

## FEATURES

- ◆ RoHS compliant
- ◆ Efficiency up to 83%
- ◆ SIP/DIP Package
- ◆ Wide temperature performance at full 1 Watt load, -40°C to 85°C
- ◆ UL 94V-0 package material
- ◆ No heatsink required
- ◆ Small Footprint
- ◆ Industry standard pinout
- ◆ Power sharing on output
- ◆ 1KVDC isolation
- ◆ Continuous Short Circuit Protection
- ◆ Internal SMD construction
- ◆ No external components required
- ◆ MTTF up to 1.8 million hours

## MODEL SELECTION

**B<sup>①</sup>05<sup>②</sup>05<sup>③</sup>X<sup>④</sup>LS<sup>⑤</sup>R<sup>⑥</sup>**

- ① Product Series
- ② Input Voltage
- ③ Output Voltage
- ④ Fixed Input
- ⑤ SIP Package
- ⑥ Regulated Output

## APPLICATIONS

The B\_XLSR&B\_XLDR series are specially designed for applications where a group of polar power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

These products apply to:

- 1) where the voltage of the input power supply is fixed (voltage variation  $\leq \pm 5\%$ );
- 2) where isolation is necessary between input and output (isolation voltage  $\geq 1000\text{VDC}$ );
- 3) where the regulation of the output voltage and the output ripple noise are demanded.

## SELECTION GUIDE

Order code	Input		Output			Efficiency (% Typ)	Switching Frequency (KHz Typ)
	Voltage (VDC)		Voltage (VDC)	Current (mA)			
	Nominal	Range		Max	Min		
QB0505XLDR	5	4.75-5.25	5	50	5	68	80
PB0505XLDR	5	4.75-5.25	5	150	15	68	80
B0505XLDR	5	4.75-5.25	5	200	20	71	80
B0509XLDR	5	4.75-5.25	9	111	12	70	75
B0512XLDR	5	4.75-5.25	12	83	9	71	83
B0515XLDR	5	4.75-5.25	15	67	7	73	67
QB0505XLSR	5	4.75-5.25	5	50	5	68	80
PB0505XLSR	5	4.75-5.25	5	150	15	68	80
B0505XLSR	5	4.75-5.25	5	200	20	68	70
B0509XLSR	5	4.75-5.25	9	111	12	70	75
B0512XLSR	5	4.75-5.25	12	83	9	71	69
B0515XLSR	5	4.75-5.25	15	67	7	73	80
B1205XLDR	12	11.4-12.6	5	200	20	68	85
B1209XLDR	12	11.4-12.6	9	111	12	72	74
B1212XLDR	12	11.4-12.6	12	83	9	70	71
B1215XLDR	12	11.4-12.6	15	67	7	74	65
B1205XLSR	12	11.4-12.6	5	200	20	68	68
B1209XLSR	12	11.4-12.6	9	111	12	72	67
B1212XLSR	12	11.4-12.6	12	83	9	70	65
B1215XLSR	12	11.4-12.6	15	67	7	74	66
B1505XLSR	15	14.25-15.75	5	200	20	70	69
B1509XLSR	15	14.25-15.75	9	111	12	71	75
B1512XLSR	15	14.25-15.75	12	83	9	71	74
B1515XLSR	15	14.25-15.75	15	67	7	72	72
B2405XLDR	24	22.8-25.2	5	200	20	68	73
B2409XLDR	24	22.8-25.2	9	111	12	68	71
B2412XLDR	24	22.8-25.2	12	83	9	73	70
B2415XLDR	24	22.8-25.2	15	67	7	75	70
B2405XLSR	24	22.8-25.2	5	150	15	68	80
B2409XLSR	24	22.8-25.2	9	111	12	68	74
B2412XLSR	24	22.8-25.2	12	83	9	73	60
B2415XLSR	24	22.8-25.2	15	67	7	75	62

## OUTPUT SPECIFICATIONS

Parameter	Test conditions	Min	Typ.	Max.	Units
Output power		0.1		1	W
Line regulation	For Vin change of $\pm 5\%$			$\pm 0.25$	%
Load regulation	10% to 100% full load			$\pm 1$	%
Output voltage accuracy	100% full load			$\pm 3$	%
Temperature drift	100% full load			0.03	%/°C
Output Ripple*	20MHz Bandwidth		10	20	MV p-p
Output Noise*	20MHz Bandwidth		50	75	MV p-p
Switching frequency	Full load, nominal input		100		KHz

\* Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.



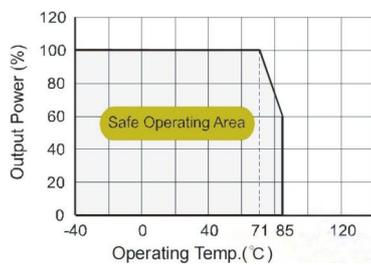
### TEMPERATURE CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Storage humidity range				95	%
Operating temperature		-40		80	°C
Storage temperature		-55		125	°C
Lead temperature	1.5mm from case for 10 seconds		15	25	°C
Temp.rise at full load				300	°C
Cooling	Free air convection				
Case material	Plastic(UL94-V0)				
Short circuit protection	Continuous				
MTBF		3500		1'	K hours
Weight			2.1		g

\*Supply voltage must be discontinued at the end of short circuit duration.

### TYPICAL CHARACTERISTICS

Temperature Derating Graph



### OUTLINE DIMENSIONS & PIN CONNECTIONS

B-XLSR	SIZE Graph	B-XLDR																										
	<p>RECOMMENDED FOOTPRINT</p> <p>Top view: grid 2.54mm(0.1inch)</p> <p>diameter: 1.00mm(0.039inch)</p>																											
<table border="1"> <thead> <tr> <th colspan="2">FOOTPRINT DETAILS</th> </tr> <tr> <th>Pin</th> <th>SIP</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>VIN</td> </tr> <tr> <td>2</td> <td>GND</td> </tr> <tr> <td>4</td> <td>0V</td> </tr> <tr> <td>6</td> <td>+V0</td> </tr> </tbody> </table>	FOOTPRINT DETAILS		Pin	SIP	1	VIN	2	GND	4	0V	6	+V0		<table border="1"> <thead> <tr> <th colspan="2">FOOTPRINT DETAILS</th> </tr> <tr> <th>Pin</th> <th>SIP</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>GND</td> </tr> <tr> <td>7</td> <td>NC</td> </tr> <tr> <td>9</td> <td>+V0</td> </tr> <tr> <td>11</td> <td>0V</td> </tr> <tr> <td>14</td> <td>VIN</td> </tr> </tbody> </table> <p>NC: No Connection</p>	FOOTPRINT DETAILS		Pin	SIP	1	GND	7	NC	9	+V0	11	0V	14	VIN
FOOTPRINT DETAILS																												
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Note:  
 Unit:mm(inch)  
 Pin section: 0.50° 0.3mm(0.020° 0.12inch)  
 Pin section tolerances: ±0.10mm(±0.004inch)  
 General tolerances: ±0.25mm(±0.010inch)

All specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified. Another 24V products, please inquire Our technical department!

**Requirement on output load**  
 To ensure this module can operate efficiently and reliably, During operation, the minimum output load is not less than 10% of the full load, and that this product should never be operated under no load! If the actual output power is very small, please connect a resistor with proper resistance at the output end in parallel to increase the load.or use our company's products with a lower rated output power .

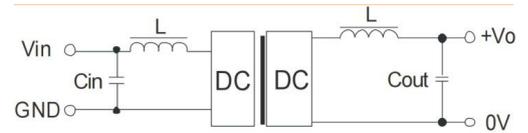
### APPLICATION NOTE

#### Requirement on output load

To ensure this module can operate efficiently and reliably, During operation, the minimum output load is not less than 10% of the full load, and that this product should never be operated under no load! If the actual output power is very small, please connect a resistor with proper resistance at the output end in parallel to increase the load, or use our company's products with a lower rated output power(QB\_XLDR /QB\_XLSR series).

#### Recommended circuit

If you want to further decrease the input/output ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, see (Figure 1).



(Figure 1)

It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the DC/DC frequency to avoid mutual interference. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees (Table 1).

#### EXTERNAL CAPACITOR TABLE (TABLE 1)

Vin (VDC)	Cin (μF)	Vout (VDC)	Cout (μF)
5	4.7	5	10
12	2.2	9	4.7
15	1	12	2.2
24	0.47	15	1

It's not recommend to connect any external capacitor in the application field with less than 0.5 watt output.

#### Overload Protection

Under normal operating conditions, the output circuit of these products has no protection against over-current and short-circuits. The simplest method is to connect a self-recovery fuse in series at the input end or add a circuit breaker to the circuit.

**When the environment temperature is higher than 71°C, the product output power should be less than 60% of the rated power.**

#### No parallel connection or plug and play.

Use dual output simultaneously, forbid opening output pin(0V) to use as single output.

#### RoHS COMPLIANT INFORMATION

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300° C for 10 seconds. The pin termination finish on the SIP package type is Tin Plate, Hot Dipped over Matte Tin with Nickel Preplate. The DIP types are Matte Tin over Nickel Preplate. Both types in this series are backward compatible with Sn/Pb soldering systems.

#### REACH COMPLIANT INFORMATION

This series has proven that this product does not contain harmful chemicals, it also has harmful chemical substances through the registration, inspection and approval.