

### Surface Mount Type

Series: **HD** Type: **V**  
 HD High temperature Lead-Free reflow (suffix:A\*)



#### ■ Features

- Endurance: 105 °C 5000 h
- Vibration-proof product is available upon request.(φ8 ≤)
- RoHS directive compliant

#### ■ Specifications

Category Temp. Range	-40 °C to +105 °C						
Rated W.V. Range	6.3 V.DC to 35 V.DC						
Nominal Cap. Range	33 μF to 1000 μF						
Capacitance Tolerance	±20 % (120 Hz/+20 °C)						
DC Leakage Current	I ≤ 0.01 CV or 3 (μA) After 2 minutes (Whichever is greater)						
tan δ	Please see the attached High temperature lead-free reflow products list.						
Characteristics at Low Temperature	W.V. (V)	6.3	10	16	25	35	(Impedance ratio at 120 Hz)
	Z(-25 °C)/Z(+20 °C)	3	3	2	2	2	
	Z(-40 °C)/Z(+20 °C)	4	4	3	3	3	
Endurance	After applying rated working voltage for 5000 hours at +105 °C±2 °C and then being stabilized at +20 °C, capacitors shall meet the following limits.						
	Capacitance change	±30 % of initial measured value					
	tan δ	≤ 300 % of initial specified value					
	DC leakage current	≤ initial specified value					
Shelf Life	After storage for 1000 hours at +105 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment)						
	Capacitance change	±20 % of initial measured value					
	tan δ	≤ 200 % of initial specified value					
	DC leakage current	≤ initial specified value					
Resistance to Soldering Heat	After reflow soldering and then being stabilized at +20 °C, capacitors shall meet the following limits.						
	Capacitance change	±10 % of initial measured value					
	tan δ	≤ initial specified value					
	DC leakage current	≤ initial specified value					

#### ■ Marking

**Example: 6.3 V 330 μF**  
 Marking color: **BLACK**

Negative polarity marking (-)  
 Capacitance (μF)  
 Series identification  
 Mark for Lead-Free Products Black Dot (Square)  
 Rated voltage Mark  
 Lot number

j	6.3 V
A	10 V
C	16 V
E	25 V
V	35 V

#### ■ Dimensions in mm (not to scale)

( ) reference size

Size code	D	L	A,B	H max.	I	W	P	K
D8	6.3	7.7	6.6	7.8	2.6	0.65±0.1	1.8	0.35-0.20 to +0.15
F	8.0	10.2	8.3	10.0	3.4	0.90±0.2	3.1	0.70±0.20
G	10.0	10.2	10.3	12.0	3.5	0.90±0.2	4.6	0.70±0.20

(mm)

**NEW**

## ■ High temperature Lead-Free reflow Products

Endurance : 105 °C 5000 h

W.V.	Cap. (±20 %)	Case size			Specification			Part No. (RoHS:compliant)	Reflow	Min. Packaging Q'ty
		Dia.	Length	Size Code	Ripple Current (120 Hz) (+105°C) (mA r.m.s.)	Impedance (100 kHz) (+20 °C)	tan $\delta$ (120 Hz) (+20 °C)			Taping  (pcs)
(V)	( $\mu$ F)	(mm)	(mm)							
6.3	330	8.0	10.2	F	230	1.5	0.30	EEEHD0J331AP	(7)	500
	1000	10.0	10.2	G	313	0.8	0.50	EEEHD0J102AP	(7)	500
10	220	8.0	10.2	F	160	1.5	0.30	EEEHD1A221AP	(7)	500
	330	10.0	10.2	G	238	0.8	0.30	EEEHD1A331AP	(7)	500
16	100	8.0	10.2	F	130	1.5	0.20	EEEHD1C101AP	(7)	500
	220	10.0	10.2	G	220	0.8	0.20	EEEHD1C221AP	(7)	500
	470	10.0	10.2	G	340	0.8	0.20	EEEHD1C471AP	(7)	500
25	100	8.0	10.2	F	130	1.5	0.16	EEEHD1E101AP	(7)	500
	330	10.0	10.2	G	238	0.8	0.16	EEEHD1E331AP	(7)	500
35	33	6.3	7.7	D8	57	2.0	0.13	EEEHDV330XAP	(5)	900
	47	6.3	7.7	D8	57	2.0	0.14	EEEHDV470XAP	(5)	900
	47	8.0	10.2	F	79	1.5	0.14	EEEHD1V470AP	(7)	500
	100	10.0	10.2	G	101	0.8	0.14	EEEHD1V101AP	(7)	500
	220	10.0	10.2	G	220	0.8	0.14	EEEHD1V221AP	(7)	500

The taping dimensions are explained on p.177 of our Catalog. Please use it as a reference guide.  
Reflow Profile(Fig-1 to Fig-11) listed on p.175 of our Catalog.