

PRODUCT SPECIFICATIONS



BMLVR100505050E100M00

CUSTOMER'S PRODUCT NAME:

DATE: 2026.05

SPEC. NO: D-2605-01

THIS SPECIFICATION IS:

- ☐ FULLY ACCEPTED
- ☐ DENIED
- ☐ ACCEPTED UNDER THE FOLLOWING CONDITIONS:

SIGNATURE:

DATE:

NAME(PRINT):

TITLE:



① Features

1.1 Technical Data	Symbol	Value	Unit
Maximum allowable continuous AC voltage *1	V_{RMS}	NIL	V
Maximum allowable continuous DC voltage	V_{DC}	5	V
Varistor voltage measured*2	V_B	21.5-33	V
Typical capacitance value measured at 1MHz*3	c	10	PF
Typical capacitance value tolerance *3	c	7-15	PF
Clamping voltage measured*4	V_c	<50	V
Leakage current at V_{DC} *1(At initial state)	I_{LVDC}	<1	μA
Leakage current at V_{DC} *1 (After ESD Test)	I_{LVDC}	<1	μA

1.2 Reference Data	Symbol	Value	Unit
Response time	T_{rise}	<1	ns
ESD testing	IEC61000-4-2	level 4	
Operating ambient temperature		-40~+85	℃
Storage temperature		40~+125	℃
Reflow temperature profile(Recommend)		260	℃

1.3 Other Data	Symbol	Value	Unit
Body	No		
End termination	Ag/Ni/Sn		
Packaging	Tape		
Complies with Standard	IEC61000-4-2, IEC61000-4-5		
Complies with RoSH Standard			

⚠ Notes:

1, AC voltage at 50~60Hz

3, Capacitance

Measured at f=1MHz, VRMS= 1V

5, The components shall be employed within 1 year, in the nitrogen condition

2, Varistor voltage

Measured at 1mA DC

4, Maximum clamping voltage

Measured at 30ns by IEC6100-4-2, @8kV

② Application



Automotive Electronics

vehicle control circuits, infotainment systems, on-board interfaces



Industrial Control

instruments, PLC, industrial signal lines.



Smart home & IoT

sensors, security cameras, network equipment.



Communication Interfaces

USB, Type-C, HDMI, audio ports, serial communication ports.



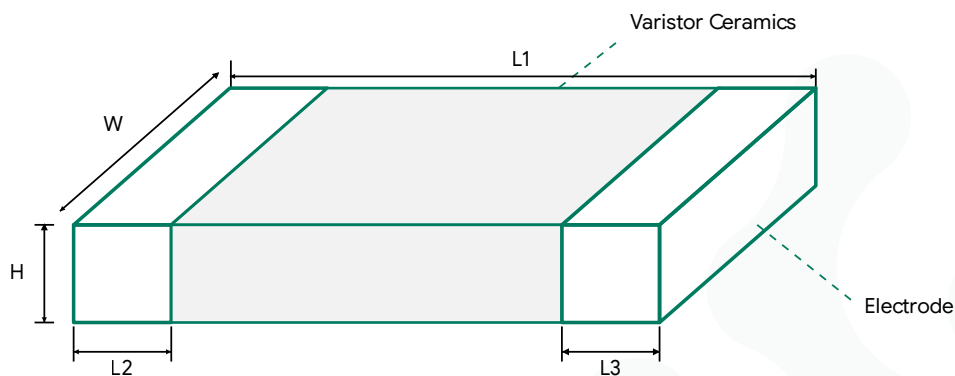
Consumer Electronics

mobile phones, tablets, wearable devices, TWS earphones, power adapters.

③ Part numbering

B	MLVR	100505	050	E	100	M	00
Grade	Product Series	Dimensions(mm)	Working voltage	For ESD	Capacitance	Tolerance	Control code

④ Appearance and Dimensions

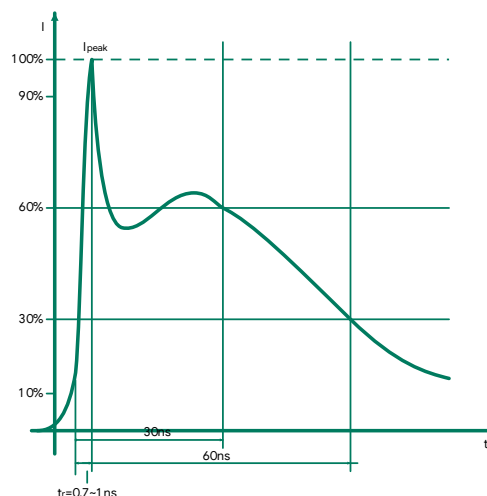


Unit: mm

Type	Length (L1)	Width (W)	High (H)	Electrode (L2, L3)
1005	1.00±0.15	0.50±0.15	0.60(max)	0.20±0.05

⑤ ESD Wave Form

SEVERITY LEVEL	AIRDIRCHARGE	DIRECT ISCHARGE
1	2 KV	2 KV
2	4 KV	4 KV
3	8 KV	6 KV
4	15 KV	8 KV



⑥ Enviromental Reliability Test

Characteristic	Test method and description			
High Temperature Storage	The specimen shall be subjected to 125°C for 1000 hours in a thermostatic bath without load and then stored at room temperature and humidity for 1 to 2 hours. The change of varistor voltage shall be within 10%.			
Temperature Cycle	The temperature cycle of specified temperature shall be repeated five times and then stored at room temperature and humidity for one two hours. The change of varistor voltage shall be within 10% and mechanical damage shall be examined.	Step	Temperature	Period
		1	-40±3°C	30min±3
		2	Room Temperature	1~2hours
		3	125±2°C	30min±3
High Temperature Load	After being continuously applied the maximum allowable voltage at 85°C for 1000 hours, the specimen shall be stored at room temperature and humidity for one or hours, the change of varistor voltage shall be within 10%.	4	Room Temperature	1~2hours
Damp Heat Load/ Humidity Load	The specimen should be subjected to 40°C, 90 to 95%RH environment, and the maximum allowable voltage applied for 1000 hours, then stored at room temperature and humidity for one or two hours. The change of varistor voltage shall be within 10%.			
Low Temperature Storage	The specimen should be subjected to -40°C, without load for 1000 hours and then stored at room temperature for one two hours. The change of varistor voltage shall be within 10%.			

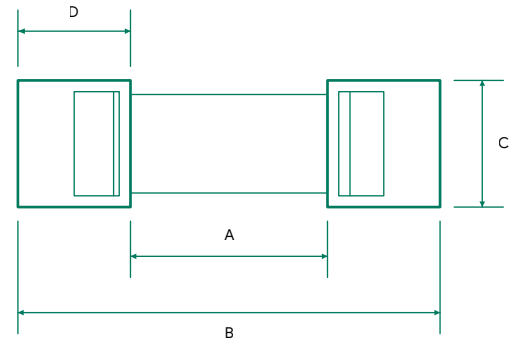
⑦ Soldering Recommendation

The principal techniques used for the soldering of components in surface mount technology are infrared reflow and wave soldering.

7.1 Taping Figure

Recommended solder pad layout

	A	B	C	D
1005	0.4~0.6	1.4~1.8	0.5~0.6	0.6~1.2
1608	0.9~1.2	2.7~3.2	0.7~1.0	0.9~1.2
2012	1.0~1.5	2.6~3.2	1.2~1.5	1.1~1.8
3216	1.8~2.5	4.2~5.2	1.2~1.8	1.2~1.8
3225	1.8~2.5	4.2~5.2	2.2~3.0	1.3~2.0
4532	2.5~3.3	5.5~6.7	2.8~3.6	1.3~2.2
5650	3.8~4.6	6.6~7.8	4.8~5.5	1.3~2.2



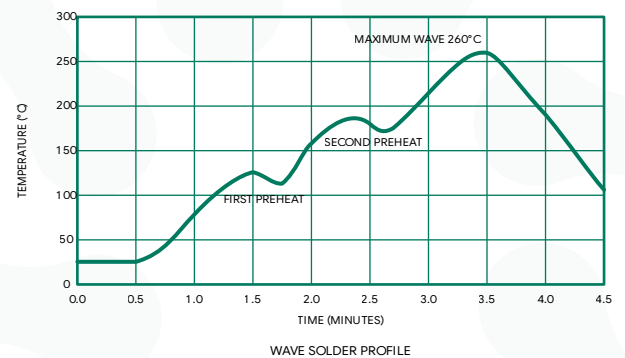
7.2 The SIR test of the solder paste shall be done (Based on JIS-Z-3284)

7.3 Steel plate and foot distance printing

Foot distance printing (mm)	Steel Plate thickness(mm)
>0.65mm	0.18mm
0.65mm~0.5mm	0.15mm
0.50mm~0.40mm	0.12mm
>0.40 mm	0.10mm

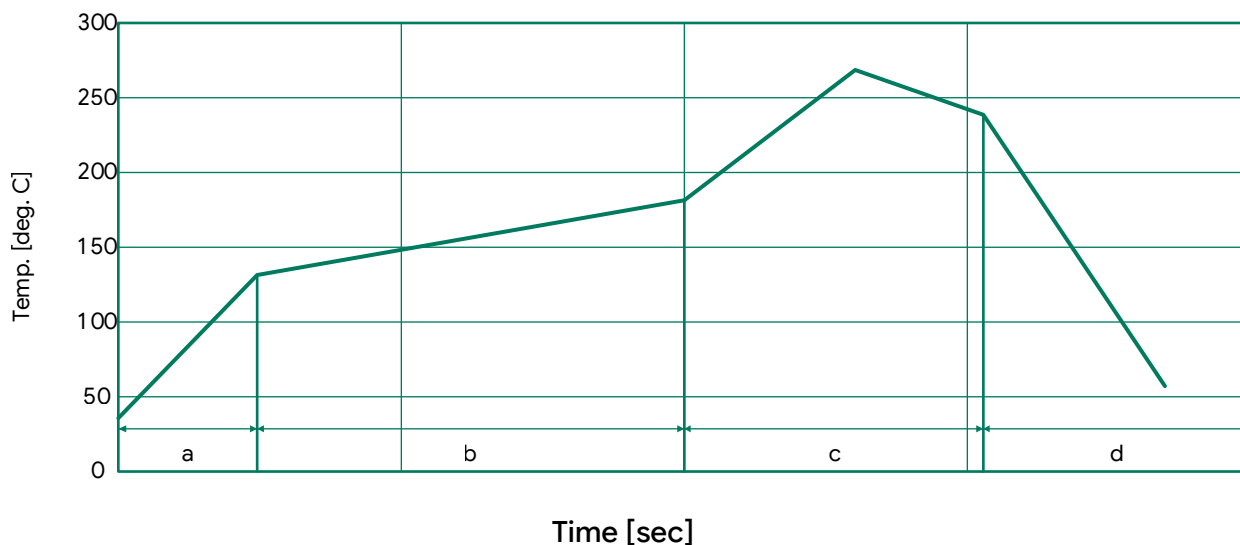
7.4 Wave Soldering

When wave soldering, the MLCV is attached to the circuit board by means of an adhesive. The assembly is then placed on a conveyor and run through the soldering process to contact the wave. Wave soldering is the most strenuous of the processes. To avoid the possibility of generating stresses due to thermal shock, a preheat stage in the soldering process is recommended, and the peak temperature of the solder process should be rigidly controlled.



⑦ Soldering Recommendation

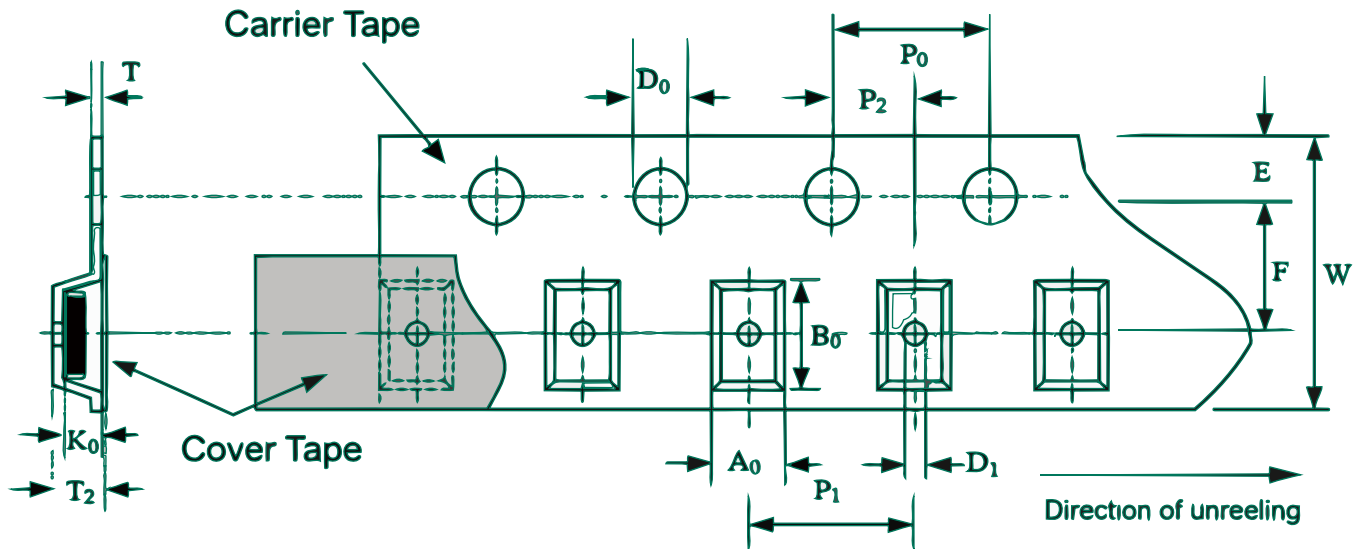
When reflow soldering, the device is placed a solder paste on the substrate ,as the solder paste is heated, it re-flows and solders the unite to board. When using a reflow process ,care should be taken to ensure that the MLCV is not subjected to an thermal gradient steeper than 4 degrees per second; the ideal gradient being 2degrees per second. During the soldering process, preheating to within 100 degrees of the soldier's peak temperature is essential to minimize thermal shock. The following is typical profile



Zone		temp. range [deg. C]	time[sec]	Remark
A	Curing	RT~130	60	Solder:Sn-Ag-Cu 260deg. C,over 10sec
B	Preheat	max 220	90~150	
C	Soldering	220 ~ 260 [max 270]	90~150	
D	Cooling	220~RT	min60	

⑧ Packaging

8.1 CARRIER TAPE DIMENSIONS



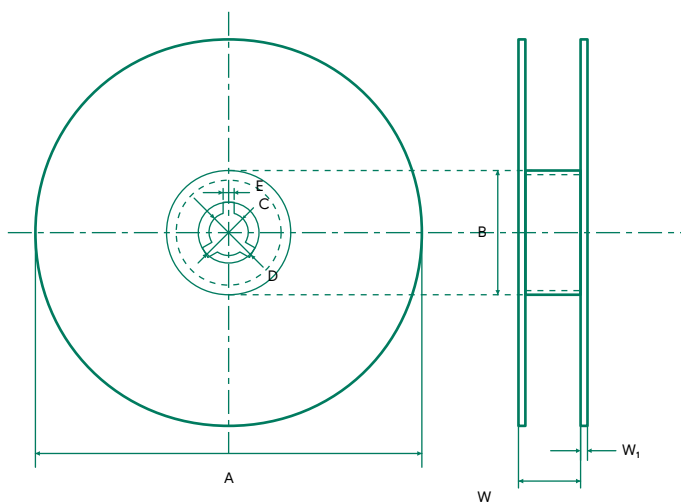
type	$A_0 \pm 0.10$	$B_0 \pm 0.10$	$K_0 \pm 0.10$	$T \pm 0.05$	$T_2 \pm 0.05$	$D_0 + 0.10 - 0.05$	$D_1 \pm 0.05$	$P_1 \pm 0.10$	$P_2 \pm 0.05$	$P_0 \pm 0.05$	$W \pm 0.20$	$E \pm 0.10$	$F \pm 0.10$
1005	0.62	1.12	0.60	0.22	0.10	1.50	1.00	4.00	2.00	4.00	8.00	1.75	3.50
1608	1.08	1.88	1.04	0.22	0.10	1.50	1.00	4.00	2.00	4.00	8.00	1.75	3.50
2012	1.42	2.30	1.04	0.22	0.10	1.50	1.00	4.00	2.00	4.00	8.00	1.75	3.50
3216	1.88	3.50	1.27	0.20	0.10	1.50	1.00	4.00	2.00	4.00	8.00	1.75	3.50
3225	2.18	3.46	1.45	0.22	0.10	1.50	1.00	4.00	2.00	4.00	8.00	1.75	3.50
4532	3.66	4.95	1.74	0.25	0.10	1.50	1.50	8.00	2.00	4.00	12.00	1.75	5.50
5650	5.10	5.97	2.80	0.25	0.10	1.50	1.50	8.00	2.00	4.00	12.00	1.75	5.50

8.1.1 Carrier tape transparent cover tape should be heat-sealed to carry the products, and the reel should be used to reel the carrier tape.

8.1.2 The adhesion of the heat-sealed cover tape shall be 40 +20/ -15 grams

8.1.3 Both the head and the end portion of taping shall be empty for reel package and SMT auto-pick-up machine. And a normal paper tape shall be connected in the head of taping for the operator handle.

8.1 REEL DIMENSIONS



type	A	B	C	D	E	W	W ₁
1005	178.0±1.0	60.0±0.5	13.0±0.2	21.0±0.2	2.0±0.5	9.0±0.50	1.5±0.15
1608	178.0±1.0	60.0±0.5	13.0±0.2	21.0±0.2	2.0±0.5	9.0±0.50	1.5±0.15
2012	178.0±1.0	60.0±0.5	13.0±0.2	21.0±0.2	2.0±0.5	9.0±0.50	1.5±0.15
3216	178.0±1.0	60.0±0.5	13.0±0.2	21.0±0.2	2.0±0.5	9.0±0.50	1.5±0.15
3225	178.0±1.0	60.0±0.5	13.0±0.2	21.0±0.2	2.0±0.5	9.0±0.50	1.5±0.15
4532	178.0±1.0	60.0±0.5	13.5±0.1	21.0±0.2	2.0±0.5	13.6±0.2	1.5±0.15
5650	178.0±1.0	60.0±0.5	13.5±0.1	21.0v±0.2	2.0±0.5	13.6±0.2	1.5±0.15

type		1005	1608	2012	3216	3225	4532	5650
quantity	paper	10000	4000	4000	-	-	-	-
	plastic	-	-	-	3000	3000	1000	1000
Minimum ordering		-	4000	4000	3000	3000	1000	1000

⑨ Storage

1, Storage period

Use the products within 12 months after delivered. Solderability should be checked if this period is exceeded.

2, Storage conditions

- Storage temperature: -40~+125°C

3, Delivery

Care should be taken when transporting or handling product to avoid excessive vibration or mechanical shock.