AVMC SERIES

HIGH RELIABLE 125°C TYPE

HYBRID ALUMINUM ELECTROLYTIC CAPACITOR ▪ SMD type
Low leakage current
Self-healing of dielectric layer
Low drift and stable electrical characteristics over lifetime
Moisture Sensitivity Level ▲ MSL 1
Long lifetime with 4000 hours at 125°C

SPECIFICATION

Item		Characteristics
Category Temperature Range		-55°C to +125°C
Rated Voltage Range	V_R	$25V_{DC}$ to $80V_{DC}$
Rated Capacitance Range	C_R	22µF to 470µF
Capacitance Tolerance ▪ At 20°C; 120Hz	ΔC	±20%
Surge Voltage ▪ At 125°C	V_S	$V_S = 1.15 \times V_R$
Dissipation Factor ▪ At 20°C; 120Hz	tan δ	V_R | $25V_{DC}$ | $35V_{DC}$ | $50V_{DC}$ | $63V_{DC}$ | $80V_{DC}$ tan δ max | 0.14 | 0.12 | 0.10 | 0.08 | 0.08
Leakage Current ▪ At 20°C; after 2min.	I_{LEAK}	Shall not exceed values in the electrical characteristics
Endurance	Test	125°C ▲ 4000hrs ▲ V_R and I_R applied
	Appearance	No significant damage
	$\Delta C/C_R$	≤ ±30% of the initial value
	tan δ	≤ 200% of the initial specified value
	ESR	≤ 200% of the initial specified value
	I_{LEAK}	≤ The initial specified value
Damp Heat (Steady State)	Test	60°C ▲ 90 to 95% RH ▲ 1000hrs ▲ V_R applied
	Appearance	No significant damage
	$\Delta C/C_R$	≤ ±20% of the initial value
	tan δ	≤ 200% of the initial specified value
	ESR	≤ 200% of the initial specified value
	I_{LEAK}	≤ The initial specified value
Shelf Life	Test	After storage for 1000hrs at 125±2°C with no voltage applied and then being stabilized at 20°C, capacitors shall meet the limits specified in Endurance. (With voltage treatment).
	Appearance	No significant damage
	$\Delta C/C_R$	≤ ±30% of the initial value
	tan δ	≤ 200% of the initial specified value
	ESR	≤ 200% of the initial specified value
	I_{LEAK}	≤ The initial specified value

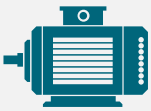
ELECTRICAL CHARACTERISTICS

$V_{R\ DC}$ (V)	C_R (µF)	Size Code	Dimensions (mm)		I_{LEAK} 20°C 2min (µA)	ESR 20°C 100kHz (mΩ)	I_R 125°C 100kHz (mA)	Part Number Note 1
			D	L				
25	100	0608	6.3	7.5	25	30	1400	250AVMC101M0608
	220	0810	8	9.7	55	27	1600	250AVMC221M0810
	270	0810	8	9.7	68	27	1600	250AVMC271M0810
	330	1010	10	10.2	83	20	2000	250AVMC331M1010
	470	1010	10	10.2	118	20	2000	250AVMC471M1010
35	68	0608	6.3	7.5	24	35	1400	350AVMC680M0608
	150	0810	8	9.7	53	27	1600	350AVMC151M0810
	180	0810	8	9.7	63	27	1600	350AVMC181M0810
	270	1010	10	10.2	95	20	2000	350AVMC271M1010
	330	1010	10	10.2	116	20	2000	350AVMC331M1010
50	33	0608	6.3	7.5	17	40	1100	500AVMC330M0608
	68	0810	8	9.7	34	30	1250	500AVMC680M0810
	100	1010	10	10.2	50	28	1600	500AVMC101M1010
	120	1010	10	10.2	60	28	1600	500AVMC121M1010
	180	1012	10	12.3	90	25	2000	500AVMC181M1012
63	22	0608	6.3	7.5	14	80	900	630AVMC220M0608
	33	0810	8	9.7	21	40	1100	630AVMC330M0810
	56	1010	10	10.2	35	30	1400	630AVMC560M1010
	68	1010	10	10.2	43	30	1400	630AVMC680M1010
	82	1010	10	10.2	52	30	1400	630AVMC820M1010
80	27	0810	8	9.7	18	45	1050	800AVMC270M0810
	33	1010	10	10.2	26	36	1360	800AVMC330M1010
	47	1010	10	10.2	38	36	1360	800AVMC470M1010

Notes

1 **Part number shows the standard Tape/Reel version**

APPLICATIONS

DC Link in Motor Drives	Harsh Environmental Applications	Input/Output Filter in DC/DC Converter	Power and Battery decoupling	Smoothing in Power Supplies
				

REFERENCE DATA ▲ 250AVMC101M0608 ▲ 100µF ▲ 25V ▲ 6.3 x 7.5mm

Fig. 1 ▪ Frequency Characteristics of ESR & |Z|

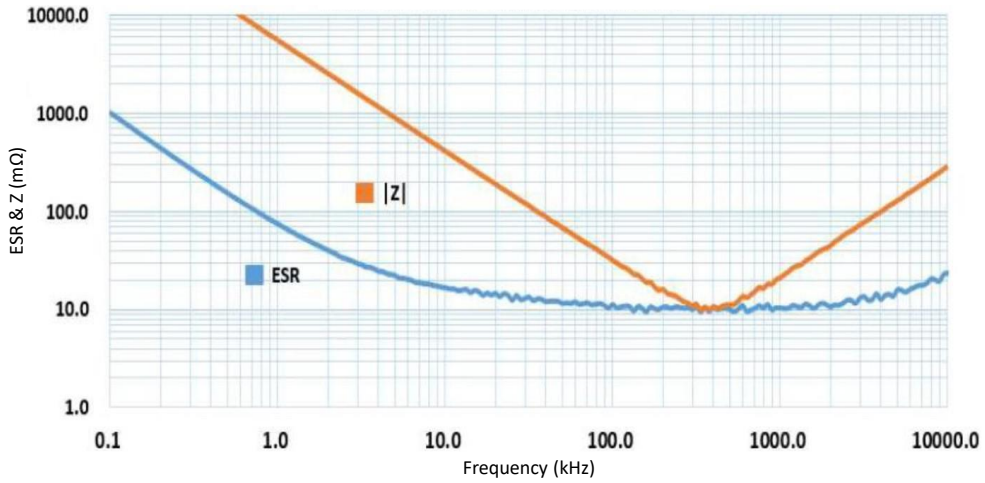


Fig. 2 ▪ Frequency Characteristics of C (µF)

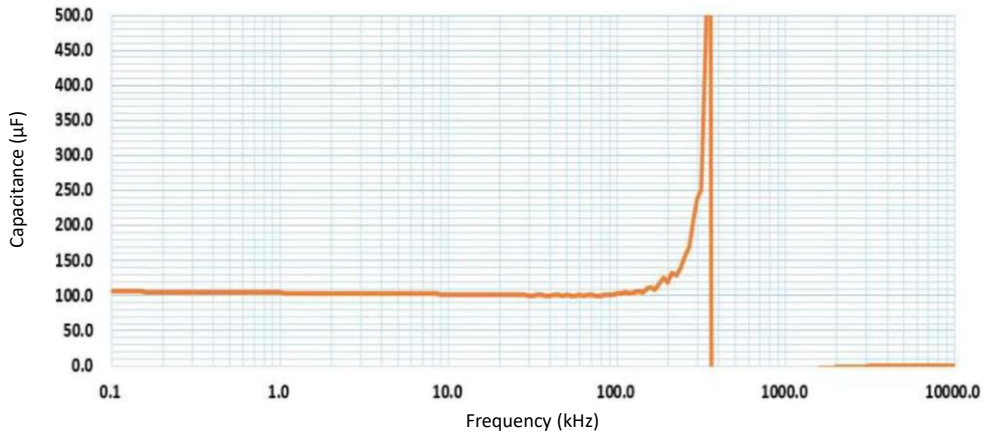
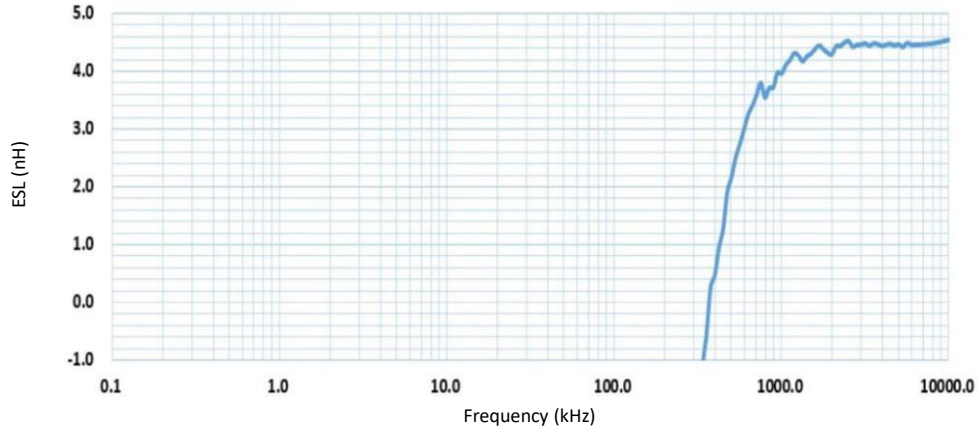


Fig. 3 ▪ Frequency Characteristics of ESL (nH)



REFERENCE DATA ▲ 500AVMC680M0810 ▲ 68µF ▲ 50V ▲ 8.0 x 9.7mm

Fig. 4 ▪ Frequency Characteristics of ESR & |Z|

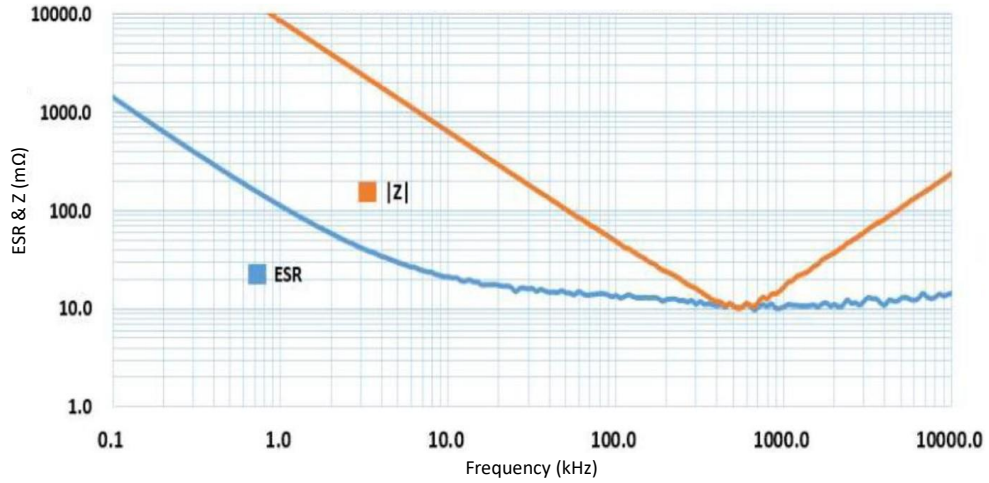


Fig. 5 ▪ Frequency Characteristics of C (µF)

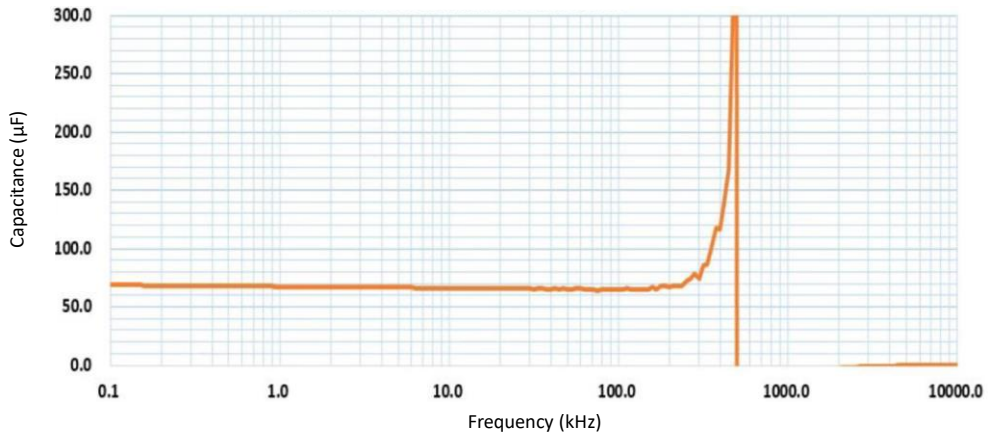
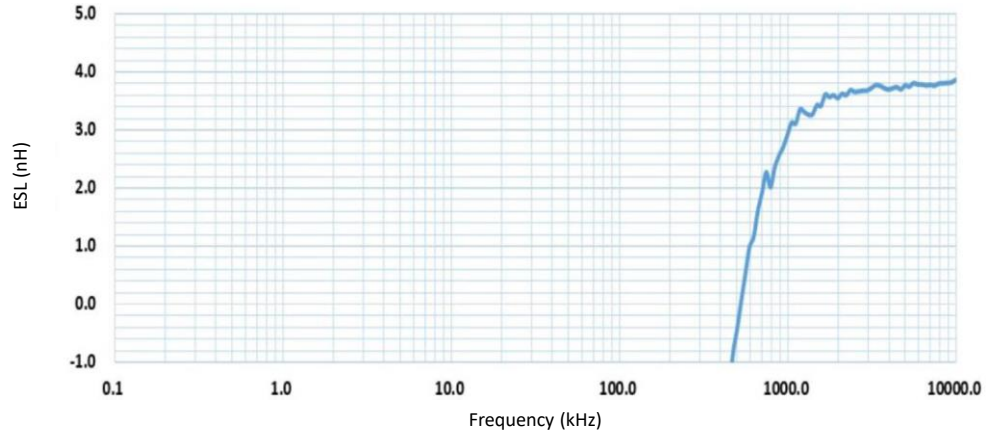


Fig. 6 ▪ Frequency Characteristics of ESL (nH)

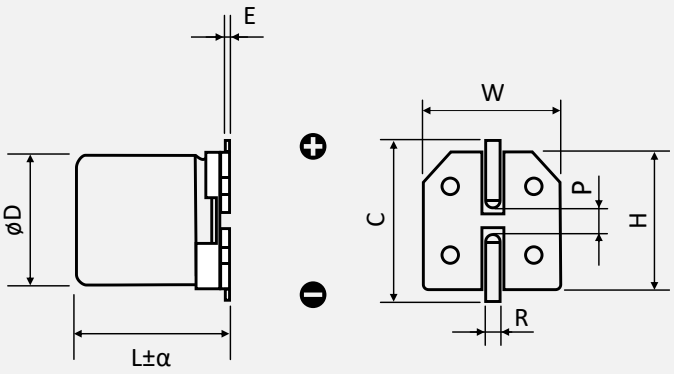


FREQUENCY CORRECTION FACTOR

Frequency Correction Factor of Permissible Ripple Current							
Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 5kHz	5kHz ≤ f < 10kHz	10kHz ≤ f < 20kHz	20kHz ≤ f < 300kHz	30kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.5	0.6	0.7	0.75	1

PACKAGE OUTLINE ▲ All dimensions in mm

Dimensions



Size Code	ØD	L	α	E	W	H	C	R	P
Tolerance	± 0.5 max.	-	-	-	± 0.2	± 0.2	± 0.2	-	± 0.3
0608	6.3	7.5	± 0.5	0.00 to 0.20	6.6	6.6	7.3	0.5 to 0.8	2.1
0810	8.0	9.7	± 0.3	0.00 to 0.20	8.3	8.3	9.0	0.8 to 1.1	2.9
1010	10.0	10.2	± 0.3	0.00 to 0.20	10.3	10.3	11.0	0.8 to 1.1	4.6
1012	10.0	12.3	± 0.2	0.00 to 0.20	10.3	10.3	11.0	0.8 to 1.1	4.6

PRODUCT CODE

Example: AVMC series ▲ 100µF ▲ 25V_{DC} ▲ ±20% ▲ D=6.3mm ▲ L=7.5mm ▲ Tape/Reel

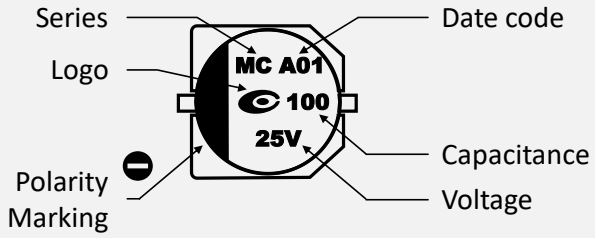
250		AVMC		101		M		0608	
Rated Voltage (V_{DC})		Series		Capacitance Code Note 1 (µF)		Capacitance Tolerance (%)		Package Code	
Code	VDC	Code	Series	Code	µF	Code	Tol.	Code	D x L
250	25	AVMC	AVMC	220	22	M	±20	0608	6.3 x 7.5
350	35			560	56			0810	8.0 x 9.7
500	50			101	100			1010	10.0 x 10.2
630	63			331	330			1012	10.0 x 12.3
800	80			471	470				

Note:

1 **Capacitance code expressed in µF. The first two digits represent significant figures. The last digit specifies the total number of zeros to be added.**

PRODUCT MARKING

Marking	Details



Marking	Description
Logo	Manufacturer Logo
Series	MC = AVMC
Date code	See date code table
Capacitance	100 = 100µF
Voltage	25V = 25V
⊖	Polarity (-) marking

DATE CODE

Example:

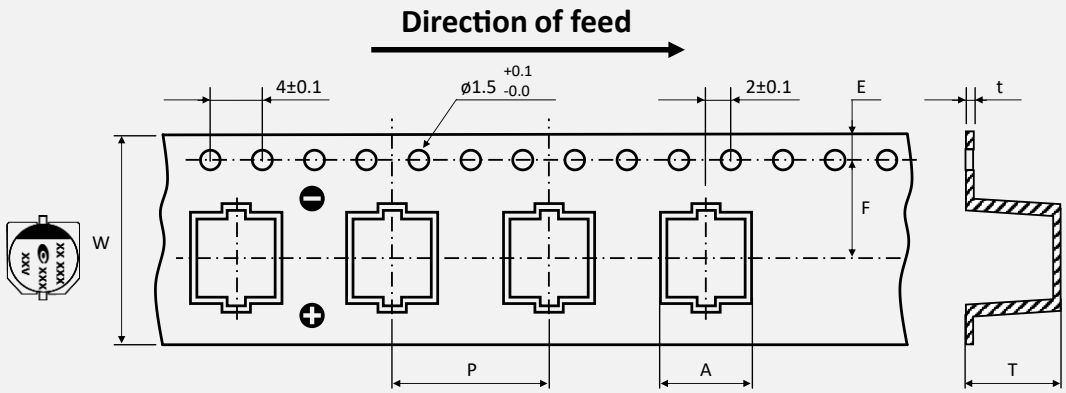
Date code

A01: A01 = 1st week of 2020

A		01	
Year		Week	
A	2019	01	1st
B	2020	02	2nd
...	...	...	...
Z	2030	53	53rd

TAPING SPECIFICATION ▲ SMD TYPE

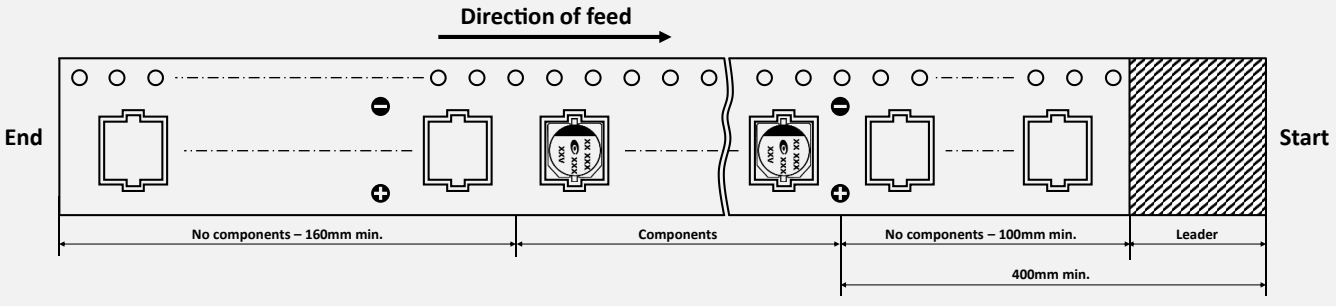
Dimensions in mm



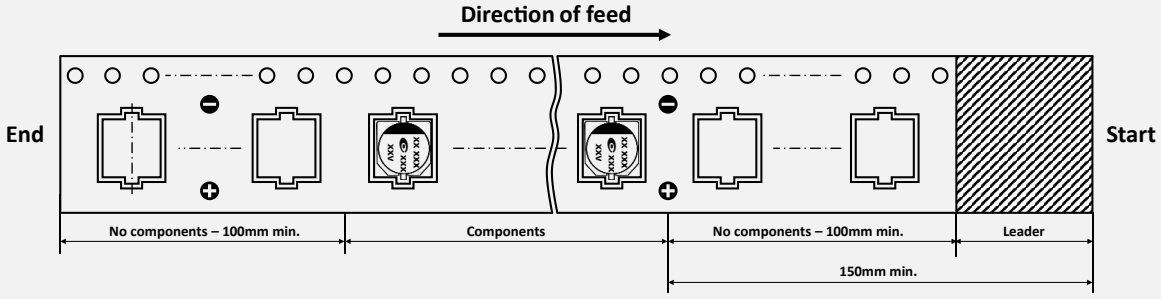
Size Code	W (mm)	A (mm)	B (mm)	F (mm)	E (mm)	P (mm)	T (mm)	t (mm)
Tolerance	± 0.3	± 0.2	± 0.2	± 0.1	± 0.1	± 0.1	± 0.2	± 0.05
0608	16	7	7	7.5	1.75	12	8.2	0.5
0810	24	8.7	8.7	11.5	1.75	16	10	0.5
1010	24	10.7	10.7	11.5	1.75	16	13	0.5
1012	24	10.7	10.7	11.5	1.75	16	13	0.5

START AND END OF TAPE ▲ SMD TYPE

Diameter 5mm / 6mm and 8mm



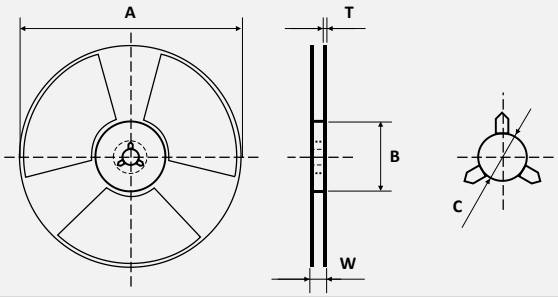
Diameter 10mm



REEL DIMENSION AND PACKAGING QUANTITY ▲ SMD TYPE

Code	Capacitor Dimensions		A ± 2	B ± 0.5	C ± 0.5	W ± 0.8	T ± 0.3	1 Reel	1 Box	
	ØD (mm)	L (mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(pcs)	(pcs)	(reel)
0608	6.3	7.5	381	100	13	16.5	2.5	900	5 400	6
0810	8.0	9.7	381	100	13	25.9	2.5	500	2 500	5
1010	10.0	10.2	381	100	13	25.9	2.5	450	2 250	5
1012	10.0	12.3	381	100	13	25.9	2.5	450	2 250	5

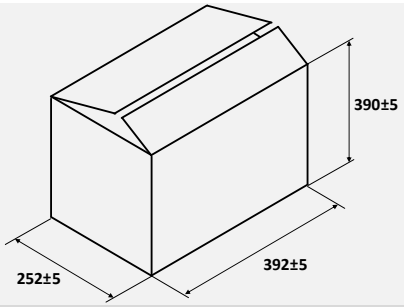
Reel



Label on the reel
Size L x W = 70mm x 35mm

1. **P/N:** Customer part number
2. **DESC:** Customer specification
3. **SPEC:** Manufacturer part number
4. **COO:** Country of origin
5. **QTY:** Quantity (pcs)
6. **MAKER:** Manufacturer
7. **VENDOR:** Manufacturer
8. **DC:** Date code
9. **LOT/NO:** Production lot

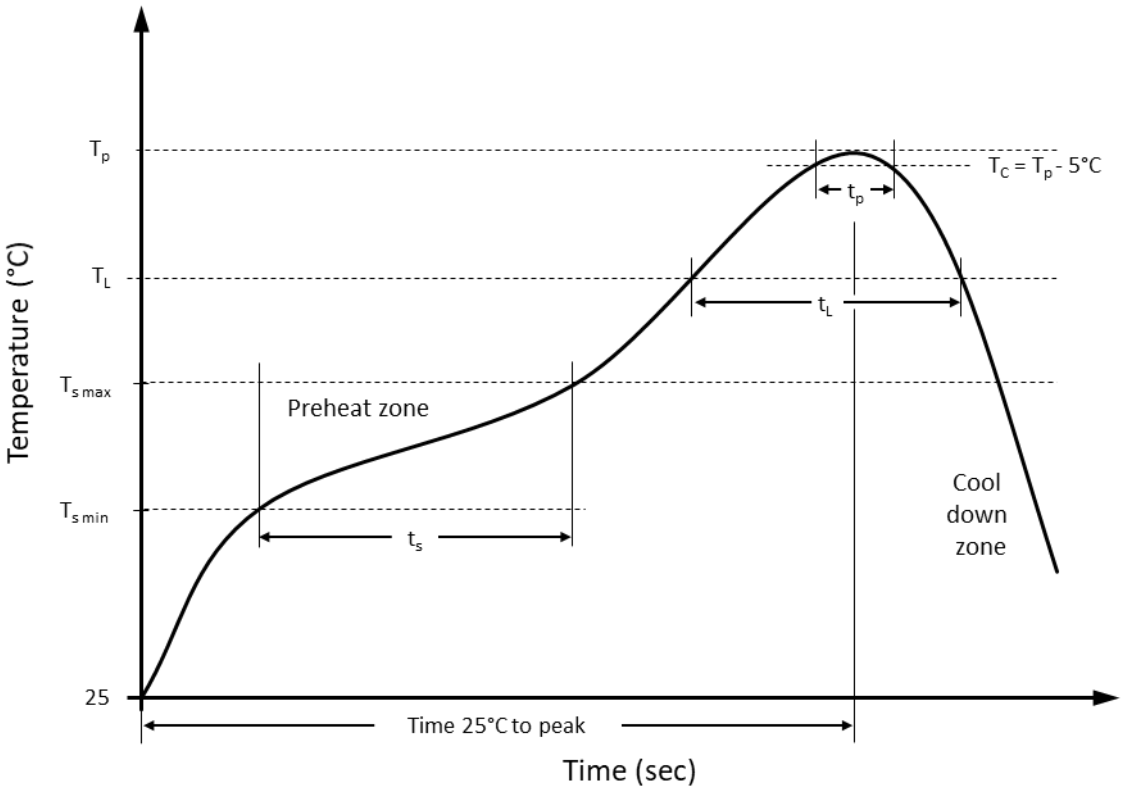
Box (Dimensions in mm)



Label on the outer carton
Size L x W = 100mm x 90mm

1. **CUSTOMER:** Customer name
2. **P/O:** Customer order number
3. **P/N:** Customer part number
4. **DESCRIPTION:** Manufacturer part number
5. **QTY:** Quantity (pcs) and shipping date
6. **COO:** Country of origin

RECOMMENDED REFLOW SOLDERING PROFILE ▲ SMD PACKAGE



Recommended reflow soldering conditions ▲ Refer to JEDEC J-STD-020E

Profile Features		Pb-Free Assembly
Preheat temperature min.	$T_{s\,min}$	150 °C
Preheat temperature max.	$T_{s\,max}$	200 °C
Preheat time t_s from $T_{s\,min}$ to $T_{s\,max}$	t_s	120 seconds
Ramp-up rate (T_L to T_p)		max. 3 °C/second
Liquidous temperature	T_L	217 °C
Time t_L maintained above T_L	t_L	See table below
Peak package body temperature	T_p	See table below
Timeframe of within 5°C below and up to max actual peak body temperature	t_p	See table below
Ramp-down rate (T_L to T_p)		max. 6 °C/second
Time 25°C to peak temperature		max. 8 minutes

Size Code	Time > 200°C	t_L Time > 217°C	Time > 230°C	T_P Peak Temperature	t_p Timeframe	Allowed Reflow Runs
≤ 6.3 mm	70 sec. max.	70 sec. max.	70 sec. max.	260 °C	5 sec	Max. twice
≥ 8mm	70 sec. max.	70 sec. max.	70 sec. max.	245 °C	10 sec	Max. twice
				260 °C	5 sec	Only once

REVISION TABLE

Revision	Date	Status	Notes
001	01/10/2021	Initial release	Initial publication

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