



The World's First Active EMI Filter IC solution

Company Overview

- Company name**
EMcoretech Co.,Ltd.
- CEOs**
Jin-Kook, Kim / Young-Wook, Ko
- Establishment**
Aug. 17th, 2018
- Employee**
14people [Oct. 2023]
- Main Product**
Active EMI solution
- Office**
H.Q. #504-1, 106dong, 50, UNIST-gil, Eonyang-eup, Ulju-gun, Ulsan
B.R #1310, 830, Dongtansunhwan-daero, Hwaseong-si, Gyeonggi-do
- Homepage**
<http://emcoretech.com/>

history

2018~2021

- 2018** Established H.Q/Razing Seed investment(Seed USD 75,775)
- 2020** Venture enterprise certification
- 2021** 15th, Received the Excellent Patent Award in South Korea

2022

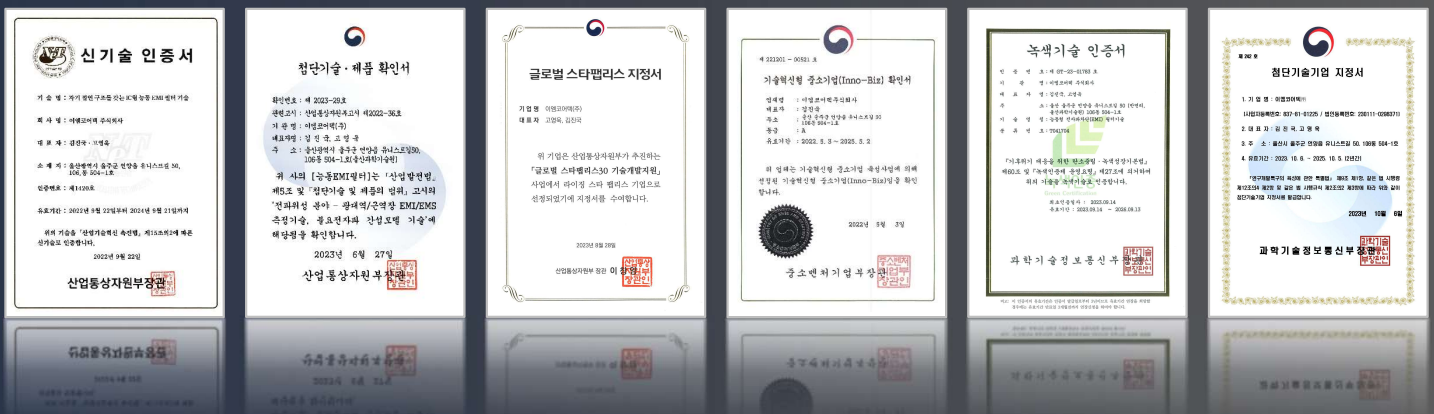
- Established of a Corporate research Institute
- ISO 9001, 14001
- Selected as a Global IP Star Company
- Certification as an INNO-BIZ
- New Excellent Technology(NET) certification
- Attracting Series-A investment (USD 1,558,105.95)
- Establishment of a Branch Office (Dongtan)

2023

- Attracting Series-A investment (USD 759,936.17)
- Advanced Technology/Product Certification
- Selected as a Global Star fabless 30
- Green Technology Certification
- Designation as an Advanced Technology Company

* 1 USD = 1,319.69

certification



EMcoretech have secured a strategic IP portfolio through domestic and international patents

Intellectual Property

for an active EMI filter and a fully isolated structure.

Patent



Design



Trademark

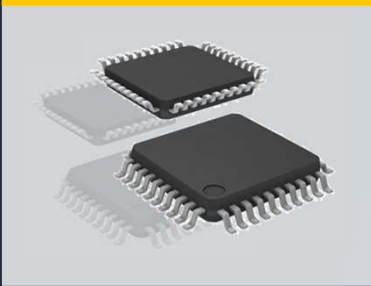


IP Application: 48
IP Registration: 42

Total 90

01

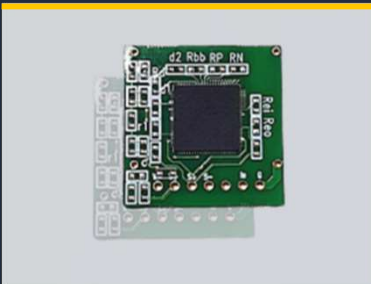
Active EMI Filter IC



EMCORETECH has successfully commercialized the world's first EMI filter IC capable of conductive EMI noise compensation.

02

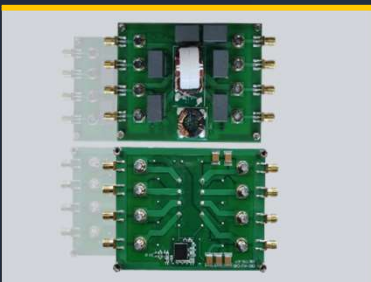
Active EMI Filter Module



This is an active EMI filter module capable of compensation conductive electromagnetic noise by utilizing an IC designed for EMI filters.

03

Active EMI Evaluation Board



This is an evaluation board designed to assess the electromagnetic interference compensation capabilities of the active EMI filter module.

04

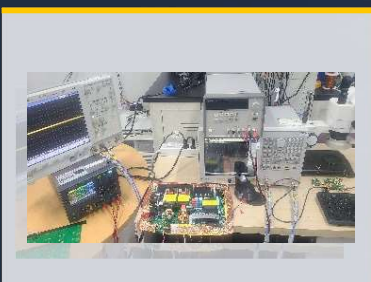
Standard EMI filter (Applied Active EMI solution)



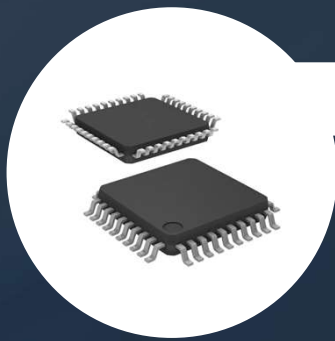
This is a general-purpose EMI filter equipped with an active EMI solution.

05

RE/CE EMI and ESD debugging



We provide services for EMI/ESD/EMP analysis and debugging, filter design, and consulting, utilizing the active EMI solution.



Product 1

Active EMI Filter IC

EMCORETECH has successfully **commercialized** the world's first **EMI filter IC** capable of conductive electromagnetic noise compensation.

Key features

- 7mm x 7mm SMT Package
- Power-saving mode feature for low-power products.
- High-level electromagnetic interference compensation capability.
- Adjustable performance for reducing electromagnetic waves (depending on the target frequency level).
- Suitable for high-voltage, high-power products.
- Utilizing a fully isolated structure.

Application

- Home Appliance <
- Electric vehicles, electric vehicle chargers <
- PV and Industrial Inverter <
- ESS, Industrial System <

Electrical Characteristics

Parameter	Value
DC Input Voltage	12V(Typ.) / 15V(Max.)
Power Dissipation	Normal mode : 0.36W ($V_{DD}=12$), 0.6W($V_{DD}=15$)
	Sleep mode : 0.0132W($V_{DD}=12$), 0.021W($V_{DD}=15$)
Maximum swing voltage	13V _{peak-peak}
Maximum swing current	750mA _{peak-peak}
Amplifier Bandwidth	DC to 30MHz
ESD, Human Body Model(HBM)	-2,000V to 2,000V
ESD, Charged Device Model(CDM)	-500V to 500V
Operating Temperature	-40°C to 125°C

Product 2

Active EMI Module



This is an EMI module that can **perform the mitigation of conductive electromagnetic noise** using an active EMI filter IC, and it can replace the choke in traditional passive EMI filters.

Key features

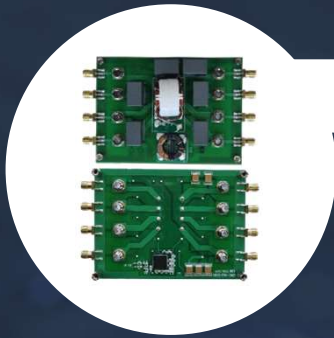
- Effective against both CM and DM noise and can be used regardless of whether it's a single-phase or three-phase system.
- Capable of reducing CE noise by up to 34dB from 150kHz to few a MHz.
- By eliminating or using fewer CM chokes in traditional passive EMI filters, it is possible to reduce the circuit board size.
- By eliminating or downsizing the harness and chokes used on the circuit board, it is possible to reduce production costs.
- Testing before PCB fabrication is convenient, allowing for a reduction in PCB development time and costs.
- It can be used in conjunction with the components of a passive EMI filter and easily added to existing passive EMI filters to maximize the attenuation effect on electromagnetic noise.

Application

Home appliance < PV, Industrial Inverter <
EV car, EV charger < ESS, Industrial System <

Electrical Characteristics

Parameter	Value
DC Input voltage	12V(Typ.) / 15V(Max.)
Power Dissipation	Normal mode : 0.36W ($V_{DD} = 12$), 0.6W($V_{DD} = 15$)
	Sleep mode : 0.0132W($V_{DD} = 12$), 0.021W($V_{DD} = 15$)
Maximum Swing voltage	13Vpeak-peak
Maximum Swing Current	750mA peak-peak
Amplifier Bandwidth	Type1 : 150kHz to 5MHz, Type2 : 9kHz to 1MHz
ESD, Human Body Model(HBM)	-2,000V to 2,000V
ESD, charged device model(CDM)	-500V to 500V
Operating temperature	-45°C to 125°C



Product 3

Active EMI Evaluation Board

This is an evaluation board **capable** of test the **conductive electromagnetic interference (EMI) noise cancellation function** of the Active EMI module.

Key features

- Effective for canceling CM and DM electromagnetic noise, and can be used regardless of single-phase or three-phase.
- It can attenuate CE electromagnetic noise up to 34dB in the frequency range from 150kHz to several megahertz.
- By eliminating or using fewer CM chokes in conventional passive EMI filters, it is possible to reduce the circuit board size.
- There are two models available: one with an evaluation board for low-signal applications using SMA ports, and another that providing high-voltage ports.
- A fully isolated structure using a magnetic core has been implemented, including both a sensing transformer and an injection transformer.

Electrical Characteristics

Parameter	Value
DC Input Voltage	15 V
Rated Voltage(Power line)	380V rms
Rated Current(Power line)	Single-phase mode: 30 Arms (max. 11.4kW) 3 phase : 15Arms (max. 9.9kW)
EMI Filter Bandwidth	150kHz - 30MHz
Amplifier Bandwidth	150kHz - 5MHz
Peak Additional Insertion Loss by AEF	20dB
Surge Immunity level(Stand-alone)	4 kV

Product 4

Standard EMI Filter(Applied Active EMI Solution)

This is a **universal EMI filter** incorporating an active EMI solution.

Key features

- This is a general-purpose EMI filter equipped with an active EMI solution.
- It is significantly lighter and more compact compared to traditional passive general-purpose EMI filters, ensuring a competitive edge in terms of pricing.
(344mm(W)x120mm(D)x150mm(H)) bandwidth: 150kHz ~ 30MHz
- It is capable of attenuating conducted electromagnetic noise in the frequency range of 150kHz to 30MHz.
- By incorporating an active EMI solution, it has lower leakage current compared to traditional passive general-purpose EMI filters.

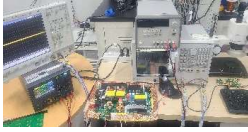
Application

- High-Power system <
- Industrial manufacturing equipment <

Specification

Parameter	Value
Rated Voltage	3 phase 250VAC
Rated Current	150A
Rated Frequency	50/60Hz
Ambient operating temperature range	-25°C ~ +40°C
Operating temperature range	-25°C ~ +100°C
Active EMI Filter	12V (max 15V)
Active EMI Filter Rated Voltage	30mA (Vdc=12V), 40mA (Vdc=15V)
Active EMI Filter Operating temperature range	-25°C ~ +100°C

Product 5 [Technical Service]

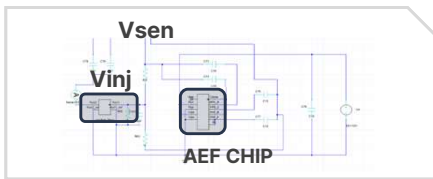


RE/CE EMI and ESD debugging

Utilizing active EMI solutions, we perform analysis and debugging for EMI/ESD/EMP, as well as consulting services for filter design.

Active EMI Filter Design

We perform the design of EMI filters and systems by applying active EMI solutions.



Circuit Design



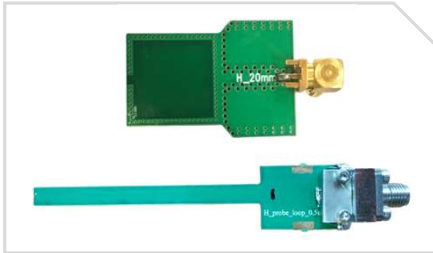
Module Design



PCB Design

EMI analysis and debugging

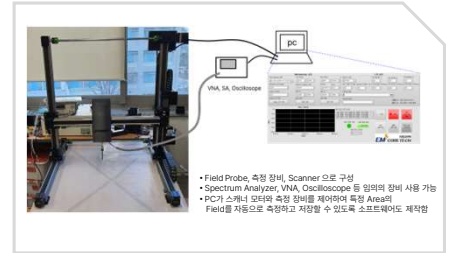
We conduct measurements of proximity electromagnetic fields and EMI debugging using our self-developed field probe and scanner system.



Lab-made field probes



Accurate calibration system of field probes



EMI/EMS/ESD/EMP Multi-purpose field scanner

ESD analysis and debugging

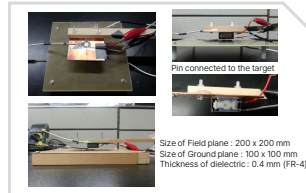
We measure, analyze, and debug semiconductor and system-level Electrostatic Discharge (ESD) using an ESD gun and our self-developed TLP/CDM/CBE test setup.



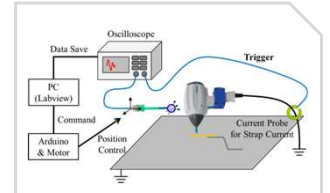
Lab-made TLP source



ESD test setup



Lab-made CDM/CBE test setup



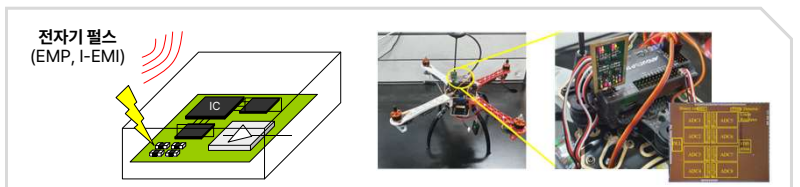
Lab-made scanning system for ESD-EMS debugging

EMP analysis and debugging

We test and debug malfunctions caused by Electromagnetic Pulse (EMP) using our self-made TLP/EMP source. Additionally, we utilize a self-developed detection circuit (To Be Determined: oscilloscope IC) to measure the internal environment of the system.



Lab-made EMP source (High-power DS source)



EMP Detection circuit & Oscilloscope IC for EMP-EMS debugging

Facility



Chamber



Equipment

EMI Test Receiver
(ESR3 Rohde & schwarz)
+ **Spectrum Analyzer** [Near field]
9K ~ 3.6GHz

Software
(EMC-32 Rohde & schwarz)

Active Rod antenna
(VAMP 9243 schwarz beck)

Log periodic antenna
(VHALP schwarz beck)

Amplifier
(TK-PA3S)

Horn antenna
(BBHA9120D schwarz beck)

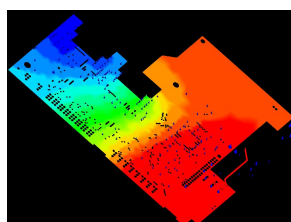
LISN + shield Box [Low & High Power]
(NNBM8124 Automotive LISN)
0.1 ~ 150MHz

EZ-17
(Rodhe & schwarz)

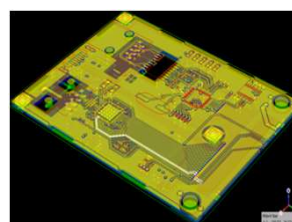
Biconical antenna
(3110 ETS-LINDGREN)

OptoCAN-HS/LIN

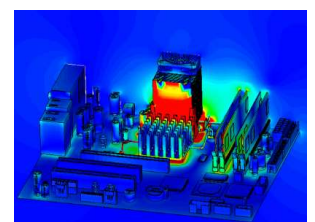
Simulation System



ANSYS 3D
analytics tool



CST Studio



EMC Studio

Analysis Equipment

Near Field Measurement System
with Receiver & Portable Spectrum



Impedance & Gain-Phase Analyzer

Network Analyzer



Time & Frequency Measure System

Thank you



We have developed the world's first active EMI filter IC capable of canceling electromagnetic noise.

We have developed an active EMI filter module utilizing an active EMI filter IC.

VISION



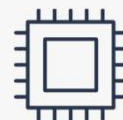
EMI Noise

Reduce
electromagnetic noise
by up to 50%.



**Accidents
caused by EMI**

Reduce
electromagnetic
accidents
by up to 50%.



**Filter size
and weight**

Reduce
the size and weight
of the EMI filter
by up to 50%.

HQ

Address. (44919) #504-1, 106dong, 50, UNIST-gil, Eonyang-eup, Ulju-gun, Ulsan

T. +82 52-254-2186 **F.** +82 52-254-2187

BR

Address. (18468) #1310, 830, Dongtansunhwan-daero, Hwaseong-si, Gyeonggi-do

T. +82 31-630-2485 **F.** +82 31-630-2486

