P24BSLD-Series 300...700 mA Step Down LED Driver

PHI-CON

- Power LED Driver with constant current output
- High efficiency up to 96 %
- Wide input voltage range
- Short circuit protection
- Adjustable output current
- On/Off - remote control input
- SMD package

Model guide

Type	Input voltage		Output voltage range	Output current	Output power	Ripple & noise	Efficiency max.	Capacity load max.
	nominal [V_{DC}]	range [V_{DC}]	[V_{DC}]	[mA] nom.	[W] max.	[mV] max.	[%]	[µF]
P24BSLD030	24	5.5...48	3.3…36	300	10.8	120	96	1000
P24BSLD035	24	5.5...48	3.3…36	350	12.6	120	96	1000
P24BSLD050	24	5.5...48	3.3…36	500	18.0	120	96	1000
P24BSLD060	24	5.5...48	3.3…36	600	21.6	120	96	1000
P24BSLD070	24	5.5...48	3.3…36	700	25.2	120	96	1000

Specifications

Input Filter:	Capacitor
Input to output drop out	2…4 V
DIM-Input Pin 10 for analog control mode	
"Off" state control voltage	4.5 …15 V
"On" state control voltage	0…0.2 V
Control voltage Dim range	0.2 V … 4.5 for Iout 100 … 0 %
Dim control current (Pin 10)	< 0.6 mA max. at 5 V DIM
ON/OFF-Input Pin 7 for Remote control or PWM control mode	
"On" state threshold level	2.8 … 6 V or not connected
"Off" state threshold level	0 … 0.6 V
PWM-frequency	200 Hz max.
Output	
Current accuracy	± 5 %
Current stability at Vin 48 V, Vout 3.3…36 V	± 1 %
Ripple & noise	120 mVp-p
Short circuit protection	Continuously
Restart after short circuit	After removed short circuit and an input voltage interruption
Temperature coefficient	± 0.015 % / °C

General	
Switching frequency	370 kHz, typ.
Standard in accordance with	EN / IEC 60950-1 EN / IEC 61347-2-13 UL8750
Radiated emissions	EN55015 class B *(see fig.1)
Conducted emissions	EN55015 class B *(see fig.1)
ESD	EN61000-4-2 perf. criteria B
Radiated immunity	EN61000-4-3 perf. criteria A
Fast transient *(see fig.1)	EN61000-4-4 perf. criteria B
Surge *(see fig.1)	EN61000-4-5 perf. criteria B
Conducted immunity	EN61000-4-6 pref. criteria A
PFMF	EN61000-4-8 pref. criteria A
Reliability calculated (MIL-HDBK-217 F) at 25 °C	MTBF > 2 Mio. hours
Environmental	
Operating temperature range P24BSLD030, P24BSLD035	-40 … 85 °C
Operating temperature range P24BSLD050, P24BSLD060 P24BSLD070	-40 … 71 °C
Storage temperature	-55 … 125 °C
Maximum case temp.	+100 °C
Humidity	95 % rel. Humidity
Physical	
Dimensions	18.1 x 23.86 x 8 mm
Weight	6 g
Case material	Plastic, UL94-V0 rated
Potting material	Epoxy, UL94-V0 rated
Absolute maximum ratings	
Input voltage ≤ 10 s	5 V min., 55 V max.

Note:
1. Operation under minimum output voltage will not damage the converter, however, they may not meet all specification listed.
2. All specifications measured at Ta 25 °C, humidity < 75 %, nominal input voltage and rated output load unless otherwise specified.

HY-LINE® POWER COMPONENTS

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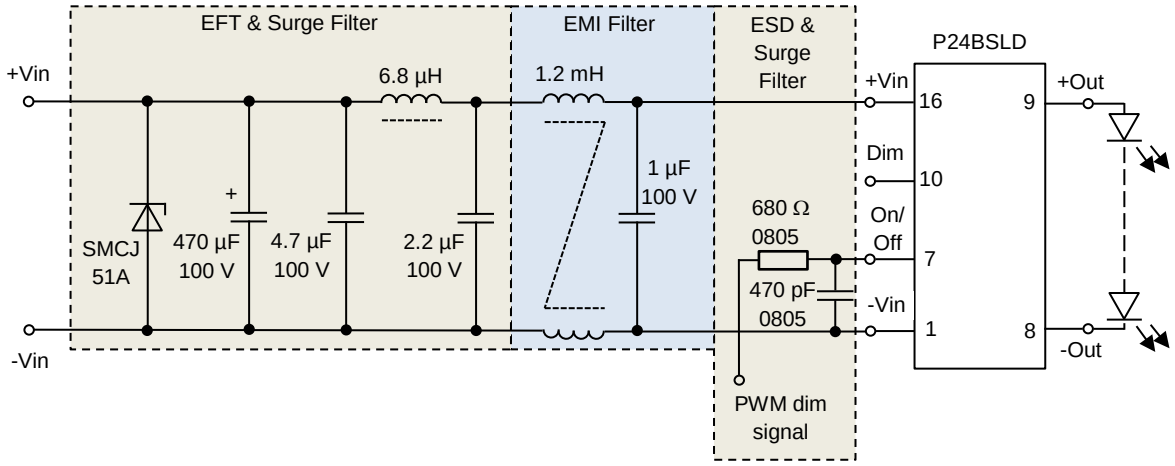
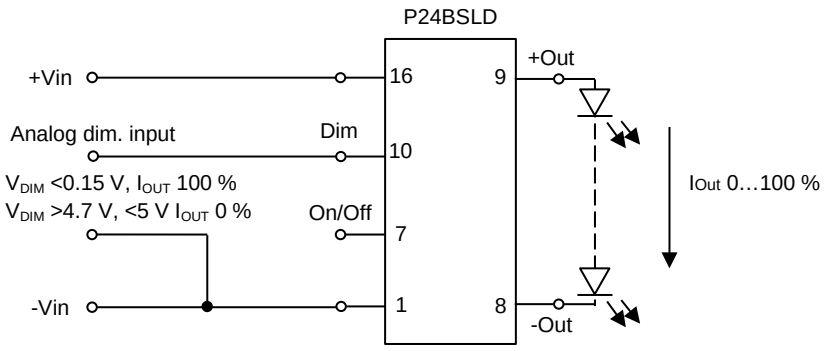
Input voltage vs output voltage							
Input voltage [V]	Output voltage [V] min.	Output voltage [V] max.	P24BSLD030 Pout [W] max.	P24BSLD035 Pout [W] max.	P24BSLD050 Pout [W] max.	P24BSLD060 Pout [W] max.	P24BSLD070 Pout [W] max.
5.5	3.3	4.0	1.20	1.40	2.00	2.40	2.80
12.0	3.3	10.0	3.00	3.50	5.00	6.00	7.00
15.0	3.3	13.2	3.96	4.62	6.60	7.92	9.24
20.0	3.3	17.0	5.10	5.95	8.50	10.20	11.90
24.0	3.3	21.0	6.30	7.35	10.50	12.60	14.70
36.0	3.3	32.0	9.60	11.20	16.00	19.20	22.40
48.0	3.3	36.0	10.80	12.60	18.00	21.60	25.20

Fig. 1 EMC circuit suggestion



Dim application circuit analog



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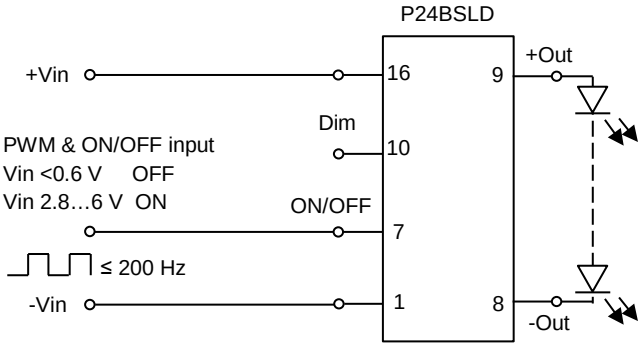
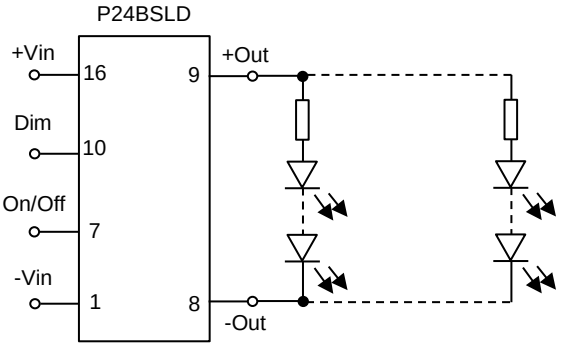
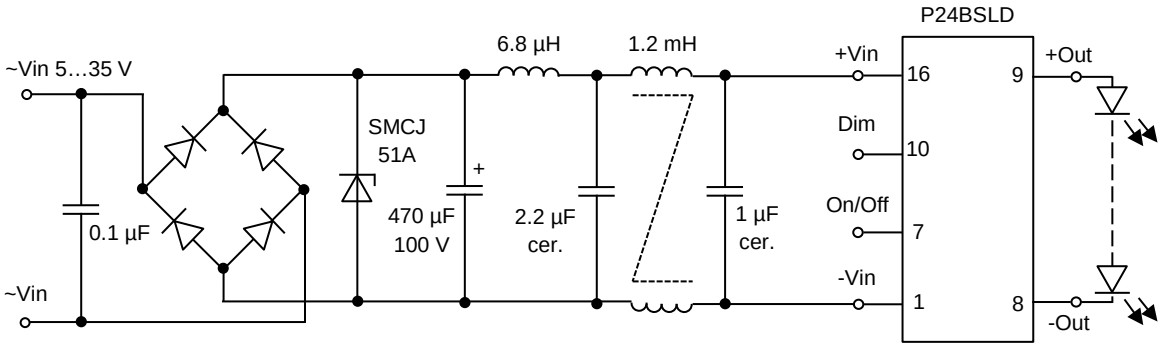
Dim circuit PWM or ON/OFF control application



Application circuit multi string



Typical Application at AC input voltage



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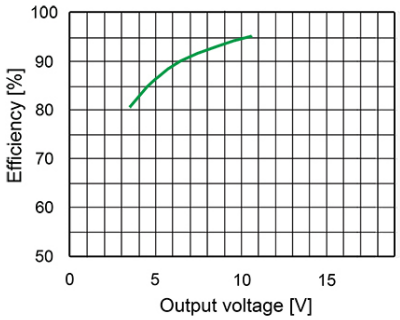
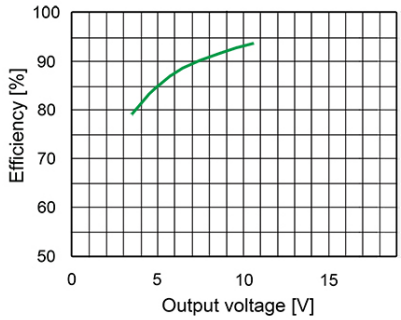
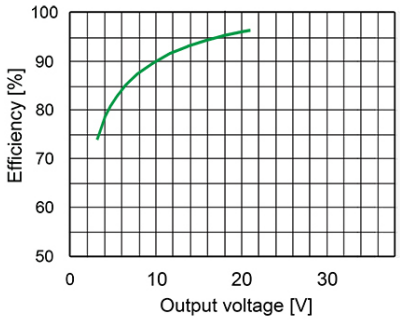
P24BSLD030, P24BSLD035, P24BSLD050
Efficiency at Vin 12 V vs output voltage



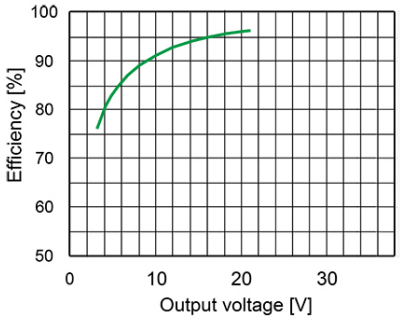
P24BSLD060, P24BSLD070
Efficiency at Vin 12 V vs output voltage



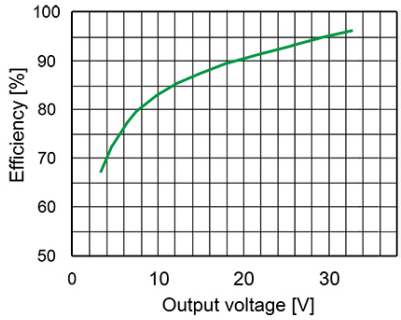
P24BSLD030, P24BSLD035, P24BSLD050
Efficiency at Vin 24 V vs output voltage



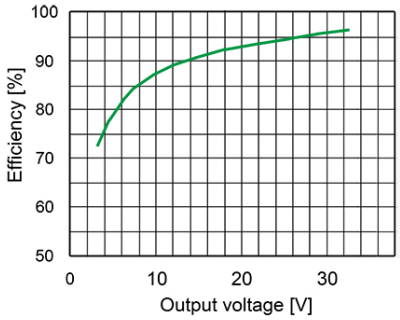
P24BSLD060, P24BSLD070
Efficiency at Vin 24 V vs output voltage



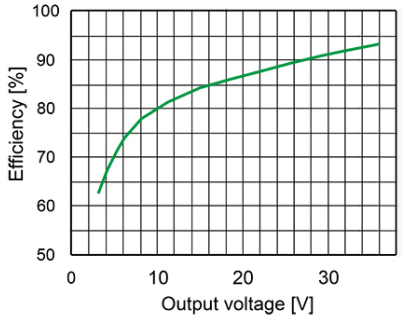
P24BSLD030, P24BSLD035, P24BSLD050
Efficiency at Vin 36 V vs output voltage



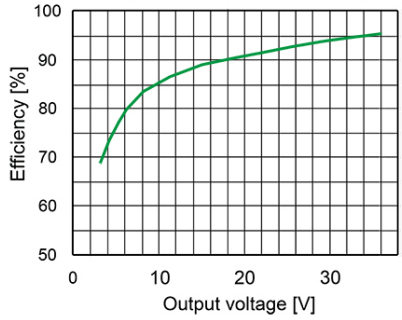
P24BSLD060, P24BSLD070
Efficiency at Vin 36 V vs output voltage



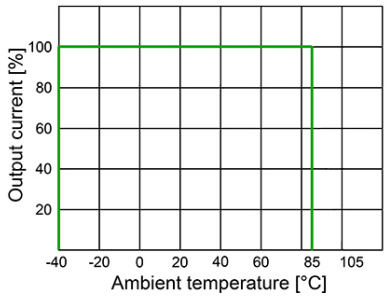
P24BSLD030, P24BSLD035, P24BSLD050
Efficiency at Vin 48 V vs output voltage



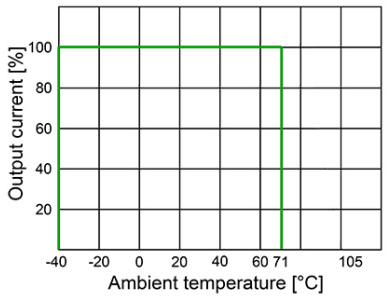
P24BSLD060, P24BSLD070
Efficiency at Vin 48 V vs output voltage



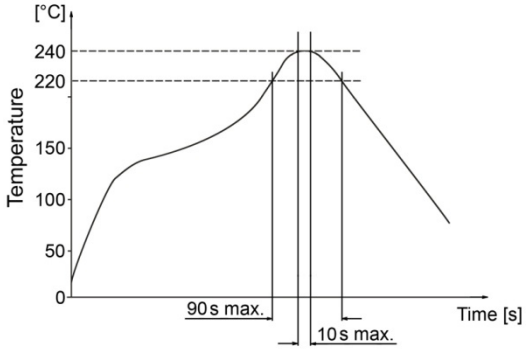
P24BSLD030, P24BSLD035
Derating at Vin 24 V



P24BSLD050, P24BSLD060, P24BSLD070
Derating at Vin 24 V



Recommended reflow soldering profile



This curve applies only to hot air reflow soldering.

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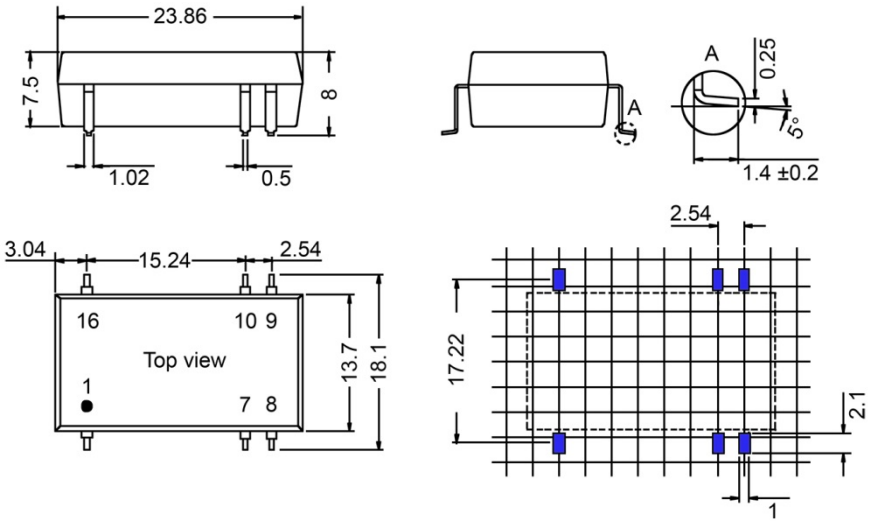
Designation key

		Nominal input voltage		Series designation	Case Technology		Function		Output current	
P	PHI-CON	**24**	24 V	**B**	**S**	SMD	**LD**	LED Driver	**030**	300 mA
									035	350 mA
									050	500 mA
									060	600 mA
									070	700 mA

Dimensions

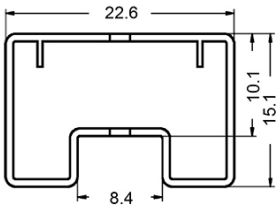


Pin assignment	
1	-Vin
7	ON/OFF or PWM - Dim.
8	-Current output
9	+Current output
10	Analog Dim.
16	+Vin

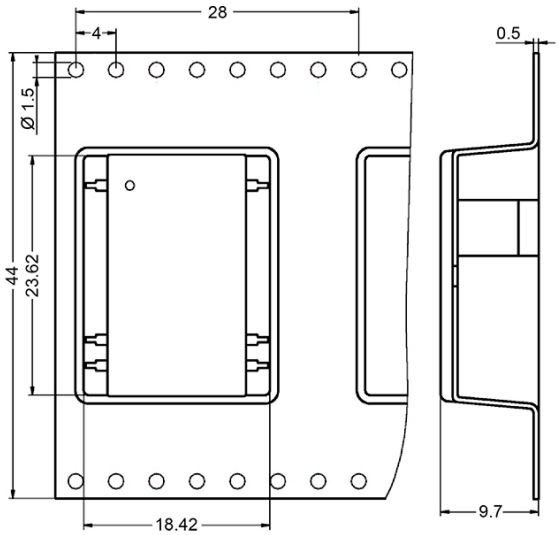
Dimensions in mm
1. Pin tolerance ± 0.1 mm
2. Pin pitch ± 0.1 mm
3. General tolerance: ± 0.25 mm

Packing dimensions

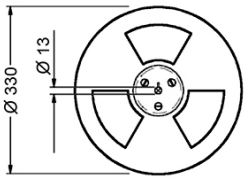
Tube



Tape



Reel



Dimensions in mm
4. Pin tolerance ± 0.5 mm
5. Tube short 220 mm, 8 pieces
6. Tube long 530 mm, 21 pieces
7. Tape & Reel Ø 330 mm, 200 pieces

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