

# EMC Filters for AC Power Line

## For Single-phase, Mid-size Box Cased ZAG-11S Series

Conformity to RoHS Directive

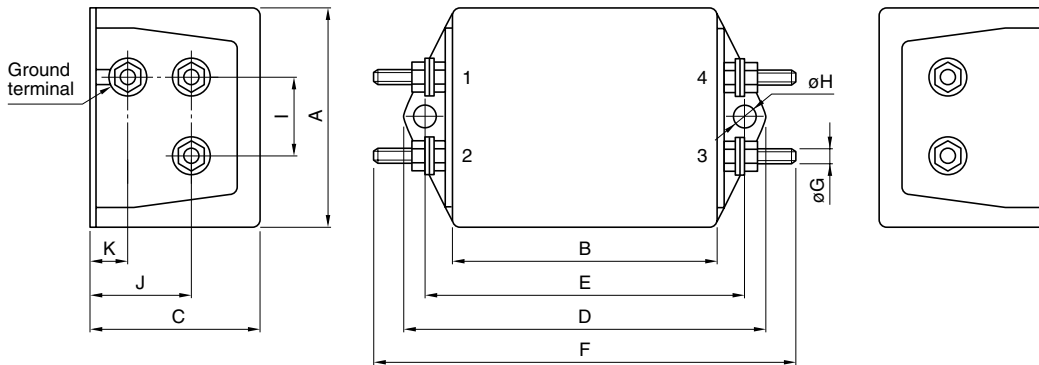
### FEATURES

- The ZAG-11S series are EMC filters designed to prevent malfunctions in microcomputers. They employ advanced amorphous magnetic materials in the common mode choke coil to achieve superior performance characteristics.
- They provide substantial attenuation of high-voltage pulses in power supply lines, exhibiting more than 20dB attenuation for a 2kV, 1μs pulse.
- Leakage current is maintained at less than 0.75mA.
- These filters are highly reliable and provide stable attenuation performance even in harsh environments, where the filters may be subjected to humidity, vibration, and shock.
- Efficient manufacturing makes these filters highly cost-effective.
- It is a product conforming to RoHS directive.

### APPLICATIONS

Computers and other terminal devices, office automation equipment, general control devices, and other industrial devices.

### SHAPES AND DIMENSIONS



Part No.	Dimensions in mm										
	A	B	C	D	E	F	øG	øH	I	J	K
ZAG2206-11S	50.8	62	40	85	75	95	M4	4.8	18	25	7.5
ZAG2210-11S	50.8	62	40	85	75	95	M4	4.8	18	25	7.5
ZAG2220-11S	50.8	62	40	85	75	95	M4	4.8	18	25	7.5
ZAG2230-11S	56	90	50	111	103.2	138	M5	4.8	21	31.7	8.2

- Case: metal, terminal: stud

### SAFETY STANDARDS

Part No.	Standard and standard No.		
	U.S.A.	Canada	Europe
	UL	CSA	NEMKO
	UL1283	CSA C22.2 No.8	EN60939
ZAG2206-11S	E62388	LR76849C	P08209036
ZAG2210-11S	E62388	LR76849C	P08209036
ZAG2220-11S	E62388	LR76849C	P08209036
ZAG2230-11S	E62388	LR76849C	P08209036



- Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

- All specifications are subject to change without notice.

## ELECTRICAL CHARACTERISTICS

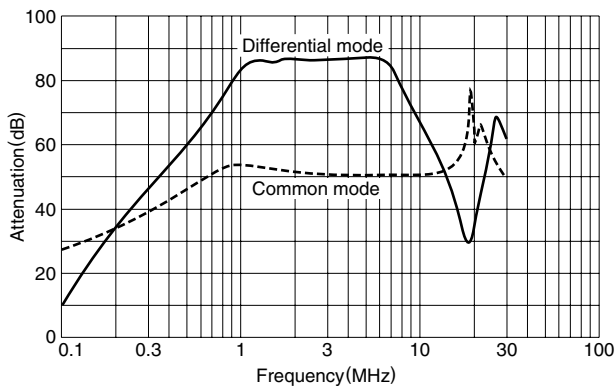
Part No.	ZAG2206-11S	ZAG2210-11S	ZAG2220-11S	ZAG2230-11S
Rated voltage Eac(V)	250	250	250	250
Rated current(A)	6	10	20	30
Test voltage Eac(V)[Between terminal and case]	1500	1500	1500	1500
Insulation resistance(M $\Omega$ )[DC, 500V, 1min/between terminal and case]	100min.	100min.	100min.	100min.
Leakage current(mA)[250V • 60Hz]	0.75max.	0.75max.	0.75max.	0.75max.
DC resistance(m $\Omega$ )	100max.	50max.	20max.	9max.
Operating temperature range(°C)[Including self-temperature rise]	-25 to +85	-25 to +85	-25 to +85	-25 to +85
With derating over(°C)	55	55	55	55
Temperature rise(°C)	30max.	30max.	30max.	30max.
Attenuation frequency range (MHz)[+5 to +35°C]	Differential mode	0.5 to 10[40dB]	0.5 to 10[40dB]	1 to 10[40dB]
	Common-mode	0.3 to 20[30dB]	0.5 to 20[30dB]	1 to 10[28dB]
Pulse attenuation characteristics	Differential mode at 20dB	1	1	1
	Common mode at 20dB	2	2	1.2
Input pulse voltage(kV)*	2	2	1.2	0.8
Weight(g)	270	300	320	480

\* Input pulse width : 1 $\mu$ s

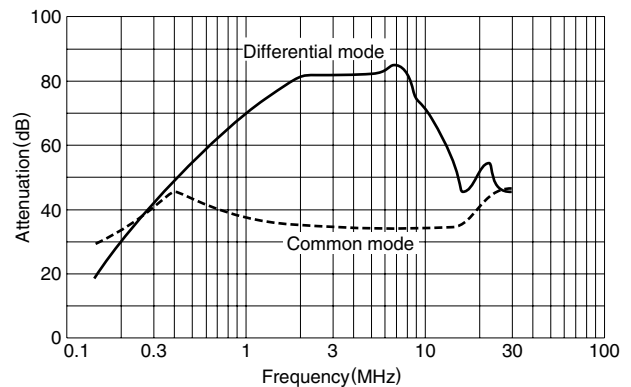
## TYPICAL ELECTRICAL CHARACTERISTICS

### ATTENUATION vs. FREQUENCY CHARACTERISTICS

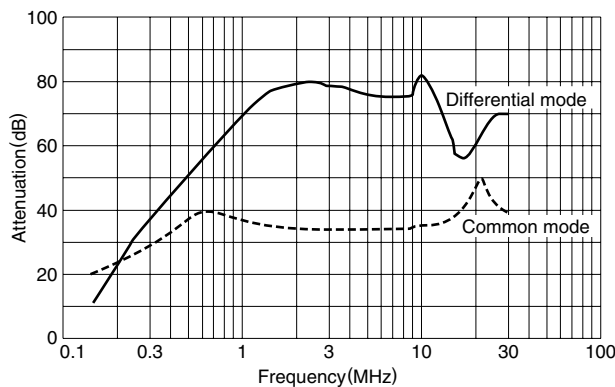
#### ZAG2206-11S



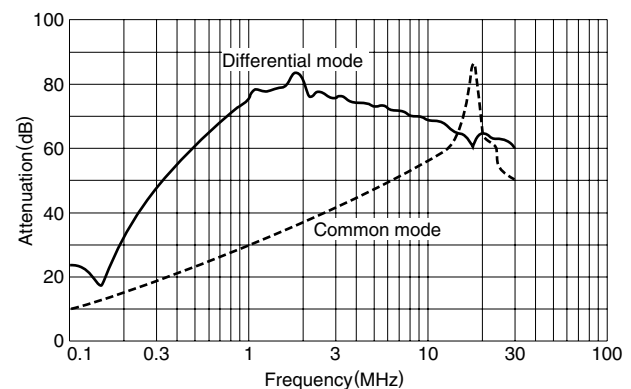
#### ZAG2210-11S



#### ZAG2220-11S

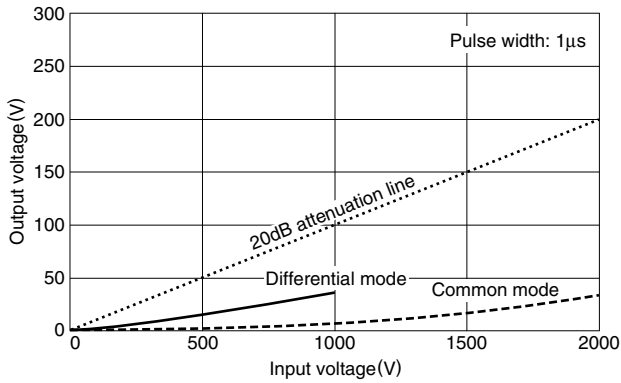


#### ZAG2230-11S

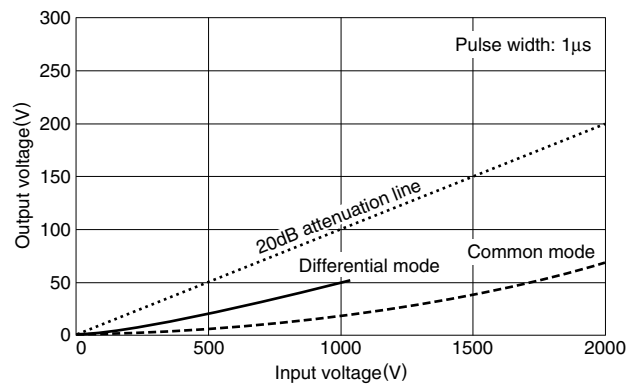


### PULSE ATTENUATION CHARACTERISTICS

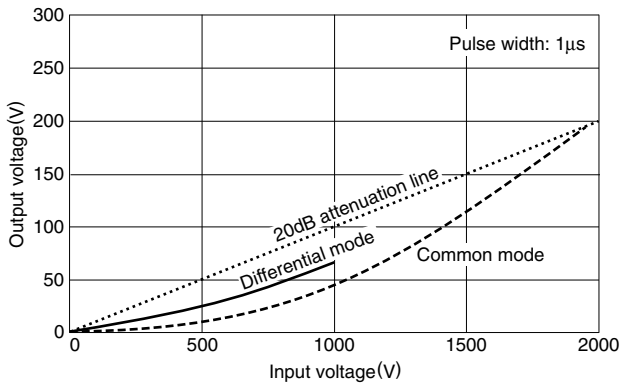
#### ZAG2206-11S



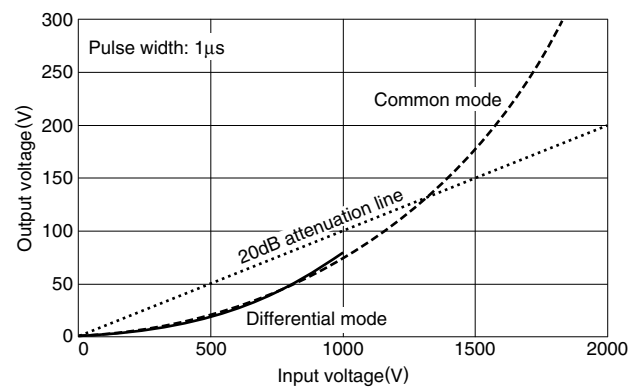
#### ZAG2210-11S



#### ZAG2220-11S

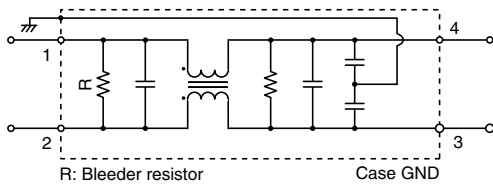


#### ZAG2230-11S

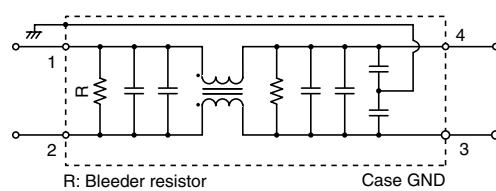


### CIRCUIT DIAGRAMS

#### ZAG2206-11S, 2210-11S, 2220-11S



#### ZAG2230-11S



# EMC Components

## EMC Filters for AC Power Supply Cased (3-Phase, Mid-Size)

## ZAGT-M Series

### FEATURES

- These are compact type 3-phase EMC filters with a highly efficient thermal design, providing high insertion loss.
- They are highly effective at preventing both the radiation and penetration of EMC noise. The parts are, therefore, highly immune to externally generated noise and do not, themselves, serve as sources of radiated noise
- For the CISPR frequency band, this product provides superior attenuation for both differential mode and common-mode noise components.
- Withstand voltages is AC.1250V between the lines and AC. 2000V between line and ground.
- Voltage drop and temperature rise are well controlled and kept to minimum levels.
- Leakage current is maintained at less than 1mA.

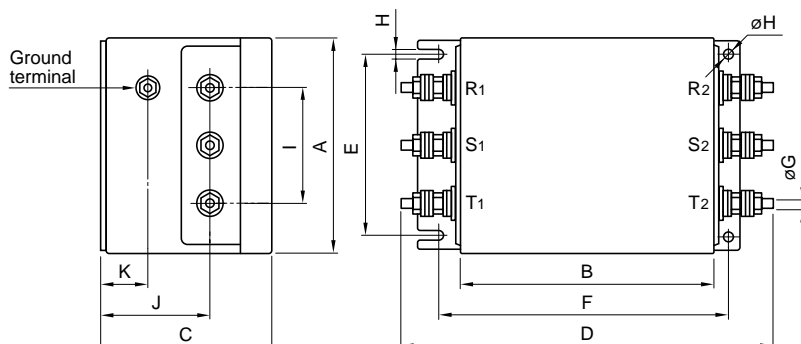
### SAFETY STANDARDS

Part No.	UL	CSA	TÜV
ZAGT2230-M	E62388	LR76849C	R9750222
ZAGT2250-M	E62388	LR76849C	R9750222
ZAGT2280-M	E62388	LR76849C	R9750222

### APPLICATIONS

Computers, hard disk drives, electronic exchange devices, NC control devices, inverters for motor, etc.

### SHAPES AND DIMENSIONS



Dimensions in mm

Part No.	A	B	C	D	E	F	øG	H	I	J	K
ZAGT2230-M	105	120	80	176	85	140	M6	5.5	64	50	20
ZAGT2250-M	110	150	80	212	90	170	M6	5.5	64	50	20
ZAGT2280-M	120	200	110	274	100	220	M8	5.5	64	66	30

- Case: metal, terminal: stud

### ELECTRICAL CHARACTERISTICS

Part No.	ZAGT2230-M	ZAGT2250-M	ZAGT2280-M
Rated voltage Eac(V)	250	250	250
Rated current(A)	30	50	80
Test voltage Eac(V)[Between terminal and case]	2000	2000	2000
Insulation resistance(MΩ) [DC, 500V, 1min/between terminal and case]	100min.	100min.	100min.
Leakage current(mA)[250V • 60Hz]	1max.	1max.	1max.
DC resistance(mΩ)	10max.	6max.	3.5max.
Operating temperature range(°C)[Including self-temperature rise]	-25 to +85	-25 to +85	-25 to +85
With derating over(°C)	55	55	55
Temperature rise(°C)	30max.	30max.	30max.
Attenuation frequency range (MHz)[+5 to +35°C]	Differential mode 0.3 to 30[25dB]	0.4 to 30[20dB]	0.5 to 30[20dB]
	Common-mode 0.3 to 20[25dB]	0.3 to 30[20dB]	0.5 to 30[20dB]
Weight(kg)	1.7	2.5	5.5

## EMC Components

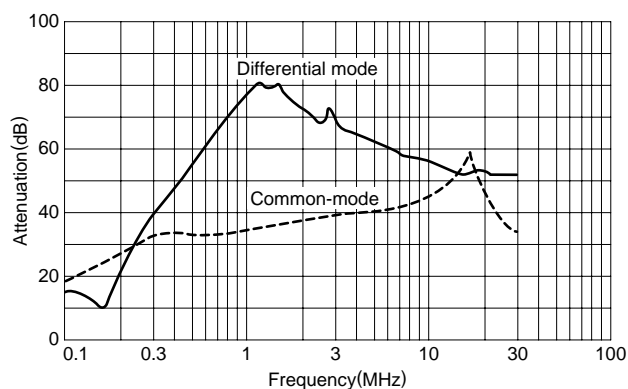
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## ZAGT-M Series

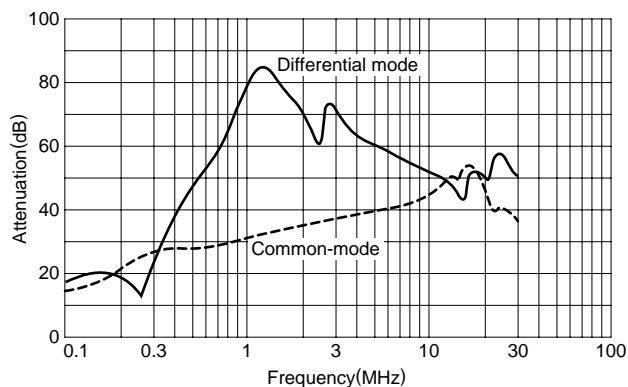
#### TYPICAL ELECTRICAL CHARACTERISTICS

#### ATTENUATION vs. FREQUENCY CHARACTERISTICS

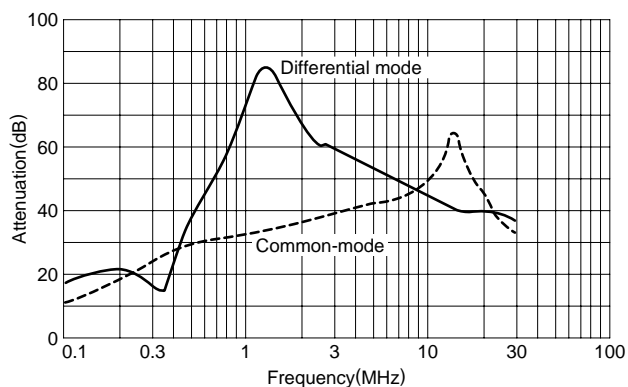
##### ZAGT2230-M



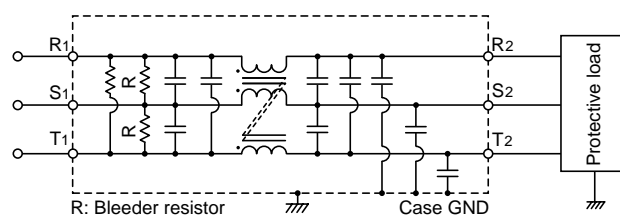
##### ZAGT2250-M



##### ZAGT2280-M



#### CIRCUIT DIAGRAM



#### CAUTIONS

- When there is a danger of a high energy pulse voltage (over 2kV for over 1 $\mu$ s), use a surge absorbing element such as a varistor, or an arrester on the EMC filter power supply input side.

