120V Compact Phase-Cut LED Driver

The DRW-NLT series of compact LED drivers offers superior performance for small to medium size lighting fixtures, such as downlights, tracklights/spotlights and wall sconces where small form factor, precise lighting control, quality of light and high reliability are critical factors.

Product Offering

Power: 8 / 11 / 12 / 15 / 17 / 21 W
Input: 120 V (50/60 Hz)
Output: 350 / 500 / 700 mA @12 – 22V
180 / 280 / 350 / 500 mA @30 – 42V
Dimming: Leading and Trailing edge Phase-Cut
UL Recognized (Class 2 Output)
Suitable for dry or damp locations

Features and Benefits

Compact Size	Specifically designed to fit in small lighting fixtures
Flicker Free	World-class flicker free design ensures Percent Flicker less than 3% over the entire dimming range.
Deep Dimming	Excellent dimming performance to less than 1% with stable light output
GloStart™	Turn light on at low dimming level (i.e. < 10%)
5 Year Warranty	Backed by the industry leading warranty of 5 years gives confidence in long term reliability and maintenance free operation

1 – Input / Output Characteristics

Specification item	Value	Condition
Nominal Input Voltage Range AC	120 VAC	
Nominal Input Voltage Range AC	108 – 132 VAC	Operational range
Input Frequency	50 / 60 Hz	Performance range
Power Factor with Full Load	> 0.9	Full output power @ 120 Input Voltage
Maximum Inrush Current	< 10 A	At 120 input 25°C cold start at 100% conditions. For more details in the attached graph
No-load Power Consumption	< 0.5 W	
Output Current Tolerance	±5%	
Output Current Ripple LF	< 3%	< 2KHz
Start-up Time	< 0.5 s	

2 - Dimming Characteristics

Specification item	Value	Condition
Dimming Protocol	Leading / Trialing Edge	Phase-Cut Dimming
Dimming Range	1% - 100% typical	Actual dimming performance is dimmer dependent. Please consult Cuvee for specific dimmer compatibility

3 - Ordering Information and Specification

Form Factor	Part Number	Max. Output Power	Output Current	Output Voltage	Eff.	i-THD (Full Load)	Max. Input Current	No Load Voltage
 63 x 32 x 17 mm	DRW-NLT008/1-CC350-22	7.7W	350mA	12 – 22V	73%	< 30%	0.08A	45V
	DRW-NLT008/1-CC180-42	7.6W	180mA	30 – 42V	75%	< 30%	0.09A	45V
 82.4 x 32 x 24.5 mm	DRW-NLT012/1-CC280-42	11.8W	280mA	30 – 42V	83%	< 10%	0.12A	45V
	DRW-NLT015/1-CC350-42	14.7W	350mA	30 – 42V	83%	< 10%	0.15A	45V
	DRW-NLT017/1-CC400-42	16.8W	400mA	30 – 42V	80%	< 15%	0.18A	45V
 81.4 x 41.3 x 25.5 mm	DRW-NLT011/1-CC500-22	11.0W	500mA	12 – 22V	80%	< 15%	0.12A	45V
	DRW-NLT015/1-CC700-22	15.4W	700mA	12 – 22V	79%	< 10%	0.17A	45V
	DRW-NLT021/1-CC500-42	21.0W	500mA	30 – 42V	TBD	TBD	TBD	TBD

4 - Environmental Conditions

Specification item	Value	Condition
Ambient Temperature (Ta) Range	-20 to 45°C	Higher ambient temperature are possible as long as Tc conforms to the operating case temperature range
Operating Case Temperature (Tc) Range	-20 to 80°C	Case Temperature measured at Tc mark on product
Storage Temperature	-40 to 85°C	
Relative Humidity	80%	Non-condensing
Lifetime	50,000 hours	At Tc within Operating Case Temperature Range.
Warranty	5 years	At Tc within Operating Case Temperature Range.
Working Locations	Suitable for dry or damp locations	

5 - Protection Features

Specification item	Value	Condition
Over Current Protection (OCP)	Yes	Automatic recovery
Output Short-Circuit Protection (SCP)	Yes	Automatic recovery

6 - Safety / EMC Compliance Approvals

Specification item	Value	Condition
Conducted and Radiated EMI	FCC CFR Title 47 Part 15 Class B	
UL / cUL	UL 8750 CSA C22.2 No. 250.13-17	UL Recognized (Class 2 Output) (E514800)

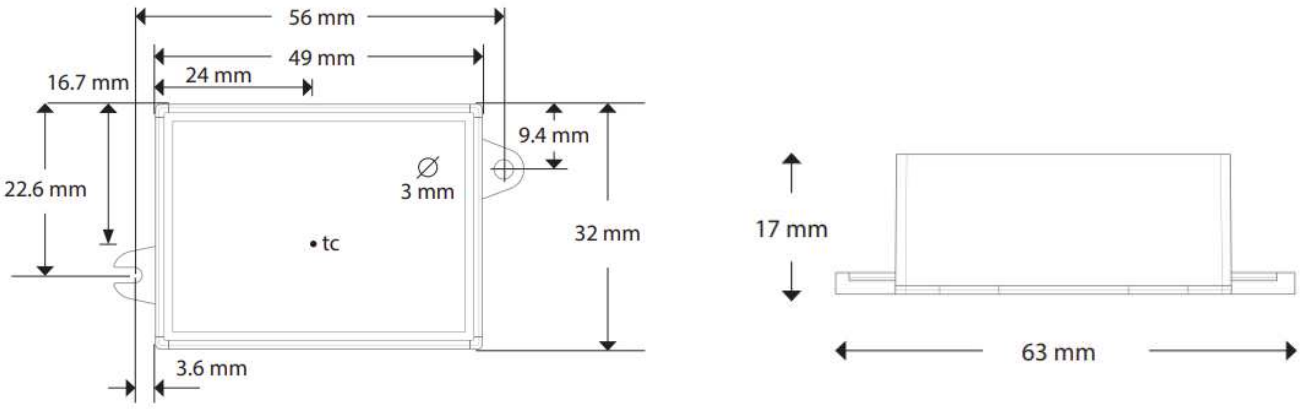
E514800

7 - Outline Drawing

7.1a - Outline Drawing

L x W x H
63 x 32 x 17 mm

DRW-NLT008/1-CC350-22
DRW-NLT008/1-CC180-42



7.1b - Mechanical Details

Specification item	Value	Condition
Length (L)	63mm	
Width (W)	32 mm	
Height (H)	17 mm	
Weight	31 g 32 g	DRW-NLT008/1-CC350-22 DRW-NLT008/1-CC350-22

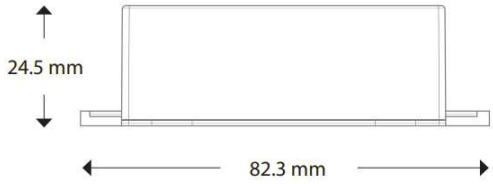
7.1c - Wire Specifications

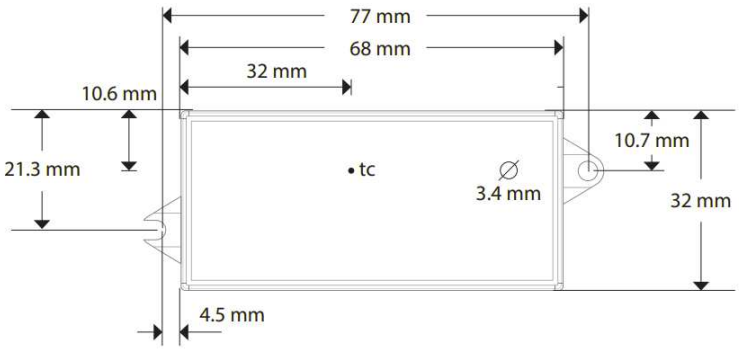
Input Wire (L-Black / N-White)	18 AWG
Output Wire (LED+ - Red / LED- - Black)	20 AWG
Wire Length (Input / Output / Control)	10 - 15 cm

7.2a - Outline Drawing

L x W x H
82.3 x 32 x 24.5 mm

DRW-NLT012/1-CC280-42
DRW-NLT015/1-CC350-42
DRW-NLT017/1-CC400-42





7.2b - Mechanical Details

Specification item	Value	Condition
Length (L)	82.3mm	
Width (W)	32 mm	
Height (H)	24.5 mm	
Weight	57 g 57 g 57 g	DRW-NLT012/1-CC280-42 DRW-NLT012/1-CC280-42 DRW-NLT012/1-CC280-42

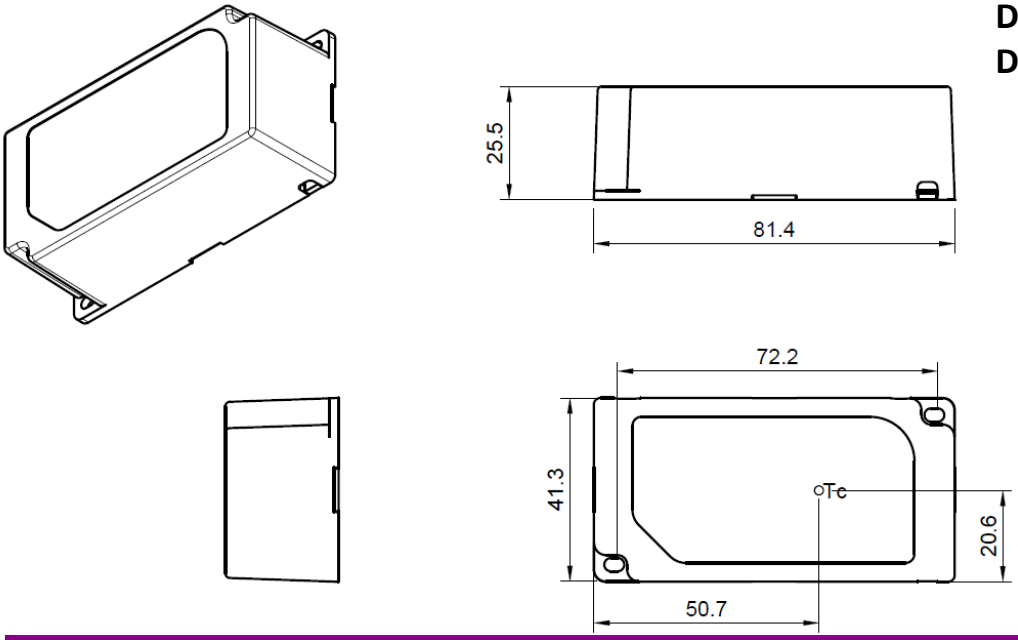
7.2c - Wire Specifications

Input Wire (L-Black / N-White)	18 AWG
Output Wire (LED+ - Red / LED- - Black)	20 AWG
Wire Length (Input / Output / Control)	10 - 15 cm

7.3a - Outline Drawing (Plastic)

L x W x H
81.4 x 41.3 x 25.5 mm

DRW-NLT011/1-CC500-22
DRW-NLT015/1-CC700-22
DRW-NLT021/1-CC500-42



7.3b - Mechanical Details

Specification item	Value	Condition
Length (L)	81.4 mm	
Width (W)	41.3 mm	
Height (H)	25.5 mm	
Weight	88 g 88 g 88 g	DRW-NLT011/1-CC500-22 DRW-NLT015/1-CC700-22 DRW-NLT021/1-CC500-42

7.3c - Wire Specifications

Input Wire (L-Black / N-White)	18 AWG
Output Wire (LED+ - Red / LED- - Black)	22 AWG
Dim+ (Purple) / Dim- (Grey) Control Wire	22 AWG
Wire Length (Input / Output / Control)	10 - 15 cm

8.1 – Graphs for smallest housing drivers

Operating Window

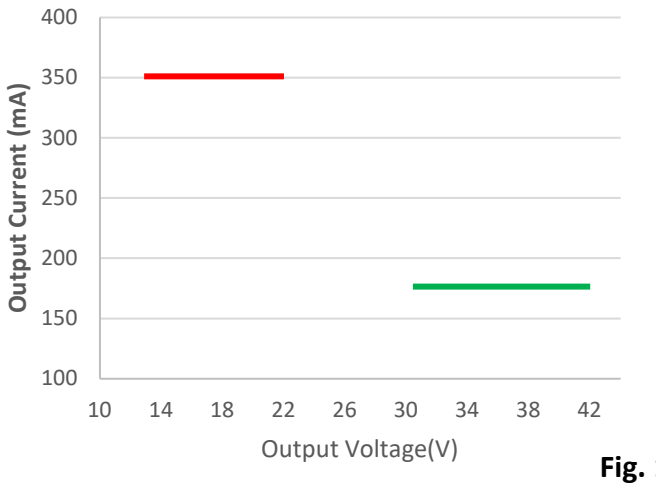


Fig. 1

Power Factor vs. Output Power

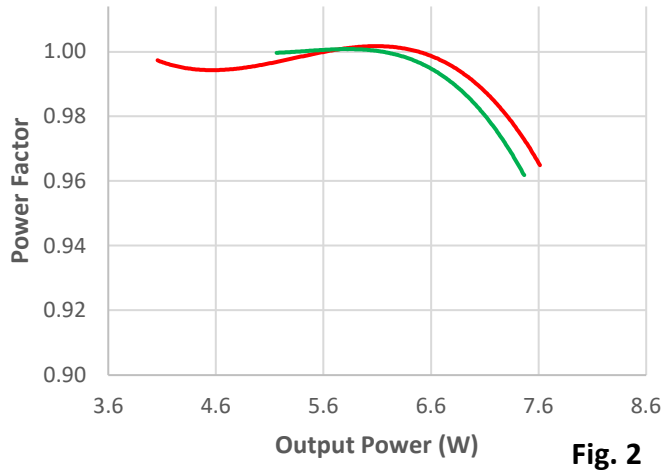


Fig. 2

Efficiency vs. Output Power

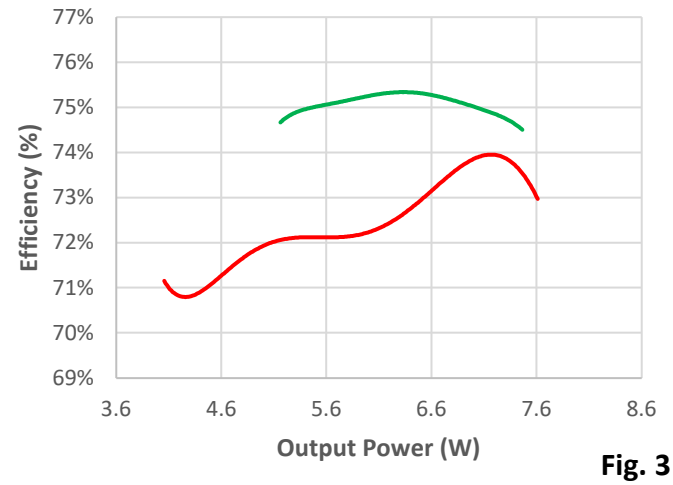


Fig. 3

I-THD vs. Output Power

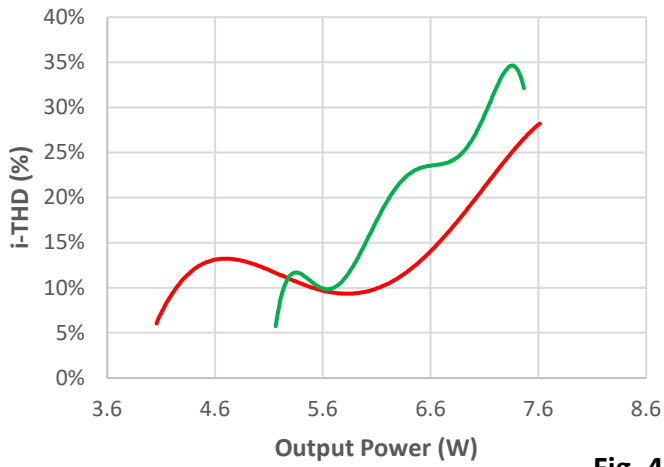


Fig. 4

Input Current vs. Output Power

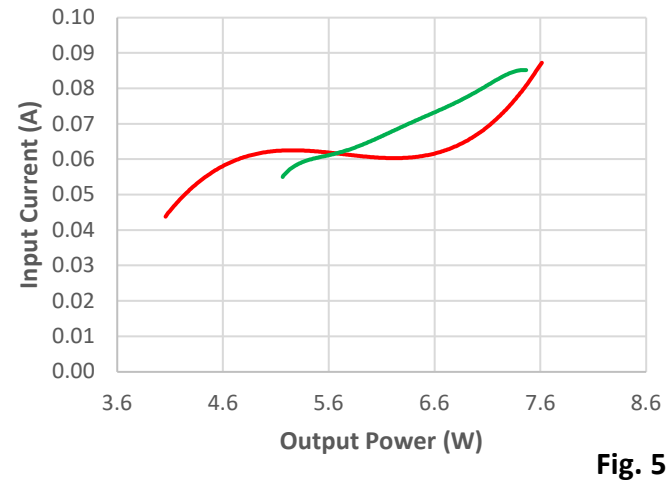


Fig. 5

DRW-NLT008/1-CC350-22

DRW-NLT008/1-CC180-42

8.2 – Graphs for mid-size housing drivers

Operating Window

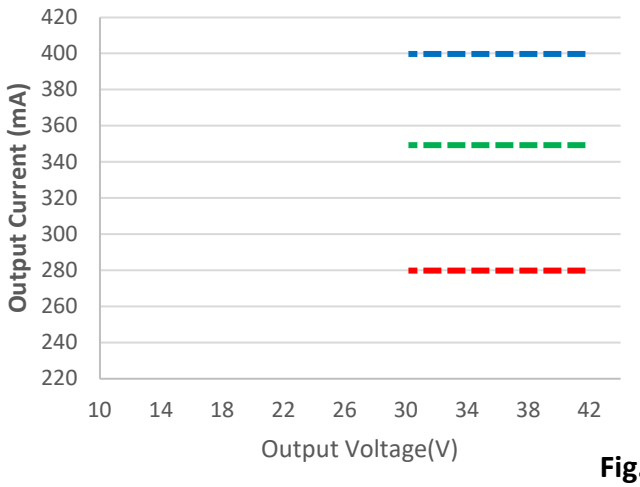


Fig. 6

Power Factor vs. Output Power

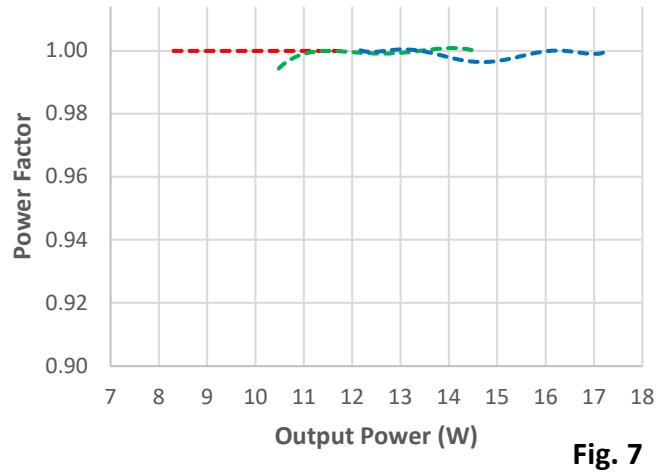


Fig. 7

Efficiency vs. Output Power

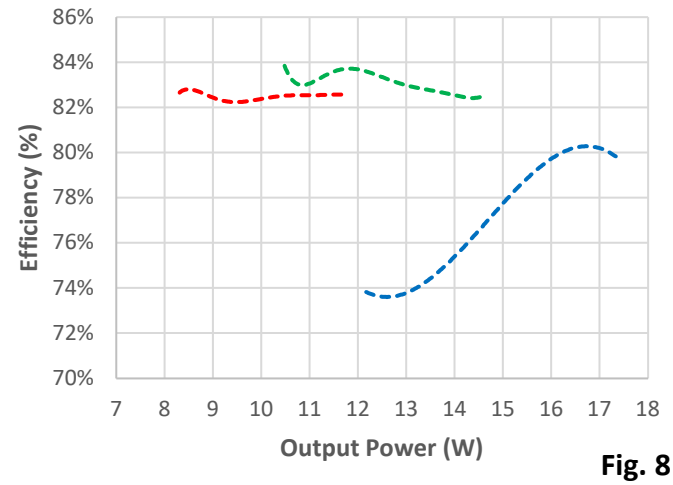


Fig. 8

I-THD vs. Output Power

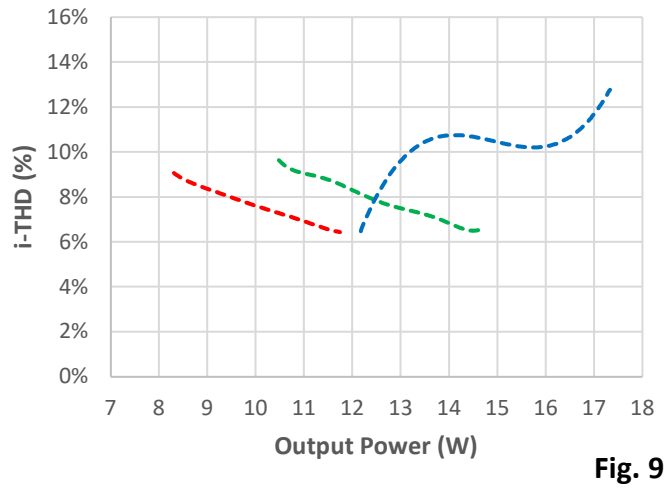


Fig. 9

Input Current vs. Output Power

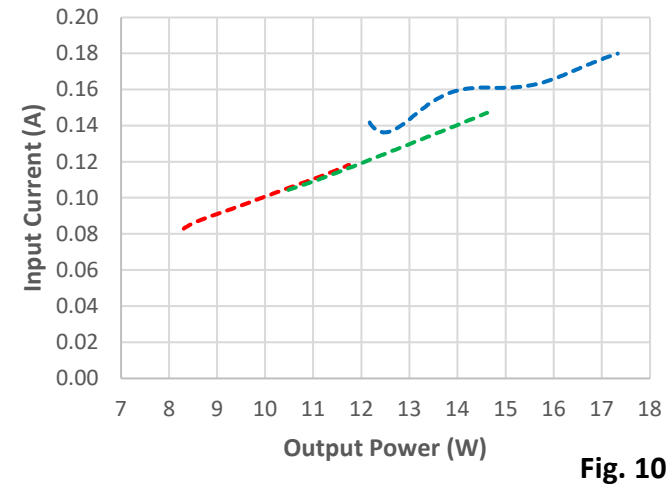


Fig. 10

DRW-NLT012/1-CC280-42
DRW-NLT015/1-CC350-42
DRW-NLT017/1-CC400-42

8.3 – Graphs for full-size housing drivers

Operating Window

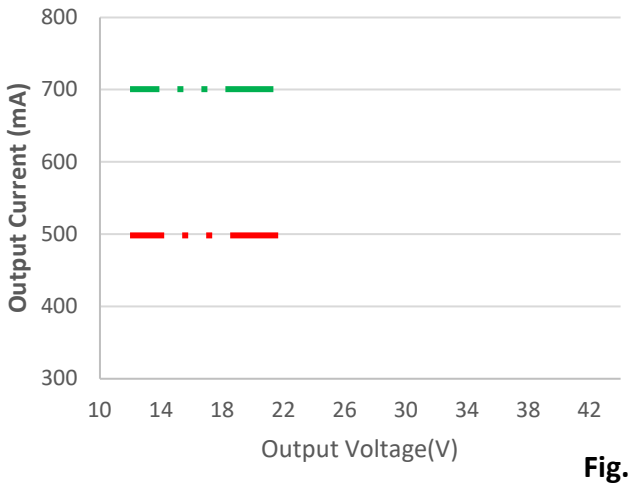


Fig. 11

Power Factor vs. Output Power

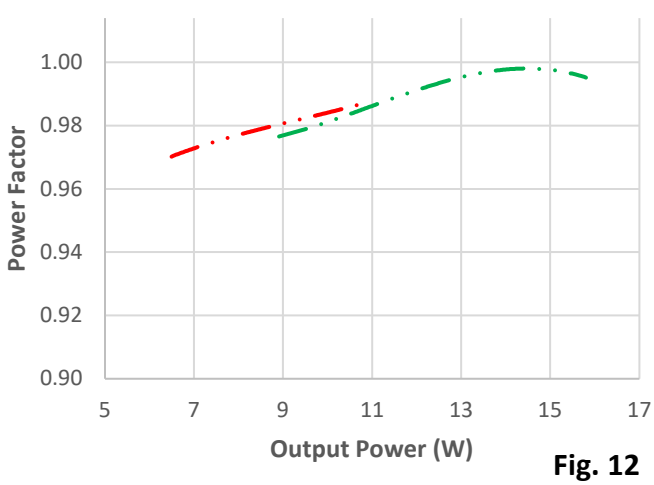


Fig. 12

Efficiency vs. Output Power

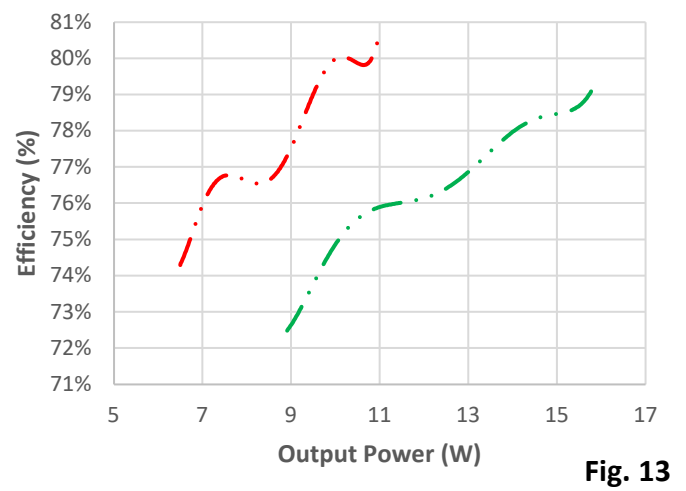


Fig. 13

I-THD vs. Output Power

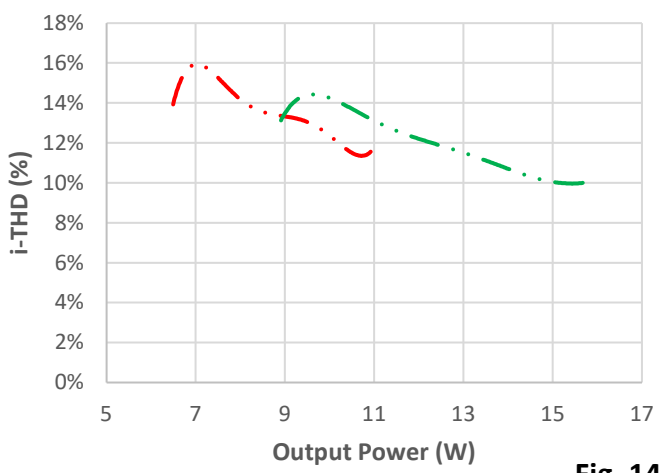


Fig. 14

Input Current vs. Output Power

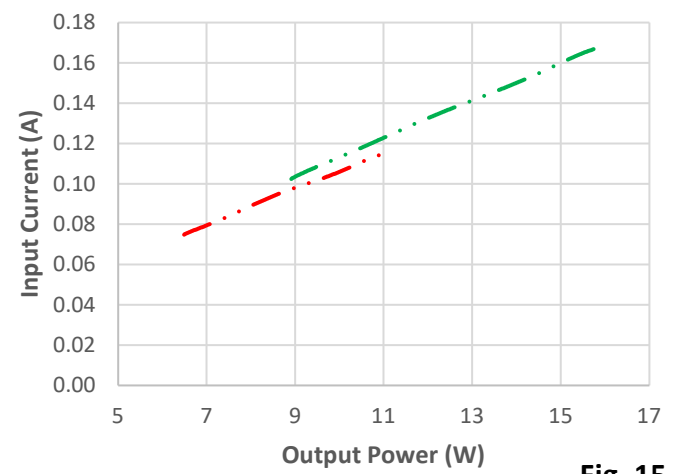
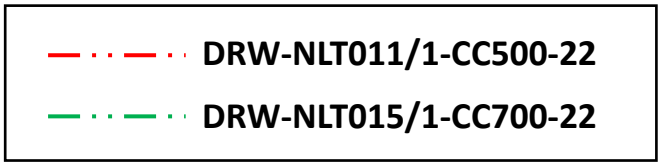


Fig. 15



8.3 – Graphs for full-size housing drivers

Operating Window

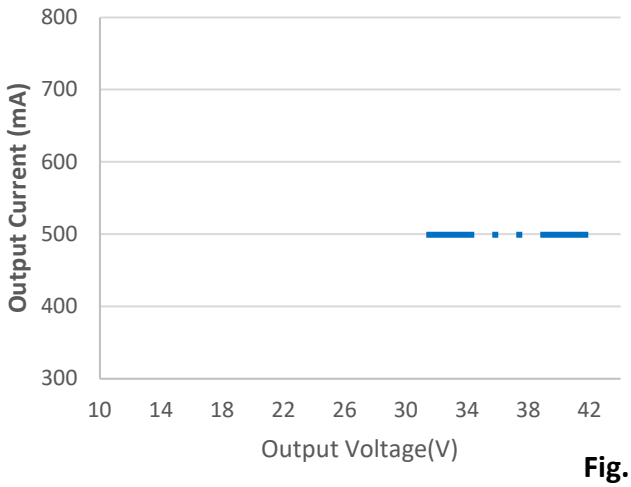


Fig. 16

Power Factor vs. Output Power

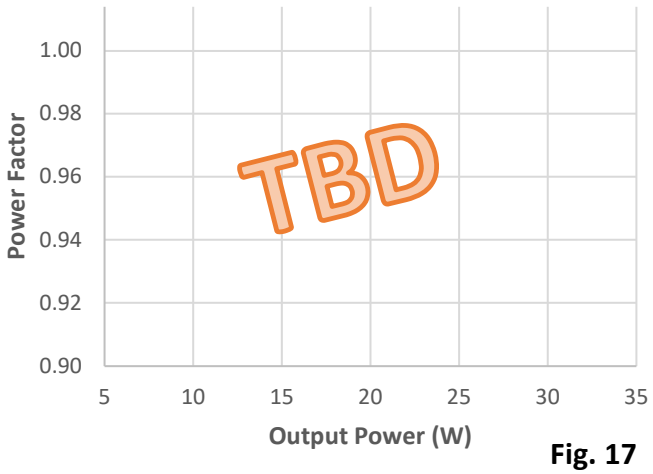


Fig. 17

Efficiency vs. Output Power

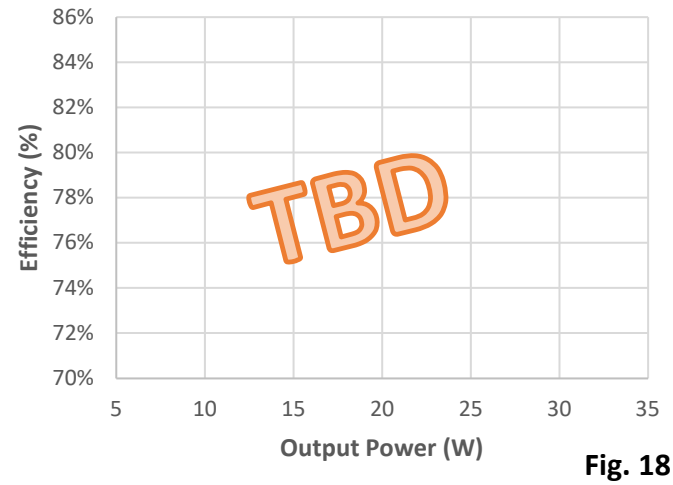


Fig. 18

I-THD vs. Output Power

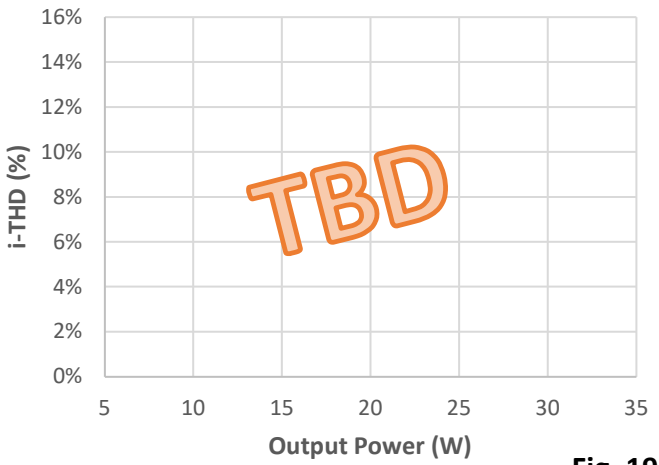


Fig. 19

Input Current vs. Output Power

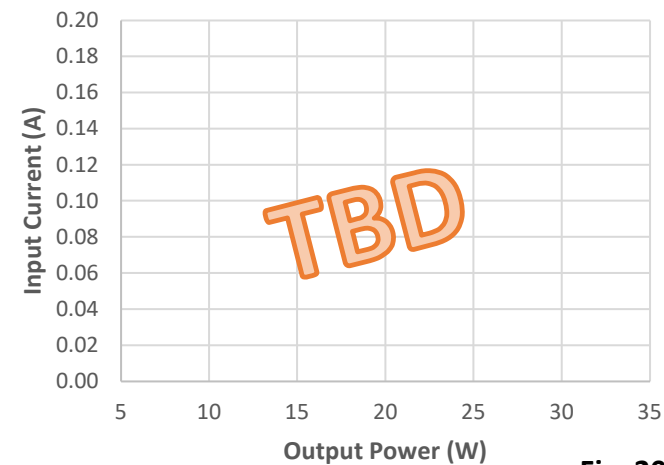
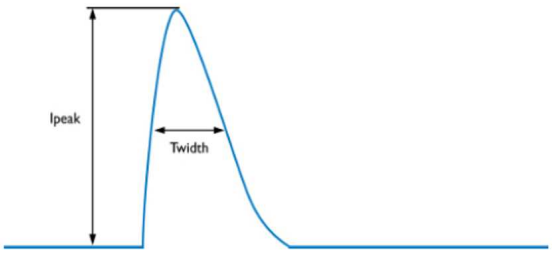


Fig. 20

DRW-NLT021/1-CC500-42

9 - Inrush Current



P/N	I_{peak} (A)	T_{width} (Time @50% of I_{peak})
DRW-NLT008/1-CC350-22	2.04 A	8.0 µs
DRW-NLT008/1-CC180-42	5.44 A	1.4 µs
DRW-NLT012/1-CC280-42	4.96 A	1.8 µs
DRW-NLT015/1-CC350-42	3.36	1.6 µs
DRW-NLT017/1-CC400-42	3.92 A	2.0 µs
DRW-NLT011/1-CC500-22	3.76 A	68.0 µs
DRW-NLT015/1-CC700-22	2.64 A	52.0 µs
DRW-NLT021/1-CC500-42	TBD	TBD

10 - Estimated Maximum Number of Drivers per Miniature Circuit Breaker (MCB)*

Estimated Maximum Number of Drivers per MCB

P/N	B10	B13	B16	B20	C10	C13	C16	C20
DRW-NLT008/1-CC350-22	75	97	120	150	87	113	140	175
DRW-NLT008/1-CC180-42	66	86	106	133	77	101	124	155
DRW-NLT012/1-CC280-42	50	65	80	100	58	75	93	116
DRW-NLT015/1-CC350-42	40	52	64	80	46	60	74	93
DRW-NLT017/1-CC400-42	33	43	53	66	38	50	62	77
DRW-NLT011/1-CC500-22	50	65	80	100	58	75	93	116
DRW-NLT015/1-CC700-22	35	45	56	70	41	53	65	82
DRW-NLT021/1-CC500-42	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

** Estimation based on typical MCB characteristics; recommend users to calculate the actual number with MCB parameters intended to be used*

11 – Lightning Surge Info

Specification item	Value	Condition
Surge	1KV	line to line (differential mode)

12 – Isolation

Isolation	Input (Primary)	Output (Secondary)	Enclosure (Plastic Case)
Input (Primary)	NA	2xU + 1KV	2xU + 1KV
Output (Secondary)	2xU + 1KV	NA	500V
Enclosure (Plastic Case)	2xU + 1KV	500V	NA

U = Max. Input Voltage

13 – Dimmer Compatibility List

Manufacturer	Part Number	Conditions
Lutron	DV-600P[1]	- min number of driver per dimmer = 1
	DVLV-600P	
	DVCL-153P	
	MACL-153MR	
	SELV-300P	
Leviton	6633-P[1]	
	6672-1LW	
	6674	

Note: We continually test new dimmers that may not be listed here. Please check with Cuvee Systems for an updated dimmer compatibility list if your dimmer is not listed.

[1] *DRW-NLT011/1-CC500-22 and DRW-NLT015/1-CC700-22 are not compatible*