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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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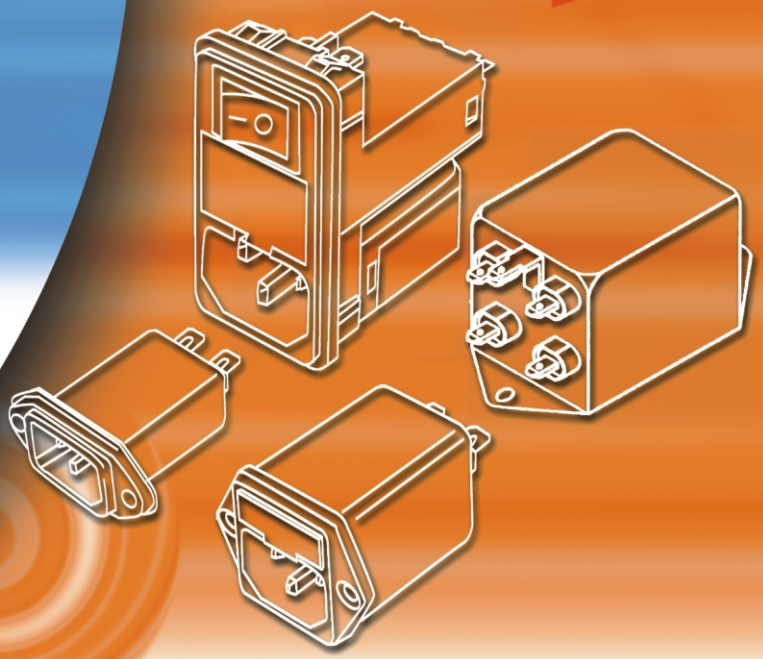
EMI FILTERS

CATALOG



Quality Makes The Difference
ISO-9001 & ISO-14001 Approved

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IEC INLET FILTERS

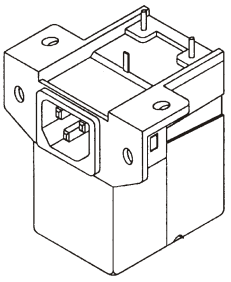
IEC INLET PC BOARD MOUNTING FILTERS

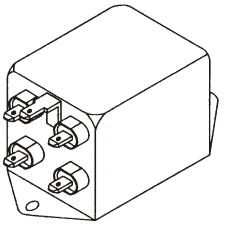
POWER ENTRY MODULE FILTERS

GENERAL PURPOSE ONE-STAGE FILTERS

GENERAL PURPOSE TWO-STAGE FILTERS

The data contained in this catalogue is intended to be a general product description.
DELTA reserves the right to make changes in specifications without notice.
Please contact us for custom designs.





MEDICAL FILTER

IEC CONNECTORS

POWER ENTRY MODULES

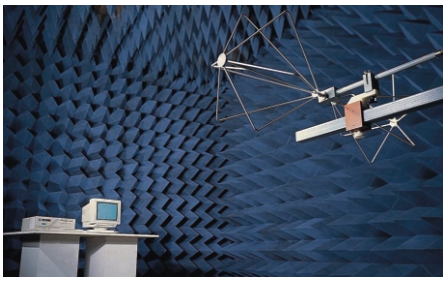
THREE-PHASE FILTERS

GENERAL PURPOSE ONE-STAGE FILTERS

Delta Strength and Capability

TECHNOLOGY & TECHNICAL SERVICE

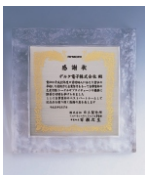
Since 1981, Delta has been producing reliable, quality consistent, dependable EMI filters that cater to power supplies, monitors, instruments, networking and medical equipments, and many other devices around the world. Our extensive years of experience have made us the prime leader of these product. We have flexible engineering and supporting groups that enable us to provide solutions to our customer's problems in a timely manner. And with our very own international recognized test facilities such as shielding rooms and anechoic chamber, test for total EMC compatibility can be done and certified right away. Our technical expertise is demonstrated by over 1000 standard part numbers that are approved with UL, CSA and VDE.



EMI/RFI Shielding Room

QUALITY

Delta's commitment to quality can be summed up in the numerous awards we have received from major world-class leaders such as Dell, HP, IBM, NEC, Sony, Fujitsu, Intel, GE and many others. All our EMI/RFI Filters meet international safety standards and have undergone Statistical Process Control and Total Quality Control before mass production. Our full commitment in quality starts from the design stage and continues through the production stages. All Delta plants are certified with ISO-9000/ISO-14001 and our EMI/RFI filter plant has been qualified under the IECQ system.



MANUFACTURING

Delta's manufacturing base for EMI/RFI filters is located within all our ISO-14001 certified Thailand plants. State-of-the-art automation equipments have been installed in these plants and through this, we are able to greatly increase our production capacity and maintain a consistent quality level for our products. Our automation equipment includes automated winding, assembly and test systems. All these systems are developed and produced by our own automated engineering department. To assure our clients of a continuous supply of stock all year round, our global operation with sales and marketing are located in key cities around the world.

Manufacturing Plant in Thailand

Marketing and R&D in Taoyuan, Taiwan

Automated Assembly Line

PRODUCT OFFERING

Delta has been moving forward with continual product improvement. Our three-phase filters with maximum amperes of 600A and voltage rating of up to 520 VAC are presently in mass production, and have been used to a large extent in AC motor drives and machine tool applications. In the meantime, development of high frequency products for telecom & networking market are underway.

Our present products covers IEC inlet filters with a maximum of 20A, chassis mounting filters with maximum of 60A and the three-phase filters. Thanks to our long experience working with multi-national companies, we have the capability to deliver customized products within a short period of time, whatever the quantity is. Our facilities, experience, services, compounded with the latest technology are there to offer EMI filters to meet our customers' utmost satisfaction.

FEATURES AND BENEFITS FOR OEM USERS

1. UL, CSA, VDE/ TUV, SEV, SEMKO, DEMKO AND SETI Safety Standards

All Delta filters are designed to meet UL standard 1283, CSA STANDARDS C22.2 No.0, No.8, and VDE STANDARD EN60939-2, including conformity to temperature range (-25℃ to +100℃) and full current rating usage at both 115 VAC and 250 VAC. All filters in this catalog are UL recognized and CSA certified, and over 1000 types are VDE approved under the following file numbers:

UL file no. E79109
CSA file no. LR48852C
VDE file no. 11641-4730 or SEMKO.

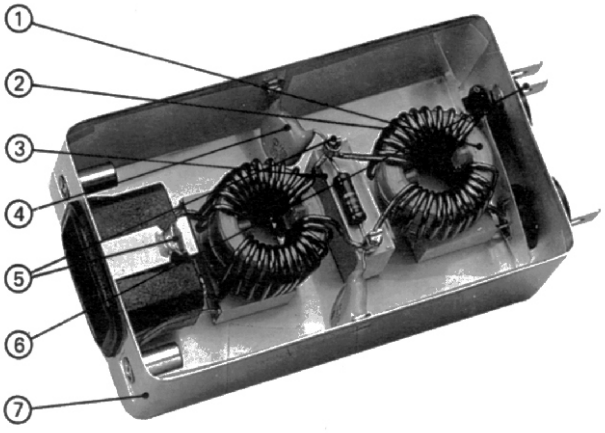
2. FCC and VDE Emission Compliance

Delta offers a wide range of filter characteristics, both in standard and custom form, to help you meet all applicable FCC, VDE and VCCI conducted emission standards, including FCC, VDE and VCCI class B requirements.

3. Construction and Design

① - Toroid cover for perfect insulation, with built-in spacers to maintain creepage distance between windings.
② - Precision balance of inductance between windings to prevent core saturation at full load.
③ - Only capacitors that comply with VDE 0565-1 are used.
④ - Low leakage current.
⑤ - Both crimped and soldered connections.
⑥ - Anti-rotation terminals to prevent open connections.
⑦ - Corrosion-proof case.

FIG.1



4. Quality Control

- 100% tested for Hipot, leakage current and insertion loss.
- Less than 200 parts-per-million (ppm) defect rate.
- Approved for Ship-to-Stock program (no incoming inspection) at major computer manufacturers' facilities.

5. Availability

Stock of standard items are maintained in Northern California for immediate shipment to OEM customers and at distributors located throughout North America.

6. Price

Delta filters are very competitively priced due to highly automated lines and cost-saving designs.

7. Custom Design and Testing Services

Delta has engineering labs and shield rooms in Taipei and Northern California. These facilities allow us to design and fabricate custom filters to meet special requirements not met by standard filters and to test customers' equipment for compliance to FCC, VDE and VCCI conducted emission requirements.

BRIEF CONCEPT OF EMI FILTER

♦ EMI NOISE-ORIGIN AND CHARACTERISTICS

Recent decades have witnessed the rapid growth of computers, business machines, industrial controls, medical electronic equipment and many other devices that utilize digital techniques. Concurrent with this growth, the problems of Electro-Magnetic Interference (EMI) found both in the equipment, causing equipment malfunction, and outside of the equipment, causing interference to other equipment of related Emission communication, have become more severe. The frequency ranges of EMI noise are 10KHz to 30MHz by conduction through wires and 30MHz to 1GHz by radiation.

Conducted EMI noise consists of two modes:

1. Common mode interference is EMI noise present on the line and neutral referenced to safety ground. Most noise problems are caused by common mode interference.
2. Differential mode interference is EMI noise present on the phase line referenced to the neutral. Differential mode EMI tends to decline rapidly in the building wiring.

♦ LEGAL REGULATION ON CONDUCTED EMI FCC

In the US, the FCC has imposed legal regulations to control interference at its source. All computing devices, including peripherals, using digital techniques with a clock frequency greater than 10KHz must comply with FCC regulations part 15 after Oct. 1983.

The FCC had divided products into two basic categories:

Class A:

For computing devices marketed for use in a commercial, industrial or business environment. Class A requires verification, which means that the equipment has been tested and complies with the data.

Class B:

For computing devices marketed for use in a residential environment. Class B requires certification, which means that the test data has to be submitted to FCC for the equipment to pass.

♦ VDE

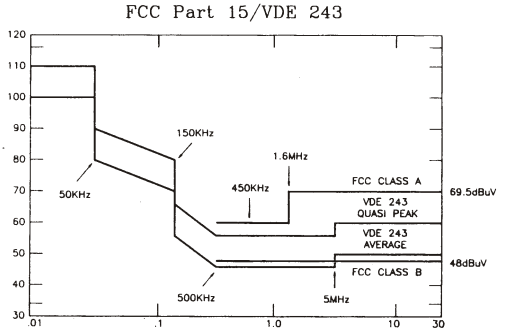
Products intended for European markets should meet the requirements devised by VDE. VDE 0243 specification limits conducted emission for computing devices and other industrial, scientific and medical equipment to two levels:

Class A:

The user has to apply for a special operating license issued by the BZT (the German equivalent of FCC). If the equipments moved from one location to another, the BZT must be notified.

Class B:

If the equipment meets the B level, it then has general approval and no operating license is required. Most manufacturers attempt to meet Class B for marketing reasons. Conducted EMI regulated by FCC part 15 and VDE 243 are shown in the figure below.



♦ ADEQUATE SELECTION OF EMI FILTER

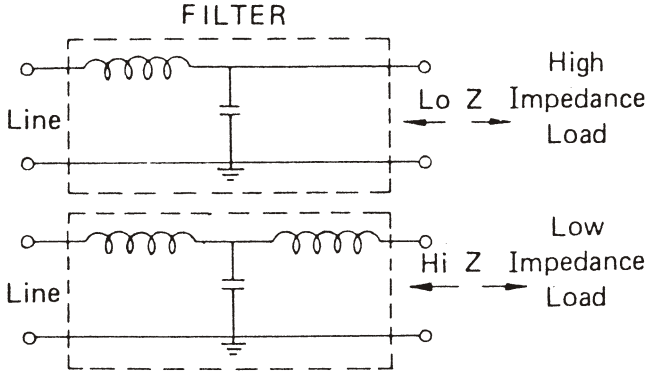
The effectiveness of noise attenuation is undoubtedly the primary concern for selecting an EMI filter. The capability in this aspect usually refers to the reading of insertion loss which is derived from following formula:

$$\text{Insertion loss (dB)} = 20 \log \frac{V1}{V2}$$

Wherein V1=EMI voltage without filter
V2=EMIvoltage with filter

Published insertion loss data assumes that power line and load have the same impedance and all such data are in practice generated from a 50 OHM-50 OHM circuit. However, the said condition seldom exists in actual application. Therefore, insertion loss readings are not supposed to represent actual performance of noise suppression but a reference for comparison among different units or evaluation of product conformity in incoming inspection. To verify actual effectiveness in noise suppression, a filter has to be mounted in the equipment and be subjected to conduct emission test in a shielding room.

The effectiveness of noise attenuation depends heavily on the source and load impedance. EMI filter function as "mismatching networks" between source and load impedance at high frequencies. The greater the mismatch, the more effective the filter will be in attenuating the interference. In most cases, the power line presents low impedance. The filter line side should then present high impedance. Equipment, on the other hand, can be either high or low impedance. High impedance equipment such as linear power supplies should use a filter with low impedance or a shunt capacitor at the load side to create a mismatch. Low impedance equipment such as switching power supplies, synchronous motors or shunt regulators should use a filter with high impedance at the load side and should have a series inductor. The schematics below provide you an easy way for choosing the appropriate filter.

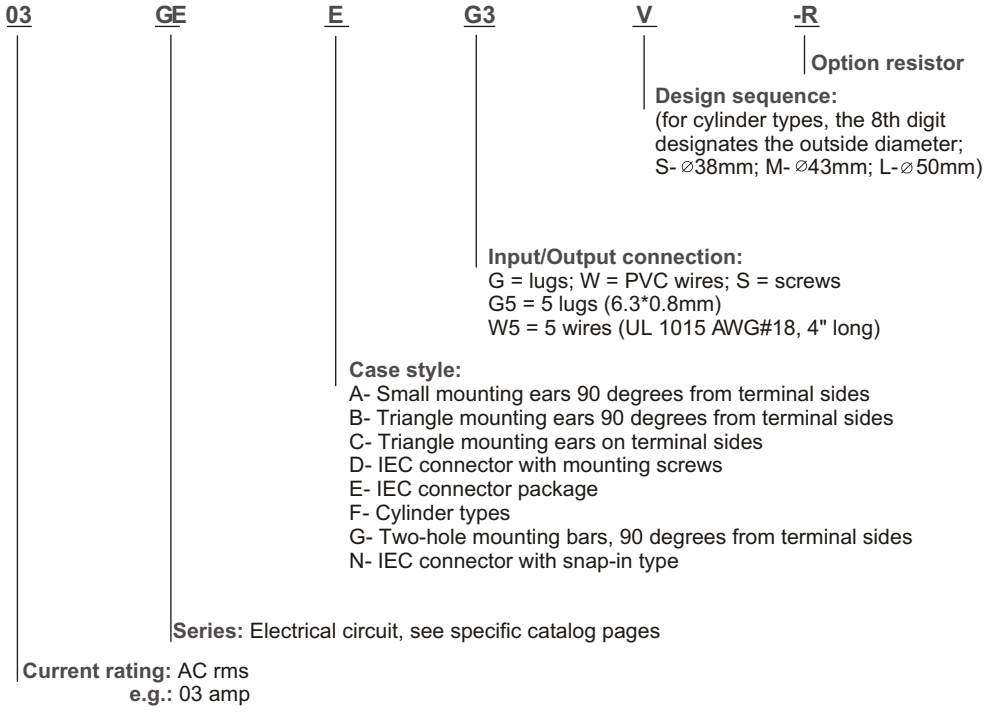


The following factors should also be taken into consideration in your selection process.

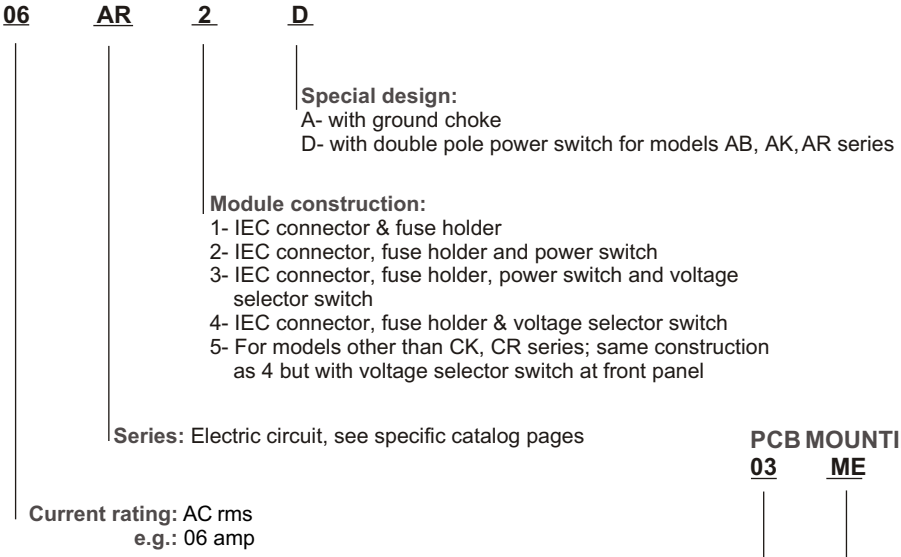
a. Current and voltage rating
b. Environment requirement such as temperature, shock, vibration and humidity
c. Physical dimension and terminal configuration
d. Availability
e. Cost effectiveness
f. Safety approval

DELTA PARTS NUMBERING SYSTEM

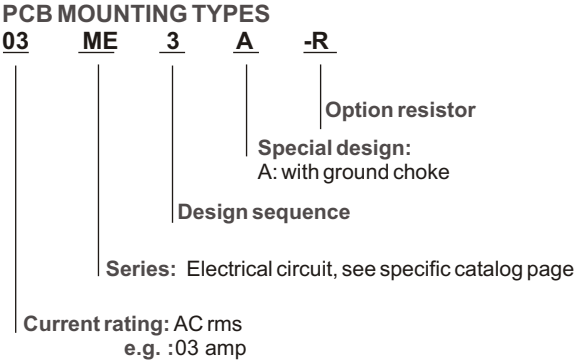
MODELS OTHER THAN POWER ENTRY MODULE TYPES AND P.C. BOARD MOUNTING TYPES



POWER ENTRY MODULE TYPES



PCB MOUNTING TYPES



DELTA PARTS NUMBERING SYSTEM

3-Phase Types

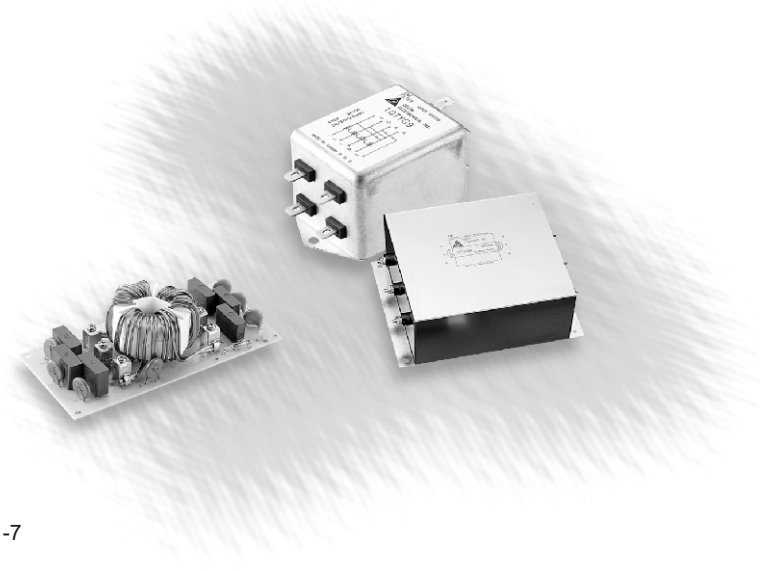
10 TD S6 D

Special Design:
Dual: diff. and common choke

Input/Output connection :
G = lugs; W = PVC wires; S = screws; T = terminal blocks
e.g.
G6 = 6 lugs
W6 = 6 wires
T2: 2 terminal blocks
TIW4: 1 terminal block / 4 wires

Series:
TD: used in "△" system
TDH: used in "△" system
TDR: used in "△" system, vertical style
TDV: used in "△" system, vertical style
TDS: used in "△" system, screw style
TY: used in both "△" & " y " system
TYS: used in "△" & " y " system, screw style
TYT: used in "△" & " y " system terminal block style
PT: P.C.B. Filter
PY: P.C.B. Filter

Current rating: AC rms
e.g.: 10 amp



15A DE SERIES COMPACT IEC CONNECTOR FILTERS

INTRODUCTIONS

1. 15DEEG3X: Filter with 120°C temperature socket
2. 15DEEG3X(D): Filter with 65°C temperature socket
3. Safety Approval:
   EG3HA/(D): UL, CSA,
   EG3E/(X)/(DX): ┐
   EG3M(D): │
   EG3HAX /(X)/(DX): │ UL, CSA, VDE
   EG3E-R/(X)/(DX): ┘
   • (X): (1), (2), (3)
4. UL, CSA approved 15A at 115VAC & 250VAC;
   VDE-10A at 250 VAC

SPECIFICATIONS

1. Maximum leakage current each
   line-to-ground @ 115VAC 60Hz: 0.20mA
   @ 250VAC 50Hz: 0.40mA
2. Hipot rating (one minute)
   line-to-ground: 2250VDC
   line-to-line: 1450VDC
3. Operating frequency: 50/60Hz
4. Rated voltage: 115/250VAC

COMPONENTS

PART NO.	Cx (uF)	Lg (uH)	L (mH)
15DEEG3HA/(D)	—	6	0.12
15DEEG3HAX/(D)	0.1		
15DEEG3HAX(2)/(D)	0.033		
15DEEG3HAX(3)/(D)	0.047		
15DEEG3E-R/(D)	0.1	—	
15DEEG3E-R(1)/(D1)	0.0047		
15DEEG3E-R(2)/(D2)	0.033		
15DEEG3E-R(3)/(D3)	0.047		
15DEEG3E/(D)	0.1		
15DEEG3E(1)/(D1)	0.0047		
15DEEG3E(2)/(D2)	0.033		
15DEEG3E(3)/(D3)	0.047		
15DEEG3M(D)	0.1	—	0.15
15DEEG3M(D2)	0.033		
15DEEG3M(D3)	0.047		

15DEEG3E

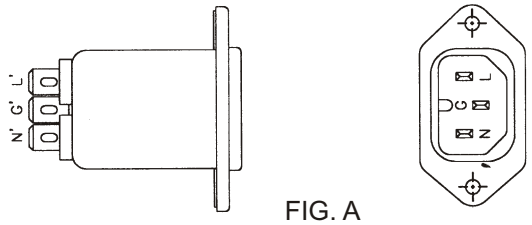


FIG. A

15DEEG3E (D)

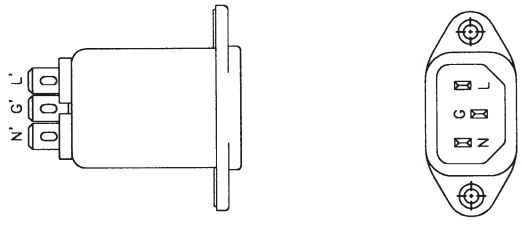


FIG. B

ELECTRICAL SCHEMATIC

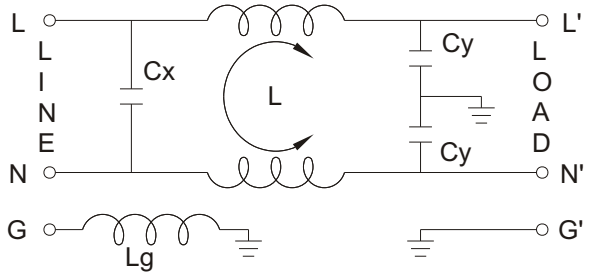
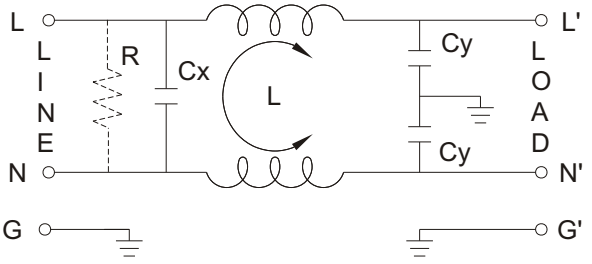


FIG. A: 15DEEG3HAX(X)/(DX)
Cy: 2200pF



15DEEG3E-R(X)/(DX)
FIG. B: 15DEEG3E(X)/(DX)
15DEEG3M(X)/(DX)

R: 1M
Cy: 2200pF

♦15DE Series P/N System

15DE Series has different combinations on socket and Cx, please see the following:

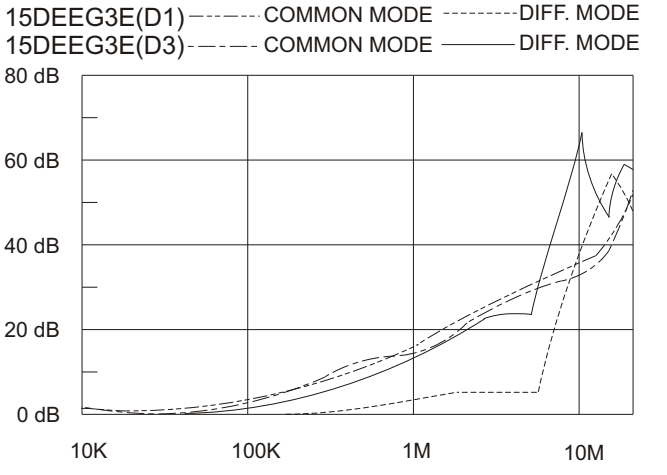
A: SOCKET
1. EX. P/N: 15DEEG3E used socket (FIG. A).
2. EX. P/N: 15DEEG3E(D), P/N with suffix: "(D)" used socket (FIG. B).

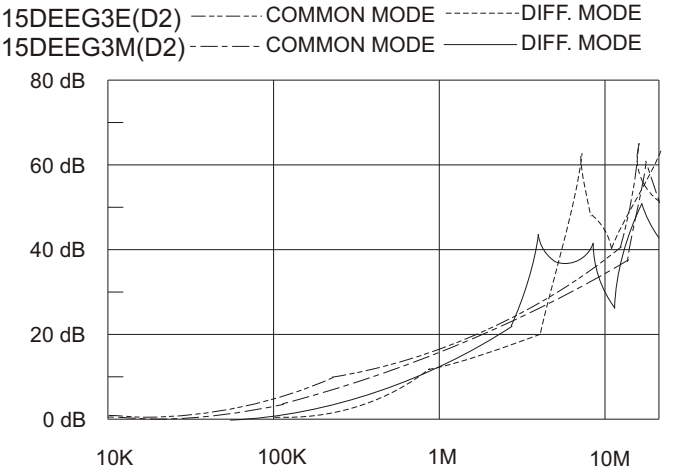
B. Cx
1. EX. P/N: 15DEEG3E Cx: 0.1uF
2. P/N with suffix "(1)" & "(D1)" Cx: 0.0047uF
3. P/N with suffix "(2)" & "(D2)" Cx: 0.033uF
4. P/N with suffix "(3)" & "(D3)" Cx: 0.047uF

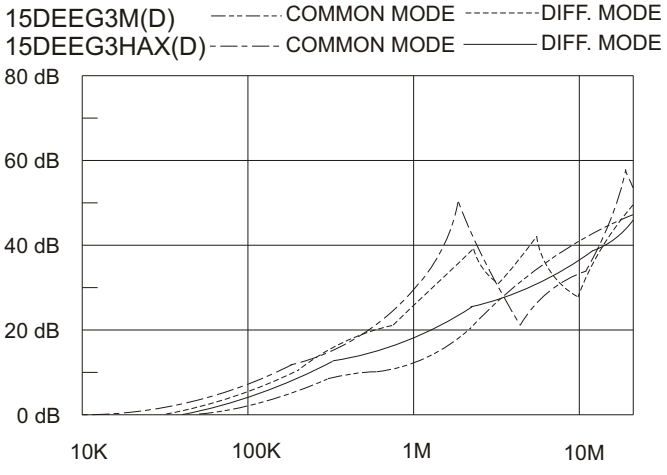
MINIMUM INSERTION LOSS IN dB

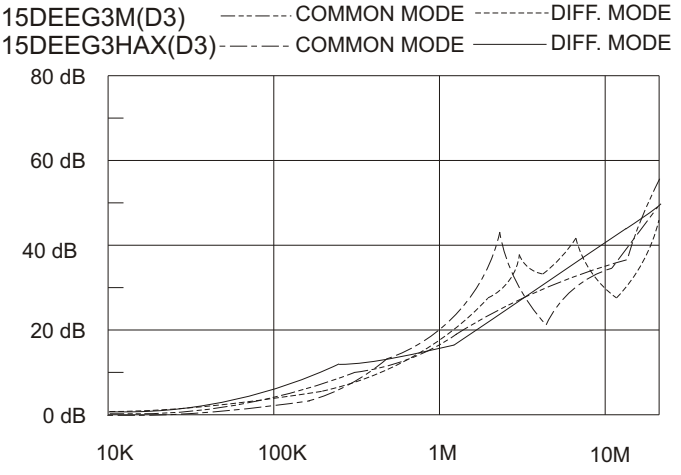
COMMON MODE (L-G) IN 50 OHM SYSTEM								DIFFERENTIAL MODE (L-L) IN 50 OHM SYSTEM							
PART NO.	FREQUENCY-MHz							PART NO.	FREQUENCY-MHz						
	.10	.15	.50	1.0	5.0	10	30		.10	.15	.50	1.0	5.0	10	30
15DEEG3E(D)/-R	1	2	8	10	20	25	40	15DEEG3E(D)/-R	1	2	10	15	25	25	40
15DEEG3E(D1)/-R		0	5	10	20	25	40	15DEEG3E(D1)/-R		0	0	1	3	30	40
15DEEG3E(D2)/-R	1	2	8	10	20	25	40	15DEEG3E(D2)/-R	0	1	5	8	20	30	40
15DEEG3E(D3)/-R	1	2	8	10	20	25	40	15DEEG3E(D3)/-R	0	1	5	10	20	30	40
15DEEG3HAX(D)	1	3	8	10	20	25	40	15DEEG3HAX(D)	1	4	10	20	15	20	25
15DEEG3HAX(D2)	1	3	8	10	20	25	40	15DEEG3HAX(D2)		0	4	10	15	25	35
15DEEG3HAX(D3)	1	3	8	10	20	25	40	15DEEG3HAX(D3)	0	1	7	15	15	20	35
15DEEG3M(D)	1	2	7	10	20	25	40	15DEEG3M(D)	1	4	10	10	20	20	35
15DEEG3M(D2)		2	6	10	20	25	35	15DEEG3M(D2)		0	5	8	25	20	35
15DEEG3M(D3)		1	6	10	20	25	35	15DEEG3M(D3)		1	8	10	20	25	35
15DEEG3HA(D)		1	5	10	20	28	35	15DEEG3HA(D)					1	8	30

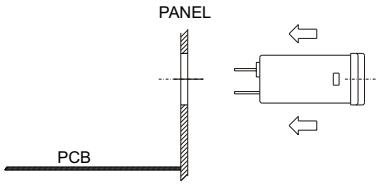
INSERTION LOSS (TYPICAL)







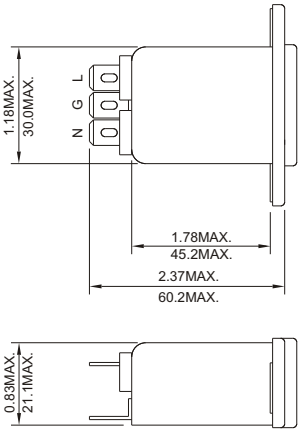


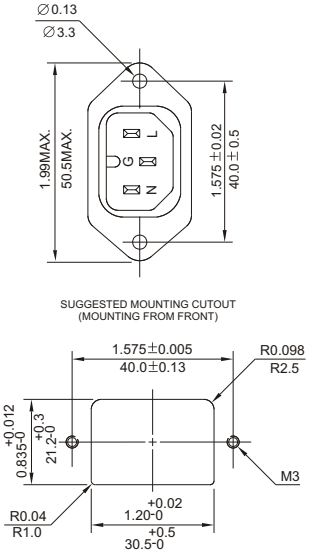


ASSEMBLY FROM FRONT

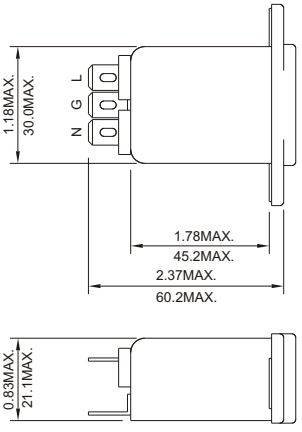
MECHANICAL CONSTRUCTION

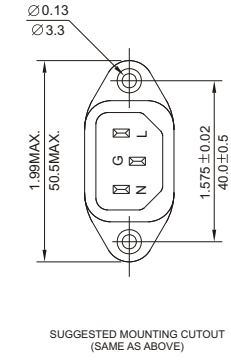
EG3HA, EG3HAX/(X)
EG3E-R/(X), EG3E/(X)



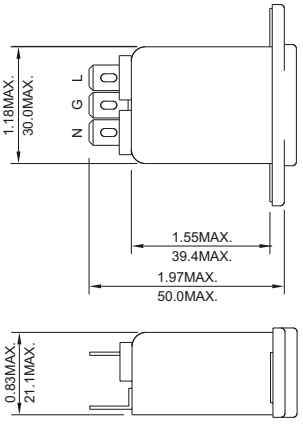


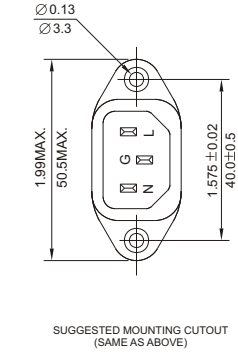
EG3HA(D), EG3HAX(D)
EG3E(D), EG3E-R(D)





EG3M(D)





UNIT: INCH / mm

GE SERIES HIGH PERFORMANCE IEC CONNECTOR FILTERS

INTRODUCTIONS

1. A high performance general purpose filter with an IEC connector providing effective EMI suppression.
2. Bleeder resistor can be added with suffix "-R" on part numbers, except "G3H","G3V","W3V","G3J","W3J",types.
3. All part numbers are UL recognized, CAS certified and VDE approved.
4. With optional Y-Cap from 100pF to 3300pF.
5. Safety under apply for 03/06/10GEEG3U series.

SPECIFICATIONS

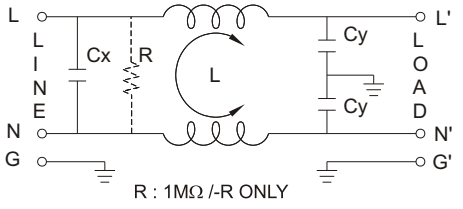
1. Maximum leakage current each
   line-to-ground @ 115VAC 60Hz: 0.25mA
   @ 250VAC 50Hz: 0.45mA
2. Hipot rating (one minute)
   line-to-ground: 2250VDC
   line-to-line: 1450VDC
3. Operating frequency: 50/60Hz
4. Rated voltage: 115/250VAC

COMPONENTS

PART NO.	Cx (uF)	L (mH)	Cy (pF)	R (Ω)
01GEEG3E/W3E/-R	0.1	6.5	2200	1M
01GEEG3H/G3V/W3V		3	3300	–
01GEEG3S/-R		10.5	2200	1M
03GEEG3E/W3E/W3ES/G3U/-R		2.5		
• **03GEEW3ES/-R**				
03GEEG3H/G3V/W3V			3300	–
03GEEG3S/-R			2200	1M
• **03GEEG3Q/W3Q-R**		4		
03GEEW3J		2.4		–
03GEHG3J				
06GEEG3E/W3E/W3ES/G3U/-R		0.8		1M
06GEEG3H/G3V/W3V			3300	–
06GEEG3S/-R		1.05	2200	1M
•• **06GEEG3Q/W3Q-R**		1.5		
••• **10GEEG3C/W3C/-R**		0.4		
10GEEG3E/W3E/W3ES/G3U/-R		0.2		
10GEEG3S/-R				
***10GEEG3Q/W3Q/-R**		0.3		
****15GEEG3E/W3E/-R**		0.2		
*****20GEEG3E/W3E/-R**		0.3		

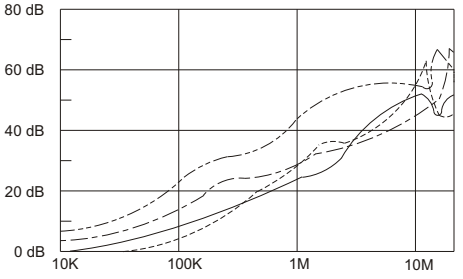
• UL, CSA approved to 4A 115/250V
•• UL, CSA approved to 8A 115/250V
••• VDE approved to 8A/250V
* UL, CSA approved to 13A 115/250V
** VDE approved to 10A/250V
*** VDE approved to 16A/250V

ELECTRICAL SCHEMATIC

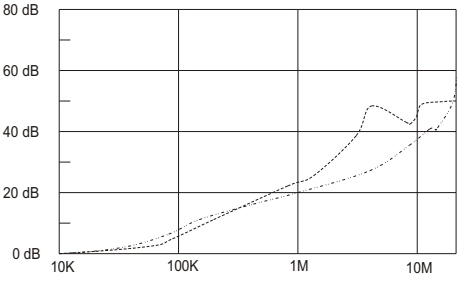


INSERTION LOSS (TYPICAL)

03GEEG3E ----- COMMON MODE ------- DIFF. MODE
06GEEG3E -·-·- COMMON MODE ——— DIFF. MODE

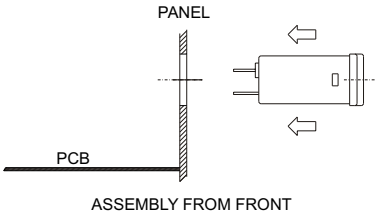


20GEEG3E ····· COMMON MODE ····· DIFF. MODE



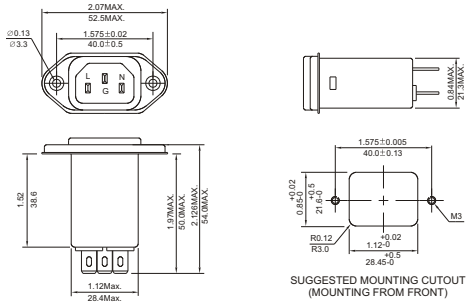
MINIMUM INSERTION LOSS IN dB

COMMON MODE (L-G) IN 50 OHM SYSTEM						
CURRENT	FREQUENCY-MHz					
RATING	.15	.50	1.0	5.0	10	30
1A(E)(S)	28	35	38	38	40	40
1A(H)	26	36	44	54	55	55
1A(G3V)	24	35	42	50	55	55
1A(W3V)	24	35	42	50	55	55
3A(E)(S)(Q)	20	25	30	38	40	40
3A(H)	24	30	38	50	55	40
3A(G3J,W3J)	20	25	30	38	40	40
3A(G3V)(W3V)	20	29	36	48	46	50
6A(E)(S)	12	18	24	35	40	40
6A(H)	15	25	28	35	45	45
6A(Q)	15	20	24	35	40	55
6A(G3V)(W3V)	14	23	30	42	45	50
10A(E)(S)	4	10	13	28	35	40
10A(C)	10	15	15	25	30	35
10A(Q)	10	12	15	30	32	45
15A(E)	4	10	13	28	35	40
20A	8	10	15	25	30	35

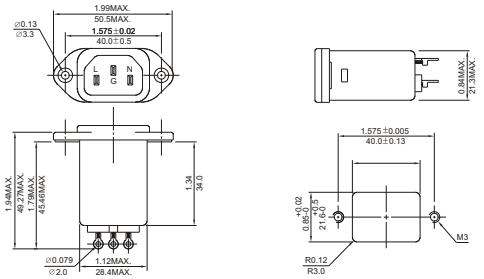


MECHANICAL CONSTRUCTION

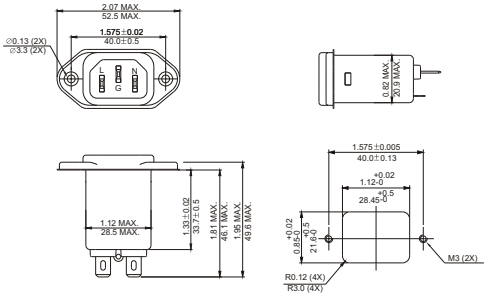
EG3E, EG3Q (Optional soldering lug or wire type)

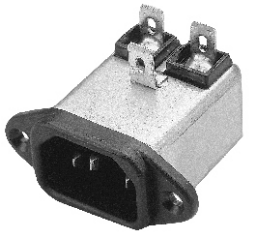


EG3S

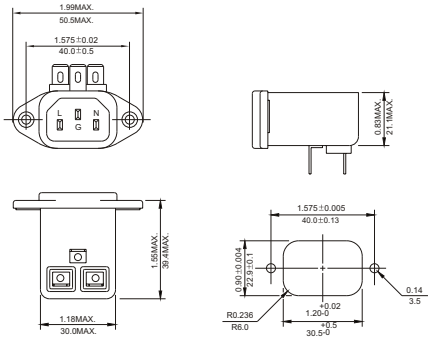


EG3U (With Compact Size)

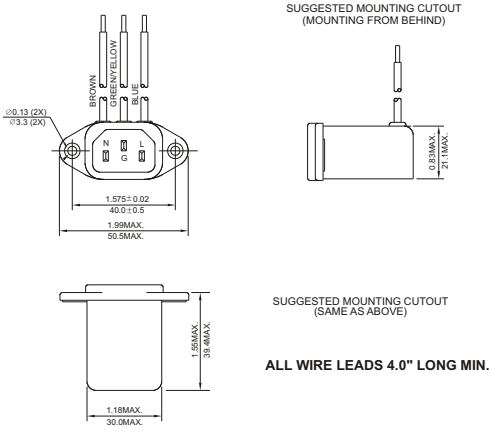




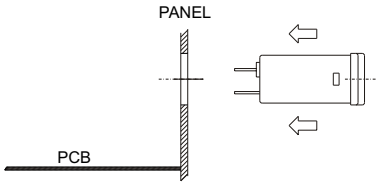
EG3V



EW3V



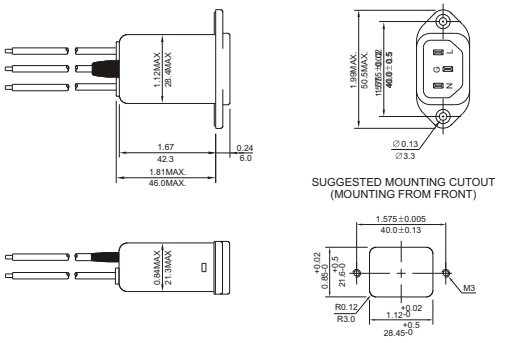
UNIT: INCH / mm

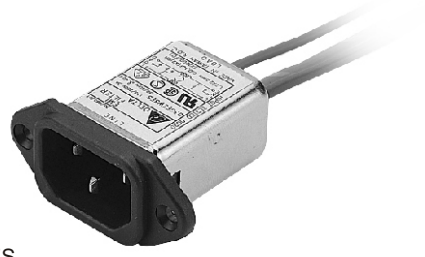


ASSEMBLY FROM FRONT

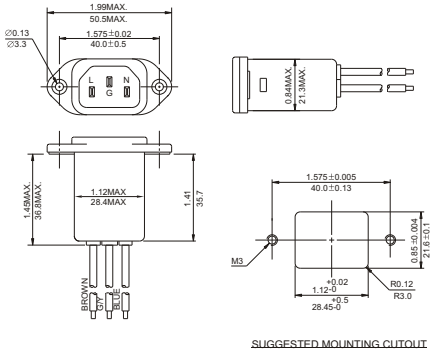
MECHANICAL CONSTRUCTION

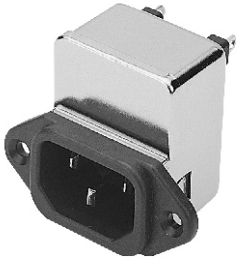
EW3J



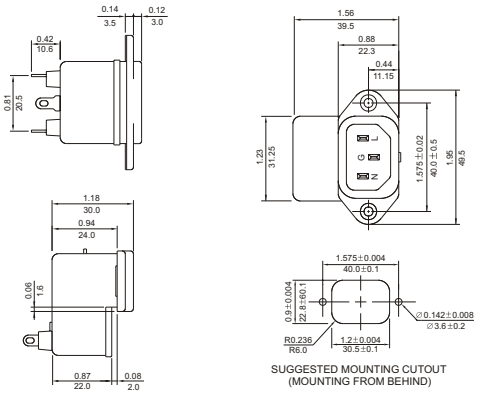


EW3ES

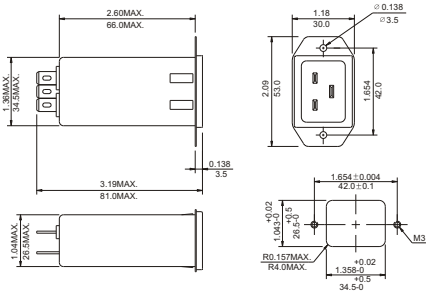




HG3J



20GEEG3E (Optional wire type)



UNIT: INCH / mm

GE SERIES — SNAP-IN MOUNTING HIGH PERFORMANCE IEC CONNECTOR FILTERS

INTRODUCTIONS

1. Snap-in mounting type to reduce labor cost. Compact and reliable at low cost.
2. Bleeder resistor can be added with suffix "-R" on part numbers, except G3H,G3V,W3V,G3J,W3J,types.
3. Optional side snap-in mounting clip type with suffix (H) on part numbers.
4. All part numbers are UL recognized, CSA certified and VDE approved.
5. With optional Y-Cap from 100pF to 3300pF.
6. Safety under apply for 03/06/10GENG3U series.

COMPONENTS

PART NO.	Cx (uF)	L (mH)	Cy (pF)	R (Ω)
01GENG3E/W3E/-R	0.1	6.5	2200	1M
03GENG3E/W3E/G3U/-R		2.5		
• 03GENW3ES/-R		2.5		
• 03GENG3Q/W3Q/-R		4		
06GENG3E/W3E/G3U/-R		0.8		
•• 06GENG3Q/W3Q/-R		1.5		
06GENW3ES/-R		0.8		
10GENG3E/W3E/G3U/-R		0.2		
••• 10GENG3C/W3C/-R		0.4		
* 10GENG3Q/W3Q/-R		0.3		
10GENW3ES/-R		0.2		
** 15GENG3E/W3E/-R		0.2		
*** 20GENG3E/W3E/-R		0.3		

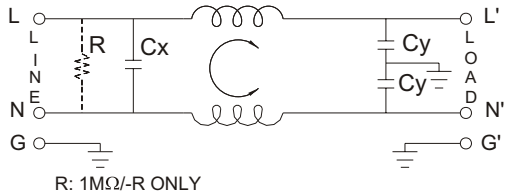
• UL, CSA approved to 4A 115/250V
•• UL, CSA approved to 8A 115/250V
••• VDE approved to 8A/250V

* UL, CSA approved to 13A 115/250V
** VDE approved to 10A/250V
*** VDE approved to 16A/250V

MINIMUM INSERTION LOSS IN dB

COMMON MODE (L-G) IN 50 OHM SYSTEM						
CURRENT	FREQUENCY-MHz					
RATING	.15	.50	1.0	5.0	10	30
1A	28	35	38	38	40	40
3A	20	25	30	38	40	40
6A	12	18	24	35	40	40
6A (G3Q)	15	20	24	35	40	55
10A	4	10	13	28	35	40
10A (G3C)	10	15	15	25	30	35
10A (G3Q)	10	12	15	30	32	45
15A	4	10	13	28	35	40
20A	8	10	15	25	30	35

ELECTRICAL SCHEMATIC

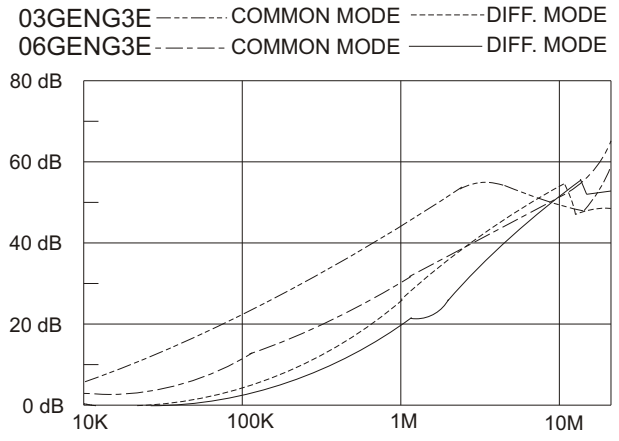


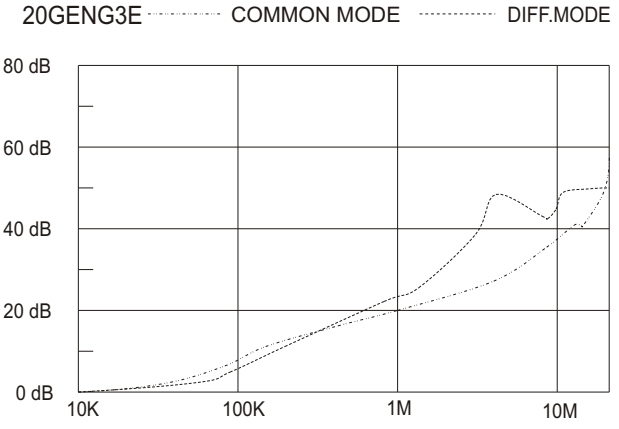
R: 1MΩ/-R ONLY

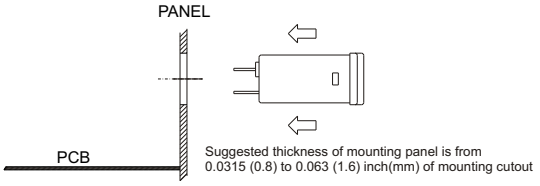
SPECIFICATIONS

1. Maximum leakage current each
   line-to-ground @ 115VAC 60Hz: 0.2mA
   @ 250VAC 50Hz: 0.4mA
2. Hipot rating (one minute)
   line-to-ground: 2250VDC
   line-to-line: 1450VDC
3. Operating frequency: 50/60Hz
4. Rated voltage: 115/250VAC

INSERTION LOSS (TYPICAL)



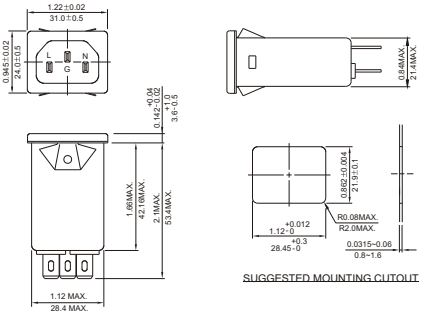




ASSEMBLY FROM FRONT

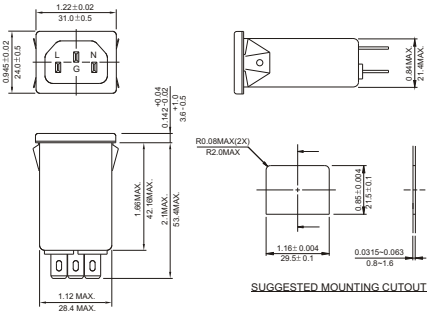
MECHANICAL CONSTRUCTION

NG3E, NG3C, NG3Q (Optional wire type)



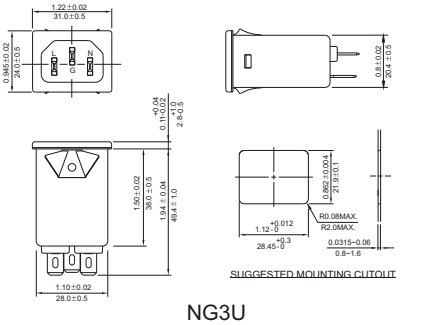
GENG3E

NG3E(H), NG3C(H), NG3Q(H) (Optional wire type)

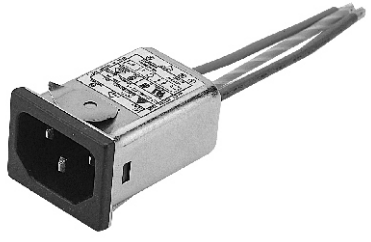


GENG3E(H)

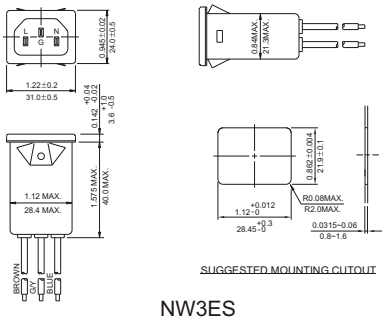
NG3U (With Compact Size)



NG3U

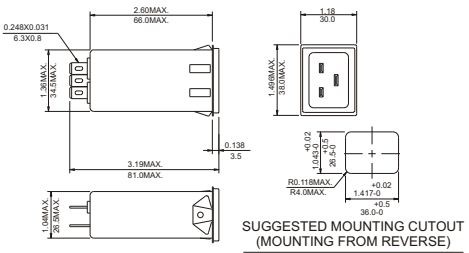


NW3ES



NW3ES

20GENG3E (Optional wire type)



UNIT: INCH / mm

ALL WIRE LEADS 4.0" LONG MIN.

GK SERIES MOUNTING HIGH PERFORMANCE IEC CONNECTOR FILTERS

INTRODUCTIONS

1. Specially designed with additional X capacitor providing most effective EMI suppression for low frequency noise (ranged 150KHz-500KHz).
2. Bleeder resistor can be added with suffix "-R" on part numbers.
3. With optional Y capacitor from 100pF to 3300pF.
4. All part numbers are UL recognized, CSA certified and VDE approved.

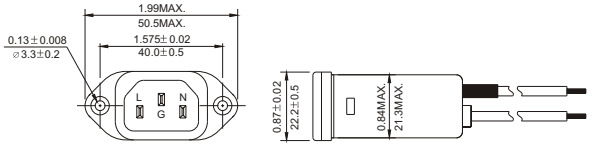
SPECIFICATIONS

1. Maximum leakage current each
   line-to-ground @ 115VAC 60Hz: 0.20mA
   @ 250VAC 50Hz: 0.40mA
2. Hipot rating (one minute)
   line-to-ground: 2250VDC
   line-to-line: 1450VDC
3. Operating frequency: 50/60Hz
4. Rated voltage: 115/250VAC

COMPONENTS

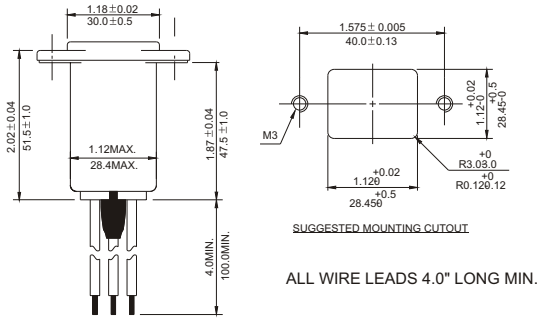
PART NO.	L (mH)	Cx (uF)	Cy (pF)
03GKEG3E/03GKEW3E	3.1	0.1	2200
06GKEG3E/06GKEW3E	1.2	0.1	
•10GKEG3E/•10GKEW3E	0.36	0.1	

• VDE approved to 9A/250V



MINIMUM INSERTION LOSS IN dB

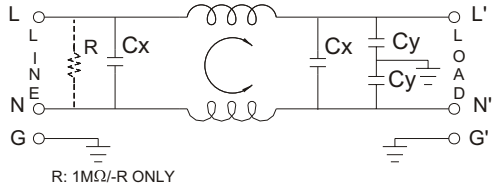
COMMON MODE (L-G) IN 50 OHM SYSTEM						
PART Number	FREQUENCY-MHz					
	.15	.50	1.0	5.0	10	30
03GKEG3E/03GKEW3E	20	25	30	40	40	50
06GKEG3E/06GKEW3E	12	20	25	35	45	45
10GKEG3E/10GKEW3E	7	10	15	30	35	50
DIFFERENTIAL MODE (L-L) IN 50 OHM SYSTEM						
03GKEG3E/03GKEW3E	5	25	50	55	53	45
06GKEG3E/06GKEW3E	7	20	35	50	50	40
10GKEG3E/10GKEW3E	7	9	25	50	45	35



ALL WIRE LEADS 4.0" LONG MIN.

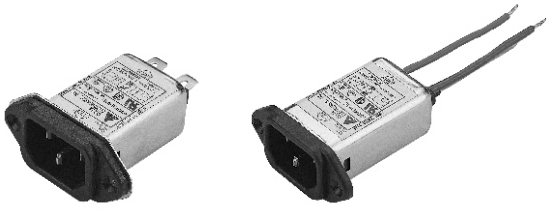
W3E

ELECTRICAL SCHEMATIC

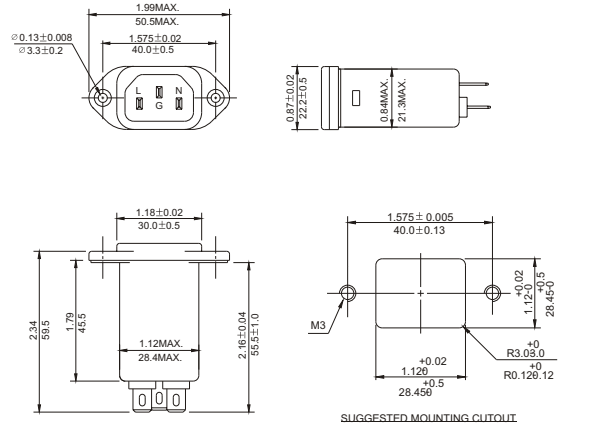


R: 1MΩ/-R ONLY

MECHANICAL CONSTRUCTION



G3E W3E



G3E

UNIT: INCH / mm

GKN SERIES SNAP-IN MOUNTING HIGH PERFORMANCE IEC CONNECTOR FILTERS

INTRODUCTIONS

1. Specially designed with additional X capacitor providing most effective EMI suppression for low frequency noise (ranged 150KHz-500KHz).
2. Bleeder resistor can be added with suffix "-R" on part numbers.
3. With optional Y capacitor from 100pF to 3300pF.
4. All part numbers are UL recognized, CSA certified and VDE approved.

SPECIFICATIONS

1. Maximum leakage current each
   line-to-ground @ 115VAC 60Hz: 0.2mA
   @ 250VAC 50Hz: 0.4mA
2. Hipot rating (one minute)
   line-to-ground: 2250VDC
   line-to-line: 1450VDC
3. Operating frequency: 50/60Hz
4. Rated voltage: 115/250VAC

COMPONENTS

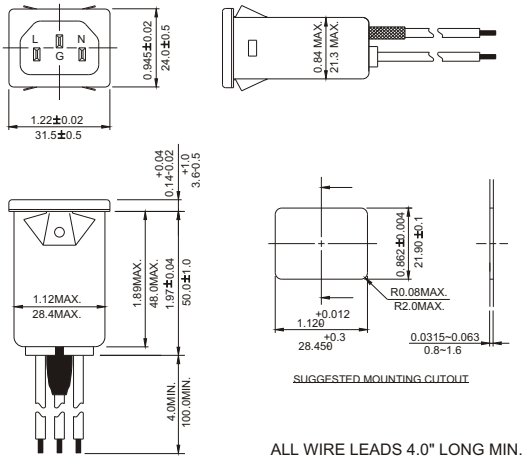
PART Number	L (mH)	Cx (uF)	Cy (pF)
03GKNG3E/03GKNW3E	3.1	0.1	2200
06GKNG3E/06GKNW3E	1.2	0.1	
• 10GKNG3E/• 10GKNW3E	0.36	0.1	

• VDE approved to 9A/250V

MINIMUM INSERTION LOSS IN dB

COMMON MODE (L-G) IN 50 OHM SYSTEM						
PART NO.	FREQUENCY-MHz					
	.15	.50	1.0	5.0	10	30
03GKNG3E/03GKNW3E	20	25	30	40	40	50
06GKNG3E/06GKNW3E	12	20	25	35	45	45
10GKNG3E/10GKNW3E	7	10	15	30	35	50
DIFFERENTIAL MODE (L-L) IN 50 OHM SYSTEM						
03GKNG3E/03GKNW3E	5	25	50	55	53	45
06GKNG3E/06GKNW3E	7	20	35	50	50	40
10GKNG3E/10GKNW3E	7	9	25	50	45	35

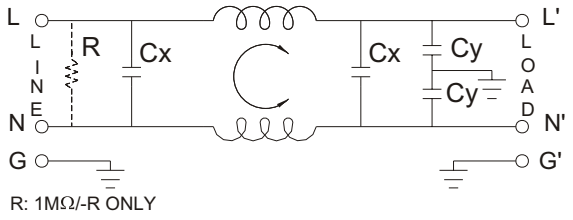
Suggested thickness of mounting panel is from
0.0315 (0.8) to 0.063 (1.6) inch(mm) of mounting cutout



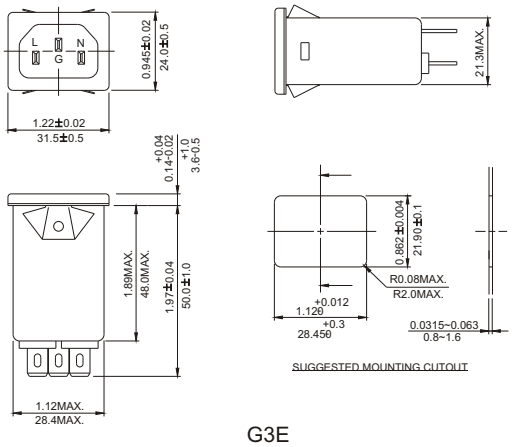
ALL WIRE LEADS 4.0" LONG MIN.

W3E

ELECTRICAL SCHEMATIC



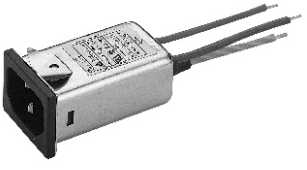
R: 1MΩ/-R ONLY



G3E

MECHANICAL CONSTRUCTION

G3E



W3E

UNIT: INCH / mm

KE SERIES HIGH PERFORMANCE IEC CONNECTOR FILTERS

INTRODUCTIONS

1. Specially designed with ground choke providing most effective EMI suppression for high frequency noise (ranged 5MHz-25MHz).
2. Bleeder resistor can be added with suffix "-R" on part numbers.
3. With optional Y capacitor 100pF to 3300pF.
4. All part numbers are UL recognized, CSA certified and VDE approved.

COMPONENTS

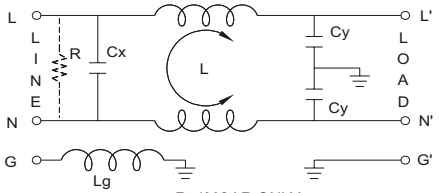
PART NO.	L (mH)	Cx (uF)	Cy (pF)	Lg (uH)
03KEEG3EA/03KEEW3EA	3.1	0.1	2200	100
*08KEEG3EA/08KEEW3EA	0.8			
**10KEEG3EA/10KEEW3EA	0.4			
***03KEEG3SA/03KEEW3SA	3.1			
***06KEEG3SA/06KEEW3SA	0.8			
***10KEEG3SA/10KEEW3SA	0.4			

* VDE approved to 6A 250V.
** UL, CSA & VDE approved to 9A 115/250VAC.
*** SEMKO approved , UL& cUL under approve.

MINIMUM INSERTION LOSS IN dB

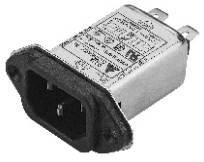
PART NO.	FREQUENCY-MHz					
COMMON MODE (L-G) IN 50 OHM SYSTEM	.15	.50	1.0	5.0	10	30
03KEEG3EA/03KEEW3EA	15	20	25	40	40	45
08KEEG3EA/08KEEW3EA	10	15	20	35	40	50
10KEEG3EA/10KEEW3EA	7	12	18	30	30	50
03KEEG3SA/03KEEW3SA	15	20	25	40	40	40
06KEEG3SA/06KEEW3SA	7	15	20	35	40	40
10KEEG3SA/10KEEW3SA	4	12	18	30	30	45
DIFFERENTIAL MODE (L-L) IN 50 OHM SYSTEM						
03KEEG3EA/03KEEW3EA	5	12	15	40	50	45
08KEEG3EA/08KEEW3EA	5	10	15	45	40	50
10KEEG3EA/10KEEW3EA	4	12	18	30	30	50
03KEEG3SA/03KEEW3SA	10	20	35	40	45	40
06KEEG3SA/06KEEW3SA	10	25	40	35	40	40
10KEEG3SA/10KEEW3SA	10	25	35	30	30	45

ELECTRICAL SCHEMATIC

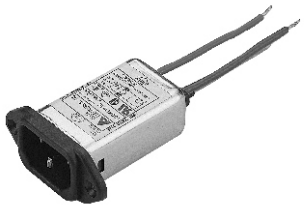


R: 1MΩ/-R ONLY

MECHANICAL CONSTRUCTION



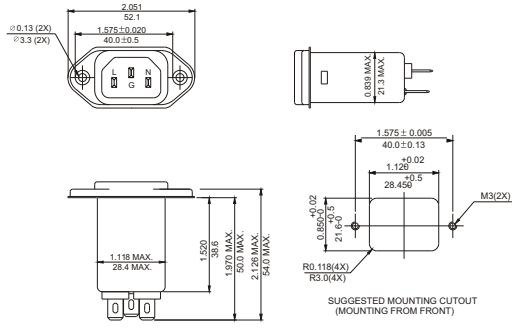
G3EA



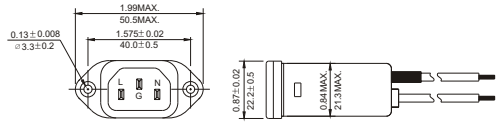
W3EA

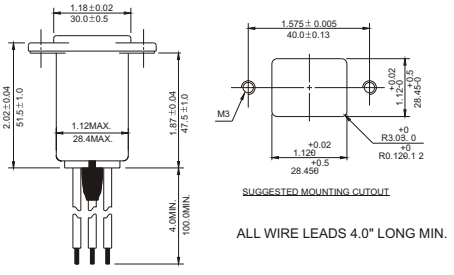
SPECIFICATIONS

1. Maximum leakage current each
   line-to-ground @ 115VAC 60Hz: 0.20mA
   @ 250VAC 50Hz: 0.40mA
2. Hipot rating (one minute)
   line-to-ground: 2250VDC
   line-to-line: 1450VDC
3. Operating frequency: 50/60Hz
4. Rated voltage: 115/250VAC



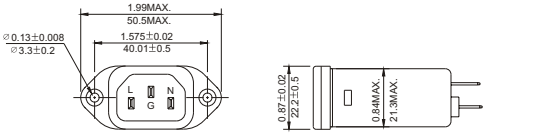
G3SA

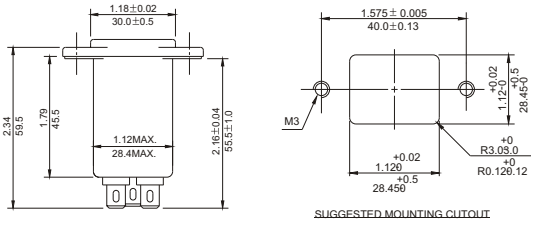




ALL WIRE LEADS 4.0" LONG MIN.

W3EA





G3EA

UNIT: INCH / mm

KEN SERIES HIGH PERFORMANCE SNAP-IN FILTERS

INTRODUCTIONS

1. Specially designed with ground choke providing most effective EMI suppression for high frequency noise (ranged 5MHz-25MHz).
2. Bleeder resistor can be added with suffix "-R" on part numbers.
3. With optional Y capacitor from 100pF to 3300pF.
4. All part numbers are UL recognized, CSA certified and VDE approved.
5. Optional side snap-in mounting clip type with suffix (H) on part numbers. for 03/06/10KENG3SA series.

COMPONENTS

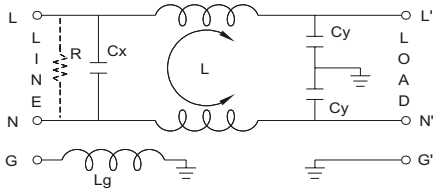
PART NO.	L (mH)	Cx (uF)	Cy (pF)	Lg (uH)
03KENG3EA/03KENW3EA	3.1	0.1	2200	100
*08KENG3EA/08KENW3EA	0.8			
**10KENG3EA/10KENW3EA	0.4			
*** 03KENG3SA/03KENG3SA	3.1			
*** 06KENG3SA/06KENG3SA	0.8			
*** 10KENG3SA/10KENG3SA	0.4			

* VDE approved to 6A 250V.
** UL, CSA & VDE approved to 9A 115/250 VAC.
*** SEMKO approved , UL & cUL under approve.

MINIMUM INSERTION LOSS IN dB

COMMON MODE (L-G) IN 50 OHM SYSTEM						
PART NO.	FREQUENCY-MHz					
	.15	.50	1.0	5.0	10	30
03KENG3EA/03KENW3EA	15	20	25	40	40	45
08KENG3EA/08KENW3EA	10	15	20	35	40	50
10KENG3EA/10KENW3EA	7	12	18	30	30	50
03KENG3SA/03KENW3SA	15	20	25	40	40	40
06KENG3SA/06KENW3SA	7	15	20	35	40	40
10KENG3SA/10KENW3SA	4	12	18	30	30	45
DIFFERENTIAL MODE (L-L) IN 50 OHM SYSTEM						
03KENG3EA/03KENW3EA	5	12	15	40	50	45
08KENG3EA/08KENW3EA	5	10	15	45	40	50
10KENG3EA/10KENW3EA	4	12	18	30	30	50
03KENG3SA/03KENW3SA	10	20	35	40	45	40
06KENG3SA/06KENW3SA	10	25	40	35	40	40
10KENG3SA/10KENW3SA	10	25	35	30	30	45

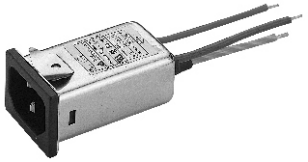
ELECTRICAL SCHEMATIC



R: 1M$_\Omega$/-R ONLY

MECHANICAL CONSTRUCTION

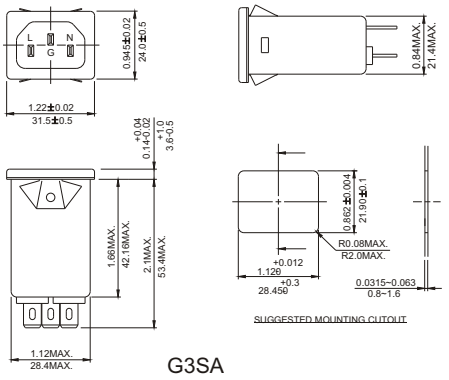
G3EA



W3EA

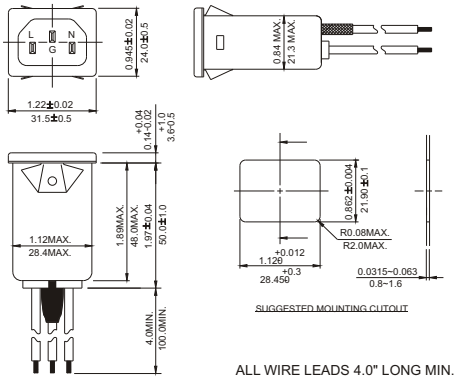
SPECIFICATIONS

1. Maximum leakage current each
   line-to-ground @ 115VAC 60Hz: 0.20mA
   @ 250VAC 50Hz: 0.40mA
2. Hipot rating (one minute)
   line-to-ground: 2250VDC
   line-to-line: 1450VDC
3. Operating frequency: 50/60Hz
4. Rated voltage: 115/250VAC



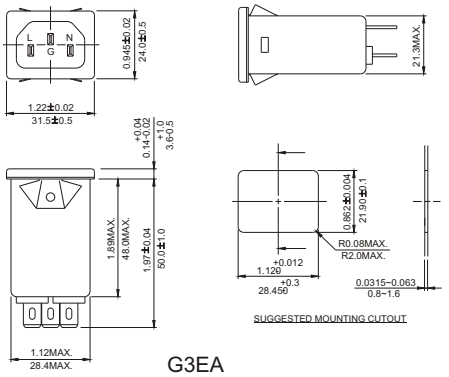
G3SA

Suggested thickness of mounting panel is from
0.0315 (0.8) to 0.063 (1.6) inch(mm) of mounting cutout



ALL WIRE LEADS 4.0" LONG MIN.

W3EA



G3EA

UNIT: INCH / mm

ME SERIES PC BOARD MOUNTING FILTERS

INTRODUCTIONS

1. Direct PC board mounting for easy installation and space saving.
2. ME2: UL.
   ME3D/P:
   ME3:
   ME3G:
   ME3B:
   ME3DA/GA:
   15ME2/ME3:
   02ME4E2:
   UL, CSA, VDE,
   ME4: UL, CSA,TUV

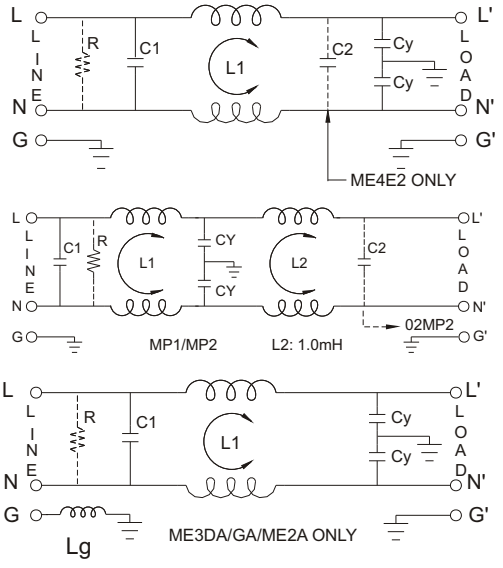
SPECIFICATIONS

1. Maximum leakage current each
   line-to-ground @ 115VAC 60Hz: 0.20mA
   0.45mA (02ME4E1)
   @ 250VAC 50Hz: 0.40mA
   0.80mA (02ME4E1)
2. Hipot rating (one minute)
   line-to-ground: 2250VDC
   line-to-line: 1450VDC
3. Operating frequency: 50/60Hz
4. Rated voltage: 115/250VAC

COMPONENTS

PART NO.	C1 (uF)	L1 (mH)	PART NO.	C1 (uF)	L1 (mH)
01ME2	0.1	3.7	**03ME3G-R/(S)**	0.1	2.5
01ME3/(S)	0.033	5	**03ME4/P**	0.47	15
02ME3G/(S)	0.1	7	**06ME2**	0.1	0.4
02ME3GA/(S)			**06ME3/(S)**	0.033	0.6
02ME3G-R/(S)			**06ME3D/(S)**	0.047	0.53
02ME4E1	0.47	25	**06ME3DA/(S)**		
***02ME4E2**	0.22	25	**06ME3G/(S)**		
***02MP1**		20	**06ME3GA/(S)**	0.1	0.8
***02MP2**		25	**06ME3G-R/(S)**		
03ME2	0.1	1.3	**10ME2**	0.1	0.1
03ME2A	0.1	2.5	**10ME3/(S)**	0.033	0.18
03ME3/(S)	0.033	2.3	**10ME3G/(S)**	0.1	0.2
03ME3G/(S)	0.1	2.5	**10ME3**		
•03ME3GA/(S)			**•• 15ME2**	0.1	0.12
•03ME3B		1.2	**•• 15ME3/(S)**		
03ME3DA/(S)	0.047	1.2			
03ME3D/(S)					

ELECTRICAL SCHEMATIC



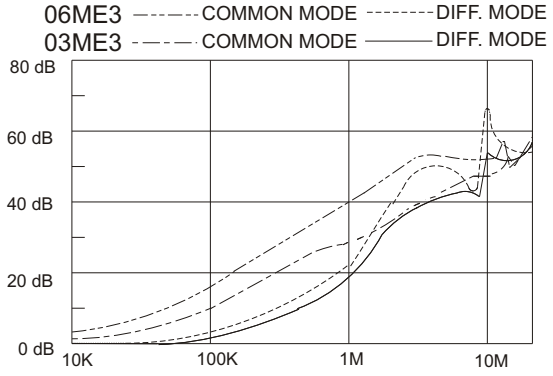
R: 1MΩ(ME3) C2: 0.1μF(ME4E2/MP2)
R: 560KΩ(ME4) R: 330KΩ(ME4E2)
Cy: 2200pF
Cy: 4700pF(ME4 /E1)
Lg: 18.3μH (2A/GA/DA)

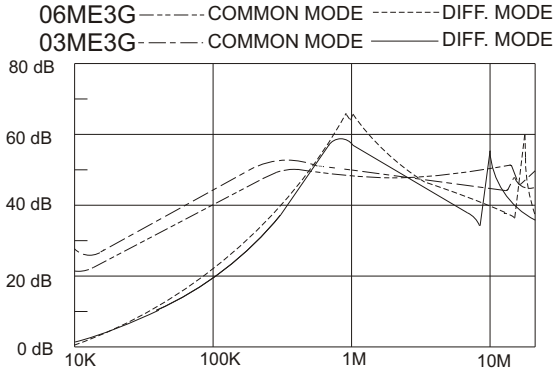
* UL, CSA approved to 2.5A 115/250VAC
• 03ME3D/(S): 03ME3D, 03ME3D(S)
•• VDE, SEV, SEMKO approved to 10A/250VAC

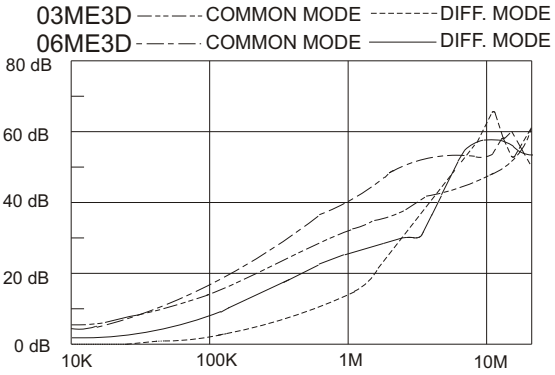
MINIMUM INSERTION LOSS IN dB

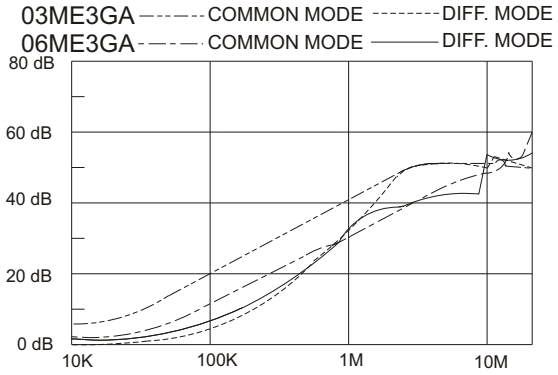
COMMON MODE (L-G) IN 50 OHM SYSTEM													
TYPE	CURRENT RATING	FREQUENCY-MHz						TYPE	CURRENT RATING	FREQUENCY-MHz					
		.15	.50	1.0.	5.0	10	30			.15	50	1.0	5.0	10	30
01ME2	1A	27	37	42	44	45	35	03ME3G	3A	20	25	30	38	40	40
01ME3/(S)	1A	25	35	40	40	40	40	03ME3GA	3A	20	23	30	40	40	40
02ME3G/(S)	2A	28	35	28	38	40	40	06ME2	6A	12	18	20	35	40	50
02ME3GA/(S)	2A	20	25	35	40	40	40	06ME3	6A	12	20	25	40	45	45
02ME4E1	2A	35	45	45	35	35	35	06ME3D	6A	10	20	20	30	35	40
02ME4E2	2.5/2A	30	40	40	35	35	40	06ME3DA	6A	8	10	15	30	30	40
02ME4/P	2A	35	45	45	35	35	35	06ME3G	6A	10	15	20	35	40	40
02MP1	2.5/2A	45	60	60	45	40	25	06ME3GA	6A	10	15	20	30	35	40
02MP2	2.5/2A	50	55	55	50	40	25	10ME3/(S)	10A	4	10	15	30	38	45
03ME2	3A	15	28	32	45	45	50	10ME3G/(S)	10A	4	10	13	28	35	40
03ME3	3A	22	30	35	45	45	48	15ME2	15A/10A	2	8	10	20	25	40
03ME3B	3A	12	20	28	40	40	40	15ME3/(S)	15A/10A	2	8	10	20	25	40
03ME3D	3A	18	28	39	48	48	55								
03ME3DA	3A	15	25	30	40	40	45								
03ME4/P	3A	30	40	40	35	35	35								

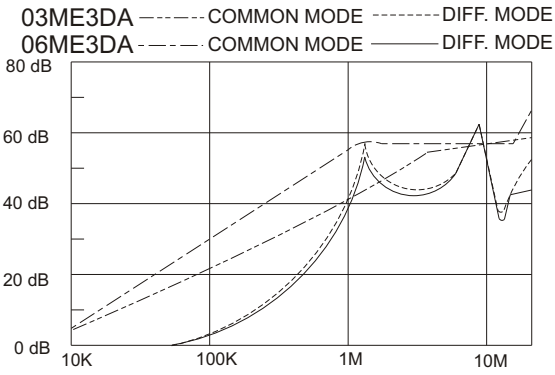
INSERTION LOSS (TYPICAL)

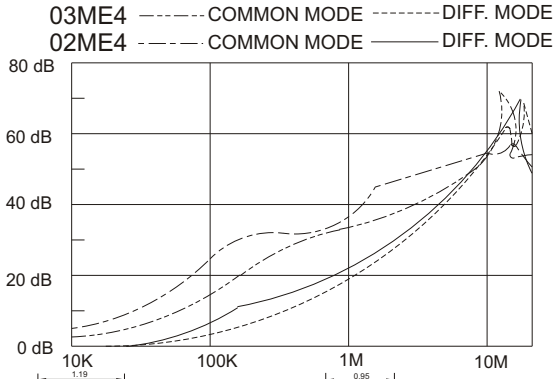






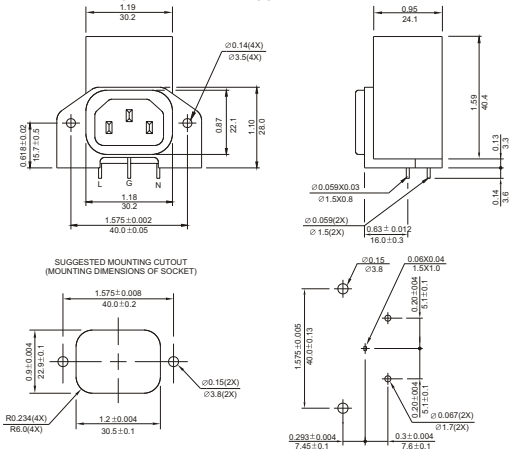




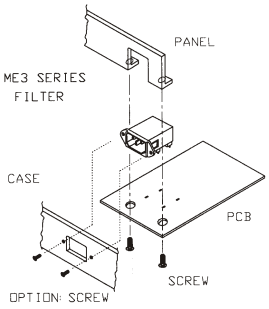


MECHANICAL CONSTRUCTION

ME2/ME2A



UNIT: INCH / mm

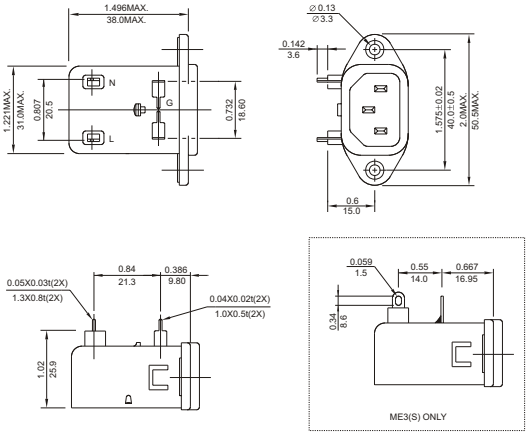


♦ **Proposal of installation for ME3 series please follow these steps to install:**

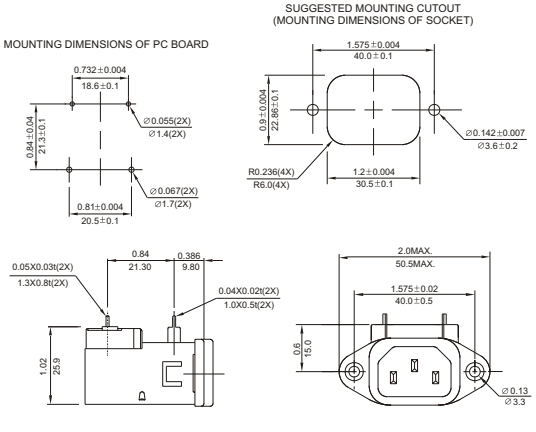
1. Insert filter to PCB and soldering.
2. Screw panel and filter on PCB.
3. Assemble case with PCB with panel and filter.

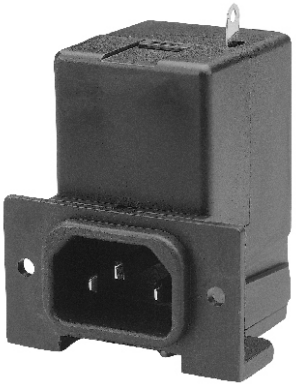
Note: - Socket of filter should be assembled with mounting hole of case tightly for easy insertion of power cord.
- Screw from the outside of case to fix filter for more secured assembly (optional).

ME3

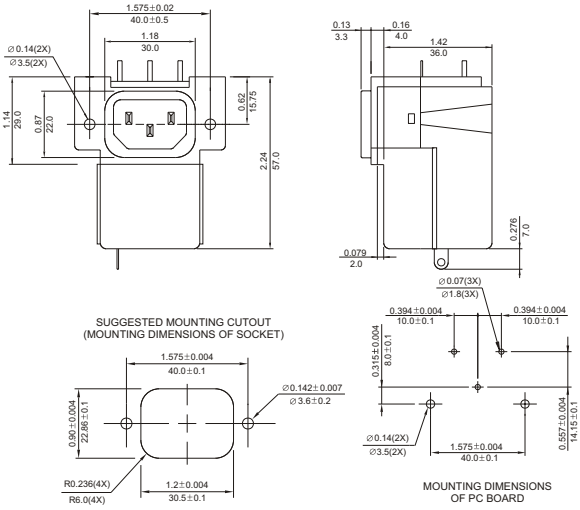


ME3DA





ME4E/MP



UNIT: INCH / mm

AK SERIES POWER ENTRY MODULE EMI FILTERS

INTRODUCTIONS

1. Power module incorporates an IEC connector, a fuse holder with optional power on/off switch and voltage selector switch, plus an EMI filter all-in-one single, easy-to-install unit.
2. Fuse holder designed for one IEC 5x20mm fuse. Safety interlock prevents fuse removal with line plug inserted (Use only with 250V fuse).
3. All part numbers are UL recognized, CSA certified and VDE approved.

SPECIFICATIONS

1. Maximum leakage current each
   line-to-ground @ 115VAC 60Hz: 0.25mA
   @ 250VAC 50Hz: 0.45mA
2. Hipot rating (one minute)
   line-to-ground: 2250VDC
   line-to-line: 1450VDC
3. Operating frequency: 50/60Hz
4. Rated voltage: 115/250VAC

MINIMUM INSERTION LOSS IN dB

COMMON MODE (L-G) IN 50 OHM SYSTEM						
CURRENT RATING	FREQUENCY-MHz					
	.15	.50	1.0	5.0	10	30
3A	30	35	40	35	35	35
6A	16	25	30	42	45	40
DIFFERENTIAL MODE (L-L) IN 50 OHM SYSTEM						
3A	10	40	45	45	45	35
6A	6	25	30	42	45	40

TYPE & RATED CURRENT

DELTA PART NO.		AK1	AK2	AK2D	AK3	AK3D	AK4	AK5
RATED CURRENT	115VAC	6A	6A	6A	6A	6A	6A	6A
	250VAC	6A	6A	4A	5A	4A	6A	6A
IEC CONNECTOR		△	△	△	△	△	△	△
FUSE HOLDER		△	△	△	△	△	△	△
POWER SWITCH		–	SP[1]	DP[2]	SP[1]	DP[2]	–	–
VOLTAGE SELECTOR SW		–	–	–	REAR[3]	REAR[3]	REAR[3]	FRONT[4]
ELECTRICAL SCHEMATIC		FIG. A	FIG. A	FIG. B	FIG. A	FIG. B	FIG. A	FIG. C

1. Single-pole UL, CSA & VDE approved
   Current rating: UL & CSA-6A both at 125VAC & 250VAC; VDE-6A at 250VAC.
   Electrical lifetime: 50,000 cycles.
   Maximum inrush current: 70A.
2. Double-pole UL CSA & VDE approved
   Current rating: UL & CSA-6A at 125VAC, 4A at 250VAC; VDE-4A at 250VAC.
   Electrical lifetime: 10,000 cycles.
   Maximum inrush current: 50A.
3. Voltage selector SW -UL, CSA & VDE approved
   Current rating: 10A at 125VAC; 5A at 250VAC.
4. Voltage selector SW -UL, CSA & VDE approved
   Current rating: UL & CSA-6A both at 125VAC & 250VAC; VDE-6A at 250VAC.

ELECTRICAL SCHEMATIC

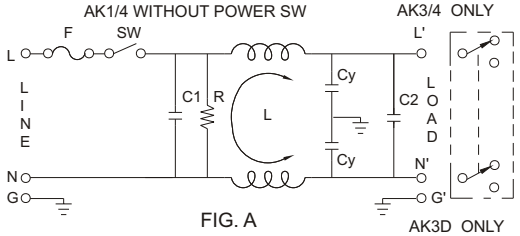


FIG. A

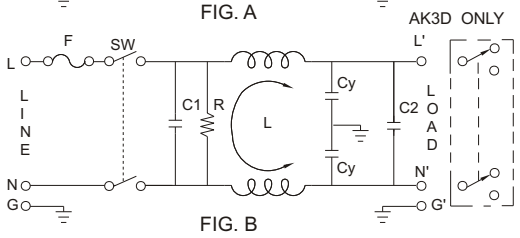


FIG. B

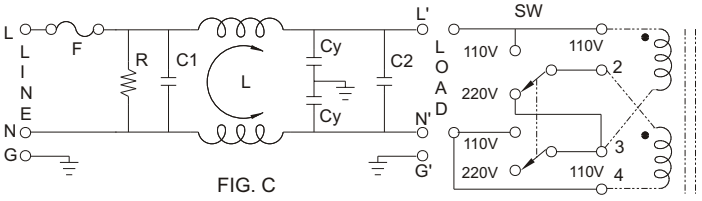


FIG. C

For transformers with two separate windings

COMPONENT VALUE:

6A:	3A:
R: 2.2MΩ	R: 1MΩ
C1: 0.1uF	C1: 0.1uF
C2: 0.1uF	C2: 0.1uF
Cy: 3300pF	Cy: 2200pF
L: 1.3mH	L: 14mH