

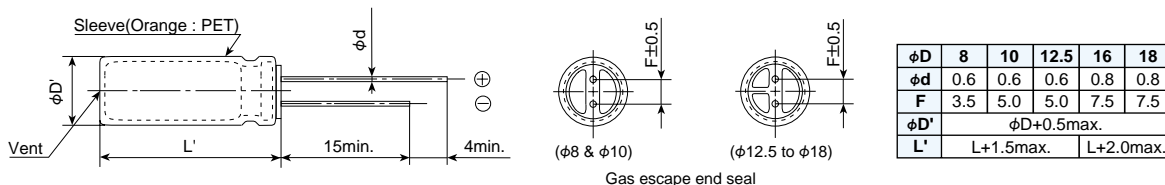
GHA Series

- For automobile modules and other high temperature applications
- Endurance with ripple current : 150°C 2,000 hours
- Pb-free design

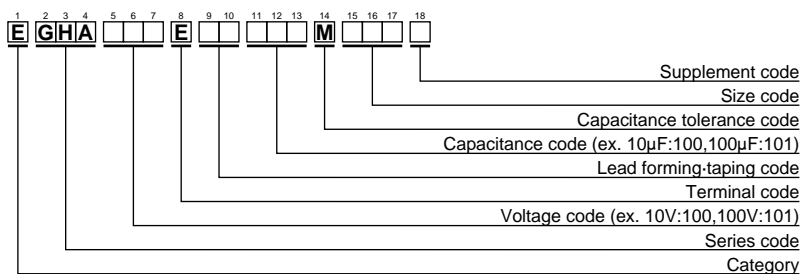
◆ SPECIFICATIONS

Items	Characteristics								
Category	-40 to +150°C								
Temperature Range	-40 to +150°C								
Rated Voltage Range	10 to 100V _{dc}								
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)								
Leakage Current	I=0.03CV or 4μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20°C, 1 minute)								
Dissipation Factor (tanδ)	Rated voltage (V _{dc})	10V	16V	25V	35V	50V	63V	80V	100V
	tanδ (Max.)	0.20	0.16	0.14	0.12	0.10	0.10	0.08	0.08
When nominal capacitance exceed 1,000μF, 0.02 shall be added each 1,000μF increase. (at 20°C, 120Hz)									
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V _{dc})	10V	16V	25V	35V	50V	63V	80V	100V
	Z(-25°C)/Z(+20°C)	3	2	2	2	2	2	2	2
	Z(-40°C)/Z(+20°C)	6	4	4	4	4	4	4	4
(at 120Hz)									
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours (φ8 to φ12.5 : 1,000 hours) at 150°C.								
	Capacitance change	≤±30% of the initial value							
	D.F. (tanδ)	≤300% of the initial specified value							
	Leakage current	≤The initial specified value							
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 150°C without voltage applied.								
	Capacitance change	≤±30% of the initial value							
	D.F. (tanδ)	≤300% of the initial specified value							
	Leakage current	≤The initial specified value							

◆ DIMENSIONS (Radial Lead Type=VB) [mm]



◆ PART NUMBERING SYSTEM



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◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tanδ	Rated ripple current (mA _{rms} /150°C,100kHz)	Part No.	WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tanδ	Rated ripple current (mA _{rms} /150°C,100kHz)	Part No.	
10	220	8×12	0.20	270	EGHA100E□□221MH12D	35	2,200	18×31.5	0.14	1,670	EGHA350E□□222MMN3S	
	330	8×12	0.20	270	EGHA100E□□331MH12D		3,300	18×40	0.16	1,870	EGHA350E□□332MM40S	
	470	8×12	0.20	270	EGHA100E□□471MH12D		50	10	8×12	0.10	140	EGHA500E□□100MH12D
	560	10×12.5	0.20	510	EGHA100E□□561MJC5S			22	8×12	0.10	140	EGHA500E□□220MH12D
	680	10×16	0.20	660	EGHA100E□□681MJ16S			33	8×12	0.10	140	EGHA500E□□330MH12D
	1,000	10×20	0.20	820	EGHA100E□□102MJ20S			47	8×12	0.10	140	EGHA500E□□470MH12D
	2,200	12.5×20	0.22	1,000	EGHA100E□□222MK20S			56	8×12	0.10	140	EGHA500E□□560MH12D
	3,300	12.5×30	0.24	1,280	EGHA100E□□332MK30S			100	10×12.5	0.10	380	EGHA500E□□101MJC5S
	4,700	16×25	0.26	1,370	EGHA100E□□472ML25S			220	10×20	0.10	640	EGHA500E□□221MJ20S
	5,600	16×31.5	0.28	1,610	EGHA100E□□562MLN3S			330	12.5×20	0.10	770	EGHA500E□□331MK20S
	6,800	16×31.5	0.30	1,670	EGHA100E□□682MLN3S			470	12.5×25	0.10	960	EGHA500E□□471MK25S
10,000	18×35.5	0.38	1,790	EGHA100E□□103MMP1S	560	12.5×30		0.10	1,080	EGHA500E□□561MK30S		
16	220	8×12	0.16	270	EGHA160E□□221MH12D	680	16×25	0.10	1,190	EGHA500E□□681ML25S		
	330	8×12	0.16	270	EGHA160E□□331MH12D	1,000	16×31.5	0.10	1,420	EGHA500E□□102MLN3S		
	330	10×12.5	0.16	510	EGHA160E□□331MJC5S	2,200	18×40	0.12	1,670	EGHA500E□□222MM40S		
	470	10×16	0.16	660	EGHA160E□□471MJ16S	63	56	10×12.5	0.10	430	EGHA630E□□561MJC5S	
	560	10×16	0.16	660	EGHA160E□□561MJ16S		68	10×16	0.10	560	EGHA630E□□680MJ16S	
	680	10×20	0.16	820	EGHA160E□□681MJ20S		100	10×20	0.10	710	EGHA630E□□101MJ20S	
	1,000	12.5×20	0.16	1,000	EGHA160E□□102MK20S		220	12.5×25	0.10	1,040	EGHA630E□□221MK25S	
	2,200	12.5×25	0.18	1,200	EGHA160E□□222MK25S		330	12.5×30	0.10	1,170	EGHA630E□□331MK30S	
	3,300	16×25	0.20	1,370	EGHA160E□□332ML25S		470	16×25	0.10	1,280	EGHA630E□□471ML25S	
	4,700	16×31.5	0.22	1,610	EGHA160E□□472MLN3S		560	16×31.5	0.10	1,520	EGHA630E□□561MLN3S	
	5,600	16×35.5	0.24	1,720	EGHA160E□□562MLP1S		680	16×31.5	0.10	1,520	EGHA630E□□681MLN3S	
6,800	18×35.5	0.26	1,790	EGHA160E□□682MMP1S	1,000		18×35.5	0.10	1,700	EGHA630E□□102MMP1S		
25	100	8×12	0.14	270	EGHA250E□□101MH12D		80	33	10×12.5	0.08	420	EGHA800E□□330MJC5S
	220	10×12.5	0.14	510	EGHA250E□□221MJC5S	47		10×16	0.08	550	EGHA800E□□470MJ16S	
	330	10×16	0.14	660	EGHA250E□□331MJ16S	56		10×20	0.08	690	EGHA800E□□560MJ20S	
	470	10×20	0.14	820	EGHA250E□□471MJ20S	68		10×20	0.08	690	EGHA800E□□680MJ20S	
	560	10×20	0.14	820	EGHA250E□□561MJ20S	100		12.5×20	0.08	820	EGHA800E□□101MK20S	
	680	12.5×20	0.14	1,000	EGHA250E□□681MK20S	220		16×25	0.08	1,250	EGHA800E□□221ML25S	
	1,000	12.5×25	0.14	1,200	EGHA250E□□102MK25S	330		16×31.5	0.08	1,480	EGHA800E□□331MLN3S	
	2,200	16×25	0.16	1,370	EGHA250E□□222ML25S	470		18×31.5	0.08	1,530	EGHA800E□□471MMN3S	
	3,300	16×35.5	0.18	1,720	EGHA250E□□332MLP1S	560		18×35.5	0.08	1,660	EGHA800E□□561MMP1S	
	4,700	18×35.5	0.20	1,790	EGHA250E□□472MMP1S	680		18×40	0.08	1,740	EGHA800E□□681MM40S	
	5,600	18×40	0.22	1,870	EGHA250E□□562MM40S	100	22	10×12.5	0.08	390	EGHA101E□□220MJC5S	
68	8×12	0.12	210	EGHA350E□□680MH12D	33		10×16	0.08	510	EGHA101E□□330MJ16S		
100	8×12	0.12	210	EGHA350E□□101MH12D	47		10×20	0.08	640	EGHA101E□□470MJ20S		
100	10×12.5	0.12	510	EGHA350E□□101MJC5S	56		10×20	0.08	640	EGHA101E□□560MJ20S		
220	10×16	0.12	660	EGHA350E□□221MJ16S	68		12.5×20	0.08	760	EGHA101E□□680MK20S		
330	10×20	0.12	820	EGHA350E□□331MJ20S	100		12.5×25	0.08	950	EGHA101E□□101MK25S		
470	12.5×20	0.12	1,000	EGHA350E□□471MK20S	220		16×31.5	0.08	1,380	EGHA101E□□221MLN3S		
560	12.5×20	0.12	1,000	EGHA350E□□561MK20S	330		18×31.5	0.08	1,430	EGHA101E□□331MMN3S		
680	12.5×25	0.12	1,200	EGHA350E□□681MK25S	470		18×35.5	0.08	1,550	EGHA101E□□471MMP1S		
1,000	16×25	0.12	1,370	EGHA350E□□102ML25S	560		18×40	0.08	1,620	EGHA101E□□561MM40S		

□ □ : Lead forming / Taping code

◆RATED RIPPLE CURRENT MULTIPLIERS

●Frequency Multipliers

Capacitance (μF)	Frequency (Hz)	120	1k	10k	100k
10 to 100		0.40	0.75	0.90	1.00
220 to 560		0.50	0.85	0.94	1.00
680 to 1,000		0.60	0.87	0.95	1.00
2,200 to 3,300		0.75	0.90	0.95	1.00
4,700 to 10,000		0.85	0.95	0.98	1.00

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