

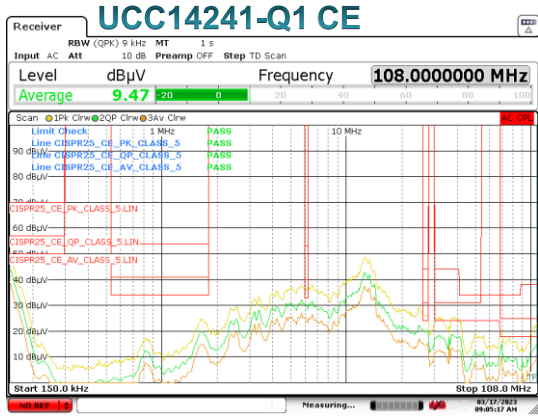
**UCC14241-Q1**  
**UCC14141-Q1**  
**UCC14341-Q1**

**CISPR 25, Class 5 CE EMI**

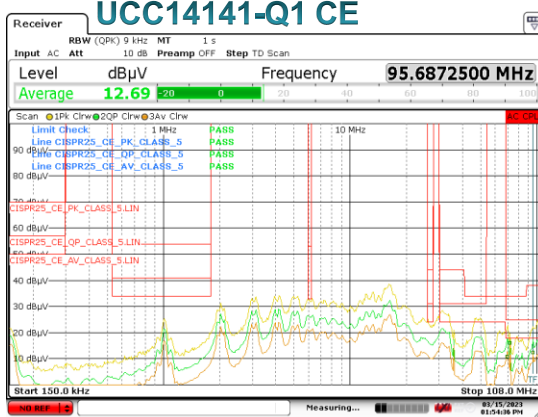
*March 08, 2024*

# UCC14xxx-Q1: CISPR25 EMI-Pass Solution

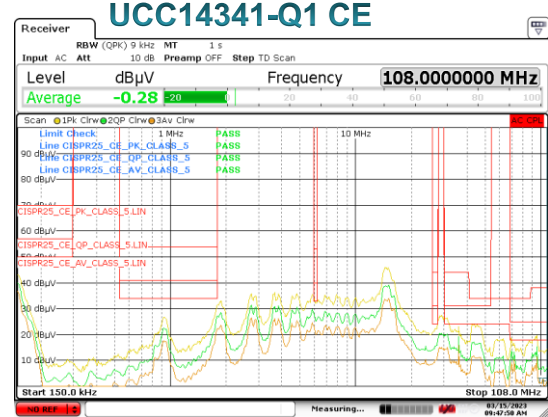
Conducted EMI



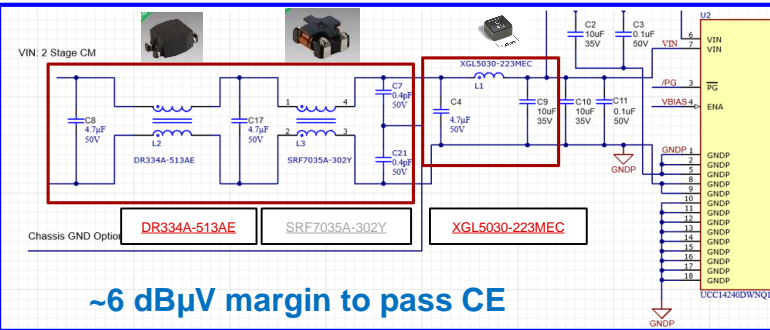
1.5W Load 24Vin, +15V, -5V output



1.5W Load 12Vin, +15V, -5V output



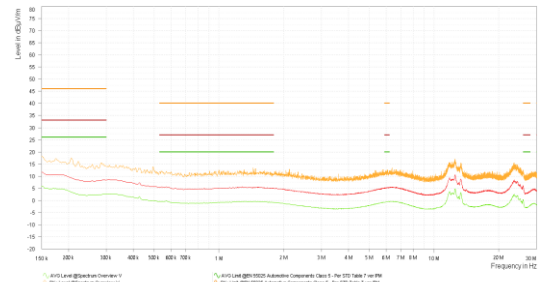
1.5W Load 15 Vin, +15V, -5V output



Radiated EMI

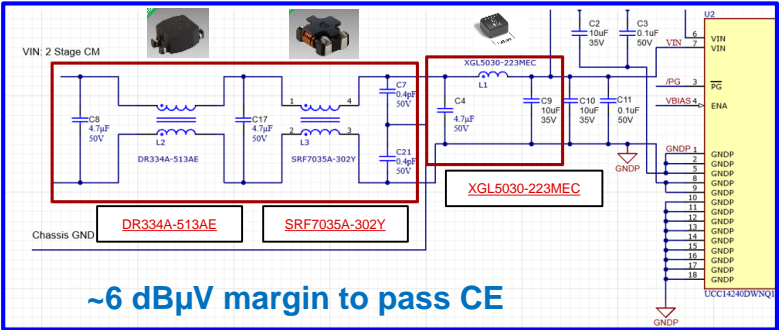


## UCC14241-Q1 RE



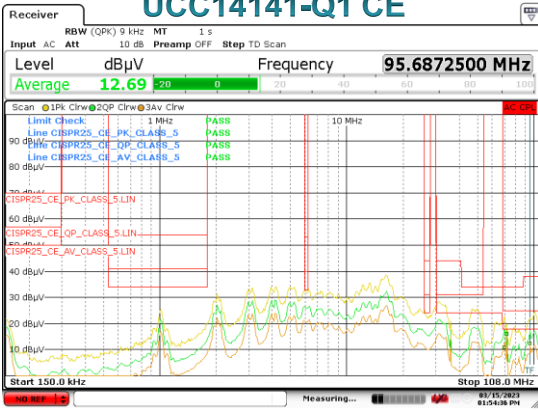
# UCC14xxx-Q1: Optimized EMI Filter

➤ 2 CM + 1 DM configuration



~6 dBμV margin to pass CE

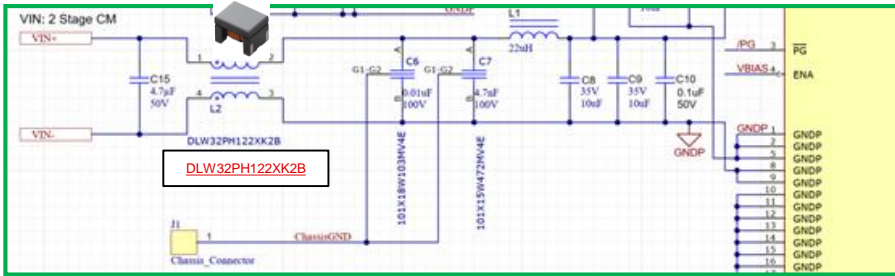
## UCC14141-Q1 CE



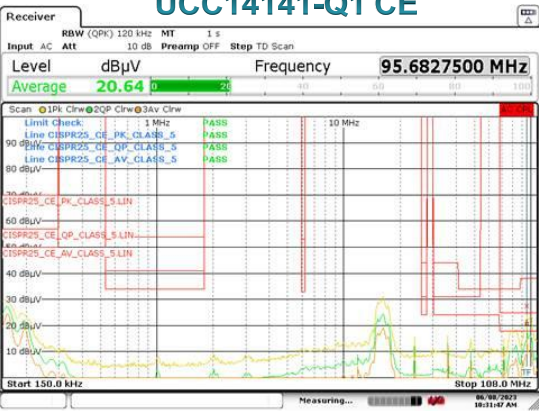
1.5W Load 12Vin, +15V, -5V output

➤ 1 CM + 1 DM configuration

\* Includes use of Johanson X2Y capacitors, C6-7 to achieve better results



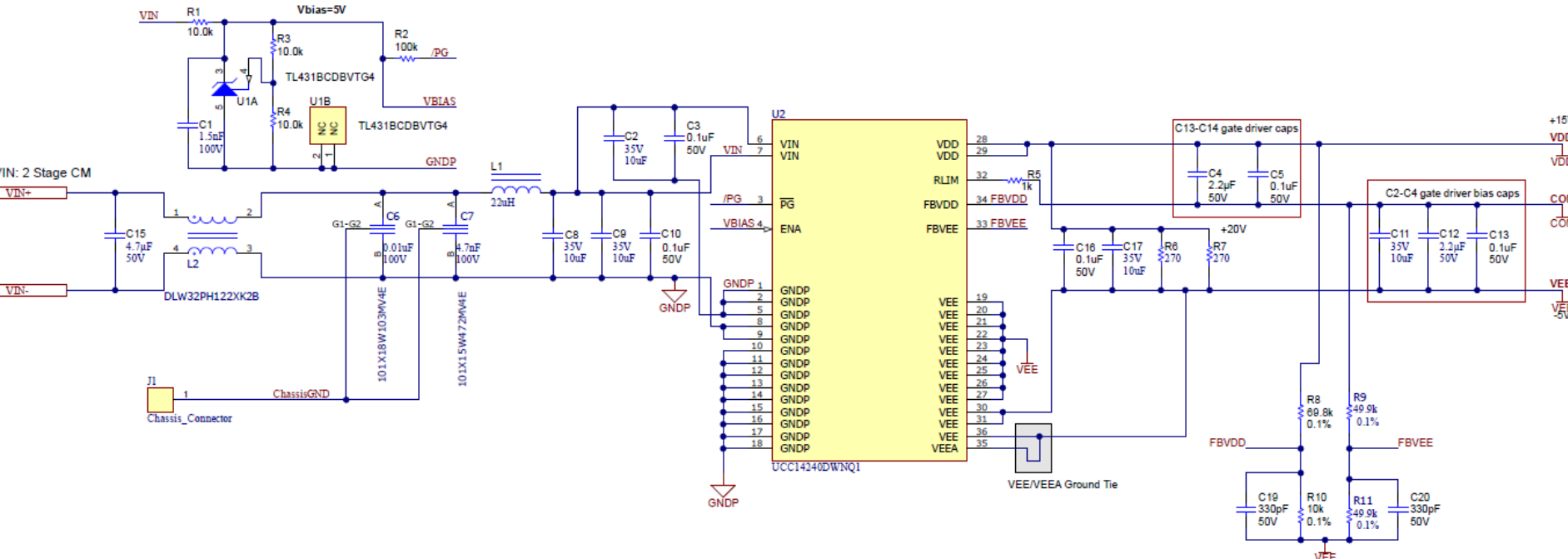
## UCC14141-Q1 CE



1.5W Load 12Vin, +15V, -5V output

- Smaller Filter
- Lower Cost
- Better EMI

# UCC14xxx-Q1: "Optimized" EMI Filter Schematic



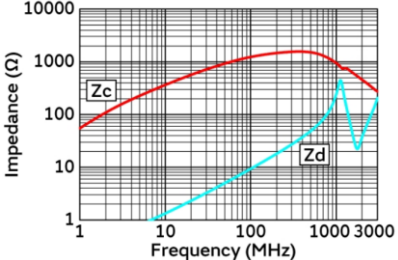
# UCC14xxx-Q1: “Optimized” EMI Filter Schematic BoM

Part Number	Qty	Ref Des	Manufacturer	Description
GMK316AB7106KL-TR	5	C2, C8, C9, C11, C17	Taiyo Yuden	CAP, CERM, 10 $\mu$ F, 35 V, +/- 10%, X7R, 1206_190
GCM155R71H104KE02D	5	C3, C5, C10, C13, C16	Murata	CAP, CERM, 0.1 $\mu$ F, 50 V, +/- 10%, X7R, AEC-Q200 Grade 1, 0402
CGA4J3X7R1H225K125AB	1	C4	TDK	CAP, CERM, 2.2 $\mu$ F, 50 V, +/- 10%, X7R, AEC-Q200 Grade 1, 0805
101X18W103MV4E	1	C6	Johanson	Multilayer Ceramic Capacitor, X2Y Series, 0.01 $\mu$ F, - 20%, X7R, 100 V, 1206
101X15W472MV4E	1	C7	Johanson	Feed Through Capacitors 100V 4700 pF 20% X7R
CGA4J3X7R1H225K125AE	1	C12	TDK Corporation	CAP, CERM, 2.2 $\mu$ F, 50 V,+/- 10%, X7R, AEC-Q200 Grade 1, 0805
CGA5L3X7R1H475K160AE	1	C15	TDK Corporation	CAP, CERM, 4.7 $\mu$ F, 50 V,+/- 10%, X7R, AEC-Q200 Grade 1, 1206
CGA2B2X7R1H331K050BA	2	C19, C20	TDK Corporation	CAP, CERM, 330 pF, 50 V, +/- 10%, X7R, AEC-Q200 Grade 1, 0402
LPS4018-223MRB	1	L1	Coilcraft	Inductor, Shielded Drum Core, Ferrite, 22 $\mu$ H, 0.83 A, 0.36 ohm, SMD
DLW32PH122XK2B	1	L2	Murata	Chip Common Mode Choke Coil 1200 $\Omega$ @ 100 MHz 1200mA
CRCW080510K0FKEA	3	R1, R3, R4	Vishay	RES, 10.0 k $\Omega$ , 1%, 0.125 W, AEC-Q200 Grade 0, 0805
ERJ-2GEJ104X	1	R2	Panasonic	RES, 100 k $\Omega$ , 5%, 0.1 W, AEC-Q200 Grade 0, 0402
CRCW08051K00FKEA	1	R5	Vishay	RES, 1.00 k $\Omega$ , 1%, 0.125 W, AEC-Q200 Grade 0, 0805
3521270RFT	2	R6, R7	TE Connectivity	RES, 270 $\Omega$ , 1%, 2 W, 2512
ERA-3AEB6982V	1	R8	Panasonic	Res Thin Film 0603 69.8 K $\Omega$ 0.1% 1/10W SMD
RN73C1J49K9BTG	2	R9, R11	TE Connectivity	Thin Film Resistors 0603 49.9 K $\Omega$ 0.1%
ERA-3ARB103V	1	R10	Panasonic	Res Thin Film 0603 10 K $\Omega$ 0.1% 1/10W SMD
TL431BCDBVTG4	1	U1	Texas Instruments	Adjustable Precision Shunt Regulator, 100 mA, 0 to 70°C, 5-pin SOT-23 (DBV)
UCC14240DWNQ1	2	U2	Texas Instruments	2W, 24V-Vin, 25V-Vout, High-Efficiency, >2. 5 kVRMS Isolated DC-DC Converter

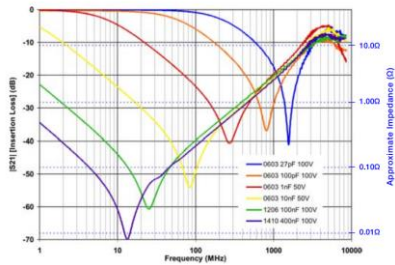
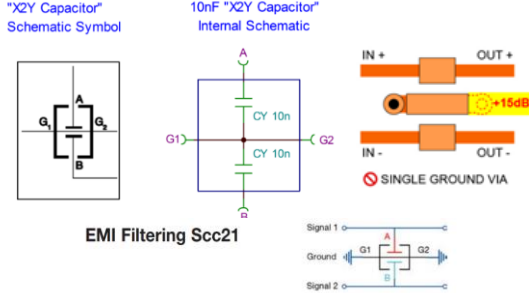
- R6, R7 load resistors only and are not part of required design

# UCC14xxx-Q1: EMI Filter Components

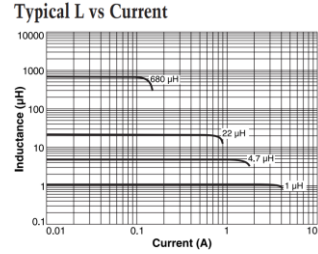
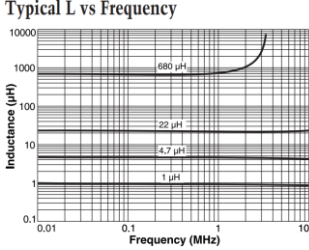
**Common Mode Choke:**  
 High Impedance >30MHz to 1 GHz  
DLW32PH122XK2B



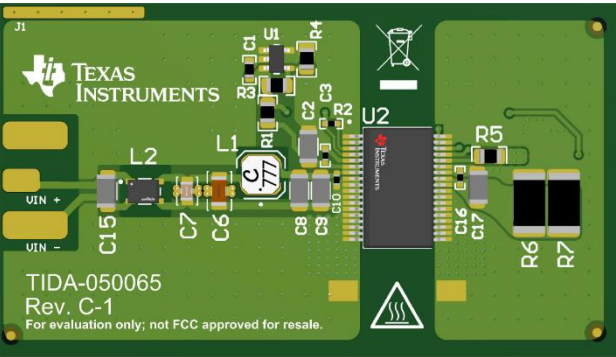
**Common Mode 3-Term X2Y Cap:**  
 High Impedance >30MHz to 1 GHz  
101X18W103MV4E



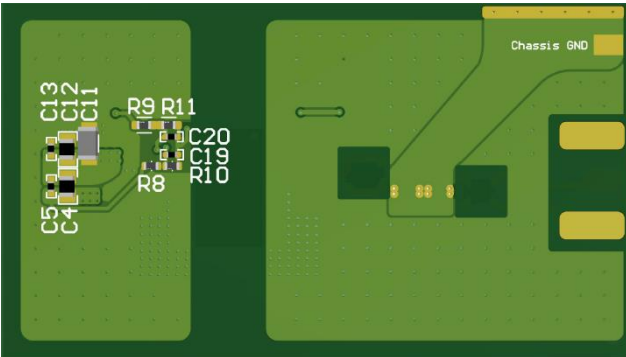
**Differential Mode Inductor:**  
 High Impedance >30MHz to 1 GHz  
LPS4018-223MRB



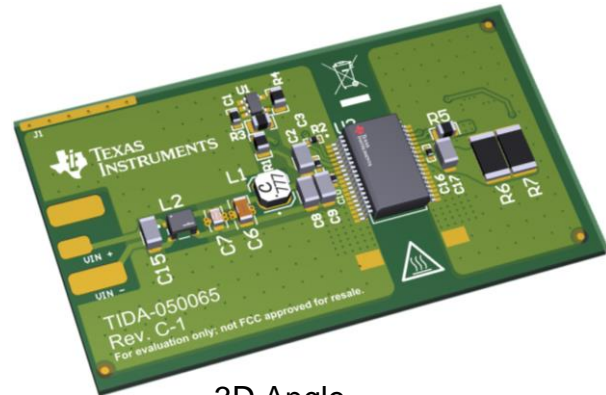
# UCC14xxx-Q1: EMI Filter 4-Layer PCB, 2 oz Cu All Layers



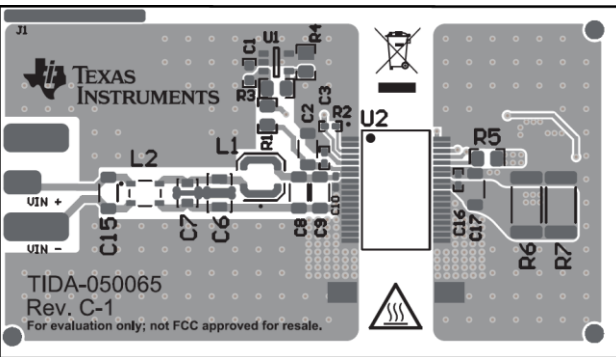
3D Top



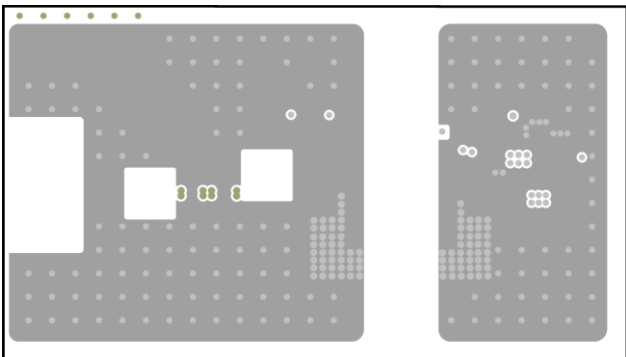
3D Bottom



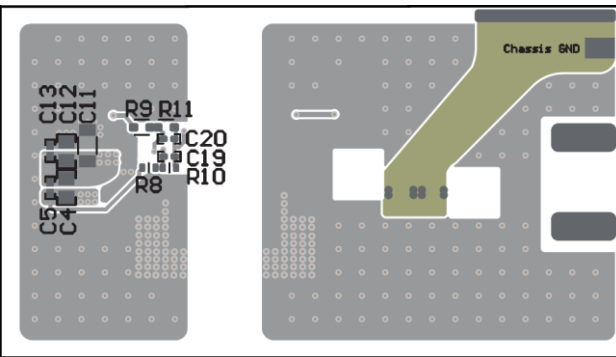
3D Angle



Layer 1: Top Assembly



Layer 2, 3: Internal GNDP and VEE



Layer 4: Bottom Assembly