

HA Standard Series
New



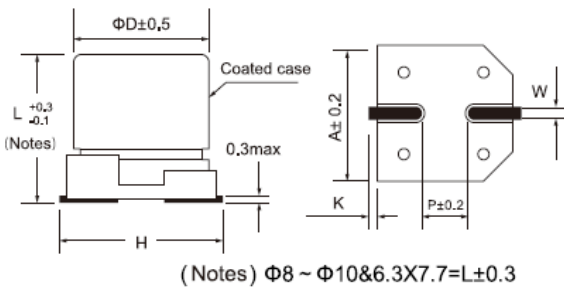
- Endurance: 105°C, 2000hrs
- Recommended Applications: Standard SMD type product
- Corresponding product to RoHS

■ **Specifications**

Item	Characteristics		
Category Temperature Range	-55 ~ +105°C		
Rated Voltage Range	16~25VDC		
Rated Capacitance Range	47~ 470 μF		
Capacitance Tolerance	± 20 % (120Hz , 20°C)		
Surge Voltage	Rated voltage (V) x 1.15		
Leakage Current (20°C)	I ≤ 0.01CV or 3 (μ A) whichever is greater (After rated voltage applied for 2 minutes) I : Leakage Current (μ A) C : Capacitance(μ F) V : Rated Voltage Range(VDC)		
Dissipation Factor (MAX) (tan δ) (120Hz ,20°C)	WV	16	25
	tan δ	0.16	0.14
Temperature characteristic Impedance ratio (MAX)	Z(100KHz) / WV	16~ 25V	
	Z-25°C / Z+20°C	≤ 1.15	
	Z-55°C / Z+20°C	≤ 1.25	
Endurance	After applying rated voltage for 2000 hours at 105°C, the capacitor shall meet the following requirement °		
	Appearance	No significant damage	
	Capacitance Change	Within ±20% of the initial value	
	Dissipation Factor	Not more than 150% of the initial specified value	
	Equivalent Series Resistance	Not more than 150% of the initial specified value	
Humidity Test	after subjecting 90 to 95% RH for 1000 hours at 60°C , the capacitors shall meet the requirement as Endurance °		
	Capacitance Change	Within ±10% of the initial value	
	Dissipation Factor	Not more than 130% of the initial specified value	
	Equivalent Series Resistance	Not more than 130% of the initial specified value	
	Leakage Current	Not more than the initial specified value	
Resistance to Soldering Heat *	Capacitance Change	Within ±10% of the initial value	
	Dissipation Factor	Not more than 130% of the initial specified value	
	Equivalent Series Resistance	Not more than 130% of the initial specified value	
	Leakage Current	Not more than the initial specified value	

* For any doubt about measured values, measure the leakage current again after the following voltage treatment °
 Voltage treatment: Applying DC rated voltage to the capacitors for 2 hours at 105°C °

■ **Diagram of Dimensions**



■ **Marking : case with red printing**



SIZE	ΦD x L	A	H(Max)	W	P	K
EA4	6.3x7.7	6.6	7.8	0.65±0.15	1.8±0.2	0.35+0.15/-0.2
GA6	8x10.4	8.3	10	0.9±0.2	3.1±0.2	0.7±0.2
HA5	10x10.2	10.3	12	0.9±0.2	4.6±0.2	0.7±0.2

■ **Multiplier for Ripple Current**

Frequency(HZ)	120 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F ≤ 500K
Coefficient	0.05	0.30	0.70	1.00

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■ Dimensions, Rated Ripple Current, Equivalent Series Resistance

Rated (Surge) Voltage(V)	Capacitance (μ F)	SIZE Φ DxL(mm)	RIPPLE (mA/rms, 105 °C 100KHz)	ESR (m Ω , 20°C 100KHz)	LC (μ A max/2min)
16 (18.4)	150	6.3X7.7	1600	45	24
	270	8X10.4	1800	40	43.2
	470	10X10.2	2000	30	75.2
25 (28.75)	100	6.3X7.7	1600	45	25
	180	8X10.4	1800	40	45
	270	10X10.2	2000	30	67.5