MALSECL00AG310HARK Datasheet

DiGi Electronics Part Number	MALSECL00AG310HARK-DG
Manufacturer	Vishay Beyschlag/Draloric/BC Components
Manufacturer Product Number	MALSECL00AG310HARK
Description	CAP ALUM 100UF 20% 50V SMD
Detailed Description	100 µF 50 V Aluminum Electrolytic Capacitors Radial, Can - SMD 180mOhm @ 100kHz 2000 Hrs @ 105°C

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Manufacturer Product Number:	Manufacturer:
MALSECL00AG310HARK	Vishay Beyschlag/Draloric/BC Components
Series:	Product Status:
ECL	Obsolete
Capacitance:	Tolerance:
100 µF	±20%
Voltage - Rated:	ESR (Equivalent Series Resistance):
50 V	180mOhm @ 100kHz
Lifetime @ Temp.:	Operating Temperature:
2000 Hrs @ 105°C	-40°C ~ 105°C
Polarization:	Ratings:
Polar	-
Applications:	Ripple Current @ Low Frequency:
General Purpose	395.3 mA @ 120 Hz
Lead Spacing:	Size / Dimension:
-	0.394" Dia (10.00mm)
Height - Seated (Max):	Surface Mount Land Size:
0.413" (10.50mm)	0.406" L x 0.406" W (10.30mm x 10.30mm)
Mounting Type:	Package / Case:
Surface Mount	Radial, Can - SMD

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8532.22.0020	

Aluminum Capacitors

FEATURES

- Load life: 2000 h at 105 °C
- Extra low impedance, high ripple current
- Polarized SMD aluminum electrolytic capacitors, non solid electrolyte
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free RoHS COMPLIANT

APPLICATIONS

- SMD technology, for high mounting density
- Industrial and professional applications
- General industrial, consumer
- Smoothing, filtering, buffering

PACKAGING

Supplied in blister tape.

QUICK REFERENCE DATA	
DESCRIPTION	**VALUE**
Nominal case size (Ø D x L in mm)	6 x 5.8 to 12.5 x 13.5
Rated capacitance range C_R	10 µF to 1500 µF
Capacitance tolerance	± 20 %
Rated voltage range	6.3 V to 50 V
Category temperature range	-40 °C to 105 °C
Load life	2000 h
Based on sectional specification	IEC 60384-4 / EN 130300
Climatic category IEC 60068	40 / 105 / 56

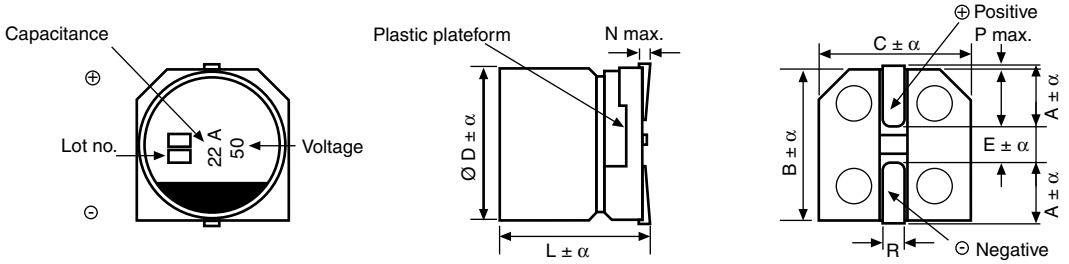
SELECTION CHART FOR C_R, U_R, AND RELEVANT NOMINAL CASE SIZES (Ø D x L in mm)

C_R (µF)	RATED VOLTAGE (V)					
	6.3	**10**	**16**	**25**	**35**	**50**
10	→	→	→	→	→	6.3 x 5.8
22	→	→	→	→	→	6.3 x 5.8
33	→	→	→	→	6.3 x 5.8	8 x 6.2
47	→	→	→	→	6.3 x 5.8	8 x 6.2
68	→	→	→	6.3 x 5.8	8 x 6.2	8 x 10
100	→	→	6.3 x 5.8	8 x 6.2	8 x 10	10 x 10
220	6.3 x 5.8	6.3 x 7.7	8 x 6.2	8 x 10	10 x 10	-
330	8 x 6.2	→	8 x 10	-	-	-
470	→	8 x 10	10 x 10	-	-	-
680	→	10 x 10	-	-	-	-
1000	10 x 10	-	-	-	-	-
1500	10 x 10	-	-	-	-	-

For technical questions, contact: aluminumcaps1@vishay.com

DIMENSIONS in millimeters

CASE SIZE CODE	D ± α	L ± α	A ± α	B ± α	C ± α	E ± α	R	N	P
AD	6.3 ± 0.5	5.8 ± 0.3	2.4 ± 0.2	6.6 ± 0.2	6.6 ± 0.2	2.2 ± 0.2	0.5 to 0.8	0.3	0.5
BM	6.3 ± 0.5	7.7 ± 0.4	2.4 ± 0.2	6.6 ± 0.2	6.6 ± 0.2	2.2 ± 0.2	0.5 to 0.8	0.3	0.5
AE	8 ± 0.5	6.2 ± 0.4	3.3 ± 0.2	8.3 ± 0.2	8.3 ± 0.2	2.3 ± 0.2	0.5 to 0.8	0.3	0.5
AF	8 ± 0.5	10 ± 0.5	2.9 ± 0.2	8.3 ± 0.2	8.3 ± 0.2	3.1 ± 0.2	0.8 to 1.1	0.3	0.5
AG	10 ± 0.5	10 ± 0.5	3.2 ± 0.2	10.3 ± 0.2	10.3 ± 0.2	4.5 ± 0.2	0.8 to 1.1	0.3	0.5
AH	12.5 ± 0.5	13.5 ± 0.5	4.6 ± 0.2	12.8 ± 0.2	12.8 ± 0.2	4.5 ± 0.2	1.1 to 1.4	0.3	0.5



ELECTRICAL DATA

SYMBOL	DESCRIPTION
U_R	Rated voltage
C_R	Rated capacitance at 120 Hz
tan δ	Max. dissipation factor at 120 Hz
R_{ESR}	Max. equivalent series resistance at 120 Hz
I_R	Rated alternating current at 120 Hz and upper category temperature
Z	Max. impedance at 100 kHz

Note

- Unless otherwise specified, all electrical values apply at T_{amb} = 20 °C, P = 86 to 100 kPa, RH = 45 to 75 %.

ORDERING EXAMPLE

ECL 22 µF / 50 V, ± 20 %, size 6.3 x 5.8 mm

Ordering code: MALSECL00AD222HARK

For Standard Packaging Quantity (SPQ) and Minimum Order Quantity (MOQ) please refer to our price list or contact customer service.

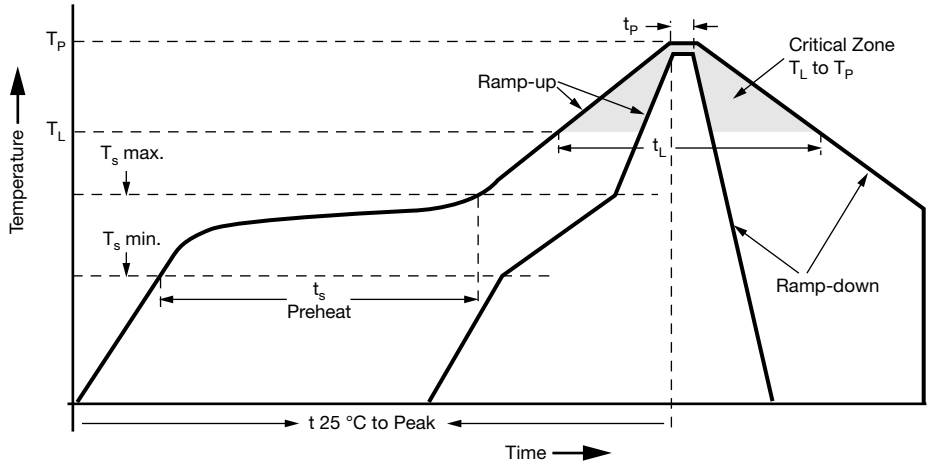
ELECTRICAL DATA AND ORDERING INFORMATION

U_R (V)	C_R 120 Hz (µF)	DIMENSIONS D x L (mm)	tan δ 120 Hz	Z 100 kHz / 20 °C (Ω)	I_R 100 kHz / 105 °C (mA)	WEIGHT (g)	CATALOG NUMBER
6.3	220	6.3 x 5.8	0.24	0.44	230	0.30	MALSECL00AD322BARK
	330	8 x 6.2	0.24	0.26	300	0.55	MALSECL00AE333BARK
	1000	10 x 10	0.24	0.09	670	1.21	MALSECL00AG410BARK
	1500	10 x 10	0.24	0.09	670	1.21	MALSECL00AG415BARK
10	220	6.3 x 7.7	0.19	0.34	280	0.40	MALSECL00BM322CARK
	470	8 x 10	0.19	0.17	450	1.00	MALSECL00AF347CARK
	680	10 x 10	0.19	0.09	670	1.21	MALSECL00AG368CARK
16	100	6.3 x 5.8	0.16	0.44	230	0.30	MALSECL00AD310DARK
	220	8 x 6.2	0.16	0.26	300	0.55	MALSECL00AE322DARK
	330	8 x 10	0.16	0.17	450	1.00	MALSECL00AF333DARK
	470	10 x 10	0.16	0.09	670	1.21	MALSECL00AG347DARK

ELECTRICAL DATA AND ORDERING INFORMATION

U_R (V)	C_R 120 Hz (µF)	DIMENSIONS D x L (mm)	tan δ 120 Hz	Z 100 kHz / 20 °C (Ω)	I_R 100 kHz / 105 °C (mA)	WEIGHT (g)	CATALOG NUMBER
25	68	6.3 x 5.8	0.14	0.44	230	0.30	MALSECL00AD268EARK
	100	8 x 6.2	0.14	0.26	300	0.55	MALSECL00AE310EARK
	220	8 x 10	0.14	0.17	450	1.00	MALSECL00AF322EARK
35	33	6.3 x 5.8	0.12	0.44	230	0.30	MALSECL00AD233FARK
	47	6.3 x 5.8	0.12	0.44	230	0.30	MALSECL00AD247FARK
	68	8 x 6.2	0.12	0.26	300	0.55	MALSECL00AE268FARK
	100	8 x 10	0.12	0.17	450	1.00	MALSECL00AF310FARK
	220	10 x 10	0.12	0.09	670	1.21	MALSECL00AG322FARK
50	10	6.3 x 5.8	0.12	0.88	165	0.30	MALSECL00AD210HARK
	22	6.3 x 5.8	0.12	0.88	165	0.30	MALSECL00AD222HARK
	33	8 x 6.2	0.12	0.63	300	0.55	MALSECL00AE233HARK
	47	8 x 6.2	0.12	0.63	300	0.55	MALSECL00AE247HARK
	68	8 x 10	0.12	0.34	450	1.00	MALSECL00AF268HARK
	100	10 x 10	0.12	0.18	670	1.21	MALSECL00AG310HARK

REFLOW SOLDERING CONDITIONS FOR SMD ALUMINUM ELECTROLYTIC CAPACITORS



PROFILE FEATURE

	SOLDERING CONDITION		
	Ø 4 TO Ø 10	Ø 12.5	Ø 16
Average ramp-up rate (T_L to T_P)	3 °C/s max.	3 °C/s max.	
Preheat			
Temperature min. (T_s min.)	150 °C	150 °C	
Temperature max. (T_s max.)	200 °C	200 °C	
Time (T_s min. to T_s max.)	60 s to 150 s	40 s to 120 s	40 s to 100 s
T_s max. to T_L			
Ramp-up rate	3 °C/s max.	3 °C/s max.	
Time maintained above			
Temperature (T_L)	217 °C	217 °C	
Time (t_L)	60 s to 90 s	40 s to 60 s	
Peak / classification temperature (T_P)	250 °C	240 °C	230 °C
Time within 5 °C of actual peak temperature (T_P)	10 s max.	10 s max.	
Ramp-down rate	3 °C/s max.	3 °C/s max.	
Time 25 °C to peak temperature	8 min max.	8 min max.	

RESISTANCE TO SOLDERING HEAT	
Leakage current	Less than specified value
Capacitance value	Within ± 10 % of initial value
tan δ	Less than specified value

LOW TEMPERATURE BEHAVIOR (at 120 Hz)

IMPEDANCE RATIO (Z) T2/(Z) T1	RATED VOLTAGE (V)							
T2/T1	**6.3**	**10**	**16**	**25**	**35**	**50**	**63**	**100**
-25 °C / +20 °C	2	2	2	2	2	2	3	3
-40 °C / +20 °C	3	3	3	3	3	3	4	4

MULTIPLIER OF RIPPLE CURRENT (I_R) AS A FUNCTION OF FREQUENCY

FREQUENCY (Hz)	I_R MULTIPLIER
50	0.41
120	0.59
300	0.69
1000	0.80
10 000	0.88
100 000	1.00

ADDITIONAL ELECTRICAL DATA

PARAMETER	CONDITIONS	VALUE
Current		
Leakage current (test conditions: U_R, 20 °C)	After 2 min at U_R	$I_{L2} \leq 0.01 \times C_R \times U_R$ or 3 µA for $U_R \leq 100$ V (whichever is greater)
Resistance		
Equivalent series resistance (ESR)	Calculated from tan $\delta_{max.}$	ESR = tan $\delta / 2 \pi f C_R$

TEST PROCEDURES AND REQUIREMENTS

TEST	PROCEDURE (quick reference)	REQUIREMENTS
Load life	T_{amb} = 105 °C U_R and I_R applied After 2000 h	ΔC/C: ± 25 % of initial value $I_L \leq$ spec. limit tan $\delta \leq 2 \times$ spec. limit
Shelf life	No voltage applied After 1000 h After test: U_R to be applied for 30 min 24 h to 48 h before measurement	ΔC/C: ± 25 % of initial value $I_L \leq$ spec. limit tan $\delta \leq 2 \times$ spec. limit

Statements about product lifetime are based on calculations and internal testing. They should only be interpreted as estimations. Also due to external factors, the lifetime in the field application may deviate from the calculated lifetime. In general, nothing stated herein shall be construed as a guarantee of durability.

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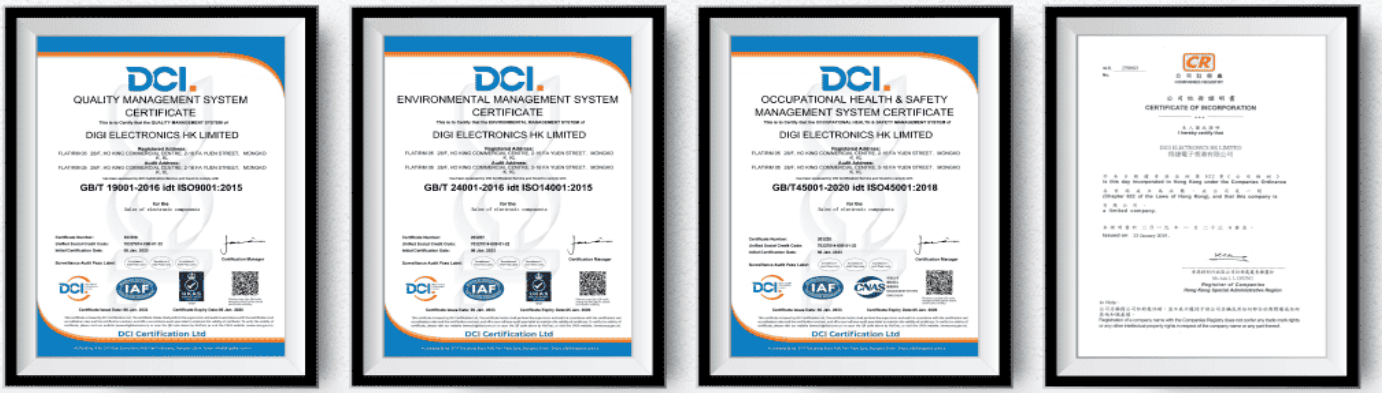

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