# WURTH ELECTRONICS
# Product Line
## for
# LED Lighting Applications

Presented by
Mouser Electronics

mouser.com

"The Design Fulfillment Distributor"

The Newest Products for Your Newest Designs®



MOUSER ELECTRONICS
a tti company

# Introduction

Purpose

- Provide an overview of Wurth Electronics Midcom's product line for LED lighting applications

Objectives

- Discuss the features and benefits of using Wurth Electronics Midcom's passive magnetic solutions for LED lighting projects

Content

- 17 pages

Estimated Time to Complete

- 10 minutes

# Benefits of Wurth Electronics Midcom Transformers for LED applications

- Use of standard components in transformer designs
- High manufacturability of the transformers
- Highly efficient designs for optimal performance with excellent EMI behavior
- Transformers on Reference Designs of the leading IC manufacturers available from stock at www.mouser.com

# LED Power Supply Requirements

- Input Voltages
- Output Voltages and Currents
- Isolation and Safety Requirements
- Dimming Requirements
- Operating Temperature Range
- EMI Requirements

# IC Manufacturers

Midcom

WÜRTH ELEKTRONIK

CYPRESS

Driving the Communications Revolution™

infineon

National Semiconductor

NXP

ON Semiconductor®

ON

Texas Instruments

CYPRESS

Midcom

WE WÜRTH ELEKTRONIK

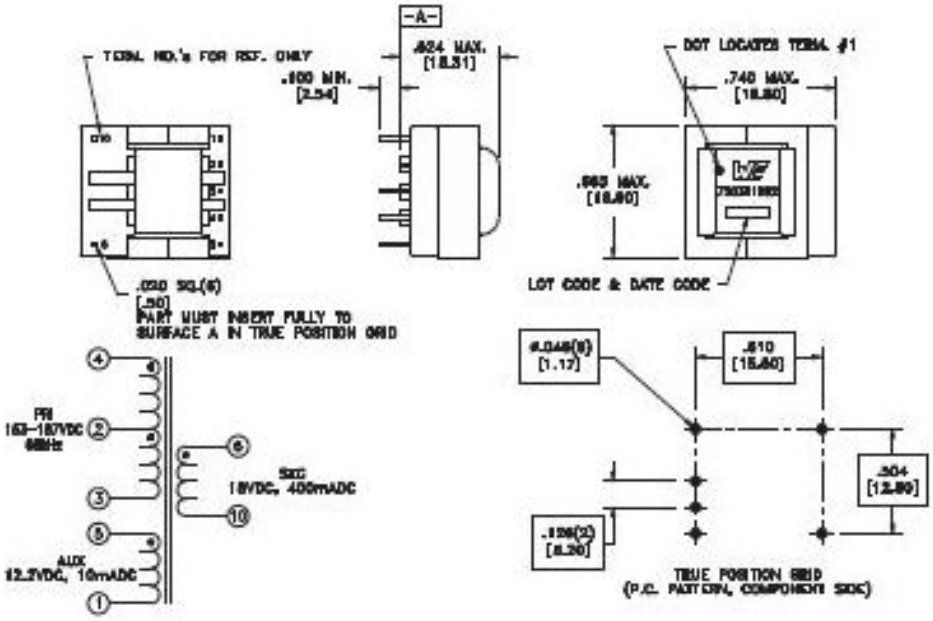
# Cypress CY8CLEDAC02

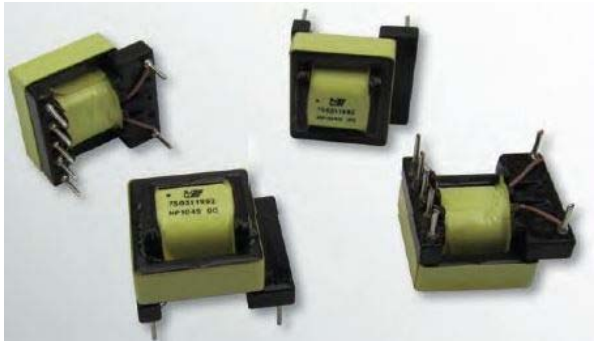
## 8W Low-Line Dimmable LED Driver

- LED retro-fit of incandescent bulbs
- Input voltage: 108-132$V_{RMS}$
- 16.5V at 500mA
- Capable of driving 5 white LEDs
- Phase-cut and PWM dimming
- Leading- or trailing-edge dimming detection

## 750311992 Flyback Transformer for 108-132$V_{RMS}$

- High energy storage in compact design
- Low copper losses
- Operating temperature: -40°C to 125°C
- UL1310 compliant
- Package style: EE16/7/5



Infineon

Midcom WE WÜRTH ELEKTRONIK

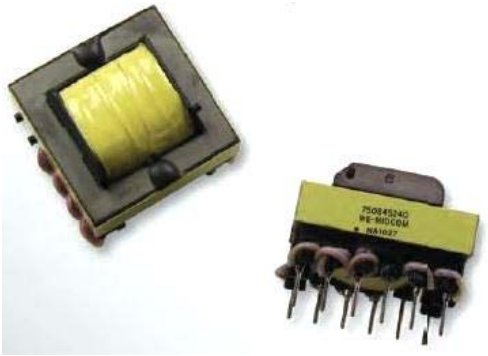
# Infineon BCR450, TDA4863

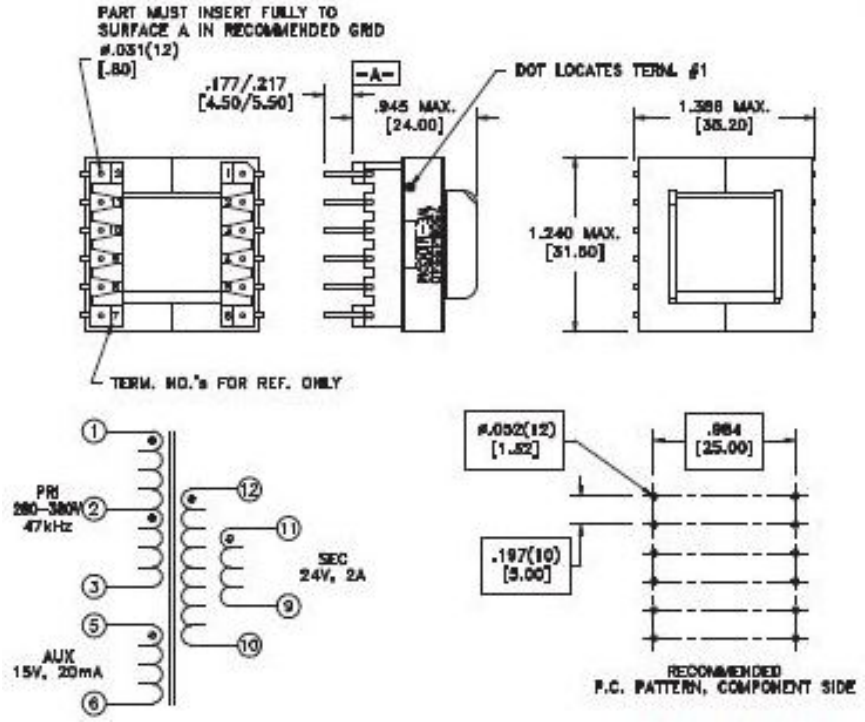
## 40W LED Street and Indoor Lighting

- LED street and indoor lighting applications
- Up to 40W for 180-270$V_{RMS}$
- Up to 20W for 90-270$V_{RMS}$
- 15-26V output
- Power factor correction up to 0.98 and low THD
- Efficiency up to 90%

## 750845240 Flyback Transformer

- 24V output up to 2A
- Low copper losses
- Operating temperature: -40°C to 125°C
- Primary to secondary isolation of 4500VAC
- Package style: EE30/15/7





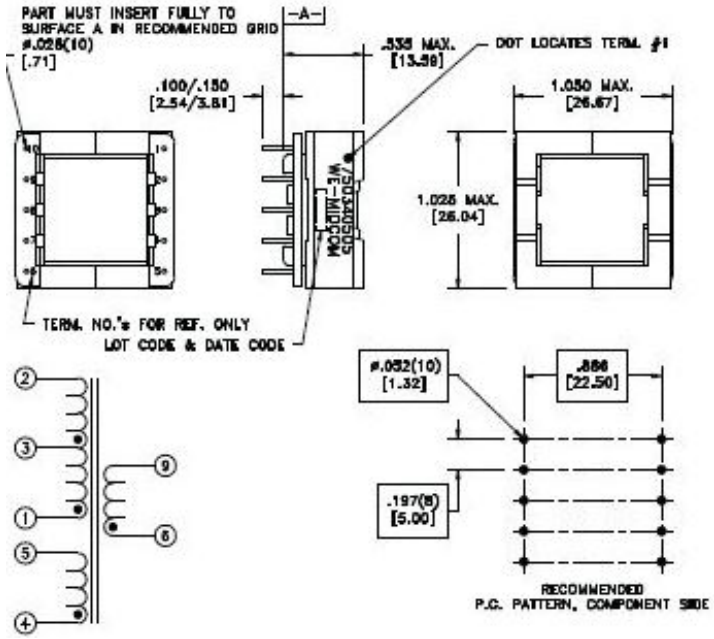
# NXP SSL210X

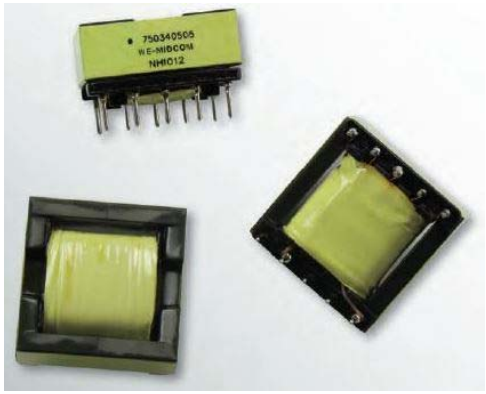
## 12 to 22W Dimmable LED Driver

- UM10341 for 12W LED applications
- UM10386 for 22W LED applications
- Retro-fit lamps up to 150W
- Shelf and down lighting applications
- Input voltage: 85-276$V_{RMS}$
- Output voltage of 9-23V and output current of 400-1050mA
- TRIAC dimming compatible

## 750340505 Flyback Transformer

- Design for varying loads
- Very low AC and DC copper losses
- Operating temperature: -40°C to 125°C
- Primary to secondary isolation of 4000$V_{AC}$
- Package style: EFD25



ON Semiconductor®

Midcom

WÜRTH ELEKTRONIK

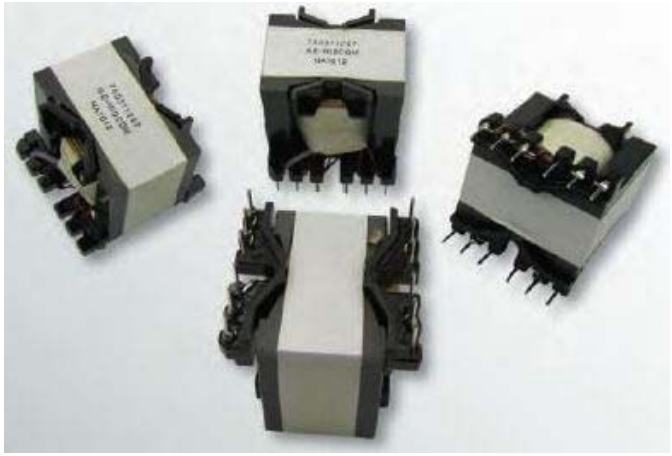
# NCL30001, AND8427/D

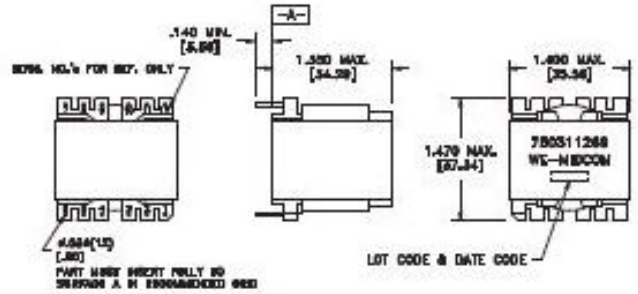
## 55V Single State Power Factor Corrected LED Power Supply

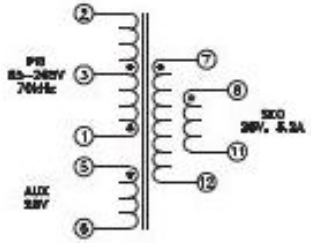
- Street and low bay LED lighting
- Reduces EMI signature
- High efficiency, up to 92%
- Input voltage: 90-265$V_{RMS}$
- Optional dimming function available
- Power factor > 0.9

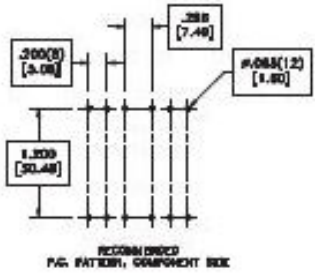
## 750311269 Flyback Transformer for 28V Output

- 75W output
- Low copper losses
- Operating temperature: -40°C to 125°C
- Package style: PQ3230







National Semiconductor

Midcom

WE WÜRTH ELEKTRONIK

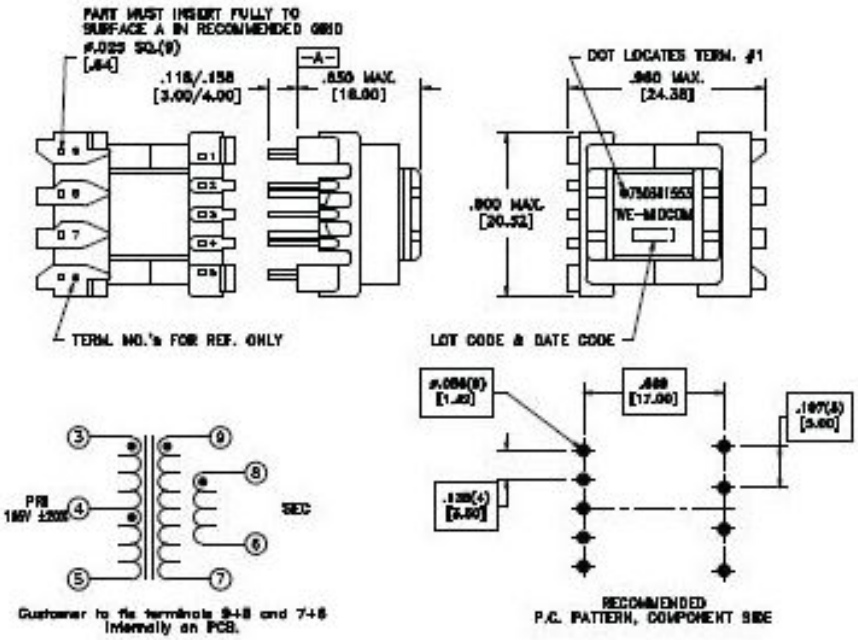
# LM3445, AN-2034

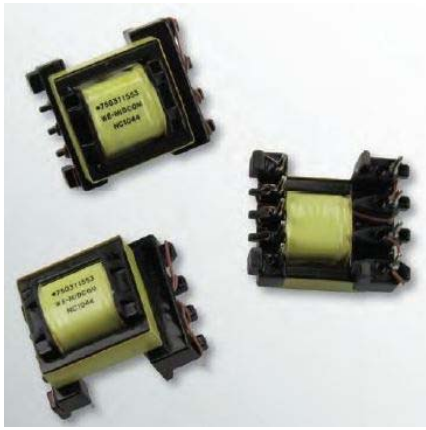
## 120$V_{AC}$, 8W Isolated Flyback LED Driver

- Input voltage: 90-135$V_{RMS}$
- $V_{OUT}$ = 12V-30V
- $I_{LED}$ = 350mA
- Line injection circuitry enables PFC > 0.99
- Adjustable LED current and switching frequency
- Non-dimmable

## 750311553 Flyback Transformer

- High energy in compact design
- Low copper losses
- Operating temperature: -40°C to 125°C
- Design to meet IEC61558-2-17 for reinforced insulation
- Package style: EE16/8/5



TEXAS INSTRUMENTS

Midcom WÜRTH ELEKTRONIK

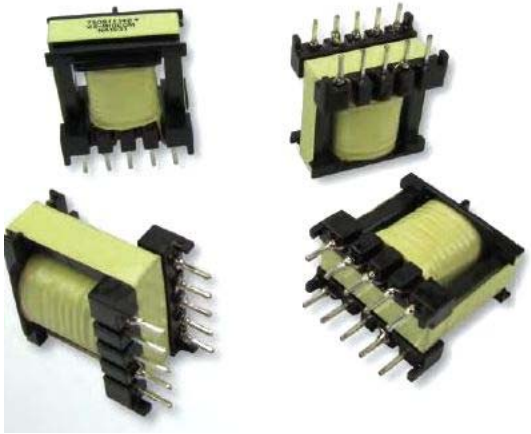
# TPS92210-PMP6001

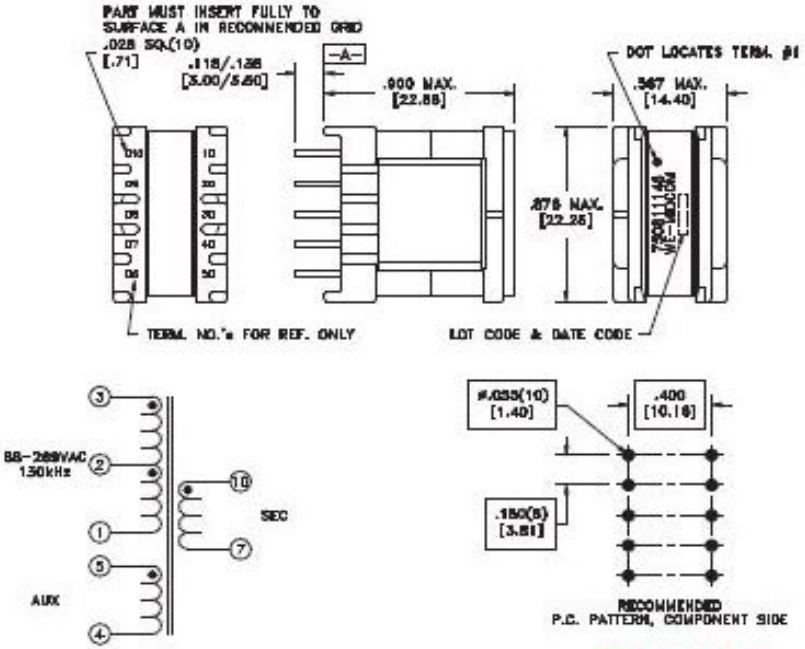
## 38V, 350mA Non-Dimmable LED Driver

- Non-dimmable light bulb replacement
- Input voltage: 90-265$V_{RMS}$
- 38V output at 350mA
- Single stage power factor correction
- Isolated discontinuous flyback topology

## 750811146 Flyback Transformer

- Compact high energy design
- Low copper losses
- Operating temperature: -40°C to 125°C
- Reinforced insulation to IEC60950-1 requirements
- Package style: EE20/10/6





# Safety Requirements

Midcom

WÜRTH ELEKTRONIK

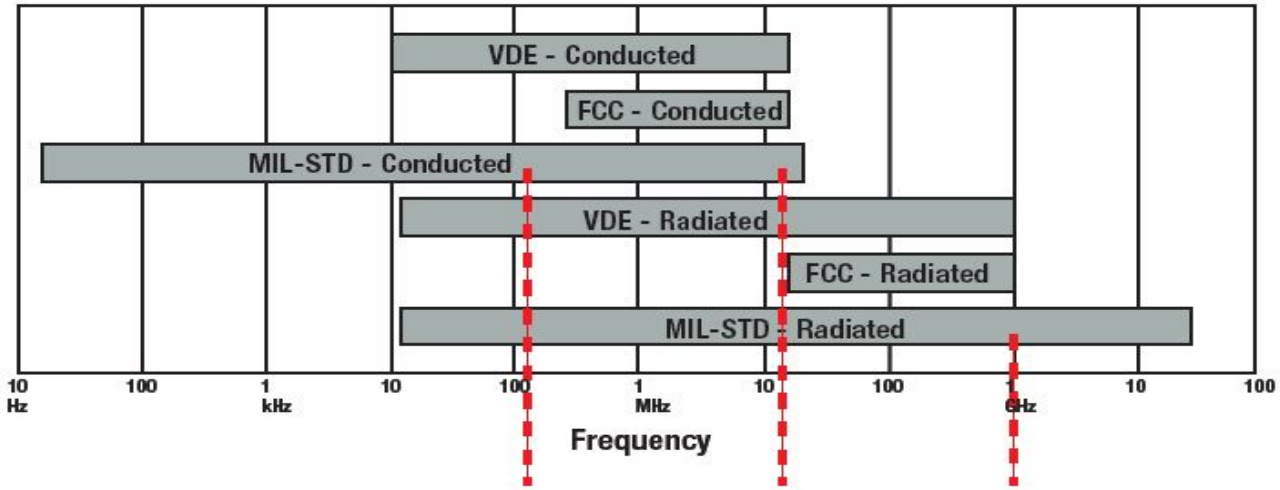
## Standards Applicable to LED Lighting

- UL8750 – Specifies the safety requirements for LED light sources and their components.
- UL60950 – Specifies the safety requirements for information technology Equipment.
- UL1310 – Specifies the safety requirements for Class 2 power supplies
- EN61347-2-13 – Specifies safety requirements for DC or AC control gear for LED modules.

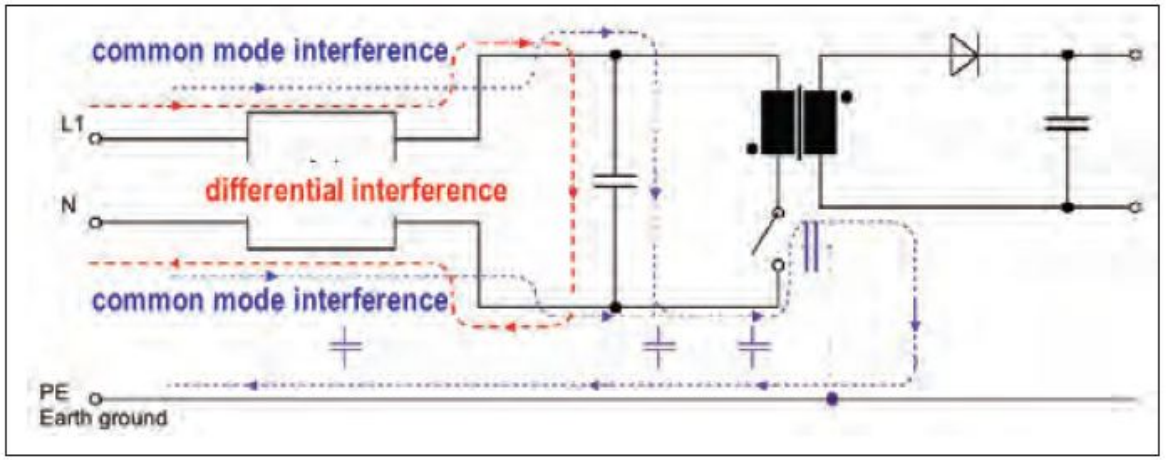
| | Functional | Basic/ Reinforced |
|---|---|---|
| Size | + | - |
| Pinout flexibility | + | - |
| Efficiency | + | - |
| Coupling | + | - |
| Manufacturing capacity/leadtime | + | - |
| Cost | + | - |
| Safety | - | + |
| Dielectric withstand | - | + |

| | |
|---|---|
| **Functional Insulation** | Insulation that is necessary only for the functioning of the equipment |
| **Reinforced Insulation** | Single insulation system that provides a degree of protection against electric shock equivalent to double insulation |
| **Double Insulation** | Insulation comprising both basic insulation and supplementary insulation. |
| **Working Voltage** | Highest voltage to which the insulation or the component under consideration is, or can be, subjected when the equipment is operating under conditions of normal use |
| **Creepage Distance** | Shortest distance through air along the surface of an insulation material between two conductive parts |
| **Clearance Distance** | Shortest distance in air between two conductive parts |

# LED Lighting and EMI




## Common Mode and Differential Mode Interference

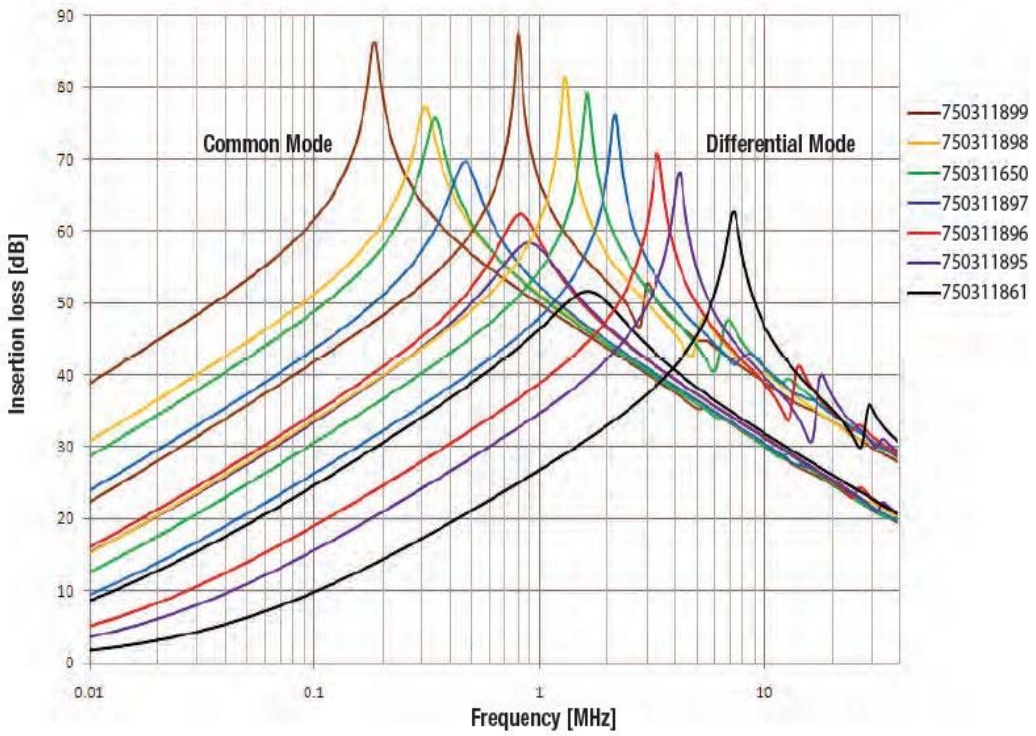


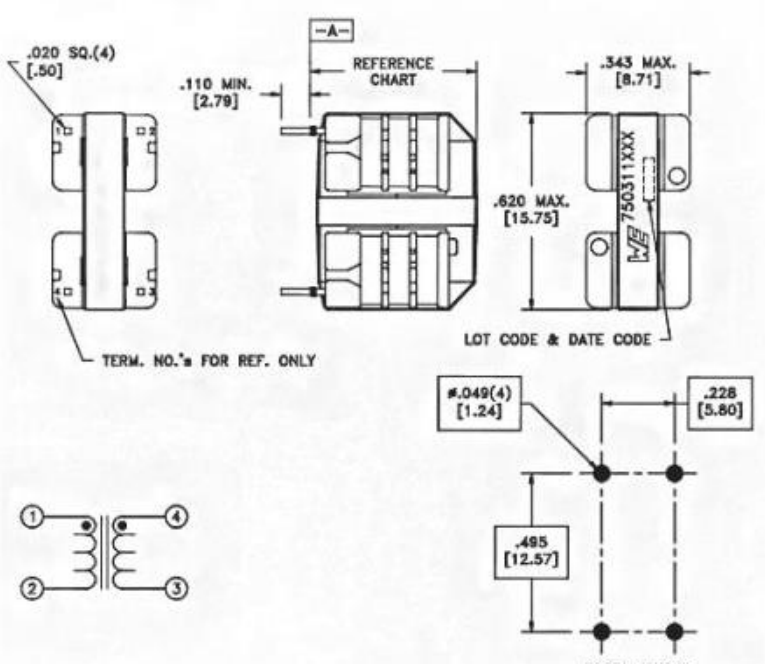
# Dual Coil Chokes

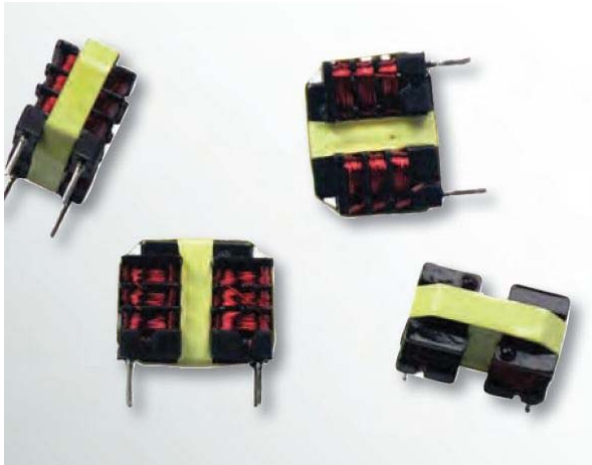
Midcom

WÜRTH ELEKTRONIK

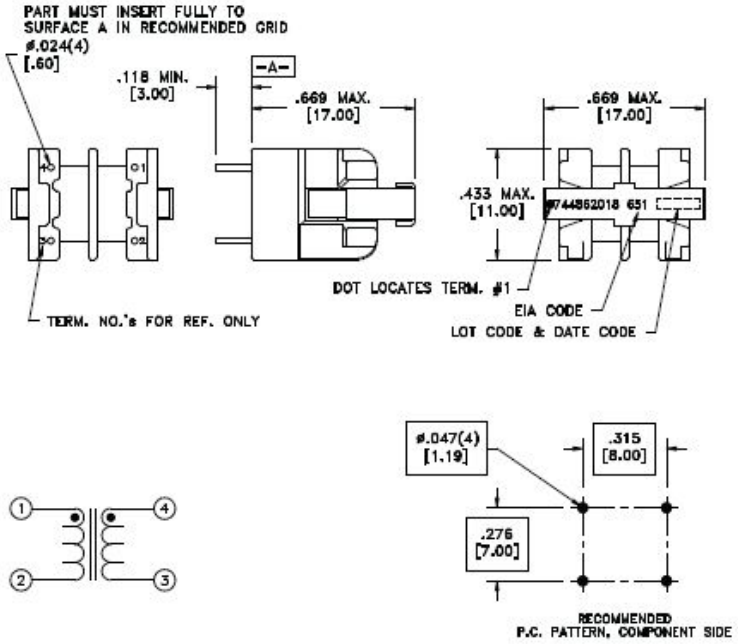
## Common Mode and Differential Mode Attenuation

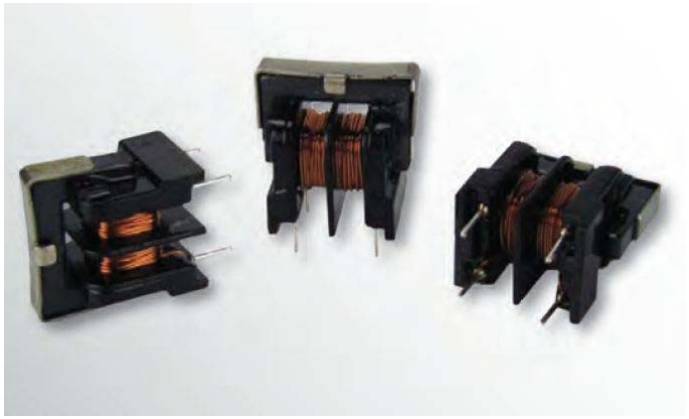


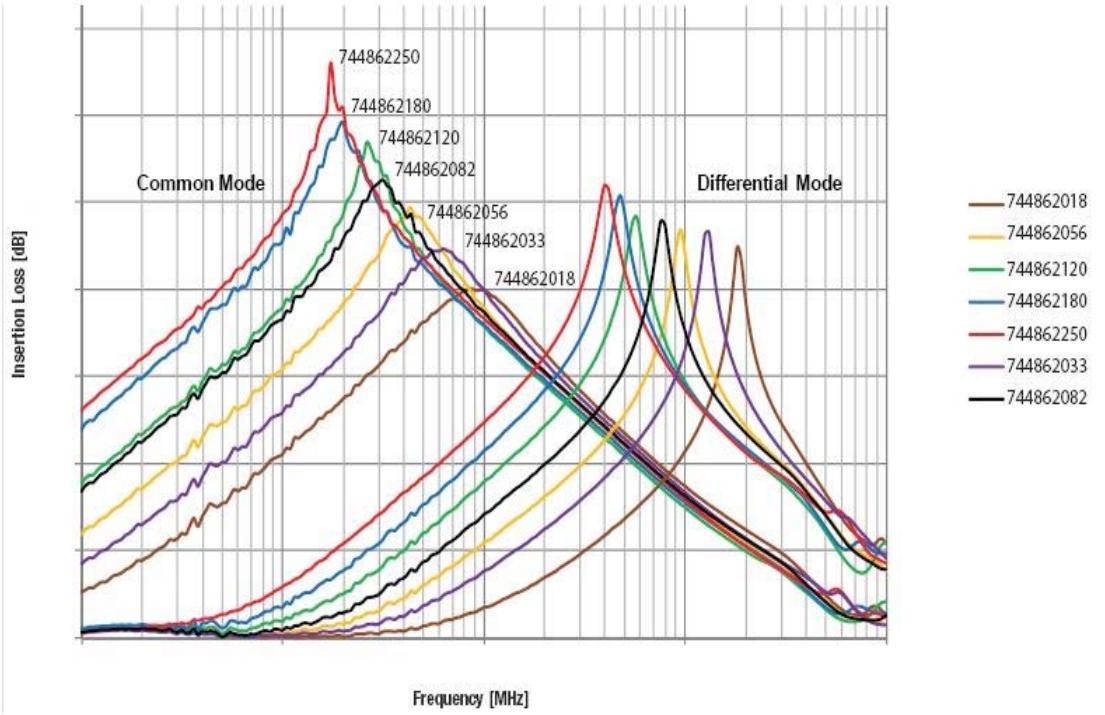



# WE-TFC Chokes



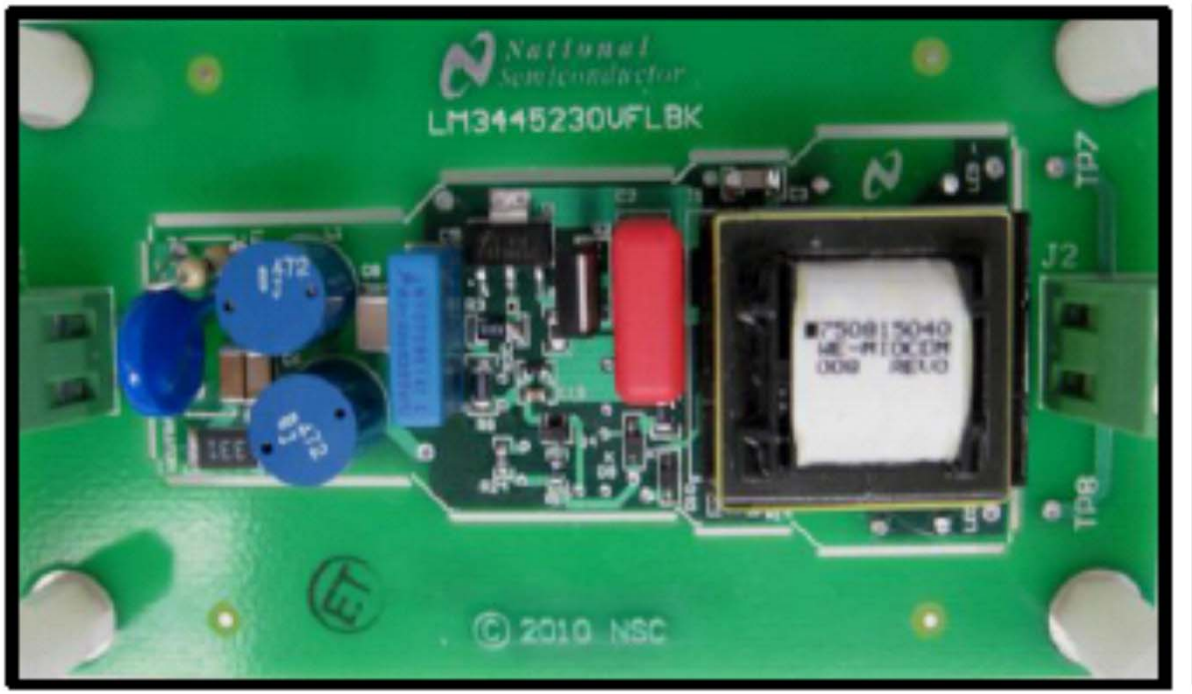
## Common Mode and Differential Mode Attenuation



# Summary…

Midcom

WÜRTH ELEKTRONIK



# This ends the product presentation

For more information, or to purchase Wurth Electronics products, please visit www.mouser.com

Toll Free: (800) 346-6873

Phone: (817) 804-3888

Fax: (817) 804-3899

Email: sales@mouser.com