

Data Sheet

Customer:

Product: Shielded Molding SMD Power Inductor – SDN Series

Sizes.: 0412/0420/0518/0530/0618/0624/0630/1040

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VIKING TECH CORPORATION
光頤科技股份有限公司
No.70, Guangfu N. Rd., Hukou
Township, Hsinchu County
303, Taiwan (R.O.C)

TEL:886-3-5972931
FAX:886-3-5972935•886-3-5973494
E-mail:sales@viking.com.tw

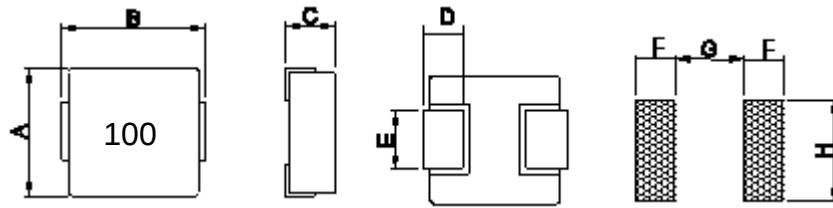
VIKING TECH CORPORATION KAOHSIUNG BRANCH
光頤科技股份有限公司高雄分公司
No.248-3, Sin-Sheng Rd., Cian-Jhen Dist., Kaohsiung,
806, Taiwan

TEL:886-7-8217999
FAX:886-7-8228229
E-mail:sales@viking.com.tw

VIKING ELECTRONICS (WUXI) CO., LTD.
光頤電子(無錫)有限公司
No.22 Xixia Road, Machinery & Industry Park,
National Hi-Tech Industrial Development Zone
of Wuxi, Wuxi, Jiangsu Province, China
Zip Code:214028
TEL:86-510-85203339
FAX:86-510-85203667•86-510-85203977
E-mail:china@viking.com.tw

Produced by (QC)	Checked (QC)	Approved by (QC)	Prepared by (Sales)	Accepted by (Customer)
10-Sep-25	10-Sep-25	10-Sep-25	10-Sep-25	
Mandy Chang	Ben Chang	Ben Chang		

Shielded Molding SMD Power Inductor



Features

- Low profile and low DCR
- Minimized acoustic noise and minimized leakage flux noise
- Magnetically Shielded construction, low EMI
- High current carrying capacity, Low core loss
- Frequency range up to 3MHz
- Halogen free & RoHS compliant

Applications

- PC/TV, and server applications
- DC/DC converter for CPU in Notebook / PC / PDA
- VRM for server
- DC switching power supply circuit

Characteristics

- All test data is referred to 25°C ambient
- Rated current: Isat or Irms, whichever is smaller
- Isat: DC current at which the inductance drops approximate 30% TYP from its value without current.
- Irms: DC current that causes the temperature rise ($\Delta T = 40^\circ\text{C}$) from 25°C ambient
- Absolute maximum voltage 30VDC
- Storage temperature: $5^\circ\text{C} \sim 40^\circ\text{C}$, Humidity: 10 to 75% RH or less
- Storage period is within 12 months

Dimensions

Unit: mm

Type	A	B	C	D	E	F	G	H
SDN0412	4.2±0.25	4.4±0.35	1.0±0.2	0.8±0.3	2.0±0.3	1.5	2.2	2.5
SDN0420	4.2±0.25	4.4±0.35	1.8±0.2	0.8±0.3	2.0±0.3	1.5	2.2	2.5
SDN0518	5.2±0.20	5.4±0.30	1.6±0.2	1.2±0.2	2.2±0.3	1.9	2.2	2.5
SDN0530	5.2±0.20	5.4±0.3	2.8±0.2	1.2±0.2	2.2±0.3	1.9	2.2	2.5
SDN0618	6.6±0.20	7.0±0.3	1.6±0.2	1.6±0.3	3.0±0.3	2.35	3.7	3.5
SDN0624	6.6±0.20	7.0±0.3	2.2±0.2	2.0±0.1	3.0±0.3	2.35	3.7	3.5
SDN0630	6.6±0.20	7.0±0.3	2.8±0.2	1.6±0.3	3.0±0.3	2.35	3.7	3.5
SDN1040	10.0±0.30	11.5 Max	3.8±0.2	2.0±0.5	3.0±0.5	4.1	5.4	4.1

Inductance and rated current ranges

- SDN0412 0.47μH~4.7μH @Saturation Current: 6.8~2.8A
- SDN0420 0.22μH~10μH @Saturation Current: 12.5~2.2A
- SDN0518 0.47μH~10μH @Saturation Current: 15.5~3A
- SDN0530 0.20μH~10μH @Saturation Current: 14.5~3.5A
- SDN0618 0.68μH~22μH @Saturation Current: 17~2.3A
- SDN0624 0.33μH~10μH @Saturation Current: 24.5~4.0A
- SDN0630 0.22μH~33μH @Saturation Current: 34~2.5A
- SDN1040 0.15μH~33μH @Saturation Current: 75~5.0A

— Test equipment:

L: Wayne kerr 3260B LCR meter with Wayne kerr 3265B bias current source

DCR: Milli-ohm meter

— Electrical specifications at 25°C

— Operating temperature rang: $-55^\circ\text{C} \sim +125^\circ\text{C}$

Product Identification

SDN	0630	M	T	100
Product Type	Dimensions (AxC)	Inductor Tolerance	Packaging Style	Inductance
	0412: 4.2×1.0 0420: 4.2×1.8 0518: 5.2×1.6 0530: 5.2×2.8 0618: 6.6×1.6 0624: 6.6×2.2 0630: 6.6×2.8 1040: 10.0×3.8	M: ±20%	T: Tape and Reel	R10: 0.10μH 1R0: 1.0μH 100: 10μH

Electrical Characteristics

SDN0412 Type(□:Tolerance):

Part No.	Inductance (μH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Typ.	Temperature Rise Current (A) Typ.
SDN0412□TR47	0.47	M	100KHz, 0.25V	21.0	6.8	6.0
SDN0412□T1R0	1.0	M	100KHz, 0.25V	47.0	5.5	4.5
SDN0412□T2R2	2.2	M	100KHz, 0.25V	83.5	3.5	2.75
SDN0412□T4R7	4.7	M	100KHz, 0.25V	195.0	2.8	1.8

SDN0420 Type(□:Tolerance):

Part No.	Inductance (μH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Typ.	Temperature Rise Current (A) Typ.
SDN0420□TR22	0.22	M	100KHz, 0.25V	6.6	12.5	9.5
SDN0420□TR47	0.47	M	100KHz, 0.25V	14.0	9.5	7.5
SDN0420□TR68	0.68	M	100KHz, 0.25V	18.0	9.0	7.0
SDN0420□T1R0	1.0	M	100KHz, 0.25V	27.0	7.0	6.0
SDN0420□T1R5	1.5	M	100KHz, 0.25V	46.0	6.0	5.0
SDN0420□T2R2	2.2	M	100KHz, 0.25V	58.0	5.0	4.5
SDN0420□T3R3	3.3	M	100KHz, 0.25V	87.0	4.0	3.3
SDN0420□T4R7	4.7	M	100KHz, 0.25V	105.0	3.0	2.8
SDN0420□T6R8	6.8	M	100KHz, 0.25V	175.0	2.5	2.4
SDN0420□T100	10	M	100KHz, 0.25V	282.0	2.2	1.6

SDN0518 Type(□:Tolerance):

Part No.	Inductance (μH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Typ.	Temperature Rise Current (A) Typ.
SDN0518□TR47	0.47	M	100KHz, 0.25V	9.0	15.5	10.5
SDN0518□T1R0	1.0	M	100KHz, 0.25V	17.0	9.0	8.0
SDN0518□T1R5	1.5	M	100KHz, 0.25V	26.0	9.0	7.5
SDN0518□T2R2	2.2	M	100KHz, 0.25V	35.0	6.5	5.0
SDN0518□T3R3	3.3	M	100KHz, 0.25V	58.0	5.0	4.5
SDN0518□T4R7	4.7	M	100KHz, 0.25V	85.0	4.0	3.5
SDN0518□T6R8	6.8	M	100KHz, 0.25V	120.0	3.4	2.8
SDN0518□T100	10	M	100KHz, 0.25V	155.0	3.0	2.5

■Electrical Characteristics

SDN0530 Type(□:Tolerance):

Part No.	Inductance (uH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Typ.	Temperature Rise Current (A) Typ.
SDN0530□TR20	0.20	M	100KHz, 0.25V	3.9	14.5	14.0
SDN0530□TR47	0.47	M	100KHz, 0.25V	8.5	12.0	11.0
SDN0530□TR68	0.68	M	100KHz, 0.25V	12.0	11.5	9.0
SDN0530□T1R0	1.0	M	100KHz, 0.25V	14.0	11.0	8.5
SDN0530□T1R5	1.5	M	100KHz, 0.25V	25.0	8.5	8.2
SDN0530□T2R2	2.2	M	100KHz, 0.25V	29.0	7.5	7.0
SDN0530□T3R3	3.3	M	100KHz, 0.25V	38.0	6.0	5.5
SDN0530□T4R7	4.7	M	100KHz, 0.25V	60.0	5.0	4.5
SDN0530□T6R8	6.8	M	100KHz, 0.25V	90.0	4.0	3.5
SDN0530□T100	10	M	100KHz, 0.25V	125.0	3.5	3.2

SDN0618 Type(□:Tolerance):

Part No.	Inductance (uH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Typ.	Temperature Rise Current (A) Typ.
SDN0618□TR68	0.68	M	100KHz, 0.25V	12.0	17.0	9.5
SDN0618□T1R0	1.0	M	100KHz, 0.25V	16.0	14.0	8.5
SDN0618□T2R2	2.2	M	100KHz, 0.25V	35.0	8.0	7.0
SDN0618□T4R7	4.7	M	100KHz, 0.25V	62.0	5.0	4.0
SDN0618□T6R8	6.8	M	100KHz, 0.25V	110.0	4.5	3.0
SDN0618□T100	10	M	100KHz, 0.25V	155.0	2.5	2.3
SDN0618□T220	22	M	100KHz, 0.25V	350.0	2.3	1.8

SDN0624 Type(□:Tolerance):

Part No.	Inductance (uH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Typ.	Temperature Rise Current (A) Typ.
SDN0624□TR33	0.33	M	100KHz, 0.25V	4.1	24.5	18.0
SDN0624□TR47	0.47	M	100KHz, 0.25V	5.1	22.0	15.0
SDN0624□TR56	0.56	M	100KHz, 0.25V	6.5	17.0	13.0
SDN0624□TR68	0.68	M	100KHz, 0.25V	7.0	16.0	12.0
SDN0624□T1R0	1.0	M	100KHz, 0.25V	13.5	16.0	9.0
SDN0624□T1R5	1.5	M	100KHz, 0.25V	20.0	15.0	9.0
SDN0624□T3R3	3.3	M	100KHz, 0.25V	39.0	10.0	5.5
SDN0624□T6R8	6.8	M	100KHz, 0.25V	70.0	6.0	4.0
SDN0624□T100	10	M	100KHz, 0.25V	101.0	4.0	3.1

Electrical Characteristics

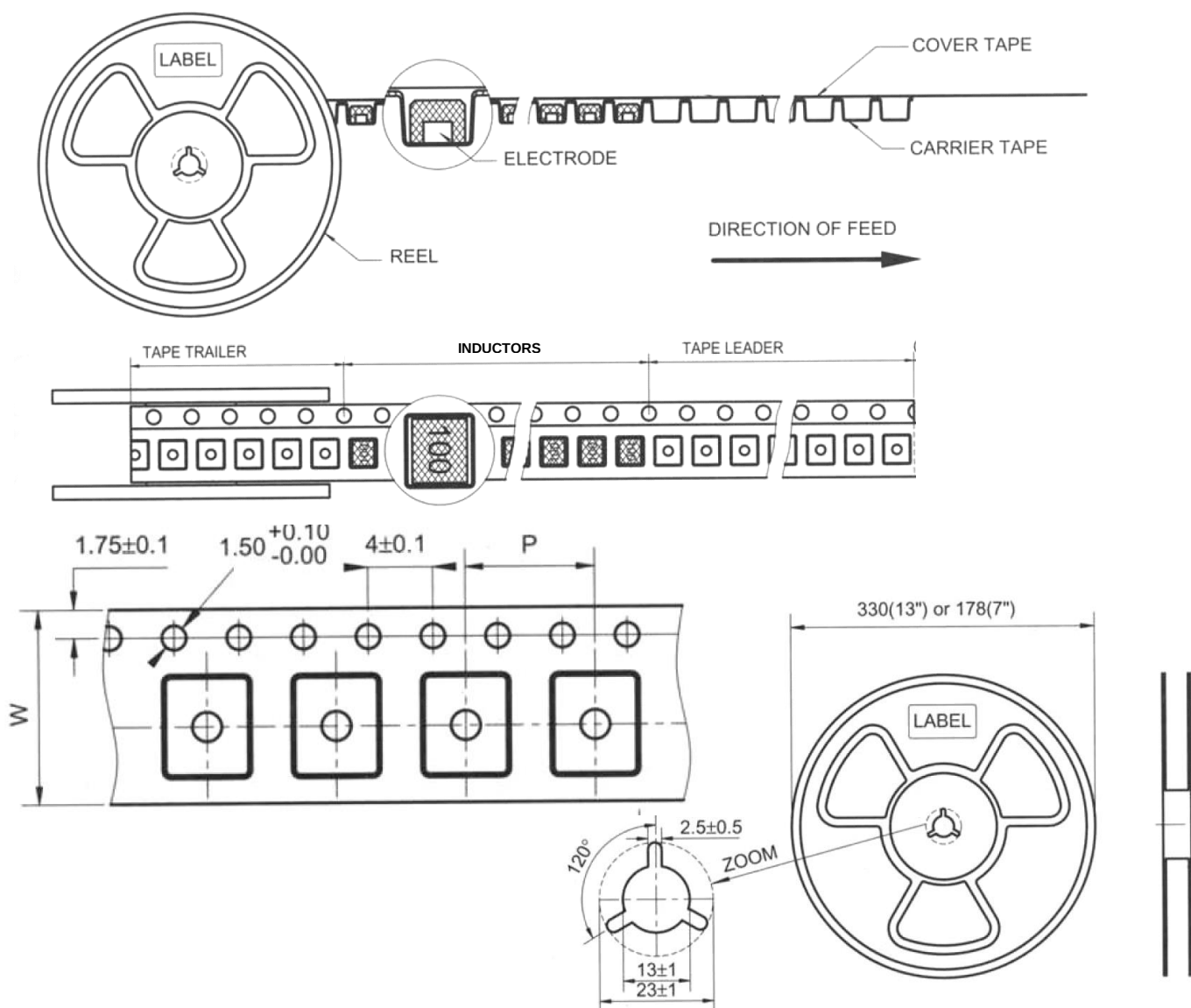
SDN0630 Type(□:Tolerance):

Part No.	Inductance (uH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Typ.	Temperature Rise Current (A) Typ.
SDN0630□TR22	0.22	M	100KHz, 0.25V	3.0	34.0	24.0
SDN0630□TR33	0.33	M	100KHz, 0.25V	3.5	25.0	21.0
SDN0630□TR47	0.47	M	100KHz, 0.25V	4.1	20.0	18.0
SDN0630□TR56	0.56	M	100KHz, 0.25V	4.5	18.0	16.5
SDN0630□TR68	0.68	M	100KHz, 0.25V	5.3	17.0	16.0
SDN0630□T1R0	1.0	M	100KHz, 0.25V	7.4	15.0	12.0
SDN0630□T1R5	1.5	M	100KHz, 0.25V	12.1	14.0	12.0
SDN0630□T2R2	2.2	M	100KHz, 0.25V	15.0	10.0	9.5
SDN0630□T3R3	3.3	M	100KHz, 0.25V	22.0	9.5	8.5
SDN0630□T4R7	4.7	M	100KHz, 0.25V	33.0	6.5	6.0
SDN0630□T6R8	6.8	M	100KHz, 0.25V	48.0	6.0	5.0
SDN0630□T100	10	M	100KHz, 0.25V	67.0	5.5	4.5
SDN0630□T150	15	M	100KHz, 0.25V	115.0	4.5	3.0
SDN0630□T220	22	M	100KHz, 0.25V	200.0	3.0	2.3
SDN0630□T330	33	M	100KHz, 0.25V	310.0	2.5	2.0

SDN1040 Type(□:Tolerance):

Part No.	Inductance (uH)	Tolerance	Test Condition	DCR (mΩ) Max.	Saturation Current (A) Typ.	Temperature Rise Current (A) Typ.
SDN1040□TR15	0.15	M	100KHz, 0.25V	0.65	75.0	45.0
SDN1040□TR22	0.22	M	100KHz, 0.25V	1.0	60.0	35.0
SDN1040□TR30	0.30	M	100KHz, 0.25V	1.1	50.0	35.0
SDN1040□TR36	0.36	M	100KHz, 0.25V	1.2	50.0	30.0
SDN1040□TR47	0.47	M	100KHz, 0.25V	1.7	40.0	30.0
SDN1040□TR56	0.56	M	100KHz, 0.25V	1.8	33.0	25.0
SDN1040□TR68	0.68	M	100KHz, 0.25V	2.4	30.0	23.0
SDN1040□TR80	0.80	M	100KHz, 0.25V	2.7	29.0	23.0
SDN1040□T1R0	1.0	M	100KHz, 0.25V	3.3	28.0	19.0
SDN1040□T1R5	1.5	M	100KHz, 0.25V	4.2	26.0	16.0
SDN1040□T2R2	2.2	M	100KHz, 0.25V	7.0	18.0	12.0
SDN1040□T3R3	3.3	M	100KHz, 0.25V	11.8	16.0	11.0
SDN1040□T4R7	4.7	M	100KHz, 0.25V	20.0	15.0	9.0
SDN1040□T6R8	6.8	M	100KHz, 0.25V	25.0	12.0	8.5
SDN1040□T8R2	8.2	M	100KHz, 0.25V	27.0	9.0	8.0
SDN1040□T100	10	M	100KHz, 0.25V	30.0	8.5	7.8
SDN1040□T150	15	M	100KHz, 0.25V	45.0	7.0	6.5
SDN1040□T220	22	M	100KHz, 0.25V	66.0	5.5	5.0
SDN1040□T330	33	M	100KHz, 0.25V	92.0	5.0	4.4

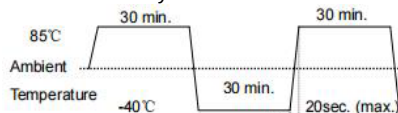
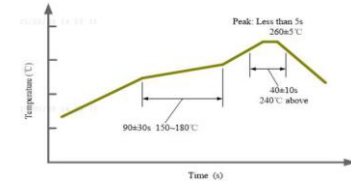
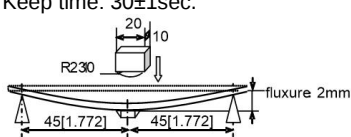
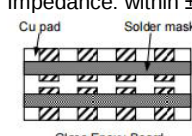
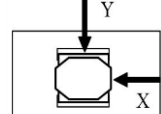
■ Tape and Reel specifications



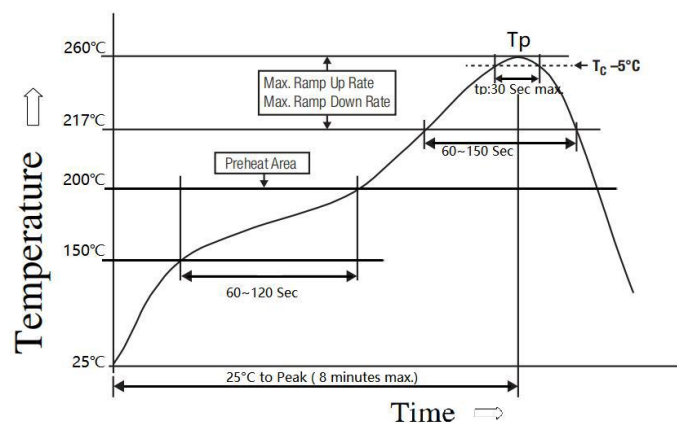
Unit: mm

Type	Tape size		Parts Per Reel
	W	P	13"
SDN0412	12	8	3000
SDN0420	12	8	3000
SDN0518	12	8	2000
SDN0530	12	8	2000
SDN0618	16	12	1500
SDN0624	16	12	1500
SDN0630	16	12	1500
SDN1040	24	16	500

Environmental Characteristics

Item	Requirement	Test Condition
Humidity Resistance	Appearance: No damage. Impedance: within $\pm 10\%$ of initial.	MIL-STD-202 Method 103 Temperature: $40 \pm 2^\circ\text{C}$. Relative Humidity: 90%. Duration: 1000 +4/-0 hours. (ORT: 96 hrs)
Temperature Shock	Appearance : No damage. Electrical Test : within $\pm 10\%$ of initial.	JESD22 Method JA-104 Temperature : Rated operating temperature (e.g. $-40 \pm 2^\circ\text{C}$ ~ $+125 \pm 2^\circ\text{C}$) Kept for 30min. maximum Transition time : 5 min. maximum 100 Cycles.  The diagram shows a temperature profile with three horizontal segments at 85°C, -40°C, and Ambient. The transitions between these segments are labeled with a maximum time of 5 minutes. The duration of each segment is 30 minutes. The maximum transition time is labeled as 20 seconds (max.).
High Temperature Resistance	Appearance: No damage. Impedance: within $\pm 10\%$ of initial.	MIL-STD -202 Method 108 Temperature : Rated operating temperature (e.g. $+125 \pm 2^\circ\text{C}$) Duration : 1000 +4/-0 hours.
Low Temperature Resistance	Appearance: No damage. Impedance: within $\pm 10\%$ of initial.	IEC68-2-1 Temperature : Rated operating temperature (e.g. $-40 \pm 2^\circ\text{C}$). Duration : 1000 +4/-0 hours.
Dropping	No visible mechanical damage. Impedance: within $\pm 10\%$ of initial.	IEC68-2-32 Drop component 10 times on a concrete floor from a height of 100cm.
Solderability test	90% or more of electrode area shall be coated by new solder.	J-STD-002 Preheating : 160°C , 60sec. Solder temperature : $245 \pm 5^\circ\text{C}$. Duration : 5 sec.
Solderability Heat test	Appearance: No damage. Impedance: within $\pm 10\%$ of initial.	MIL-STD-202 Method 210 Solder temperature : $260 \pm 0/-5^\circ\text{C}$. Duration : 5 sec. Allowed reflow time : 3 times.  The diagram shows a temperature profile over time. It starts at 150-180°C for 90-100 seconds, then rises to a peak of less than 5 seconds at 260-265°C, and then falls. The cooling rate is specified as 40-100°C above 240°C.
Flexure Strength	No visible mechanical damage.	AEC-Q200-005 Flexure: 2mm. Pressurizing Speed: 0.5mm/sec. Keep time: 30 ± 1 sec.  The diagram shows a cross-section of a component being flexed. The flexure is 2mm. The pressurizing speed is 0.5mm/sec. The keep time is 30 ± 1 sec. The diagram also shows a radius of R2.30 and dimensions of 45(1.772) and 45(1.772).
Vibration test	Appearance: No damage. Impedance: within $\pm 10\%$ of initial.  The diagram shows a cross-section of a component with labels for 'Cu pad', 'Solder mask', and 'Glass Epoxy Board'.	MIL-STD-202 Method 204 Oscillation Frequency : 10Hz to 55Hz to 10Hz in 60 seconds as a period. Total amplitude : 1.5mm. Testing Time : a period of 2 hours in each 3 mutually perpendicular directions.(total of 6 hours).
Terminal Strength	No visible mechanical damage.  The diagram shows a cross-section of a component with labels for 'Y' and 'X' directions.	MIL-STD-202 Method 211 Force: 2N for 0402 series. Force: 5N for 0603 series. Force: 10N for 0805 series above Keep time: 5 sec, X, Y directs.

Re-flowing Profile



Reflow Soldering	Tp:255~260°C Max.30 seconds (tp)	
	217°C	60~150 seconds
Pre-Heat	150 ~ 200°C	60~120 seconds

REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version A3	15-Apr-2025		-Add Storage conditions and Shelf life.
Version A4	03-Jul-2025		-Add the specifications of SDN0624MT1R0.
Version A5	10-Sep-2025		-Modify the descriptions in Features, Applications, and Characteristics.
			-Modify the content in Environmental Characteristics.
			-Add a new section for the Re-flowing Profile.