industry Standard Footprints

## Monitor and Control

Power System Controllers

# Focus Catalog

Bel Power Inc. a subsidiary of Bel Fuse Inc.

[www.belpower.com](http://www.belpower.com)

quality and innovation in DC/DC power conversion technology

power conversion solutions

### Company Profile

A NASDAQ company (BELFA & BELFB), Bel was founded in 1949 and is headquartered in Jersey City, New Jersey. Bel helps make global connectivity a reality by manufacturing electronic components for the computer, networking and telecommunication industries. Partnered with the leaders in these markets, we develop new products for emerging technologies that enable high speed communication. Our expanding portfolio includes a range of complementary products from circuit protection devices to power conversion modules, transformers and connector modules, to integrated line interface products. For over sixty years, we've used our superior, high-volume manufacturing techniques to deliver quality products to the global marketplace. Bel employs more than 10,000 people around the world with facilities in North America, Asia and Europe.

Bel Power focuses on the design and manufacture of both isolated and non-isolated DC/DC converter modules. We maintain design centers in Westborough, Massachusetts and Hangzhou, China, and a manufacturing facility in Zhongshan, China.

The Bel Power portfolio of products includes one of the broadest ranges of DC/DC converter modules on the market today. The isolated converters include all standard "brick" sizes including sixteenth, eighth, quarter, half and full brick packages, each with a range of products from state-of-the-art performance to basic volts and amps for the budget conscious. The non-isolated product offering is one of the broadest in the industry with cost-effective solutions ranging from 1A to 150A. In addition to the products available in this Focus Catalog, Bel also offers its strategic customers a wide array of custom design and manufacturing capabilities.

Bel Power is at the forefront of the shift to digital technologies in power supplies with products that currently incorporate digital microcontrollers. Many of our high current, non-isolated converters incorporate I<sup>2</sup>C bus capability including PMBus protocols for a standard yet flexible interface for a variety of applications.

### RoHS Update

Bel is committed to the elimination of lead and other banned substances from our products. Significant effort has been directed towards compliance with European Directive 2002/95/EC and all Bel Power products in this catalog now conform to this directive although select products designed specifically for network equipment and/or file



server applications make use of the exemption for lead in solder for electrical terminations. Consult data sheets for specific compliance information. RoHS compliant products are marked with the logo shown here. In addition, Bel also monitors other legislative requirements with potential impact to the use of banned substances in electronic products. We continue to pursue the use of alternative (greener) manufacturing methods and materials for our products.

*Bel Power is your one source for power conversion solutions*

## *Product Series*

### **Non-Isolated Converters**

MicroSIP Series	Page 2
PowerSIP Series	Page 3
VRM Series	Page 4
Bobcat Series	Page 5
SLIN - Tunable Loop™ Series	Page 6

### **Power Block Converters**

Power Block Series	Page 7
--------------------	--------

### **Controllers**

Digital Power System Controller	Page 8
TRKF - Onboard System Controllers	Page 8

### **Isolated Converters**

1" x 2" Isolated Series	Page 9
1/16 Brick Isolated Converter Series	Page 9
1/8 Brick Isolated Converter Series	Page 10
1/4 Brick Isolated Converter Series	Page 11
1/2 Brick Isolated Converter Series	Page 12
Full Brick Isolated Converter Series	Page 13
Brick Converter Series	Page 13
Special Package Isolated Converters	Page 14

### **Tracking Regulators**

VRAE/VRPC - MicroSIP Series	Page 2
-----------------------------	--------

## *New Products*

PowerSIP Series	Page 3
Power Block Series	Page 7
TRKF - Onboard System Controllers	Page 8
SLIN - Tunable Loop™ Series	Page 6

## *Miniature*

MicroSIP Series	Page 2
Bobcat Series	Page 5
SLIN - Tunable Loop™ Series	Page 6
TRKF - Onboard System Controllers	Page 8

## *Surface Mount*

SLIN - Tunable Loop™ Series	Page 6
Dual Output Brick Converter Series	Page 13
VRM Series	Page 4
Bobcat Series	Page 5
Power Block Series	Page 7
TRKF - Onboard System Controllers	Page 8
1/16 Brick Converter Series	Page 9

## *Custom Capabilities*

Overview	Page 15
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## *Selection Guide*

Non-Isolated Converters	Page 16
Isolated Converters	Page 17

## MicroSIP Series

RoHS Compliant

### Specifications

- Industry standard package
- Wide input voltage 4.5V – 13.8V
- Max output current 1A – 10A
- Max output power 5W – 50W

### Design Features

- Remote on/off
- Under voltage lockout
- Over current and short circuit protection
- Input under voltage lockout
- Fixed switching frequency



### Description

The MicroSIP series SIP power modules are non-isolated converters in an industry-standard package that are available in output current levels ranging from 1.5A to 10A with a full load efficiency of 91%, 3.3V output and 12V input. These modules operate over a wide input voltage range of 4.5V to 14V and provide a precisely regulated output voltage from 0.591V to 5.1V programmed using an external resistor or an external voltage source. Features include remote on/off, over current and short circuit protection, input under voltage lockout, output over voltage protection, and a compact SIP package. All product is RoHS EU Directive 2002/95/EC compliant.

### How to order MicroSIP Series

Part Number	Input Voltage	Nominal Output Voltage	Max Output Current	Max Output Power	Package L x W x H (inches)
VRAE-01E1A0	5.5 - 13.8V	0.6 - 5.1V	1.5A	7.65W	0.4 x 0.41 x 0.284
VRAE-03E1A0	4.5 - 13.8V	0.59 - 5.1V	3A	15W	0.65 x 0.41 x 0.32
VRAE-06E1A0	4.5 - 13.8V	0.59 - 5.1V	6A	30W	0.65 x 0.41 x 0.295
VRAE-10E1A0	4.5 - 13.8V	0.59 - 5.1V	10A	50W	0.65 x 0.41 x 0.32
VRPC-10AT5A*	10.2 - 13.8V	vddq/2	10A	25W	2.5 x 0.55 x 0.37
VRAE-08ET50*	5.0 - 13.8V	vddq/2	8A	7.2W	0.65 x 0.41 x 0.4

\* Tracking regulator

Additional part numbers can be found on our web site.

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### Technical Support

Bel Power's application and design engineers are ready to help with your next DC/DC power conversion solution. Our expertise designing and manufacturing isolated and non-isolated power converters ensures a prompt solution to your unique requirements and application needs.

## PowerSIP Series

RoHS Compliant

### Specifications

- Industry standard package
- Wide input voltage 4.5V – 13.8V
- Max output current 20A – 90A
- Max output power 36W – 400W

### Design Features

- Remote on/off
- Output over voltage protection – hiccup
- Over current and short circuit protection
- Power good signal
- Fixed switching frequency
- Differential remote sense



### Description

The PowerSIP series SIP power modules are non-isolated DC/DC converters in an industry standard package that deliver anywhere from 20A to 90A, package size dependent. These modules operate over a wide input voltage range (4.5V to 13.8) while converting with an efficiency as high as 92%. Units provide a precisely regulated output voltage from 0.591V to 5.1V programmed using either an external resistor or an external voltage source. Features include remote on/off, adjustable output voltage/trim, input under voltage lockout, over current and short circuit protection, as well as some models that include current share capability. All product is RoHS EU Directive 2002/95/EC compliant.

### How to order PowerSIP Series

Part Number	Input Voltage	Nominal Output Voltage	Max Output Current	Max Output Power	Package L x W x H (inches)
VRP1-20E1A0	4.5 - 13.8V	0.591 - 5.1V	20A	100W	1.45 x 0.61 x 0.4
VRP1-30E1A0	4.5 - 13.8V	0.591 - 5.1V	30A	150W	1.2 x 0.61 x 0.71
VRP1-30E3A0*	6.5 - 13.8V	1.025 - 1.2V	30A	36W	1.2 x 0.61 x 0.65
VRP2-40E1A0	5.0 - 13.8V	0.6 - 5.0V	40A	200W	1.45 x 1.1 x 0.377
ORP2-40E1A0	5.0 - 13.8V	0.6 - 5.0V	40A	200W	1.45 x 1.1 x 0.5 horiz
VRP2-50E1A0	5.0 - 13.8V	0.6 - 5.0V	50A	250W	1.45 x 1.1 x 0.743
ORP2-50E1A0	5.0 - 13.8V	0.6 - 5.0V	50A	250W	1.45 x 1.1 x 0.783 horiz
VRP2-50E2A0	5.0 - 13.8V	0.6 - 5.0V	50A	250W	1.45 x 1.1 x 0.69
ORP2-50E2A0	5.0 - 13.8V	0.6 - 5.0V	50A	250W	1.45 x 1.1 x 0.73 horiz
VRP3-60E1A0	5.0 - 13.8V	0.6 - 5.0V	60A	300W	2.58 x 1.25 x 0.608
VRP4-80A1A0	10.8 - 13.2V	0.6 - 5.0V	80A	400W	2.58 x 1.25 x 0.763
VRP3-90E1A0	6.5 - 13.2V	1.2 - 2.1V	90A	200W	2.0 x 1.2 x 0.7

\* 3 bit VID for output voltage trim.

Additional part numbers can be found on our web site.

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## Voltage Regulator Module – VRM

RoHS Compliant

### Specifications

- Compatible to the Intel VRM specification
- Wide input voltage 3.0V – 15V available
- Max output current 30A – 150A
- Max output power 30W – 375W

### Design Features

- Remote on/off and remote sense
- Current monitor
- Over current protection
- Thermal warning signal
- Power good signal



### Description

The voltage regulation modules (VRM) available from Bel Power meet Intel requirements ranging from Intel 8.5, 9.0, 10.0, 10.1, 11.0, 11.1, and 12.0. These non-isolated DC/DC converter power modules are designed using advanced circuitry and state-of-the-art components so that they can successfully meet the transient response requirements of today's fast-edge microprocessors and switching logic. When needed, these modules come equipped with their own thermal management systems. Depending on the model, some are available in edge card, pin thru hole, and surface mount interconnect packages. All product is RoHS EU Directive 2002/95/EC compliant.

### How to order VRMs

VRM Spec	Part Number	Input Voltage	Output Voltage	Max Output Current	Max Output Power	Connector	Package L x W x H (inches)
VRM8.5	VRPG-30A3A1	10.3 - 13.2V	1.05 - 1.825V	30A	55W	PTH	2.4 x 1.25 x 0.5
VRM9.0	G7NA-30D180	3 - 15V	1.05 - 1.825V	30A	55W	Goldfinger	2.75 x 1.5 x 0.48
VRM9.0	VRNB-60A160	10.8 - 13.2V	1.1 - 1.65V	60A	100W	PTH	3.8 x 1.0 x 0.81
VRM9.1	GRNB-81A180	10.8 - 13.2V	1.1 - 1.85V	81A	150W	Goldfinger	3.8 x 1.35 x 0.59
VRM10.0	GRNC-60A160	10.3 - 13.2V	0.83 - 1.6V	56A	90W	Goldfinger	3.8 x 1.2 x 0.364
VRM10.1	GRNC-C2A160	10.3 - 13.2V	0.83 - 1.6V	120A	192W	Goldfinger	3.8 x 1.2 x 0.962
VRM10.1	GRNC-C2A160	10.3 - 13.2V	0.83 - 1.6V	120A	192W	Goldfinger	3.8 x 1.2 x 0.962
VRM10.2	GRNC-C5A250	10.8 - 13.2V	0.80 - 2.5V	150A	375W	Goldfinger	3.8 x 1.2 x 0.962
VRM11.0	GRND-40A160	10.8 - 13.2V	0.82 - 1.6V	60A	72W	Goldfinger	3.8 x 1.055 x 0.393
VRM11.0	GRND-90A161	10.8 - 13.2V	0.82 - 1.6V	90A	144W	Goldfinger	3.8 x 1.06 x 0.77
VRM11.0	GRND-55A160	7.5 - 13.2V	0.82 - 1.6V	55A	88W	Goldfinger	3.8 x 1.055 x 0.393
VRM11.1	VRP1-30E2AD	4.5 - 13.2V	0.5 - 1.6V	30A	48W	PTH	1.59 x 0.61 x 0.65
VRM11.1	VRP4-C2E1A0	6.5 - 13.2V	0.5 - 1.6V	120A	196W	PTH	2.4 x 1.1 x 0.8
VRM11.1	VRP4-C0E1A0	6.5 - 13.2V	0.5 - 1.6V	100A	160W	PTH	2.4 x 1.1 x 0.8
VRM11.1	GRND-C2A160	10.8 - 13.2 V	0.5 - 1.6V	120A	192W	Goldfinger	3.8 x 1.2 x 0.7
VRM12	VRNE-60ED10	6.5 - 13.8 V	0.6 - 1.52V Dual	60A / 15A	60W	PTH	2.5 x 1.3 x 0.27
VRM12	SRNE-C3ED10	6.5 - 13.8 V	0.6 - 1.52V Dual	135A / 25A	130W	PTH	3.4 x 0.78 x 0.78
VRM12	SRNE-C6ED10	6.5 - 13.8	0.6 - 1.52V	Dual 165A / 25A	200W	SMT	3.59 x 0.78 x 1.30
AMD	VRNB-30A12C	10.8 - 13.2V	0.83 - 1.4V	30A	42W	PTH	3.8 x 1.0 x 0.81

Additional part numbers can be found on our web site.

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Although we stock hundreds of standard products, your application may require a custom design. When it does, look to Bel Power for an innovative, cost-effective solution. For the past 60 years, we've been designing and manufacturing custom electro-mechanical assemblies for the global market.

## Bobcat Series

RoHS Compliant

### Specifications

- Industry standard package
- Max input voltage 2.4V – 30V
- Max output current 3A – 30A
- Max output power range 10W – 100W

### Design Features

- Remote on/off
- Over current and short circuit protection
- Output voltage sequencing option



### Description

The xRBA and xRBC series are non-isolated converters that deliver up to 30A of output current with full load efficiency of 92% at 5V output. These converters are available in either vertical mount or surface mount packages and are fully compatible with industry standards. All models are RoHS EU Directive 2002/95/EC compliant.

### How to order xRBA Series

Part Number		Input Voltage	Output Voltage	Max Output Current	Max Output Power	Sequencing Option	Surface Mount Package L x W x H (inches)	Vertical Mount Package L x W x H (inches)
Surface Mount	Vertical Mount							
SRBA-06AxAy	VRBA-06AxAy	8.3 - 14V	0.75 - 5.0V	6A	30W	Y	0.8 x 0.45 x 0.251	1.0 x 0.5 x 0.243
SRBA-06ExA0	VRBA-06ExAy	4.5 - 14V	0.75 - 5.0V	6A	30W	Y	0.8 x 0.45 x 0.251	1.0 x 0.5 x 0.243
SRBA-06FxAy	VRBA-06FxAy	2.4 - 5.5V	0.75 - 3.63V	6A	20W	Y	0.8 x 0.45 x 0.251	1.0 x 0.5 x 0.243
SRBA-03A1Ay	VRBA-03A1Ay	8.3 - 14V	0.75 - 5.0V	3A	15W	N	0.8 x 0.45 x 0.251	1.0 x 0.5 x 0.243
SRBA-03E1Ay	VRBA-03E1Ay	4.5 - 14V	0.75 - 5.0V	3A	15W	N	0.8 x 0.45 x 0.251	1.0 x 0.5 x 0.243
SRBA-03F1Ay	VRBA-03F1Ay	2.4 - 5.5V	0.75 - 3.63V	3A	10W	N	0.8 x 0.45 x 0.27	1.0 x 0.5 x 0.27

x = 1 & 2. 1 means without sequencing, 2 means with sequencing. y = 0 & L. 0 means active high enable, L means active low enable.

### How to order xRBC Series

Part Number		Input Voltage	Output Voltage	Max Output Current	Max Output Power	Sequencing Option	Surface Mount Package L x W x H (inches)	Vertical Mount Package L x W x H (inches)
Surface Mount	Vertical Mount							
SRBC-10AxAy	VRBC-10AxAy	8.3 - 14V	0.75 - 5.0V	10A	50W	Y	1.3 x 0.53 x 0.315	2.0 x 0.5 x 0.32
SRBC-10ExAy	VRBC-10ExAy	4.5 - 14V	0.75 - 3.63V	10A	36W	Y	1.3 x 0.53 x 0.315	2.0 x 0.5 x 0.32
SRBC-10FxAy	VRBC-10FxAy	2.4 - 5.5V	0.75 - 3.63V	10A	36W	Y	1.3 x 0.53 x 0.315	2.0 x 0.5 x 0.32
SRBC-16AxAy	VRBC-16AxAy	8.3 - 14V	0.75 - 5.0V	16A	80W	Y	1.3 x 0.53 x 0.315	2.0 x 0.5 x 0.32
SRBC-16ExAy	VRBC-16ExAy	4.5 - 14V	0.75 - 3.63V	16A	58W	Y	1.3 x 0.53 x 0.315	2.0 x 0.5 x 0.32
SRBC-16FxAy	VRBC-16FxAy	2.4 - 5.5V	0.75 - 3.63V	16A	58W	Y	1.3 x 0.53 x 0.315	2.0 x 0.5 x 0.32
SRBC-30E2AL		6 - 14V	0.8 - 3.63V	25 - 30A	75 - 100W	N	1.3 x 0.53 x 0.358	Std Features
SRBC-30E3AL		6 - 14V	0.8 - 3.63V	25 - 30A	75 - 100W	N	1.3 x 0.53 x 0.358	No share and ground pins
SRBC-30E5AL		6 - 14V	0.8 - 3.63V	25 - 30A	75 - 100W	N	1.3 x 0.53 x 0.358	No share pin
SRBC-30E6AL		6 - 14V	0.8 - 1.4V	30A	42W	N	1.3 x 0.53 x 0.358	Narrow output range
	VRBC-70R1A0	20 - 30V	5 - 15V	10A	70W	N		2.0 x 0.5 x 0.32

x = 1 & 2. 1 means without sequencing, 2 means with sequencing. y = 0 & L. 0 means active high enable, L means active low enable.

## Tunable Loop™ Series

RoHS Compliant

### Specifications

- Max input voltage 2.4V – 14V
- Max output current 3A – 50A
- Max output power 10W – 100W

### Design Features

- Remote on/off
- Adjustable output voltage
- Over current and over temperature protection
- Output voltage sequencing option
- Tunable Loop™



### Description

The Tunable Loop™ series power modules are non-isolated DC/DC converters that deliver up to 50A of output current in pick-and-placeable surface mount packages, ranging in size depending on output current capability. The modules operate over a wide 3V to 14V input voltage range and provide a precisely regulated output voltage from 0.59V to 5.5V. The output voltage can be programmed using an external resistor or an external voltage source. Features include input under-voltage lockout, remote on/off, adjustable output voltage, over current and over temperature protection, and UL, CSA, and VDE recognition. All models are RoHS EU Directive 2002/95/EC compliant.

### How to order SLIN Series

Part Number		Input Voltage	Output Voltage	Max Output Current	Max Output Power	Sequencing Option	Package L x W x H (inches)
Active High	Active Low						
	SLIN-02E2AL	3 - 14V	0.6 - 5.5V	2A	10W	N	0.48 x 0.48 x 0.246
SLIN-03E1A0	SLIN-03E1AL	4.5 - 14V	0.59 - 5.5V	3A	15W	Y	0.48 x 0.48 x 0.246
SLIN-03E2A0	SLIN-03E2AL	4.5 - 14V	0.59 - 5.5V	3A	15W	N	0.48 x 0.48 x 0.246
SLIN-03F1A0	SLIN-03F1AL	2.4 - 5.5V	0.6 - 3.63V	3A	10W	Y	0.48 x 0.48 x 0.246
SLIN-03F2A0	SLIN-03F2AL	2.4 - 5.5V	0.6 - 3.63V	3A	10W	N	0.48 x 0.48 x 0.246
SLIN-06E1A0	SLIN-06E1AL	4.5 - 14V	0.59 - 5.5V	6A	30W	Y	0.48 x 0.48 x 0.285
SLIN-06E2A0	SLIN-06E2AL	4.5 - 14V	0.59 - 5.5V	6A	30W	N	0.48 x 0.48 x 0.285
SLIN-06F1A0	SLIN-06F1AL	2.4 - 5.5V	0.6 - 3.63V	6A	20W	Y	0.48 x 0.48 x 0.285
SLIN-06F2A0	SLIN-06F2AL	2.4 - 5.5V	0.6 - 3.63V	6A	20W	N	0.48 x 0.48 x 0.285
SLIN-12E1A0	SLIN-12E1AL	4.5 - 14V	0.69 - 5.5V	12A	60W	Y	0.8 x 0.45 x 0.334
SLIN-12F1A0	SLIN-12F1AL	2.4 - 5.5V	0.6 - 3.63V	12A	40W	Y	0.8 x 0.45 x 0.334
SLIN-12F2A0	SLIN-12F2AL	2.4 - 5.5V	0.6 - 3.63V	12A	40W	N	0.8 x 0.45 x 0.334
SLIN-20E1A0	SLIN-20E1AL	4.5 - 14V	0.69 - 5.5V	20A	100W	Y	1.3 x 0.53 x 0.334
SLIN-20F1A0	SLIN-20F1AL	2.4 - 5.5V	0.6 - 3.63V	20A	66W	Y	1.3 x 0.53 x 0.334
	SLIN-50E1AL	4.5 - 14V	0.7 - 2.0V	50A	90W	Y	1.3 x 0.9 x 0.393

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## Power Block Series

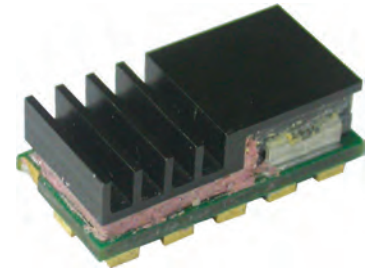
RoHS Compliant

### Specifications

- Vertical and horizontal package
- Max input voltage 13.2V
- Max output current 10A – 30A
- Max output power 50W – 150W

### Design Features

- Power out
- Big power in a small footprint
- Easily modified



### Description

The Power Block series of both surface mount and pin thru hole power modules are industry standard power building blocks used with either digital or analog controllers as part of a power system. These blocks address the ever-growing demands of higher power density and increased system level flexibility. Designed to operate from typical intermediate bus voltage levels between 7V and 13.2V, these power blocks were designed for superior power density with self-contained thermal management. Measuring 0.5" x 1.0" x 0.38" and rated up to 30A of output current, the Bel power blocks boast a power density of  $285W_{IN}^3$  and a current density of  $60A_{IN}^2$ . All product is RoHS EU Directive 2002/95/EC compliant.

### How to order Power Block Series

Part Number	Input Voltage	Nominal Output Voltage	Max Output Current	Max Output Power	Package L x W x H (inches)
VRPL-06G1A0	8 - 14V	0.8 - 3.3V	6A	19.8W	0.5 x 0.55 x 0.3
SRPL-06G1A0	8 - 14V	0.8 - 3.3V	6A	19.8W	0.5 x 0.5 x 0.35
SRBB-20A1A0	7 - 13.2V	0.8 - 5.0V	20A	100W	0.67 x 0.5 x 0.48
VRPL-20G1A0	8 - 14V	0.8 - 3.3V	20A	66W	1.0 x 0.55 x 0.5
SRPL-20G1A0	8 - 14V	0.8 - 3.3V	20A	66W	0.8 x 0.55 x 0.5
SRBL-30A1A0	7 - 13.2V	0.8 - 5.0V	30A	150W	1.0 x 0.5 x 0.38
VRPL-30G1A0	8 - 14V	0.8 - 3.3V	30A	99W	1.0 x 0.65 x 0.5
SRPL-30G1A0	8 - 14V	0.8 - 3.3V	30A	99W	1.4 x 0.55 x 0.5

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**Onboard Power System Controller**

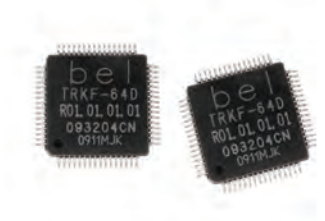
**RoHS Compliant**

**Specifications**

- SMD package
- 44 pin PQFP
- 64 pin PQFP
- 100 pin PQFP
- Max input voltage 3.3V

**Design Features**

- Digital signal processor (DSP) based with Bel firmware
- Power up and power down sequencing logic
- Fault detection and reporting
- I<sup>2</sup>C SMBus or PMBus compatible serial interface options
- Voltage margining via closed loop trim
- Configurable through serial interface
- Customizable through software
- Programmed parameters saved in non-volatile memory
- Intelligent configuration capability



**Description**

This on board power system controller provides a cost effective high performance solution for controlling, monitoring, and sequencing multiple Point of Load (POL) converters on a system board.

A new power control system comprises a digital power manager (DPM) and a plurality of power blocks each adapted to convey regulated power to a load. In this system, the power blocks only include the power part of the conventional non-isolated DC/DC converters, signal sampling and conversion circuits to provide analog voltage signal representing output voltage, output current, temperature, etc., and the driving circuits to receive pulse width modulation (PWM) signals that drive the switching devices. The closed-loop voltage control and protection functions required for the plurality of power blocks are not included within the power blocks, but integrated into the digital power manager by making full use of the calculation capability and peripheral resources of the digital power manager. The digital power manager further comprises a non-volatile memory containing a plurality of registers, including a digital power manager configuration register, a power block set-up register, a power block monitor register, and a user-definable space. The digital power manager is adapted to program and monitor each of the multiple power blocks operation. The digital power manager further comprises a user interface, such as an I<sup>2</sup>C interface, adapted to receive programming data from the host user system and send monitoring data thereto.

**How to order Digital Power System Controller**

Part Number	Input Voltage	Control and Monitor Power Block Number	Monitor VRM Number	Monitor Analog Input Number	Package L x W x H (inches)
TRKB-80D62ER	3.3V	6	2	1	0.551 x 0.551 x 0.055

**How to order TRKF Power Controllers**

Part Number	Input Voltage	Control and Monitor POL Number	Monitor VRM Number	Monitor Analog Input Number	Package L x W x H (inches)
TRKF-44D62ER	3.3V	4	0	2	0.472 x 0.472 x 0.043
TRKF-64D82ER	3.3V	8	2	2	0.472 x 0.472 x 0.043
TRKF-10DC4ER	3.3V	12	4	3	0.551 x 0.551 x 0.043

Custom designs are available on request. Email [techhelp@belf.com](mailto:techhelp@belf.com) to submit your specific application needs. Data sheets with electrical and mechanical specifications are available at [www.belpower.com](http://www.belpower.com).

## 1" x 2" Isolated Series

RoHS Compliant

### Specifications

- Industry standard package
- Max input voltage 18V – 75V
- Max output current 1A – 7A
- Max output power 30W

### Design Features

- Remote on/off
- Over current and short circuit protection
- Under voltage lockout (UVLO)
- Over temperature protection
- Compact thru-hole package



### Description

Bel's 1" x 2" series of power modules are isolated DC/DC converters that operate from a telecom input range of 36V – 75V or from an ultra-wide input range of 18V – 75V to cover both industrial and telecom inputs in one module. These modules provide a single precisely regulated output whose terminals are isolated from the input allowing for polarity versatility and ideal system grounding. The modules exhibit high conversion efficiency in one of the oldest footprint standards, the 1" x 2" package. The modules are open frame construction and feature thru hole form factors, remote on/off, protection, on-board input and output filtering, and great thermal performance. All models are RoHS EU Directive 2002/95/EC compliant.

### How to order 1" x 2" Isolated Series

Part Number	Input Voltage	Nominal Output Voltage	Max Output Current	Max Output Power	Package L x W x H (inches)
ORXL-02T050	38 - 60V	5V	1.7A	10W	1.90 x 0.98 x 0.44
ORXA-10U033	19.2 - 72V	3.3V	3A	10W	2.0 x 1.0 x 0.475
ORLC-10U050	18 - 75V	5V	2A	10W	2.0 x 1.0 x 0.475
ORLC-10Txxx	36 - 175V	3.3V / 5.0V / 12V / 24V	2A / 2A / 1A / 0.5A	12W	1.91 x 0.98 x 0.477
ORLC-25Txxx	36 - 75V	3.3V / 5.0V / 12V / 15V	7A / 5A / 2.5A / 2.0A	30W	2.0 x 1.0 x 0.438

xxx = 033 (3.3V), 050 (5.0V), 120 (12.0V), 150 (15.0V), 240 (24.0V).

All models above are enable Active High parts. Change the last letter to "L" to indicate enable Active Low.

## 1/16 Brick Isolated Converter Series

RoHS Compliant

### Specifications

- Industry standard package
- Max input voltage 18V – 75V
- Max output current up to 20A
- Max output power up to 60W

### Design Features

- Remote on/off
- OCP/SCP/OVP
- Under voltage lockout (UVLO)



### Description

Bel's 1/16 Brick isolated converter series provides up to 60W of output power. Various models operate from a nominal 48V, nominal 24V, or an ultra-wide range 18 – 75V source. Output pin locations are compatible with DOSA standard.

### How to order 1/16 Brick Isolated Converter Series

Surface Mount Part Number	Horizontal Mount Part Number	Input Voltage	Nominal Output Voltage	Max Output Current	Max Output Power	Package L x W x H (inches)
SRSB-30Txxx	ORSB-30Txxx	36 - 75V	1.2/1.5/1.8/2.5/3.3/5.0/12V	15/13/13/10/10/7/3A	36W	1.3 x 0.9 x 0.37
SRSB-40Uxxx	ORSB-40Uxxx	18 - 75V	1.2/1.5/1.8/2.5/3.3/5.0/12V	18/16/14/12/10/8/3.5A	42W	1.3 x 0.9 x 0.46
SRSB-50Txxx	ORSB-50Txxx	36 - 75V	1.8/2.5/3.3/5.0/12V	20/18/15/12/5A	60W	1.3 x 0.9 x 0.37
SRSB-50R080	ORSB-50R080	18 - 36V	8V	5A	40W	1.3 x 0.9 x 0.37

xxx = V20 (1.2V), V50 (1.5V), V80 (1.8V), 025 (2.5V), 033 (3.3V), 050 (5.0V), 120 (12.0V).

All models above are Active High parts. Change the last letter to "L" to indicate Active Low.

## 1/8 Brick Isolated Converter Series

RoHS Compliant

### Specifications

- Industry standard package
- Max input voltage 18V – 75V
- Max output current 5.9A – 50A
- Max output power 26.4W – 144W

### Design Features

- Remote on/off
- OCP/OVP/OTP
- Under voltage lockout (UVLO)



### Description

Bel's 1/8 Brick isolated converter series provides up to 400W of output power from a nominal 48V input and are designed to be highly efficient and low cost. Select models operate from an ultra-wide range 18 – 75V source.

### How to order 1/8 Brick Isolated Series

Part Number	Input Voltage	Nominal Output Voltage	Max Output Current	Max Output Power	Package L x W x H (inches)
ORCY-50Txxx	36 - 75V	8.5V / 12V	5.9A / 6A	72W	2.30 x 0.896 x 0.49
ORCY-50U033	18 - 62.5V	3.3V	12.1A	40W	2.30 x 0.90 x 0.72
ORCY-50U120	18 - 75V	12V	5A	60W	2.30 x 0.896 x 0.47
ORCB-60Txxx	36 - 75V	1.2V / 1.8V / 2.5V / 5.0V	25A / 25A / 20A / 10A	50W	2.30 x 0.896 x 0.374
ORCY-60Txxx	36 - 75V	1.5V / 2.5V	15A / 15A	38W	2.30 x 0.896 x 0.41
ORCY-60Uxxx	18 - 75V	3.3V / 5.0V / 12V	15A / 15A / 7A	84W	2.30 x 0.896 x 0.49
OREB-60Txxx	36 - 75V	3.3V / 12V	15A / 15A	60W	2.30 x 0.90 x 0.334
ORCY-75T050	36 - 75V	5.0V	15A	75W	2.30 x 0.896 x 0.395
ORCY-80Rxxx	18 - 36V	1.8V / 12V	30A / 10A	120W	2.30 x 0.90 x 0.50
ORCY-85Txxx	36 - 75V	1.5V / 2.5V / 12V	30A / 25A / 8.33A	100W	2.30 x 0.896 x 0.395
ORCY-C0TV20	36 - 75V	1.2V	50A	60W	2.30 x 0.90 x 0.40
ORCY-C2Txxx	36 - 60V	1.2V / 3.3V / 12V	50A / 30A / 12A	144W	2.30 x 0.90 x 0.37
OREB-C0Txxx	36 - 75V	3.3V / 5.0V	25A / 20A	100W	2.30 x 0.90 x 0.334

xxx = V20 (1.2V), V50 (1.5V), V80 (1.8V), 025 (2.5V), 033 (3.3V), 050 (5.0V), 085 (8.5V), 120 (12.0V).

All models above are Active High parts. Change the last letter to "L" to indicate Active Low.

Part Number	Input Voltage	Nominal Output Voltage	Max Output Current	Max Output Power	Package L x W x H (inches)
GAQC3V330P	18 - 36V	3.3V	30A	100W	2.28 x 0.90 x 0.385
GAQC5V020P	18 - 36V	5.0V	20A	100W	2.28 x 0.90 x 0.385
ORCY-30U03C	18 - 62.5V	3.3V	8A	26.4W	2.30 x 0.90 x 0.95

Custom designs are available on request. Email [techhelp@belf.com](mailto:techhelp@belf.com) to submit your specific application needs.

Data sheets with electrical and mechanical specifications are available at [www.belpower.com](http://www.belpower.com).

## 1/4 Brick Isolated Converter Series

RoHS Compliant

### Specifications

- Industry standard package
- Max input voltage 18V – 75V
- Max output current up to 100A
- Max output power up to 400W

### Design Features

- Remote on/off
- OCP/OVP/OTP
- Under voltage lockout (UVLO)



### Description

Bel's 1/4 Brick isolated converter series provides up to 400W of output power from a nominal 48V input and are designed to be highly efficient and low cost. Select models operate from an ultra-wide range 18 – 75V source.

### How to order 1/4 Brick Isolated Series

Part Number	Input Voltage	Nominal Output Voltage	Max Output Current	Max Output Power	Package L x W x H (inches)
ORQ1-C5Txxx	36 - 75V	1.8 / 3.3 / 5.0 / 7.0 / 12V	60 / 45 / 30 / 20 / 8A	150W	2.28 x 1.45 x 0.40
ORQ1-T0T120	36 - 75V	12V	25A	300W	2.30 x 1.45 x 0.50
ORQB-72TV20	36 - 75V	1.2V	60A	72W	2.30 x 1.45 x 0.45
ORQB-C0Txxx	36 - 75V	3.3/5.0V	30/20A	100W	2.30 x 1.45 x 0.50
ORQB-C0Uxxx	18 - 75V	1.2/1.5/1.8/2.5/3.3/5.0/12V	30/30/30/30/25/20/8.35A	100W	2.30 x 1.45 x 0.395
ORQB-C5R050	18 - 36V	5.0V	30A	150W	2.30 x 1.45 x 0.395
ORQB-C5Txxx	36 - 75V	1.2 / 1.5 / 1.8 / 2.5 / 12V	50 / 50 / 50 / 50 / 12A	144W	2.30 x 1.45 x 0.395
ORQB-C5Uxxx	18 - 75V	5V / 12V / 15V	30A / 12A / 8A	150W	2.30 x 1.45 x 0.50
ORQB-C8TV20	36 - 75V	1.2V	100A	120W	2.30 x 1.45 x 0.50
ORQB-D0Txxx	36 - 75V	12/28V	18/7A	216W	2.30 x 1.45 x 0.50
ORQB-D2T120	36 - 75V	12V	18A	216W	2.28 x 1.45 x 0.42
ORQB-Q0T12W	36 - 75V	12V	33A	400W	2.28 x 1.45 x 0.50
ORQB-Q2T060	36 - 75V	6.5V	60A	390W	2.30 x 1.45 x 0.50
ORQB-T0R120	18 - 36V	12V	20A	240W	2.30 x 1.45 x 0.50
ORQB-T0T120	36 - 75V	12V	25A	300W	2.30 x 1.45 x 0.50
ORX3-D2T120	36 - 75V	12V	18A	216W	2.28 x 1.45 x 0.50
ORXW-80T54L	36 - 75V	54V	1.5A	85W	2.28 x 1.45 x 0.50
ORXW-80T68L	36 - 75V	68V	1.2A	86W	2.28 x 1.45 x 0.50
ORXW-C0T96L	36 - 75V	96V	1.0A	96W	2.28 x 1.45 x 0.54
ORQB-Q2T096	36 - 75V	9.6V	40A	384W	2.30 x 1.45 x 0.5
ORQB-D0U033	18 - 75V	3.3V	30A	100W	2.30 x 1.45 x 0.39

xxx = V20 (1.2V), V50 (1.5V), V80 (1.8V), 033 (3.3V), 050 (15.0V), 070 (7.0V), 120 (12.0V), 150 (15.0V), 240 (24.0V), 280 (28.0V). All models without "L" suffix above are Active High parts. Change the last letter to "L" to indicate Active Low.

Part Number	Input Voltage	Nominal Output Voltage	Max Output Current	Max Output Power	Package L x W x H (inches)
G2PC3V345P	36 - 75V	3.3V	45A	148W	2.28 x 1.45 x 0.38
G2PWxVx60P	36 - 75V	1.2V / 1.5V / 1.8V / 2.0V / 2.5V	60A	120W	2.28 x 1.45 x 0.38
ORQB-C0T34L	36 - 75V	18 - 34V	3A	102W	2.28 x 1.45 x 0.50
GMDC12V08	18 - 36V	12V	8A	96W	2.28 x 1.45 x 0.50
GMDW12V08	36 - 75V	12V	8A	96W	2.28 x 1.45 x 0.50
GMDW15V06	36 - 75V	15V	6A	90W	2.28 x 1.45 x 0.50

Custom designs are available on request. Email [techhelp@belf.com](mailto:techhelp@belf.com) to submit your specific application needs. Data sheets with electrical and mechanical specifications are available at [www.belpower.com](http://www.belpower.com).

## 1/2 Brick Isolated Converter Series

RoHS Compliant

### Specifications

- Industry standard package
- Max input voltage 9V – 75V
- Max output current up to 120A
- Max output power up to 600W

### Design Features

- Remote on/off
- OCP/OVP/OTP
- Under voltage lockout (UVLO)

### Description

Bel's 1/2 Brick isolated converter series provides up to 600W of output power from a nominal 48V input and are designed to be highly efficient and low cost.



### How to order 1/2 Brick Isolated Series

Part Number	Input Voltage	Nominal Output Voltage	Max Output Current	Max Output Power	Package L x W x H (inches)
ORH1-Q5T280	36 - 75V	28V	16A	450W	2.4 x 2.28 x 0.5
ORHB-C0Q150	9 - 36V	15V	6.67A	100W	2.4 x 2.28 x 0.55
ORHB-C5Txxx	36 - 75V	3.3V, 5.0V	50A, 30A	165W, 150W	2.4 x 2.28 x 0.42
ORHB-D0Txxx	36 - 75V	1.2/1.5/1.8/2.5/3.3/5.0/12V	80/80/80/80/70/48/20A	96/120/144/200/231/240/240W	2.4 x 2.28 x 0.42
ORHB-D3T280	36 - 75V	28V	7A	230W	2.4 x 2.28 x 0.5
ORHB-F5S530	38 - 60V	54V	10.2A	550W	2.4 x 2.28 x 0.5
ORHB-H0T120	36 - 75V	12V	50A	600W	2.4 x 2.30 x 0.5
ORHB-T5Txx0	36 - 75V	1.2V / 28V	120A / 12.5A	144W / 350W	2.4 x 2.28 x 0.5
ORHB-T6T120	36 - 75V	12V	30A	360W	2.4 x 2.28 x 0.5
ORHW-D0Txxx	36 - 75V	1.2V / 3.3V	60A	72W / 200W	2.4 x 2.28 x 0.5
ORXW-C5T48L	36 - 75V	48.5V	3A	150W	2.4 x 2.28 x 0.5
ORXW-D0T72L	36 - 75V	72V	2.8A	200W	2.4 x 2.28 x 0.5

xxx = V20 (1.2V), V50 (1.5V), V80 (1.8V), 025 (2.5V), 033 (3.3V), 050 (5.0V), 120 (12.0V).

All models without suffix "L" above are Active High parts. Change the last letter to "L" to indicate Active Low.

### How to order Bolero Series - High Output Voltage

Part Number	Input Voltage	Nominal Output Voltage	Max Output Current	Max Output Power	Package L x W x H (inches)
GHBW53V08	36 - 55V	53V	8A	400W	2.4 x 2.28 x 0.5
GPBW52V04	36 - 75V	52V	4A	208W	2.4 x 2.28 x 0.5
ORHB-F5S53L	38 - 60V	54V	10A	540W	2.4 x 2.28 x 0.5
GHBW28V08	36 - 75V	28V	8A	130W	2.4 x 2.28 x 0.5

Parts numbers shown are Active Low parts.

### How to order Taurus Series

Part Number	Input Voltage	Nominal Output Voltage	Max Output Current	Max Output Power	Package L x W x H (inches)
GHTW5V040	36 - 75V	5.0V	40A	200W	2.4 x 2.28 x 0.5
GHTWxVx60	36 - 75V	1.2 / 1.5 / 1.8 / 2.0 / 2.5V	60A	200W	2.4 x 2.28 x 0.5
GPTW5V030	36 - 75V	5.0V	30A	150W	2.4 x 2.28 x 0.5
GPTWxVx40	36 - 75V	1.2 / 1.5 / 1.8 / 2.0 / 2.5V	40A	130W	2.4 x 2.28 x 0.5

24V input modules and turned model option are also available.

Custom designs are available on request. Email [techhelp@belf.com](mailto:techhelp@belf.com) to submit your specific application needs.

Data sheets with electrical and mechanical specifications are available at [www.belpower.com](http://www.belpower.com).

## Full Brick Isolated Converter Series

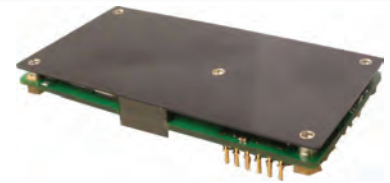
RoHS Compliant

### Specifications

- Industry standard package
- Max input voltage 9V – 75V
- Max output current up to 120A
- Max output power up to 600W

### Design Features

- Remote on/off
- OCP/OVP/OTP
- Under voltage lockout (UVLO)



### Description

The Full Brick is an isolated DC/DC converter that operates from a nominal 48V source. These units will provide up to 700W of output power from a nominal 48V input. Bel's Full Brick converters are designed to be highly efficient and low cost.

### How to order Full Brick Isolated Series

Part Number	Input Voltage	Nominal Output Voltage	Max Output Current	Max Output Power	Package L x W x H (inches)
ORFB-F0T280	36 - 76V	28V	18A	504W	4.6 x 2.4 x 0.5
ORFB-S0T280	36 - 76V	28V	25A	700W	4.6 x 2.4 x 0.5
ORFB-F5T096	36 - 75V	9.6V	57.5A	552W	4.6 x 2.4 x 1.0

All models above are Active High parts. Change the last letter to "L" to indicate Active Low. ORFB-F5T096 has a fixed heatsink.

## Brick Converter Series

RoHS Compliant

### Specifications

- Industry standard package
- Max input voltage 36V – 75V
- Dual outputs
- Max output power 35W to 75W

### Design Features

- Remote on/off
- OCP/OVP/OTP
- Under voltage lockout (UVLO)

### Description

The Brick Converter Series includes isolated converters that operate from a nominal 48V source. They provide up to 77W of output power with two output voltages. These converters are provided in a compact, through-hole 1/4 brick package that is easy to use and provides good thermal performance.

### How to order Brick Converter Series

Part Number	Input Voltage	Nominal Output Voltage	Max Output Current	Max Output Power	Package L x W x H (inches)
ORXC-75TD30	36 - 75V	3.3V / 1.8V	15A / 1.5A	77W	2.3 x 1.45 x 0.427
ORXU-75TD10	36 - 75V	+12V / -12V	5A / 1.5A	78W	2.4 x 2.28 x 0.48
ORXW-35TD20	36 - 75V	3.3V / 1.5V	6A / 8A	35W	2.3 x 1.45 x 0.424
ORXW-45TD10	36 - 75V	3.3V / 1.2V	8A / 13A	45W	2.3 x 1.45 x 0.45
ORXW-45TD20	36 - 75V	3.3V / 1.5V	8A / 12A	45W	2.3 x 1.45 x 0.45
ORXW-45TD30	36 - 75V	3.3V / 1.8V	10A / 10A	45W	2.3 x 1.45 x 0.45
ORXW-45TD40	36 - 75V	3.3V / 1.6V	8A / 12A	45W	2.3 x 1.45 x 0.45
ORXW-45TD50	36 - 75V	3.3V / 1.0V	8A / 13A	45W	2.3 x 1.45 x 0.45
ORXW-35TD20	36 - 75V	3.3V / 1.5V	6A / 8A	35W	2.3 x 1.45 x 0.424
ORXW-65TD10	36 - 75V	+12V / -12V	2.7A / 2.7A	65W	2.22 x 1.45 x 0.46
ORXW-65TD30	36 - 75V	+12V / -12V	2.7A / 2.7A	65W	2.22 x 1.45 x 0.45
SRXA-40TD10	36 - 72V	1.5V / 1.2V	15A / 15A	54W	2.3 x 1.5 x 0.47
SRXA-50TD10	36 - 72V	3.0V / 2.0V	10A / 10A	62W	2.3 x 1.5 x 0.48
SRXA-60TD10	36 - 72V	4.5V / 3.0V	10A / 10A	60W	2.3 x 1.5 x 0.48

All models above are Active High parts. Change the last letter to "L" to indicate Active Low.

## Special Package Isolated DC/DC Converters

RoHS Compliant

### Description

Some products have special packaging which can be used in various applications. These are isolated DC/DC converters that are designed to be highly efficient.

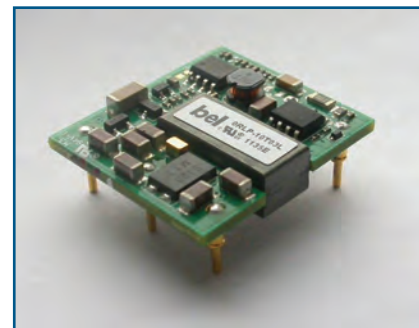
### How to order Special Package Isolated DC/DC Converters

Part Number	Input Voltage	Nominal Output Voltage	Max Output Current	Max Output Power	Package L x W x H (inches)
ORLP-10T03X	36 - 80V	3.3V	3.0A	10W	1.1 x 0.96 x 0.335
ORX3-20AD10	10 - 14V	-25V / -60V	0.8A / 0.3A	20W	2.0 x 1.6 x 0.37
ORXA-18U033	19.2 - 72V	3.3V	5A	16.5W	2.0 x 2.0 x 0.5

Custom designs are available on request. Email [techhelp@belf.com](mailto:techhelp@belf.com) to submit your specific application needs. Data sheets with electrical and mechanical specifications are available at [www.belpower.com](http://www.belpower.com).

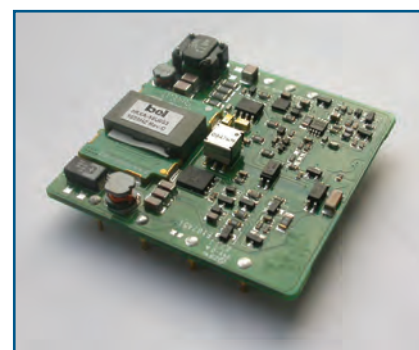
#### ORLP-10T03x

This isolated regulated single output DC/DC converter is available in an industry standard 0.96" X 1.1" footprint. The fixed DC output is tightly regulated and the location of pins allows this device to fit into legacy standard pin out of a 1" X 2" converter. The converter accepts a 2:1 input voltage range which is ideal for telcom applications. It is also equipped with input under voltage lockout, output over current and short circuit protection, as well as over temperature protection and output over voltage protection. High efficiency allows for a high usable power density.



#### ORXA-18U033

This Isolated regulated single output DC/DC converter is available in a legacy 2" X 2" footprint and operates from an ultra wide input range of 19.2V to 72V making it suitable for industrial and tele-com applications. The device is equipped with input under voltage lockout, output over current and short circuit protection, as well as over temperature protection and output over voltage protection. High efficiency allows for a high usable power density.





## Custom Design Capabilities

RoHS Compliant

Although we stock hundreds of standard products, your application may require a custom design. When it does, look to Bel Power for an innovative, cost-effective solution. For the past 60 years, we've been designing and manufacturing custom electro-mechanical assemblies for the global market.

At Bel Power, we listen to our customers. This allows us to develop innovative, high quality products to meet changing requirements. Your success is built on our continuous attention to all of your major design concerns including flammability, voltage breakdown, high temperature materials, packaging constraints, and RoHS compliance.

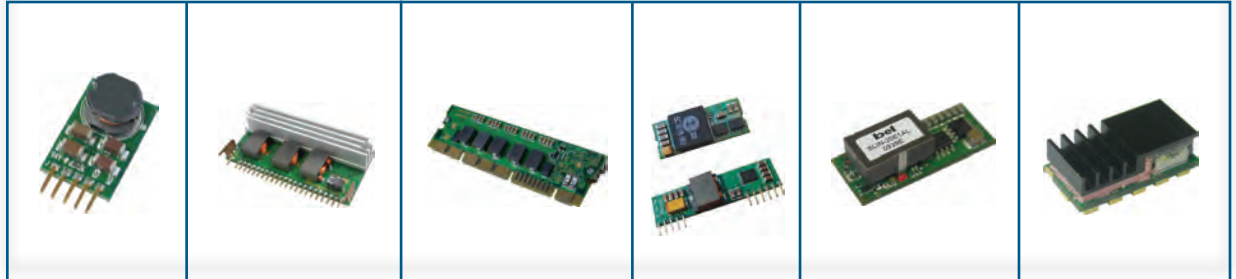
*When your next design requires a custom DC/DC converter — we can help!*



Bel Power continues to develop new isolated and non-isolated DC/DC converters in a wide variety of packages for a broad array of applications. Please call or e-mail us if you don't see a product that meets your specific needs. Contact us online at [techhelp@belf.com](mailto:techhelp@belf.com).

Modification to standard parts and custom design available on request. Consult our customer service center to discuss your specific application.

*RoHS compliant power conversion solutions*

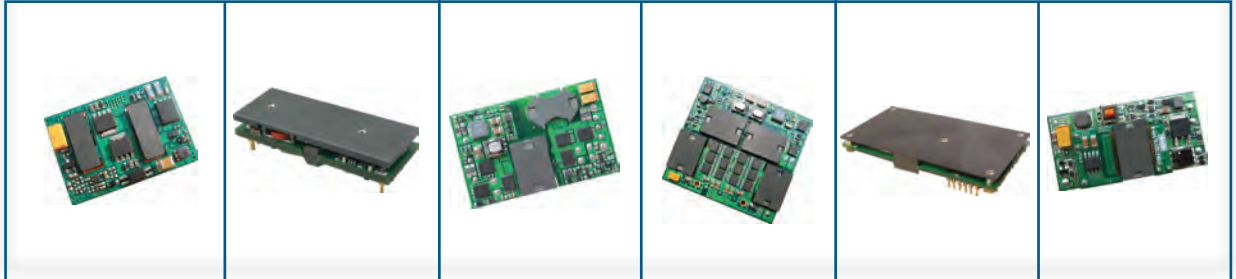


Description	MicroSIP	PowerSIP	VRM	Bobcat	SLIN with Tunable Loop™ Feature	Power Block
Reference Page Number	Page 2	Page 3	Page 4	Page 5	Page 6	Page 7
Max Input Voltage	4.5-13.8V	4.5-13.8V	3-15V	2.4-30V	2.4-14V	13.2V
Max Output Current	1-10A	20-90A	30-150A	3-30A	3-30A	10-30A
Max Output Power	5-50W	36-400W	30-375W	10-100W	10-100W	50-150W
Features	SIP package Board space saver Wide input range	Industry standard pkg Low cost OCP/SCP/OVP	Thru hole Gold finger Surface mount Thermal warning option	Vertical mount Surface mount Easily modified	3 sizes available Tunable Loop™ feature Active high/low option	Pick-n-placeable High power Small footprint Easily modified

Custom designs are available on request. Email [techhelp@belf.com](mailto:techhelp@belf.com) to submit your specific application needs. Data sheets with electrical and mechanical specifications are available at [www.belpower.com](http://www.belpower.com).

# Isolated Converters — Selection Guide

*RoHS compliant power conversion solutions in industry standard packages*



Description	1/16 Brick	1/8 Brick	1/4 Brick	1/2 Brick	Full Brick	1" x 2"
Page Number	Page 9	Page 10	Page 11	Page 12	Page 13	Page 9
Max Input Voltage	18-75V	18-7V5	18-75V	9-75V	9-75V	18-75V
Max Output Current	5-20A	5.9-50A	8.4-100A	3-120A	3-120A	1-7A
Max Output Power	18-60W	26.4-144W	72-400W	72-600W	72-600W	30W
Features (standard on all isolated converters)	Industry standard packages Optional cover or plates available Heat sink option upon request Easily modified		Over current protection - OCP Over voltage protection - OVP Under voltage lockout - UVLO Low cost – available thru distribution		Low profile RoHS compliant Thru hole / surface mount Stocked in distribution	

Our industry standard Brick converters are available thru one of our stock distributor partners. Custom or modified standards available upon request. Contact our technical support center at [techhelp@belf.com](mailto:techhelp@belf.com)

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**Local Support**

Our regional sales offices are ready to provide expert local applications and sales support. In addition, our extensive network of manufacturers' representatives and distributors help bring our solutions to you. Please visit us at [www.belpower.com](http://www.belpower.com) for a list of our regional offices or to find a local Bel Power representative.

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