

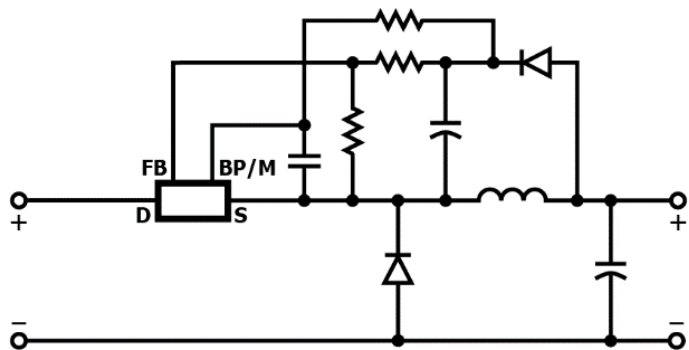


# LinkSwitch-TN2 for Appliance and Industrial Markets

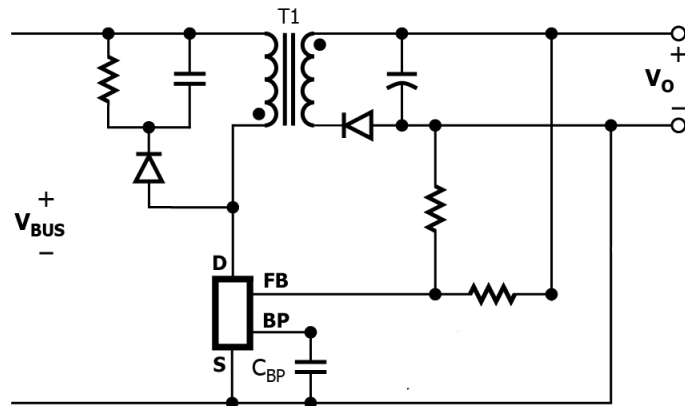
January 2021

# 725 V and 900 V Rating Supports Wide Input Voltage Range for Non-Isolated Switch Mode Power Supplies

## ■ Buck/Buck-Boost



## ■ Non-isolated Flyback



# LinkSwitch-TN2: Extra Features, More Current While Retaining the Simplicity of LinkSwitch-TN

	LinkSwitch-TN2	LinkSwitch-TN	Benefit
<b>Voltage rating(s)</b>	725 V / 900 V	700 V	Wider input voltage range
<b>Max. current</b>	575 mA	360 mA	More current for 725 V parts
<b>FB voltage <math>V_{FB}</math></b>	2.0 V $\pm 1.25\%$	1.65 V $\pm 7\%$	Meets $\pm 5\%$ load regulation over temperature
<b>FB threshold current</b>	49 $\mu$ A $\pm 10\%$	49 $\mu$ A $\pm 38\%$	
<b>Supply current <math>I_{S1}</math></b>	100 $\mu$ A	220 $\mu$ A	Easily meets <30 mW no-load in buck
<b>Programmable <math>I_{LIM}</math></b>	✓	×	Selectable via bypass capacitor to improve efficiency inductor flexibility
<b>OVP / line OV protection</b>	✓	×	Flyback configuration only
<b>Auto-restart duty cycle</b>	3%	6%	Reduce power output in short circuit

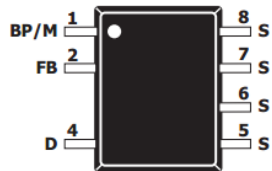
# Retaining Same Packages Makes Upgrade Simple

- New pinout for P/G packages improves connection to heatsink
- Pinout for D package is the same as current LinkSwitch-TN

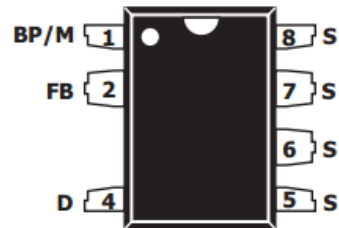
## Power Output in Buck Application

Product	230 VAC $\pm 15\%$		85-265 VAC	
	MDCM (mA)	CCM (mA)	MDCM (mA)	CCM (mA)
LNK3202P/G/D	63	80	63	80
LNK3204P/G/D	120	170	120	170
LNK3205P/G/D	175	270	175	270
LNK3206P/G/D	225	360	225	360
LNK3207P/G/D	360	575	360	575

D Package (SO-8C)



P Package (DIP-8C)  
G Package (SMD-8C)



# Multi-Function Pin Increases Feature Set, Retains Circuit Simplicity

## Small EMI filter

- Frequency jitter
- Source potential cooling

## Input fuse and rectifier

- Optimized for low power

## BYPASS pin biasing

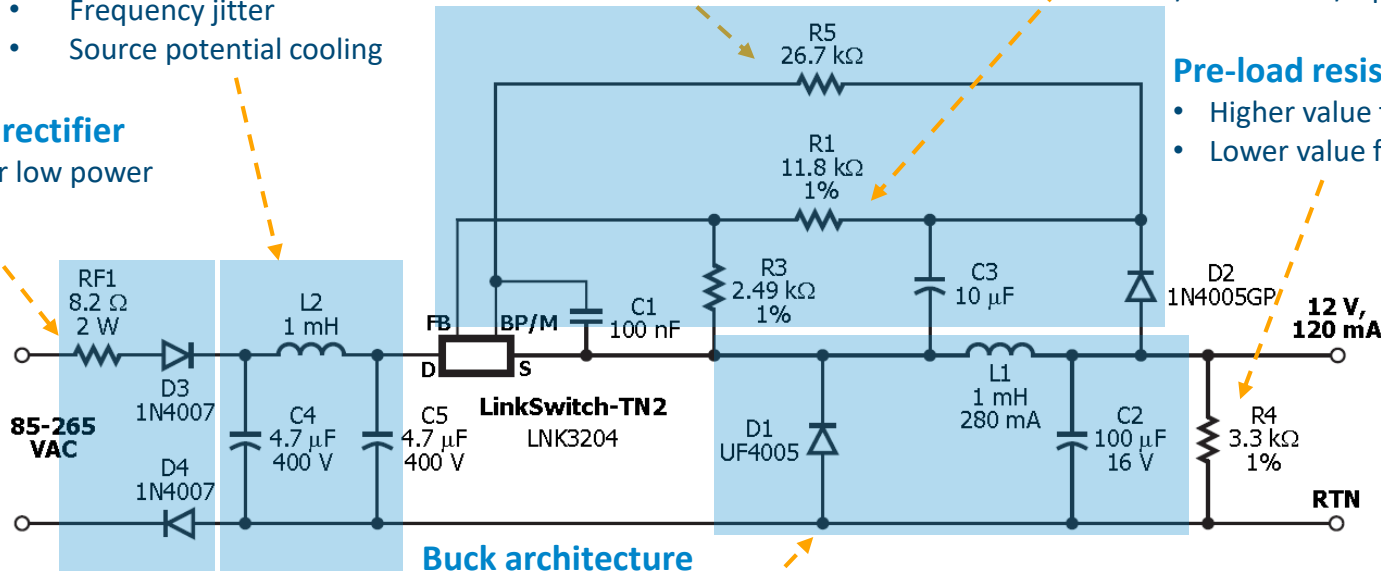
- Reduces no-load power consumption
- Increases efficiency across load

## Multi-function feedback network

- Accurate regulation
- I/P UV and O/P protection

## Pre-load resistor options

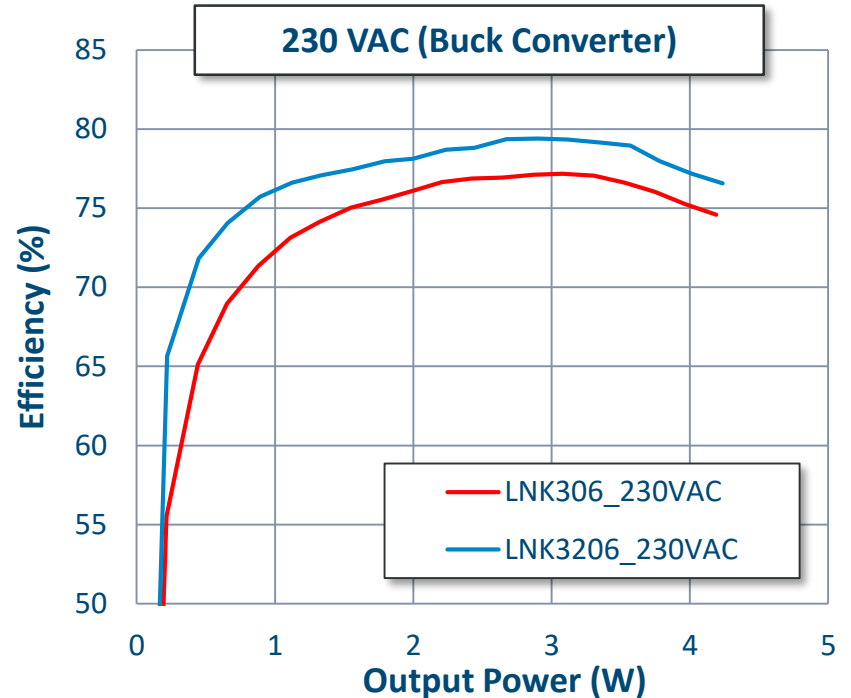
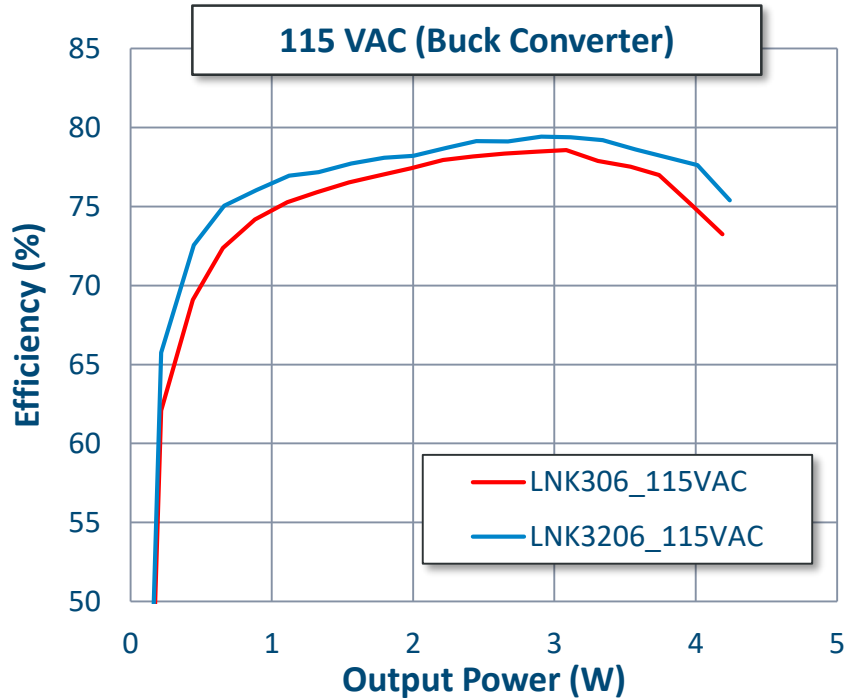
- Higher value for < 30 mW
- Lower value for better regulation



## Buck architecture

- High efficiency
- Low-cost magnetics

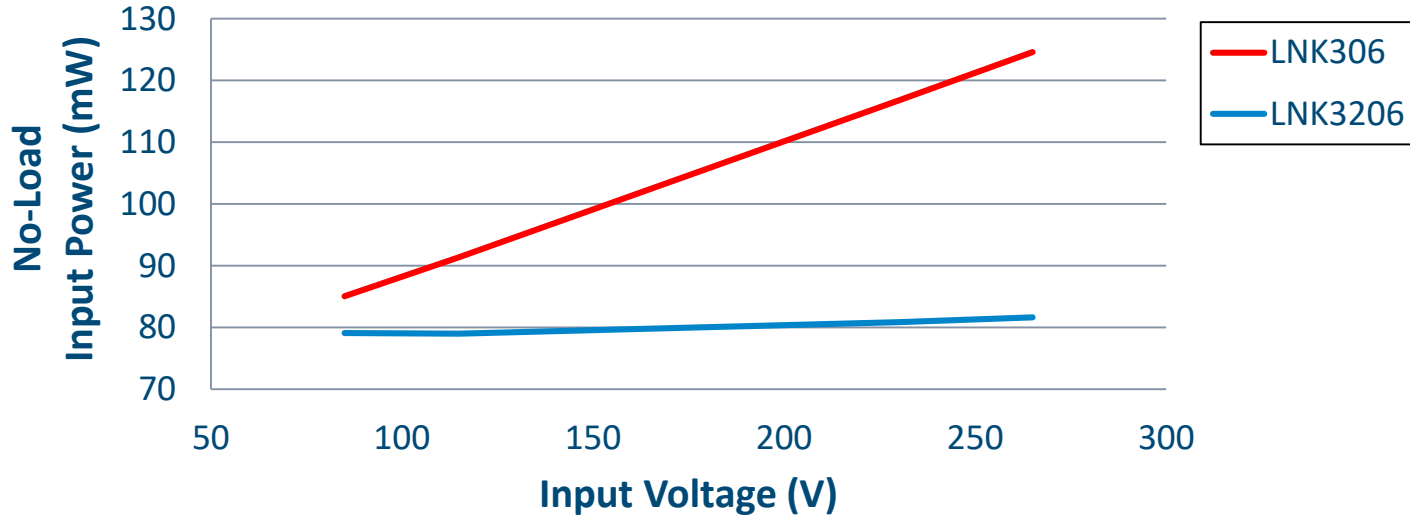
# 1% Increase in Efficiency at 115 VAC, 3% at 230 VAC



Optimized board-level performance comparing LinkSwitch-TN2 with industry standard (LinkSwitch-TN)

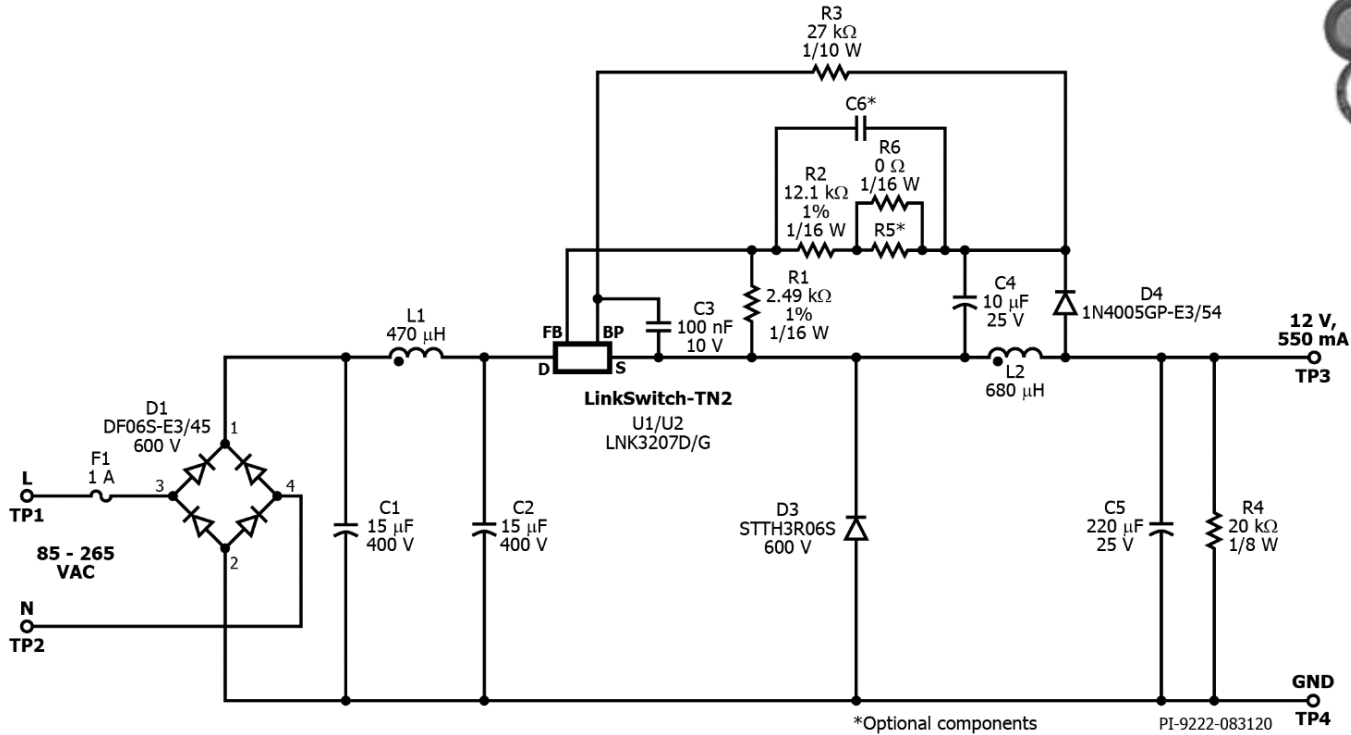
# No-Load Input Power Reduced by 40%

- Optimizing pre-load resistor, no-load can be reduced to <30 mW



No-Load Input Power MDCM Buck

# RDR-912: 12 V, 550 mA, 19 Components Supports P/G/D Packages



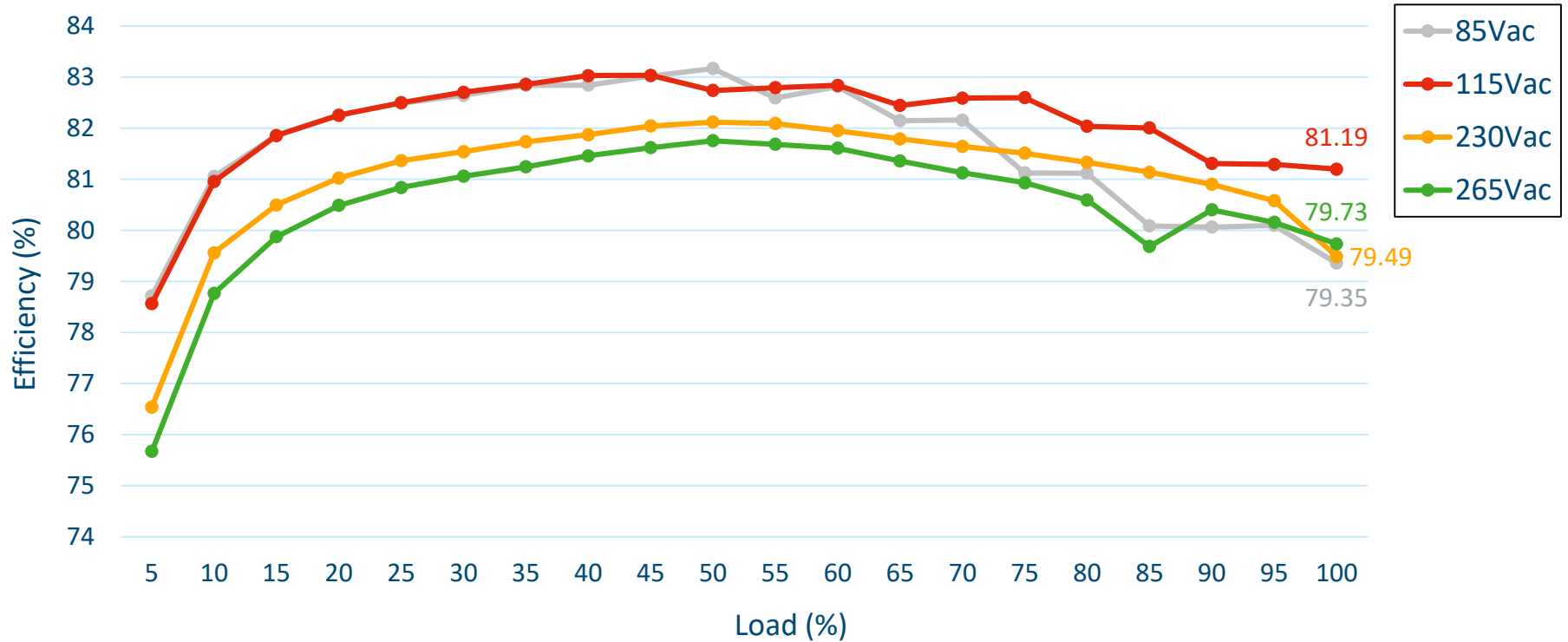
55 x 35 mm



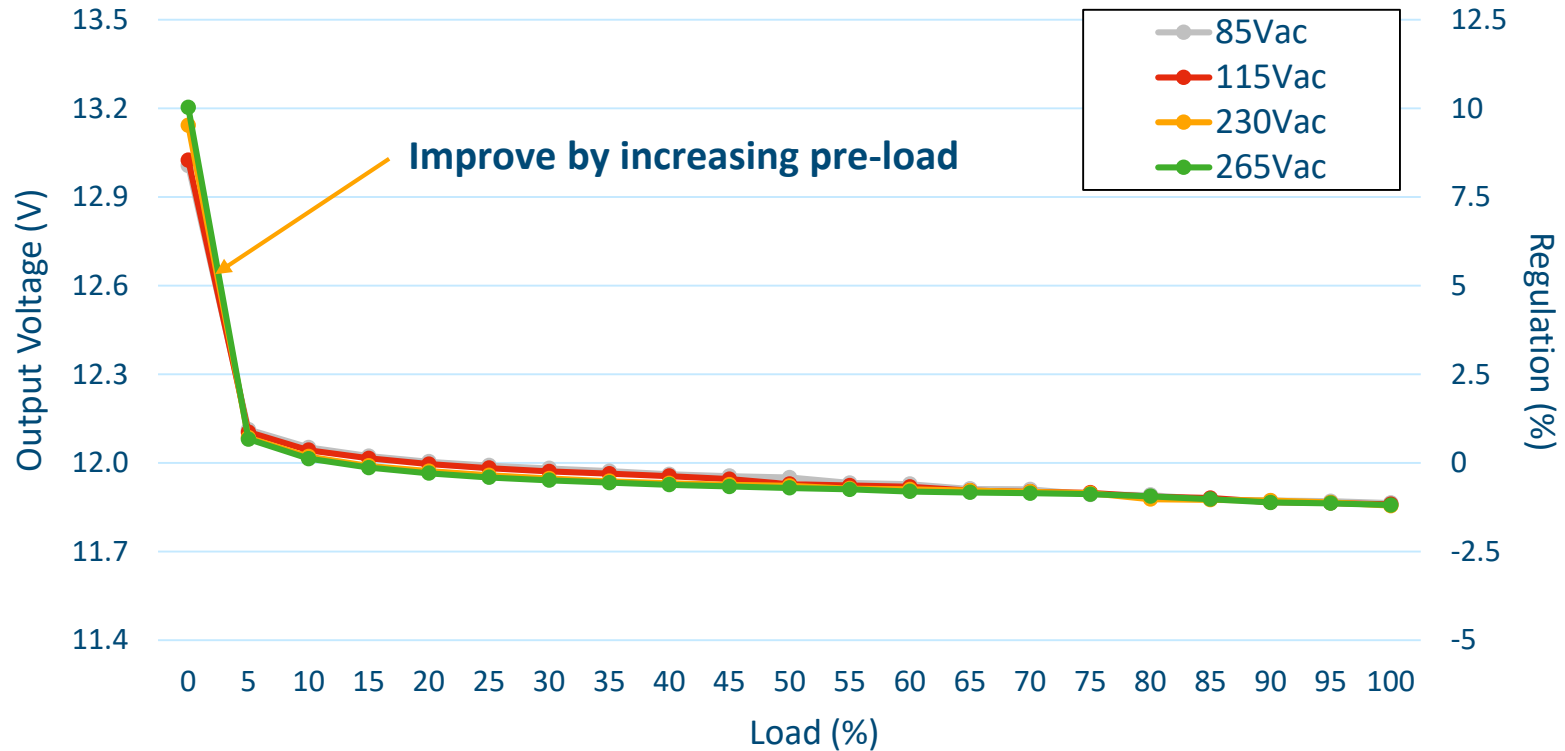
RDR-912



# Efficiency >80%



# Excellent Line and Load Regulation



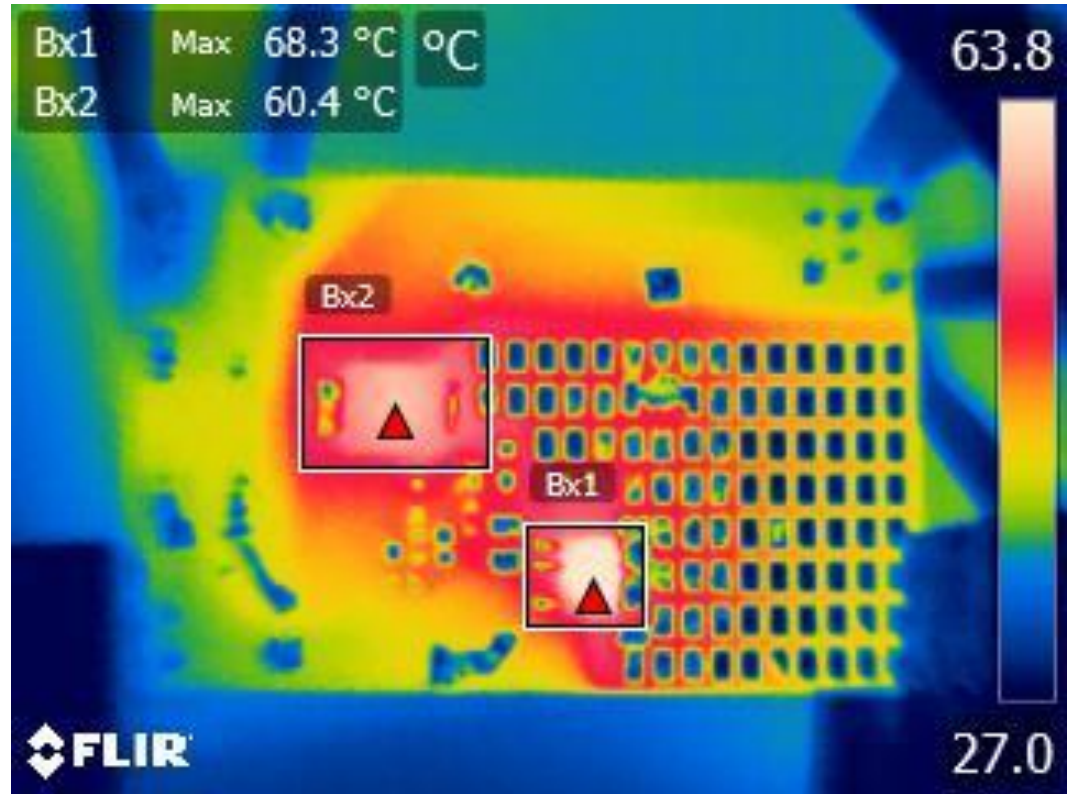
# Worst Case Thermals: 85 VAC (bottom-side)

## ■ Test Settings

- ▶ Burn-in settings:  
T = Ambient, t > 30 min

## ■ Notes

- ▶ Bx1: LNK3207D
- ▶ Bx2: Buck diode

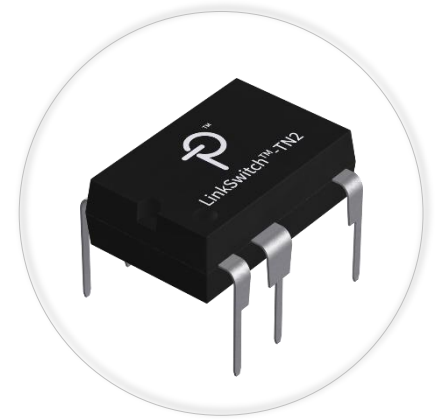


# Reference Designs Available

Design Example	Part Number	Specification	Input Voltage	Target Applications
<a href="#">DER-507</a>	LNK3202D	5 V, 35 mA	85-265 VAC	Cap Dropper Replacement
<a href="#">RDR-506</a>	LNK3204D/P/G	12 V, 120 mA	85-265 VAC	General Purpose
<a href="#">DER-508</a>	LNK3206D	18 V, 250 mA 5 V, 50 mA	85-265 VAC	Induction Cooker / White Goods
<a href="#">DER-737</a>	LNK3294P	12 V, 120 mA	85-440 VAC	Industrial / India Appliance
<a href="#">RDR-912</a>	LNK3207D/G	12 V, 550 mA	85-265 VAC	General Purpose

# LinkSwitch-TN2: Key Advantages

- **725 V / 900 V voltage rating for power switch**
- **725 V current capability extended to 575 mA with Size 7**
- **Easily upgrade LinkSwitch-TN designs**
- **Extremely accurate  $V_{FB}$  pin tolerance ( $\pm 1.3\%$ )**
  - ▶ Meets  $\pm 5\%$  regulation over temperature
- **Improved no-load performance**
- **Improved full-load and light-load efficiency**
- **Selectable current limit**
  - ▶ Allows use of wider range inductors to optimize the design
- **Line-OV and output-OV protection in flyback configuration**



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