


AVNET Silica'S Tech Day 2025
Breda December 11th

Coilcraft Agenda – Avnet Silica TechDays

- Why Coilcraft? Some facts...
- Understanding of Common Mode Chokes
-  **MAG Pro**
 - Understanding of Common Mode Choke Finder & Analyzer
 - DC-DC Optimizer – Finding the right technical solution
 - Power Inductor Finder & Analyzer – How to improve existing circuits
- Additional Material – can be provided by Mail

Company Overview

Coilcraft Facts

- Founded in 1945
- 100% wholly owned/operated company
- 80 years of financial strength
- All manufacturing locations are owned and operated by Coilcraft
- No involvement with joint ventures
- Manufacturing plants certified to IATF 16949
- 24-hour engineering and sales support



Global Manufacturing Footprint

- Manufacturing facilities in China, Malaysia, Mexico, Indonesia, Vietnam and USA
 - With redundant factory setup, we're our own second source!
- Self-manufactured production equipment
 - Fast time to market
 - Ability to ramp up quickly
 - Can produce any product at any location
 - **SHORT LEAD TIMES**



Coilcraft Product Support

At Coilcraft, we take pride in the quality and support we provide for our products

1. Innovation
2. Our facilities are the **ONLY** true source for all Coilcraft products
3. Our products are supported for long life cycles, based on your needs
4. Almost no **End Of Life** (*no EOL*)
5. Global automotive quality performance of <1.0 ppm for 2024



Global Distribution Centers

- Strong inventory position in all regions
- Global logistics footprint supports offshore mass-production requirements
- We are the only manufacturer to have its full line stocked and ready to ship on this scale
- 98% of all online orders shipped in 24 hours
- Little to no lead time for standard parts
- Active Foreign Trade Zone in Iowa



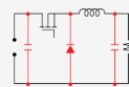

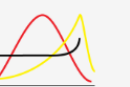



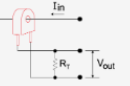
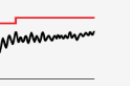
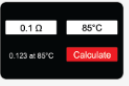

Quality Management Systems

- Manufacturing locations certified to IATF16949 2016
- Non-manufacturing locations certified to ISO 9001
- All facilities are ISO 14001 Certified or Compliant
- All facilities maintain social responsibility systems compliant to EICC Code of Conduct



MAGPro™ Design Tools

- The world's most comprehensive set of inductor characterization tools.
- 10 different online tools that are free to use.
- All tools populated with measured performance data.

 <p>DC-DC Optimizer</p> <p>This complete converter application tool finds the most efficient inductor solutions and analyzes their performance to optimize your Buck, Boost and Buck-boost converters.</p>	 <p>Power Inductor Finder and Analyzer</p> <p>Identify the best power inductors for your specified parameters and review AC and DC losses, temperature rise, L vs. current, self-heating curves and more. Or if you already know your part number(s), skip the search and move directly to the performance analysis.</p>	 <p>RF Inductor/Choke Finder and Analyzer</p> <p>This powerful tool identifies the best RF inductors and chokes for your defined parameters. Search for L @ Frequency or Z @ Frequency for specific application conditions. Or skip the search function and proceed directly to performance analysis for known part number(s).</p>	 <p>EMI Power Choke Impedance Finder</p> <p>Identify the choke with the impedance characteristic for your frequency range. Find a choke based on your defined parameters or directly compare performance of selected part numbers.</p>	 <p>Common Mode Choke Finder and Analyzer</p> <p>Find the best off-the-shelf common mode chokes for your required impedance, attenuation, or inductance. Or skip the search function and proceed directly to performance analysis for specific off-the-shelf part number(s)</p>
 <p>Coupled Inductor Finder and Analyzer</p> <p>Identify the best coupled inductors for your specified parameters. Display AC and DC losses, temperature rise, L vs current, self-heating curves and more. Or skip the search function and jump right into performance analysis for part number(s) you already know.</p>	 <p>Current Transformer Finder</p> <p>Match off-the-shelf current sense transformers to your application. See a list of suitable current transformers with a recommended terminating resistor.</p>	 <p>Wirewound Ferrite Bead Finder and Analyzer</p> <p>Display lists of off-the-shelf wirewound ferrite beads to meet your impedance@Frequency and current rating requirements. See performance curves including Impedance and inductance vs. Frequency.</p>	 <p>DCR @ Temperature Tool</p> <p>Coilcraft's DCR @ Temperature Tool calculates the temperature-adjusted DCR for any standard Coilcraft inductor.</p>	 <p>Reference Design Inductor Finder</p> <p>Your inductor choices should not be limited to those chosen by the IC companies. This tool finds all the latest and greatest inductors suitable for the published reference design you're using.</p>



Understanding Common Mode Chokes to Reduce EMI

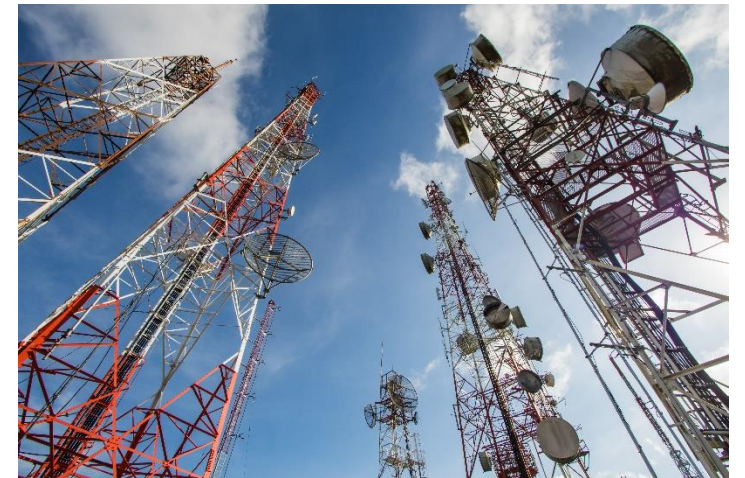
What is Common Mode Noise?

- Common Mode Noise is unwanted electrical signals that appear equally and in phase on two or more signal lines with respect to a common reference point. Typically, this is ground.
- This can occur on either data lines or on power lines.



Common Mode Noise Sources

- AC Mains Coupling onto Signal Lines
- EMI from Radio Transmitters
- Switching Power Supplies
- Motors
- Relays
- Fluorescent Lights
- Variable Frequency Drives
- ...



Common Mode Noise

- Electric Vehicles are a great example of Common Mode Noise susceptibility and the need to reduce
- EVs generate a lot of noise from high dv/dt and high di/dt switching from inverters and converters
- Generated common mode noise, if not dealt with, can impact brake controllers, collision avoidance, other safety critical systems or just your AM / FM radio.

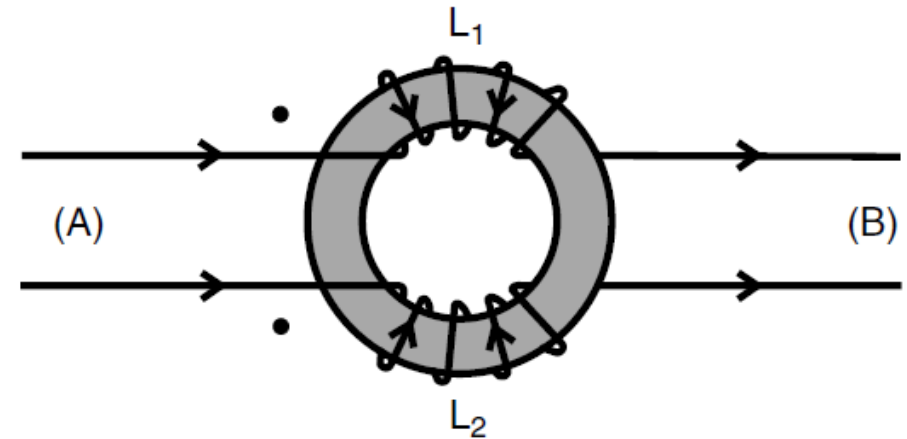
Common Mode Noise Reduction

- Twisted Pair Cables to cancel out noise on signal lines
- Conductive Shields to block external EMI.
 - Big, bulky, expensive and maybe difficult to solder,...
- Proper Grounding and PCB layout practices
- Common Mode Chokes to suppress common mode currents
- Remove ground lines underneath of products.



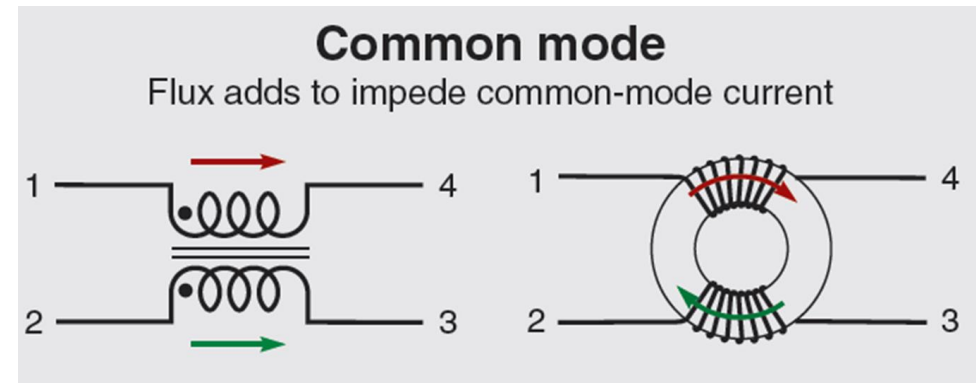
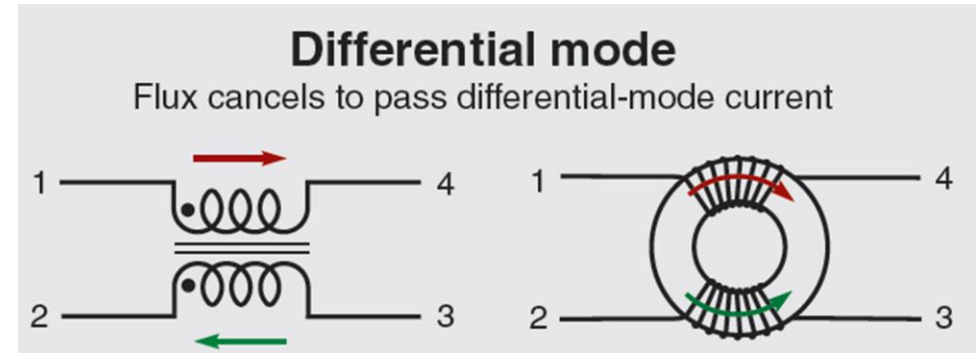
Common Mode Choke Fundamentals

- Physically, a Common Mode Choke is two parallel windings that share the same core
- Common Mode Chokes filter / attenuate common mode noise / signals
- Differential mode “the signals” pass with minimal loss
- Can be applied to power lines and data lines
- Power Lines:
 - The differential power signal “passes”
 - Common Mode Noise is filtered
- Data Lines:
 - The data sent differentially is “passed”
 - Common Mode Noise is filtered



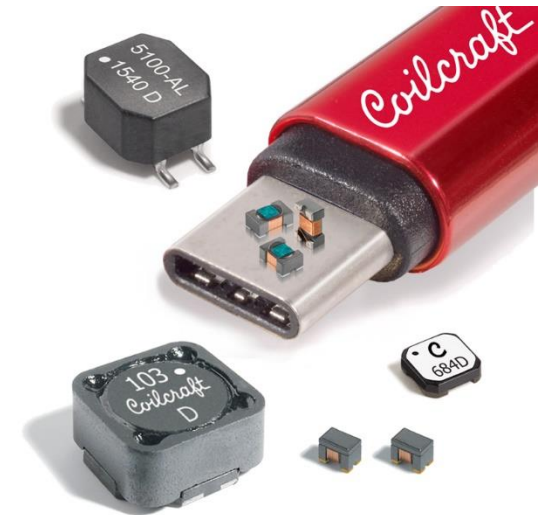
Common Mode Choke Fundamentals

- Differential Mode (Normal Operation, the signal):
 - Current flows into one wire and out through the other.
 - The magnetic fields generated by the two wires cancel each other out in the core.
 - Result: Little to no impedance to the desired signal.
- Common Mode (Noise):
 - Noise currents flow in the same direction on both wires.
 - The magnetic fields add together, creating a strong magnetic flux in the core.
 - Result: The choke presents a high impedance to these currents, blocking or attenuating them.



What to consider when selecting a CMC

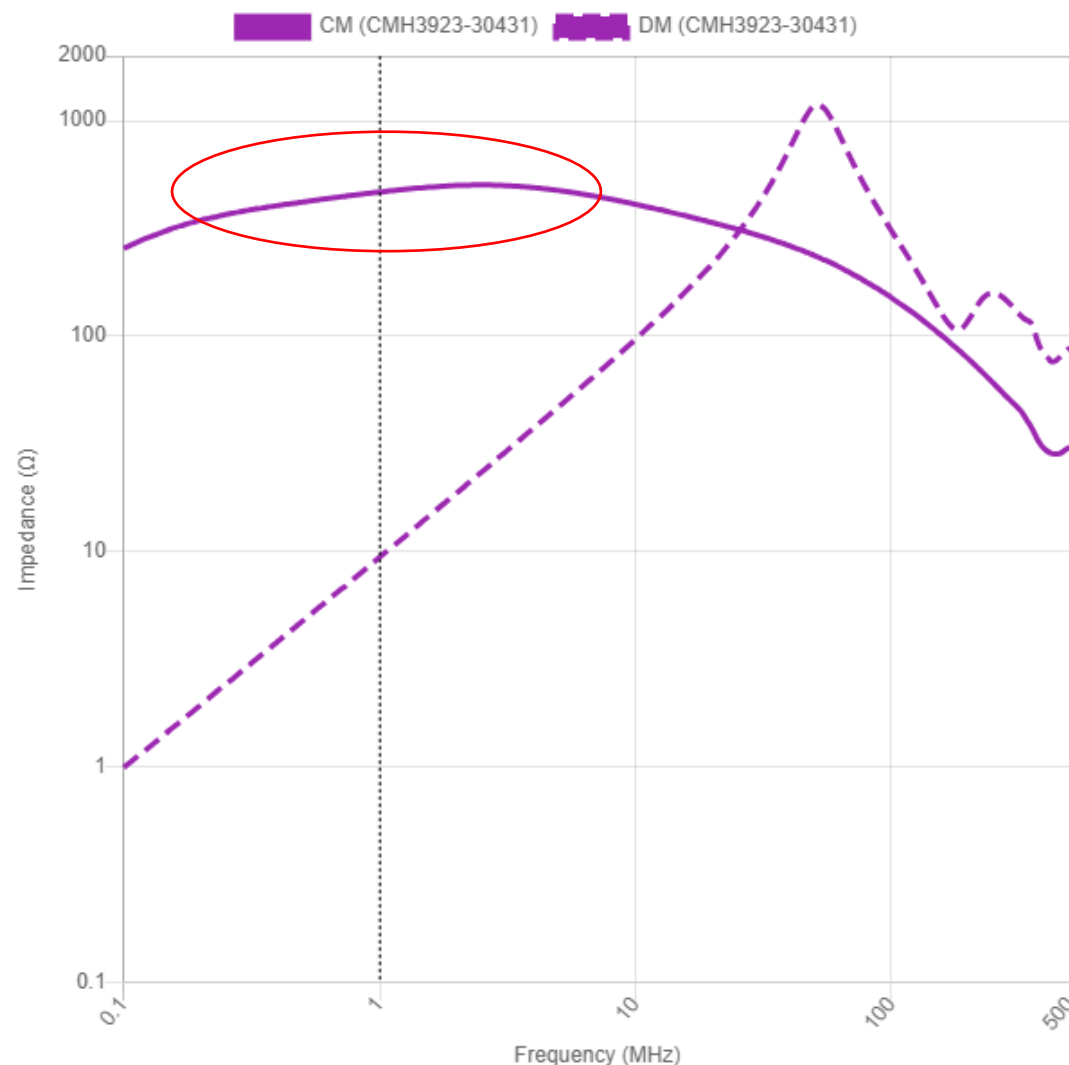
- What type of line are you concerned with?
 - Power line or data line?
- Key parameters to help select the right part
 - Frequency range of the noise
 - Frequency range of the signal – usually data line only
 - Impedance / Insertion Loss required
 - Isolation voltage – Important in power line applications
 - Size constraints
 - Current that will flow through the CMC
 - Ambient Temperature Range of Expected Operation



Impedance vs. Frequency

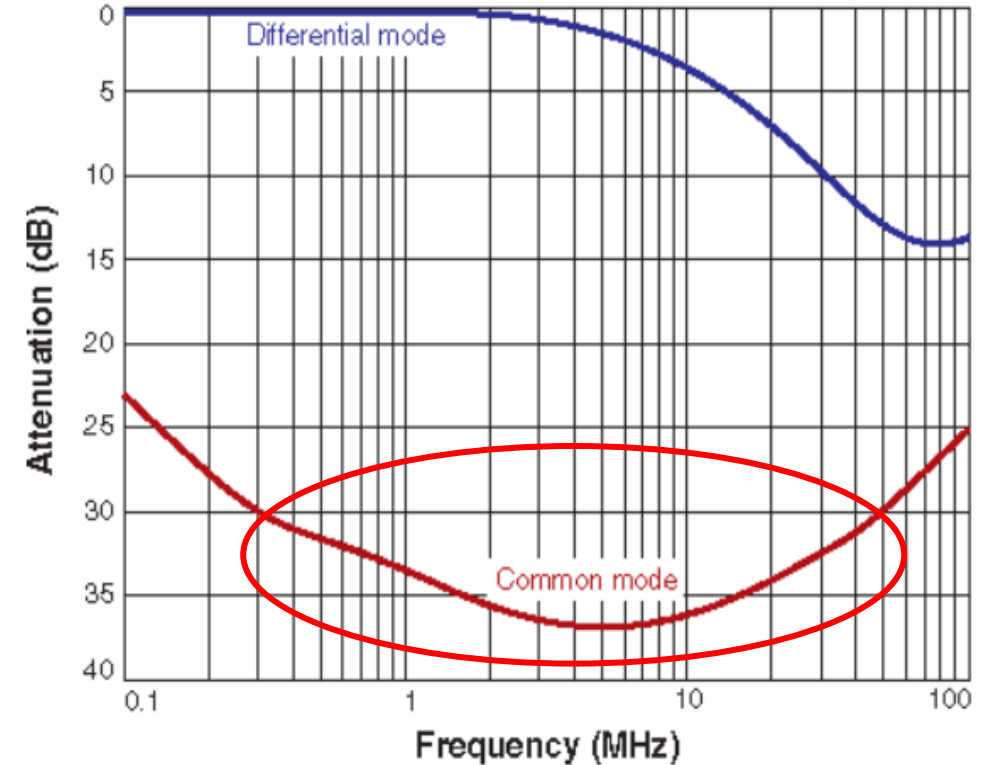
- Impedance (Ohms) vs Frequency is important as it determines how effectively the choke attenuates (dB) common mode noise at different frequencies.
- You are looking for a high impedance at the noise frequencies of concern (often in the MHz range for EMI) in the device you are selecting.
- #CMH3923-30431

Impedance vs. Frequency at 1 MHz



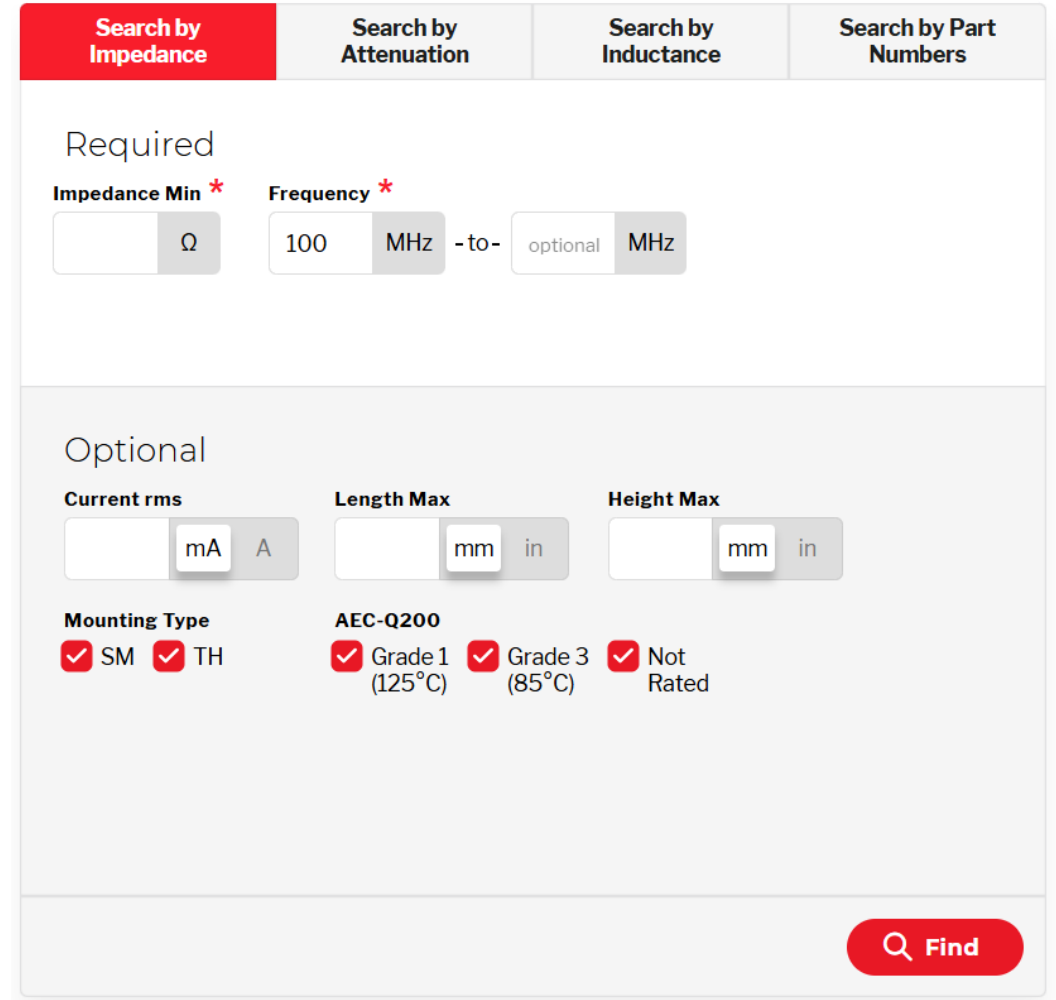
Attenuation

- Attenuation is the amount by which the common mode signal is weakened or reduced by the common mode choke.
- This is measured in dB and is typically a positive number.
- A level of 0 dB is no attenuation where a positive attenuation number means the signal is weaker after passing through the choke.
- Having as much attenuation over a frequency range as possible is what designers should look for.
- +30dB Attenuation over a wide frequency band from 300KHz to 50MHz
- #CR7915



MAGPro[®] Common Mode Choke Finder

- On-line and free to use with no registration required
- Provides multiple ways of searching for a common mode choke
 - Impedance
 - Attenuation
 - Inductance
 - Part Number



The screenshot shows the search interface for the MAGPro Common Mode Choke Finder. It features four search tabs: 'Search by Impedance' (selected), 'Search by Attenuation', 'Search by Inductance', and 'Search by Part Numbers'. The 'Required' section includes an 'Impedance Min' field with a unit selector (Ω) and a 'Frequency' field with a value of 100 MHz, a range selector (-to-), and an optional frequency field. The 'Optional' section includes 'Current rms' (mA/A), 'Length Max' (mm/in), and 'Height Max' (mm/in) fields. Below these are checkboxes for 'Mounting Type' (SM and TH), 'AEC-Q200' (Grade 1 (125°C), Grade 3 (85°C), and Not Rated).

MAGPro[®] Results Data

- All of the data from our MAGPro[®] tools is measured data
- Measurements are made at room temperature
- Attenuation and Impedance measurements are made with reference loads of 50 ohms
- None of the data in the tool is simulated or extrapolated.

Example #1

- Power Line Application for an Industrial Motor Control
- 2A max
- 1000 V Isolation
- 1 kOhm at 1 Mhz
- Max Height 15 mm








Search by Impedance	Search by Attenuation	Search by Inductance	Search by Part Numbers
Required			
Impedance Min *	Frequency *		
1000 Ω	1 MHz -to- optional MHz		
Optional			
Current rms	Length Max	Height Max	
2 mA A	mm in	15 mm in	
Mounting Type	AEC-Q200		
<input checked="" type="checkbox"/> SM <input checked="" type="checkbox"/> TH	<input checked="" type="checkbox"/> Grade 1 (125°C)	<input checked="" type="checkbox"/> Grade 3 (85°C)	<input checked="" type="checkbox"/> Not Rated
Find			

Example #1

Analyze & Graph

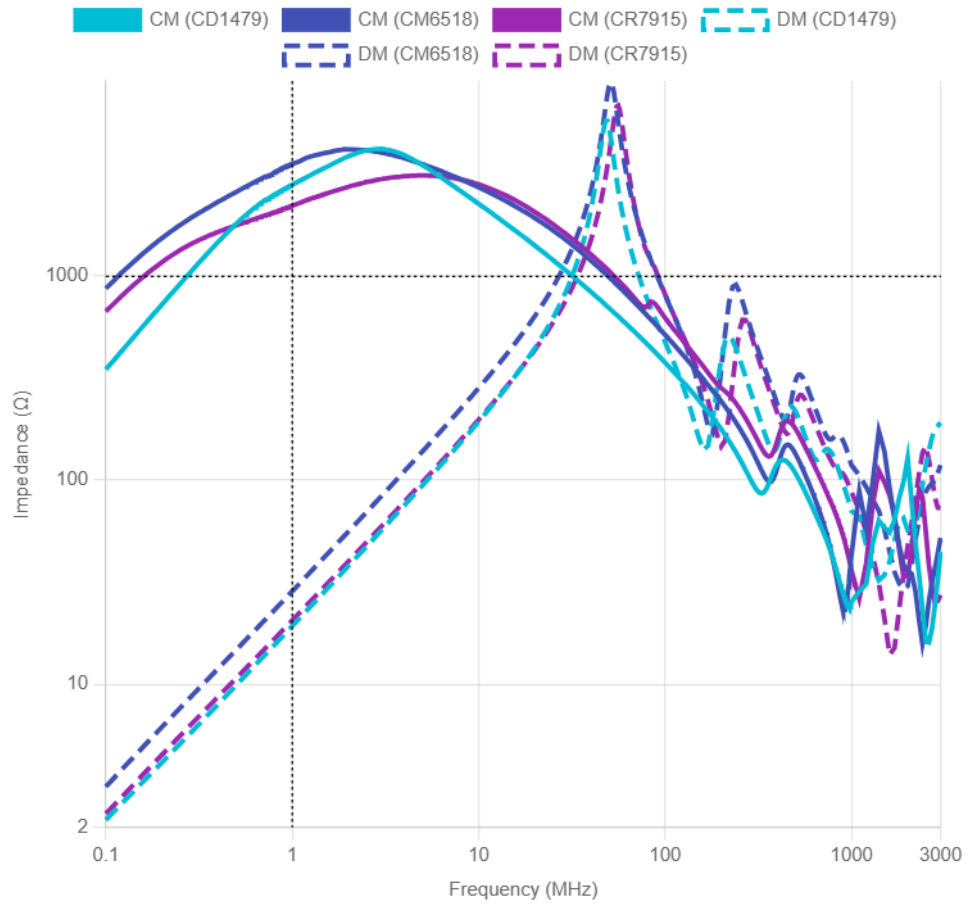
Update Sort Order

Automatically sorted by size / footprint

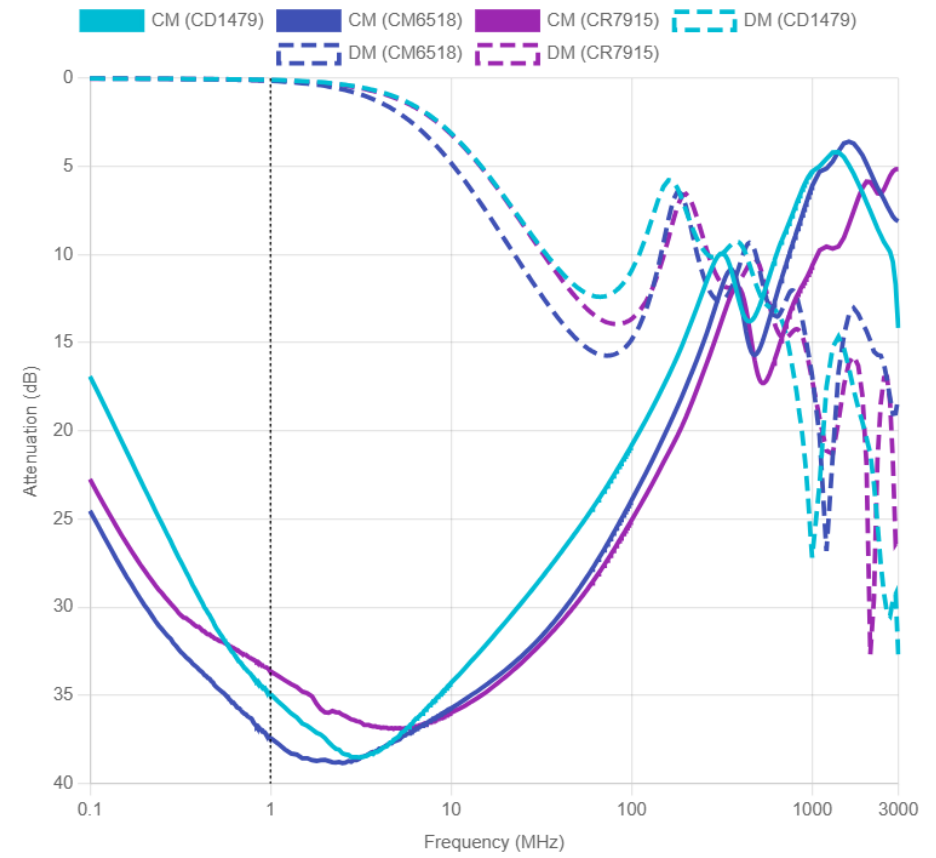
Part Number			CM Impedance at 1 MHz (Ω)	DM Impedance at 1 MHz (Ω)	Minimum Inductance (μH)	DCR Per Line (Ω)	Rated Current (A)	Isolation Voltage (Vrms)	Lines	Mount	Footprint (mm ²)	Length (mm)
Check parts below to Analyze			× ↓ ↑	× ↓ ↑	× ↓ ↑	× ↓ ↑	× ↓ ↑	× ↓ ↑	× ↓ ↑	× ↓ ↑	× ↓	× ↓ ↑
<input type="checkbox"/>		CR7915 Sample Buy	2206	20.6	730.0	0.050	2.6	1500	2	SM	169.0	13.0
<input type="checkbox"/>		CM6518 Sample Buy	3532	28.6	910.0	0.060	2.5	1500	2	SM	232.92	16.38
<input type="checkbox"/>		CG3333 Sample Buy	1774	1.2	590.0	0.050	3.7	1000	2	SM	332.91	19.56
<input type="checkbox"/>		CF2638 Sample Buy	1437	22.2	140.0	0.060	2.9	1000	2	SM	332.91	19.56
<input type="checkbox"/>		CD1479 Sample Buy	2794	19.3	380.0	0.020	4.2	1000	2	SM	332.91	19.56
<input type="checkbox"/>		CH4659 Sample Buy	3107	22.3	500.0	0.040	4.7	1000	2	SM	332.91	19.56
<input type="checkbox"/>		CD1480										

Example #1

Impedance vs. Frequency at 1 MHz



Attenuation vs. Frequency at 1 MHz



dential – Do Not L...

Example #2

- Data Line for an Industrial Controller
- Need 25 dB or greater of attenuation from 10 MHz to 250 MHz
- Small as possible

Search by Impedance | **Search by Attenuation** | Search by Inductance | Search by Part Numbers

Required

Attenuation * dB

Frequency * MHz -to- MHz

Optional

Current rms mA A

Length Max mm in

Height Max mm in

Mounting Type SM TH

AEC-Q200 Grade 1 (125°C) Grade 3 (85°C) Not Rated

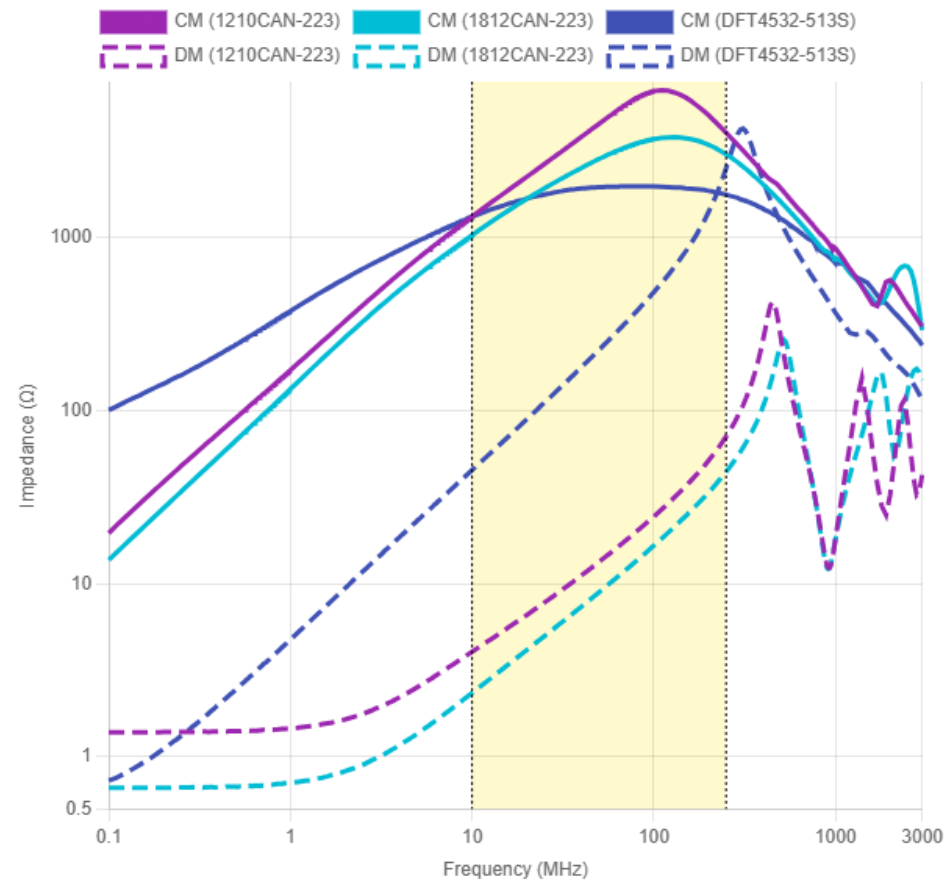
Example #2

Analyze & Graph Update Sort Order Export

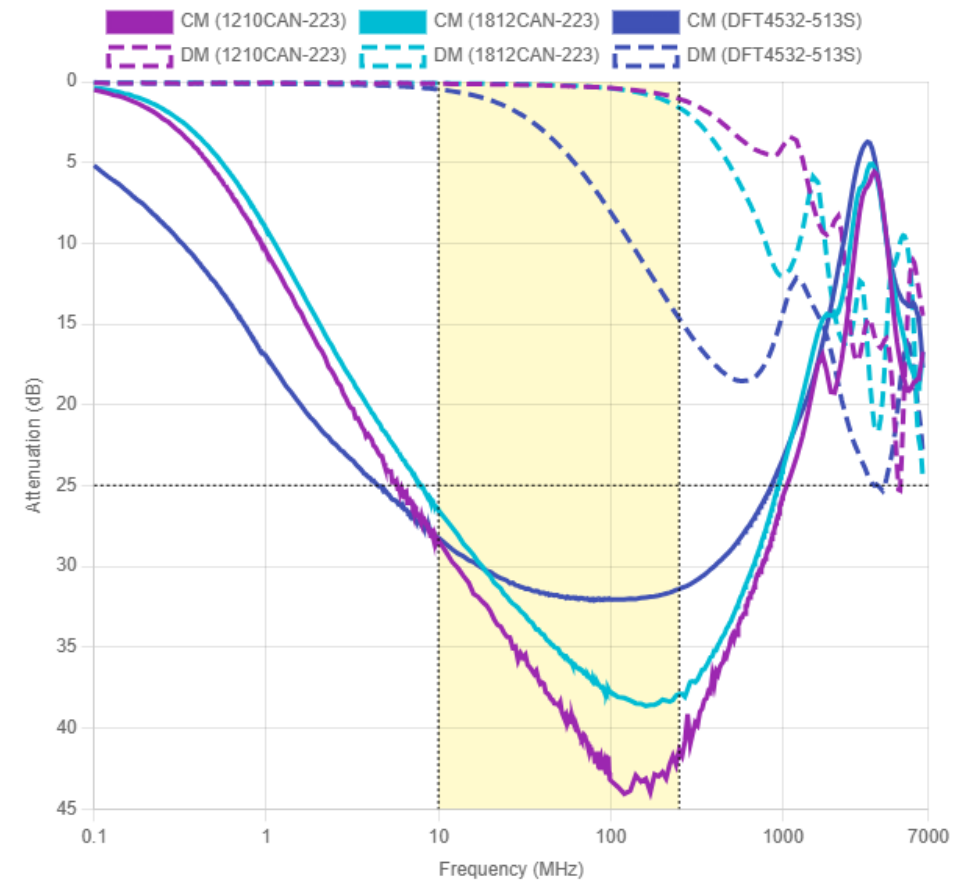
Part Number	CM Attenuation 250 MHz (dB min)	DM Attenuation 250 MHz (dB max)	Minimum Inductance (µH)	DCR Per Line (Ω)	Rated Current (mA)	Isolation Voltage (Vrms)	Lines	Mount	Footprint (mm²)	Length (mm)	Width (mm)	Height (mm)	AEC Grade	Price (\$)		
Check parts below to Analyze																
<input type="checkbox"/>		1210CAN-223 Sample Buy	41.38	1.05	15.4	0.600	300	250	2	SM	8.68	3.25	2.67	2.8	1	\$0.78
<input type="checkbox"/>		1210CAN-513 Sample Buy	41.24	1.15	35.7	1.4	200	250	2	SM	8.68	3.25	2.67	2.8	1	\$0.78
<input type="checkbox"/>		1210CAN-104 Sample Buy	40.78	1.94	70.0	3.7	100	250	2	SM	8.68	3.25	2.67	2.8	1	\$0.78
<input type="checkbox"/>		DFT4532-513S Sample Buy	31.4	14.65	35.7	0.320	370	250	2	SM	15.3	4.5	3.4	3.2	3	\$2.23
<input type="checkbox"/>		1812CAN-223 Sample Buy	37.9	1.61	15.4	0.400	400	250	2	SM	15.74	4.95	3.18	3.0	1	\$0.97
<input type="checkbox"/>		1812CAN-513 Sample Buy	32.13	2.26	35.7	0.590	300	250	2	SM	15.74	4.95	3.18	3.0	1	\$0.97
<input type="checkbox"/>		1812CAN-104 Sample Buy	36.11	3.81	70.0	1.0	260	250	2	SM	15.74	4.95	3.18	3.0	1	\$0.97
<input type="checkbox"/>		DFT7160-513S Sample Buy	34.19	19.48	35.7	0.300	700	250	2	SM	52.64	9.4	5.6	4.9	-	\$1.43
<input type="checkbox"/>		DFT7160-513B Sample Buy	30.66	0.72	35.7	0.300	700	250	2	SM	52.64	9.4	5.6	4.9	-	\$1.21
<input type="checkbox"/>		DFT7160-475B Sample Buy	27.5	1.42	3290.0	0.600	500	250	2	SM	52.64	9.4	5.6	4.9	-	\$1.21
<input type="checkbox"/>		CMH3815-24516 Sample Quote	29.35	27.8	2400.0	0.0055	16000	2500	2	TH	1482.25	38.5	38.5	15.5	-	-

Example #2

Impedance vs. Frequency 10 -250 MHz

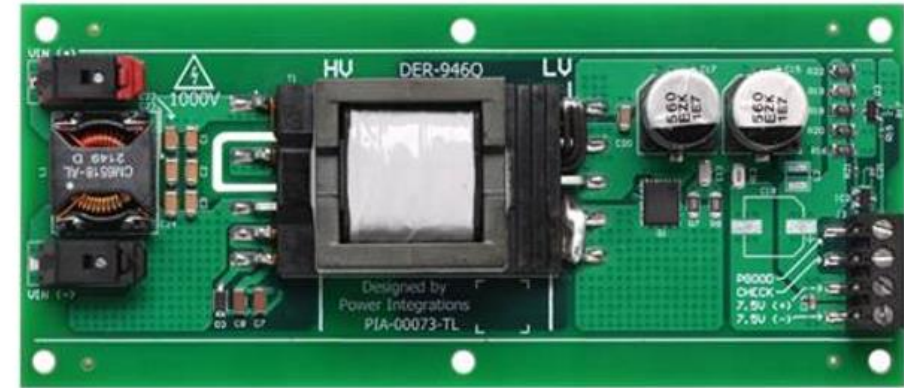


Attenuation vs. Frequency 10 -250 MHz



Example #3

- Power Integrations DER-946Q Demo Board
- 10 W, Single Output Automotive Emergency Power Supply for 800 V Systems Using InnoSwitch™ 3-AQ INN3947CQ
- Utilizes the CM6518-AL as part of the input filter
- Automotive inverters operate in tough environments with fast voltage and current changes. These can create strong common mode currents that potentially disrupt the power supply, other inverter parts, and signal accuracy.




Example #3

- Input power line for PI DER-946Q Demo Board.
- Search by part number
- Frequency 1Mhz; not much more expected for power supplies
- Compare CM6518.

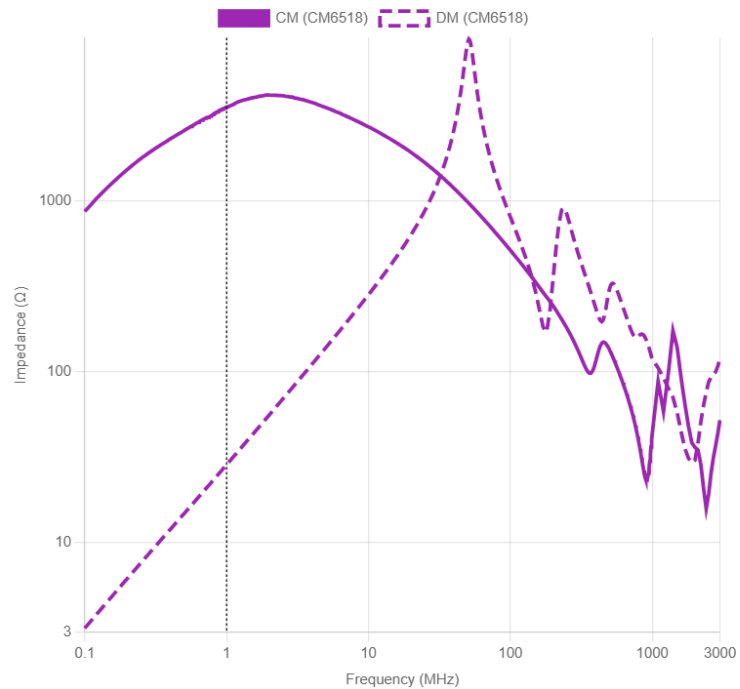
Search by Impedance	Search by Attenuation	Search by Inductance	Search by Part Numbers
Required			
Frequency / Bandwidth *			
1	MHz	- to -	optional MHz
Select Parts *			
Series	Part Number		
CM6518	CM6518		
Series	Part Number		

Find

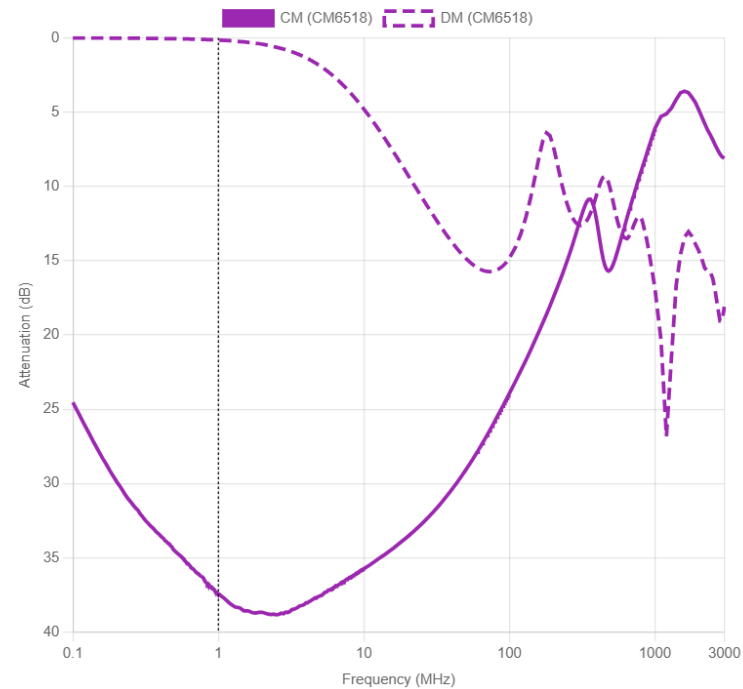
Example #3

Part Number	CM Impedance at 1 MHz (Ω)	CM Attenuation 1 MHz (dB min)	Minimum Inductance (μ H)	DCR Per Line (Ω)	Rated Current (mA)	Isolation Voltage (Vrms)	Lines	Mount	Footprint (mm ²)	Length (mm)	Width (mm)	Height (mm)	AEC Grade	Price (\$)
Check parts below to Analyze	X ↓ ↑	X ↓ ↑	X ↓ ↑	X ↓ ↑	X ↓ ↑	X ↓ ↑	X ↓ ↑	X ↓ ↑	X ↓	X ↓ ↑	X ↓ ↑	X ↓ ↑	X ↓ ↑	X ↓ ↑
<input checked="" type="checkbox"/>  CM6518 Sample Buy	3532	37.42	910.0	0.060	2500	1500	2	SM	232.92	16.38	14.22	8.9	-	\$2.04

Impedance vs. Frequency at 1 MHz



Attenuation vs. Frequency at 1 MHz



In Summary

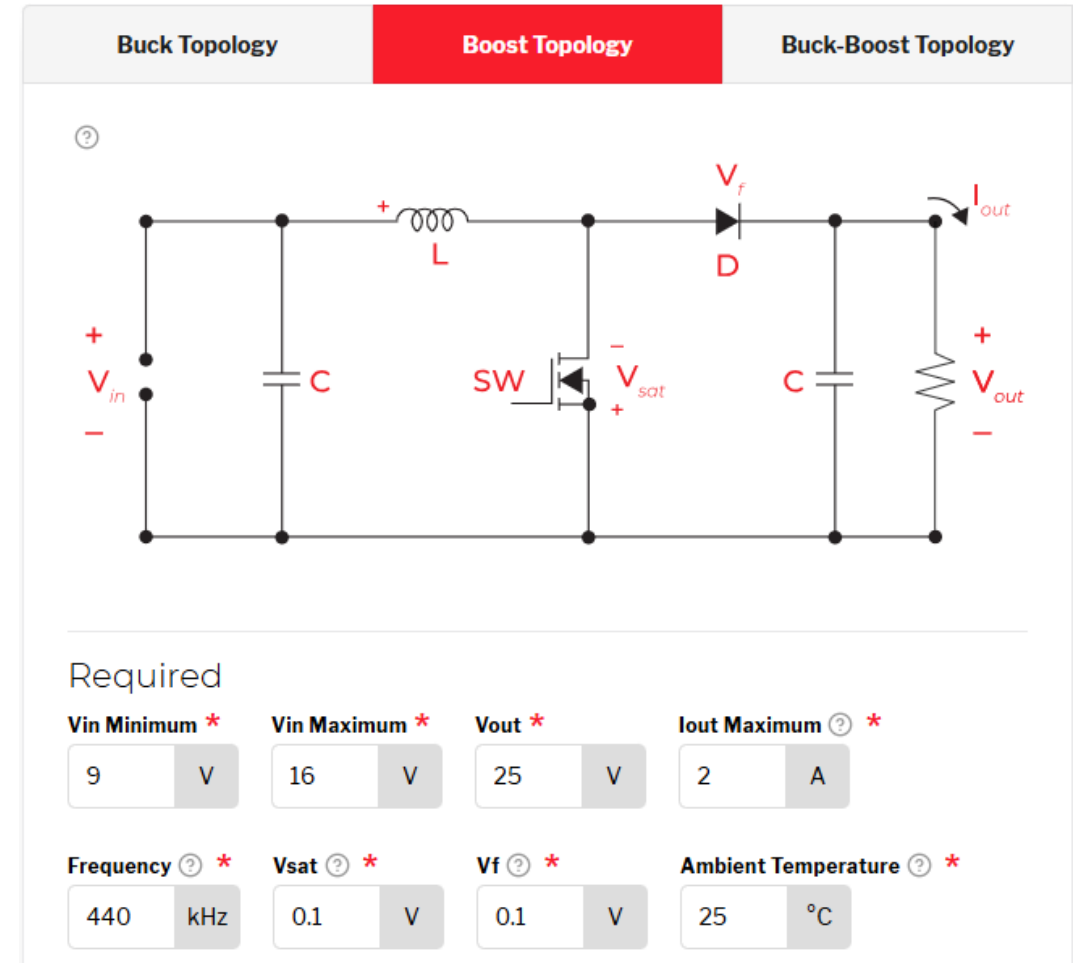
- Common Mode Noise can come from a vast array of sources.
- Common Mode Chokes attenuate the Common Mode Noise.
- CMC selection must consider more than just the amount and frequency of the noise to cancel.
- Coilcraft's **MAGPro**® CMC Finder & Analyzer tool helps to select the proper CMC quickly and easily.

DC-DC Optimizer

50W Boost Converter

Example #1 – 50W Boost Converter

- Boost topology
- V_{in} : 9V to 16V
- V_{out} : 25V
- I_{out} max: 2A
- Freq: 440KHz



Example #1 – 50W Boost Converter

Additional Filter criterias:

- AEC-Q 1
- 105°C ambient temp.
- Max part temp. 145°C
- XGL6060 only

Narrow Results: Part Number L nominal Irms @ 105°C DCR typ @ 105°C Isat @ 105°C Ipeak L at Ipeak L at IDC CCM / DCM ΔIL% Total losses @ 2A Part temp @ 2A Total losses @ 0.2A Part temp @ 0.2A Max Temp Rating Voltage Rating SRF Length Width Height Mount Shielded Core material AEC grade Price Clear All

Ambient Temperature: 105°C

Analyze & Graph Update Sort Order -40°C 165°C Export

Part Number	L nominal (μH)	Irms @ 105°C (A)	DCR typ @ 105°C (mΩ)	Isat @ 105°C (A)	Adjusted for User Inputs										Max Temp Rating (°C)	Voltage Rating (V)	SRF (MHz)
					Ipeak (A)	L at Ipeak (μH)	L at IDC (μH)	CCM / DCM	ΔIL%	Max Load		Light Load					
										Total losses @ 2A (mW)	Part temp @ 2A (°C)	Total losses @ 0.2A (mW)	Part temp @ 0.2A (°C)				
<input type="checkbox"/> XGL6060-152 Sample Buy	1.5	26.0	4.3	18.0	10.1	1.3	1.4	CCM	162%	1788	137°C	549	115°C	165°C	80	41.0	
<input type="checkbox"/> XGL6060-182 Sample Buy	1.8	23.5	5.0	16.6	9.4	1.6	1.7	CCM	136%	1620	136°C	530	115°C	165°C	80	35.0	

→ This reduce # of parts from 849pcs to 12pcs

Example #1 – 50W Boost Converter

Additional Filter criterias:

- 12parts left of XGL6060
- Detailed and graphical analysis can be done now

Narrow Results:

Ambient Temperature: 105°C

Show Page Parts Update Sort Order -40°C 165°C Export

Part Number	L nominal (μH)	Irms @ 105°C (A)	DCR typ @ 105°C (mΩ)	Isat @ 105°C (A)	Adjusted for User Inputs										Max Temp Rating (°C)	Voltage Rating (V)	SRF (MHz)
					Ipeak (A)	Lat Ipeak (μH)	Lat IDC (μH)	CCM / DCM	ΔIL%	Max Load		Light Load					
										Total losses @ 2A (mW)	Part temp @ 2A (°C)	Total losses @ 0.2A (mW)	Part temp @ 0.2A (°C)				
<input checked="" type="checkbox"/> XGL6060-152 Sample Buy	1.5	26.0	4.3	18.0	10.1	1.3	1.4	CCM	162%	1788	137°C	549	115°C	165°C	80	41.0	
<input checked="" type="checkbox"/> XGL6060-182 Sample Buy	1.8	23.5	5.0	16.6	9.4	1.6	1.7	CCM	136%	1620	136°C	530	115°C	165°C	80	35.0	
<input checked="" type="checkbox"/> XGL6060-222 Sample Buy	2.2	20.7	5.6	15.7	8.7	2.0	2.1	CCM	111%	1389	135°C	480	115°C	165°C	80	30.0	

Power Inductor Finder and Analyzer

Buck Converter – Optimization of an existing project using XAL6060

Example #2 – Improving an Existing Project

- Search on Lnom
- Replace an existing XAL6060-332MEC
- Inductance 3.3uH
- Current: 5A
- Ripple: 30%
- Freq: 400KHz
- SMD only
- AEC-Q only

The screenshot shows the Coilcraft search interface with the following settings:

- Search for L@I** (selected)
- Search for Lnom** (highlighted in red)
- Compare Losses**
- Required Inductance**: 3.3 nH to 3.3 μH
- Optional Current**: 5 mA to 5 A
- Ripple Current**: 1.3 mA to 30 %
- Frequency**: 400 kHz to MHz
- DCR Max**: mΩ to Ω
- Length Max**: mm to in
- Height Max**: mm to in
- Mounting Type**: SM, TH
- AEC-Q200**: Grade 1 (125°C), Grade 2 (105°C), Grade 3 (85°C), Not Rated
- Find** button

Example #2 – Improving an Existing Project

Additional Filter criterias:

- 3.1mm height
- 85°C ambient temp.
- 600mW losses max.
- Length 7mm max.
- Sort for cost

The screenshot shows the Coilcraft online component selection tool. The search criteria are: Inductance 3.3 nH, Current 5 mA, Ripple Current 1.3 mA, and Frequency 400 kHz. The ambient temperature is set to 85°C. The search results are filtered to show 8 parts, sorted by cost. The table below shows the first four parts.

Part Number	L nominal (μH)	Isat @ 85°C (A)	Irms 40°C rise @ 85°C (A)	DCR typ @ 85°C (mΩ)	Total losses (mW)	Part temp. (°C)	Max Temp Rating (°C)	Voltage Rating (V)	Length (mm)	Width (mm)	Height (mm)	Mount	Shielded	Core material	AEC grade
<input type="checkbox"/> XGL4030-332 Sample Buy	3.3	5.2	6.8	24.5	548	105°C	165°C	80	4.3	4.3	3.1	SM	Yes	Composite	1
<input type="checkbox"/> XGL6020-332 Sample Buy	3.3	7.5	7.9	26.0	571	99°C	165°C	80	6.91	6.71	2.1	SM	Yes	Composite	1
<input type="checkbox"/> XAL6030-332 Sample Buy	3.3	12.1	7.2	24.5	549	102°C	165°C	60	6.76	6.56	3.1	SM	Yes	Composite	1
<input type="checkbox"/> XGL6030-332 Sample Buy	3.3	10.3	9.5	16.1	378	95°C	165°C	80	6.91	6.71	3.1	SM	Yes	Composite	1

→ This reduce # of parts from 46parts to 8 parts

Example #2 – Improving an Existing Project

Additional Filter criterias:

- 8 parts left
- Detailed and graphical analysis can be done now

Ambient Temperature: 85°C

Show Page Parts Update Sort Order -40°C 165°C Export

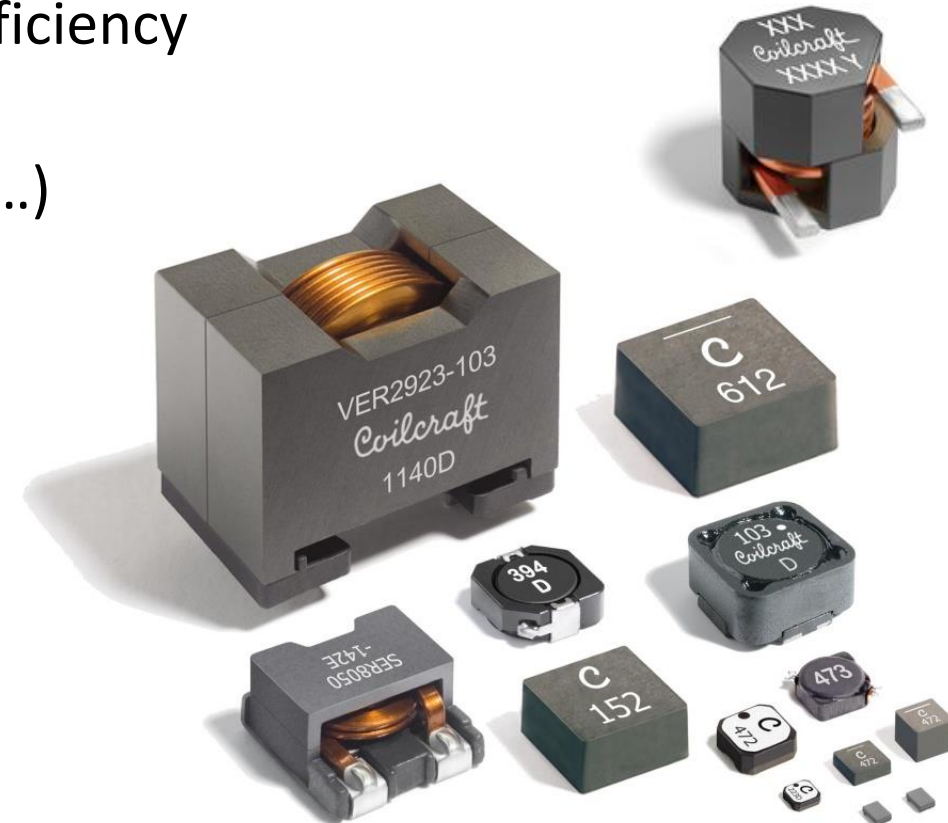
Part Number	L nominal (µH)	Isat @ 85°C (A)	Irms 40°C rise @ 85°C (A)	DCR typ @ 85°C (mΩ)	Total losses (mW)	Part temp. (°C)	Max Temp Rating (°C)	Voltage Rating (V)	Length (mm)	Width (mm)	Height (mm)	Mount	Shielded	Core material	AEC grade
Check parts below to Analyze															
<input checked="" type="checkbox"/> XGL4030-332 Sample Buy	3.3	5.2	6.8	24.5	548	105°C	165°C	80	4.3	4.3	3.1	SM	Yes	Composite	1
<input checked="" type="checkbox"/> XGL6020-332 Sample Buy	3.3	7.5	7.9	26.0	571	99°C	165°C	80	6.91	6.71	2.1	SM	Yes	Composite	1
<input checked="" type="checkbox"/> XAL6030-332 Sample Buy	3.3	12.1	7.2	24.5	549	102°C	165°C	60	6.76	6.56	3.1	SM	Yes	Composite	1
<input checked="" type="checkbox"/> XGL6030-332 Sample Buy	3.3	10.3	9.5	16.1	378	95°C	165°C	80	6.91	6.71	3.1	SM	Yes	Composite	1
<input checked="" type="checkbox"/> XGL5030-332 Sample Buy	3.3	8.3	9.0	16.4	404	97°C	165°C	80	5.68	5.48	3.1	SM	Yes	Composite	1

Magnetics is our only business

Coilcraft Core Technology – Power Inductors



- Strength Power Inductors
 - Low profile, high currents, Lowest DCR – Higher efficiency
 - Best DCR / Isat combinations
 - Custom products (Transformer, Inductor, Coupled,...)
 - Lowest core losses for high frequency
 - Molded Inductors with nearly no thermal aging
 - Ferrite Power Inductors in different case sizes
 - Soft saturation (X-series, AGM)
 - Small form factors → with high performance



Coilcraft Core Technology – RF Inductors



- Strenght RF Inductors
 - Very high number of L values (partially in 0.1nH steps)
 - Available in Ceramic and Ferrite
 - Industry *highest* Q factors in smallest case sizes
 - Industry *lowest* DCR in equivalent case sizes
 - Industry *highest* current ratings
 - Highest possible performance, w/o core saturation in small case sizes
 - SRF up to 34Ghz (0201)



Coilcraft Core Technology – RF Products



- Strength RF Magnetics
 - RF chip inductors (solutions for 5G, medical)
 - Air core inductors
 - Wideband RF transformer & chokes
 - RFID transponder coils
 - Baluns, Chip Baluns
 - NFMI Antenna
 - CAN Bus Chokes
 - PoC Filter solutions for GSML, FPDLink



Coilcraft Core Technology – Filter, Chokes,...



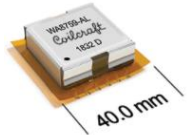
- Strength EMI/RFI Filters
 - Common mode chokes for Power & Data lines
 - Coupled Inductors
 - Data line
 - USB
 - CAN



<p>LPD </p> <ul style="list-style-type: none"> ■ Compact, low-profile design ■ Smaller footprint than MSD 	<p>LPD-V </p> <ul style="list-style-type: none"> ■ High isolation versions of LPD ■ 1500 Vrms, one minute isolation (hipot) 	<p>MSD </p> <ul style="list-style-type: none"> ■ Industry standard footprints ■ Higher Isat ratings than LPD 	<p>MSD_H </p> <ul style="list-style-type: none"> ■ Our latest innovation, halogen-free ■ AEC-Q200 Grade 1 / 165°C max part temp
<p>MSD_T </p> <ul style="list-style-type: none"> ■ High temperature MSD version ■ AEC-Q200 Grade 1 / 165°C max part temp 	<p>PFD </p> <ul style="list-style-type: none"> ■ Footprints as small as 1.52 x 2.29 mm ■ Ideal as low-power isolation transformers 	<p>1812DPS </p> <ul style="list-style-type: none"> ■ Only 0.150 inch (3.81 mm) high ■ Optimized for xDSL filtering 	

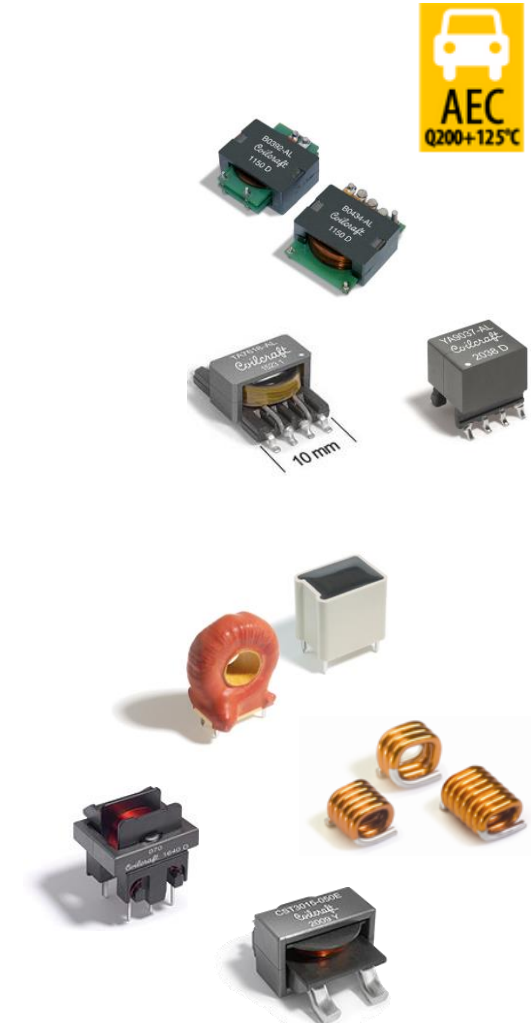
Off the Shelf Transformers

- Versatile power topologies including Flyback, Forward, and Push-pull
- Isolation and Gate Drive transformers to provide galvanic isolation for different interfaces like isoSPI, I²C, Power Lan,..
- Ultra low profile, only 5.97 mm tall
- 2500 Vrms and 5000 Vrms, one minute primary to secondary isolation voltage, max. 5700Vrms standard spec.
- Designed to meet basic and reinforced insulation requirements
- Qualified AEC-Q200 Grade 1 requirements (-40°C to +125°C ambient)
- [Transformers | Coilcraft](#)



Coilcraft Core Technology - Customer Specific Parts

- Strength in Custom Inductors / Transformers / ...
 - Experience with development, qualification and production in the automotive marketplace.
 - Capability to customize standard off the shelf components along with “ground up” designs.
 - Work directly with IC companies to assist in developing magnetics for reference designs.



Question`s?

Please see the contact details from your local contact on the next page.

Questions? – Your Local Coilcraft Contact

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Thank You!