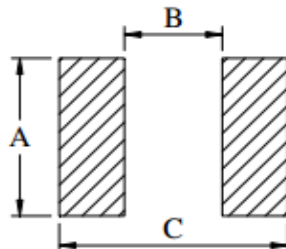
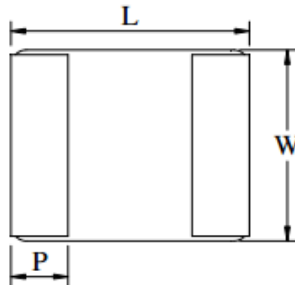


## IPC-2520AB-XXX-M Power Choke

Part No.	Inductance $L_0(\mu H) \pm 20\%$ , 1MHz, 1V	DCR (mΩ)		IDC3 Typ.(Amps)	Isat4 @ 25°C Typ.(Amps)
		TYP.	MAX.		
IPC-2520AB-R33-M	0.33	14	17	5.6	4.3
IPC-2520AB-R47-M	0.47	20	25	4.5	3.8
IPC-2520AB-1R0-M	1.00	43	53	3.1	2.8
IPC-2520AB-2R2-M	2.20	84	98	2.3	1.8

### Notes

1. All test data is referenced to 25 °C ambient
2. Operating temperature range - 55 °C to + 125 °C
3. Idc(A):DC current (A) that will cause an approximate  $\Delta T$  of 40 °C
4. Isat(A):DC current (A) that will cause  $L_0$  to drop approximately 30 %
5. The part temperature (ambient + temp rise) should not exceed 125 °C under worst case operating conditions. Circuit design component placement, PWB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.



Code	Dimensions
L	2.5±0.2
W	2.0±0.2
T	1.2MAX.
P	0.6±0.2

Unit: mm

A	2.0
B	1.2
C	2.8

Unit: mm

Recommend Land Pattern Dimensions

## FEATURES

- Lowest molded height (1.2 mm) in this package Footprint.
- Shielded construction
- Frequency range up to 3.0 MHz
- Lowest DCR/ $\mu$ H, in this package size
- Handles high transient current spikes without saturation
- Ultra low buzz noise, due to composite construction
- Encapsulated body offers improved environmental protection and moisture resistance.
- Higher dielectric withstanding voltage vs. IHLP
- Flame retardant encapsulant (UL 94 V-0)
- Corrosion resistant package
- Compliant to RoHS directive 2011/65/EU

## APPLICATIONS

- PDA/notebook/desktop/server applications
- High current POL converters
- Low profile, high current power supplies
- Battery powered devices
- DC/DC converters in distributed power systems
- DC/DC converter for Field Programmable Gate Array (FPGA)

Description																
IPC-2520AB-1R0				1.0μH				±20 %								
Model				Inductance Value				Inductance Tolerance								
Global Part Number																
I	P	C			2	5	2	0			A	B	1	R	0	M
Product Series				Dimensions				Thickness				Inductance Value				Tol.

## Performance Graphs

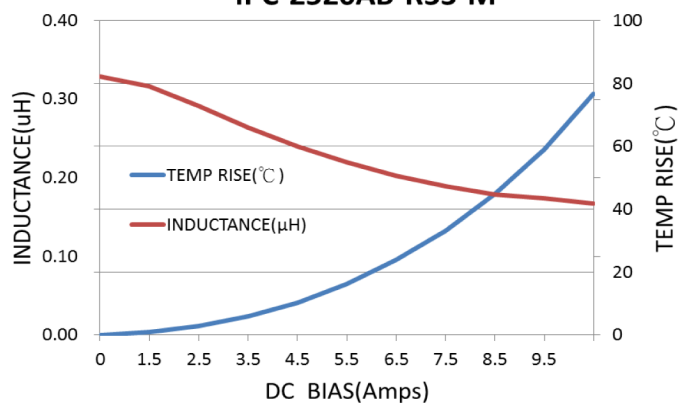
### Test Instruments

Wayne kerr 3255B/G LCR Meter  
Wayne kerr 3265B Bias Current Source

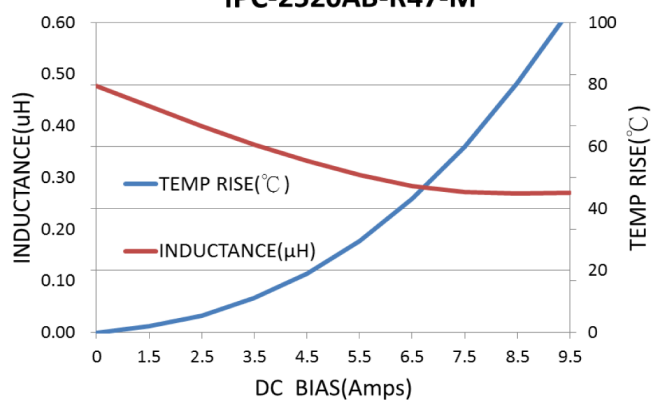
### Test Condition

Temperature:  $26 \pm 3^{\circ}\text{C}$   
Humidity: < 70% RH  
Frequency: 100 KHz, 1.0V

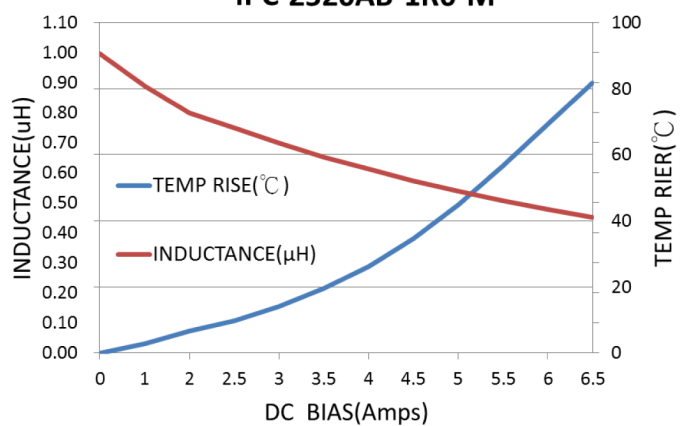
**IPC-2520AB-R33-M**



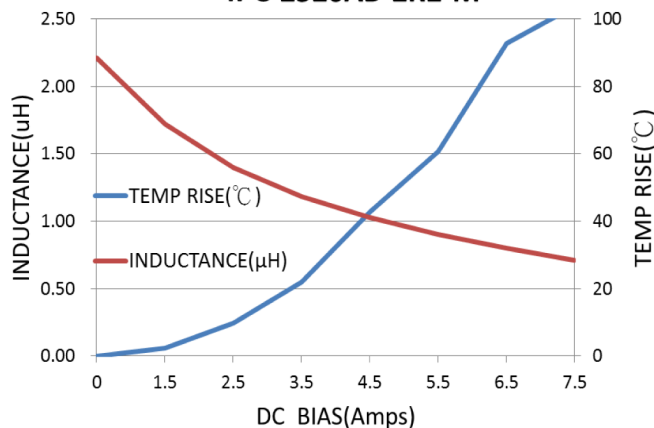
**IPC-2520AB-R47-M**



**IPC-2520AB-1R0-M**



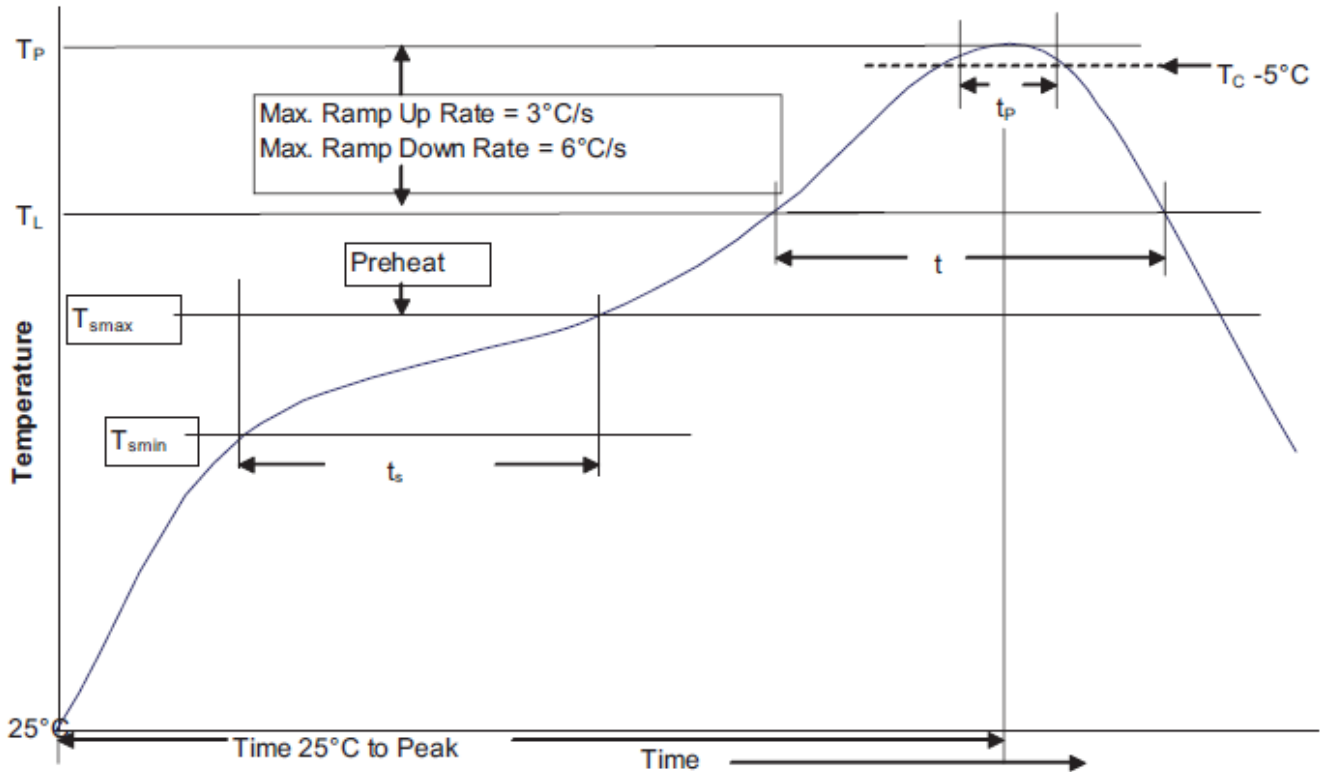
**IPC-2520AB-2R2-M**



Mechanical Reliability		
Item	Specification and Requirement	Test Method
Solderability	The surface of terminal immersed shall be minimum of 95% covered with a new coating of solder	Solder heat proof: 1. Preheating: $160 \pm 10^{\circ}\text{C}$ 2. Retention time: $245 \pm 5^{\circ}\text{C}$ for $2 \pm 0.5$ seconds
Vibration	Inductance change: Within $\pm 5\%$ Without mechanical damage such as break	3. Vibration frequency: (10 Hz to 55 Hz to 10Hz) in 60 seconds as a period 4. Vibration time: Period cycled for 2 hours in each of 3 mutual perpendicular directions. 5. Amplitude: 1.5 mm max.
Shock	Inductance change: Within $\pm 5\%$ Without mechanical damage such as break	1. Peak value: 100 G 2. Duration of pulse: 11ms 3. 3 times in each positive and negative direction of 3 mutual perpendicular directions
Endurance Reliability		
Item	Specification and Requirement	Test Method
Thermal Shock	Inductance change: Within $\pm 5\%$ Without distinct damage in appearance	1. Repeat 100 cycles as follow: (-55 $\pm 2^{\circ}\text{C}$ ; 30 $\pm 3$ min) → (Room temp., 5 min) → (+125 $\pm 2^{\circ}\text{C}$ , 30 $\pm 3$ min) → (Room temp., 5 min) 2. Recovery: 48 + 4 / -0 hours of recovery under the standard condition after the test. (see Note a*)
Humidity Resistance	Inductance change: Within $\pm 5\%$ Without distinct damage in appearance	1. Environment condition: 85 $\pm 2^{\circ}\text{C}$ Humidity: 80–85% Applied Current: Rated current 2. Duration: 168 + 4 / -0 hours (see Note a*)
Low Temperature Store	Inductance change: Within $\pm 5\%$ Without distinct damage in appearance	Store temperature: -55 $\pm 2^{\circ}\text{C}$ , 168 + 4 / -0 hours
High Temperature Store	Inductance change: Within $\pm 5\%$ Without distinct damage in appearance	Store temperature: +125 $\pm 2^{\circ}\text{C}$ , 168 + 4 / -0 hours

Note a\*: When there are questions concerning measurement result : measurement shall be made after 48  $\pm 2$  hours of recovery under the standard condition

## Reflow Chart



### Reference JDEC J-STD-020D

Profile Feature	Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak		
• Temperature min. (T <sub>smin</sub> )	100°C	150°C
• Temperature max. (T <sub>smax</sub> )	150°C	200°C
• Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> )	60-120 Seconds	60-120 Seconds
Average ramp up rate T <sub>smax</sub> to T <sub>p</sub>	3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T <sub>L</sub> )	183°C	217°C
Time at liquidous (t <sub>L</sub> )	60-150 Seconds	60-150 Seconds
Peak package body temperature (T <sub>p</sub> )*	Table 1	Table 2
Time (t <sub>p</sub> )** within 5 °C of the specified classification temperature (T <sub>C</sub> )	20 Seconds**	30 Seconds**
Average ramp-down rate (T <sub>p</sub> to T <sub>smax</sub> )	6°C/ Second Max.	6°C/ Second Max.
Time 25°C to Peak Temperature	6 Minutes Max.	8 Minutes Max.

\* Tolerance for peak profile temperature (T<sub>p</sub>) is defined as a supplier minimum and a user maximum.

\*\* Tolerance for time at peak profile temperature (t<sub>p</sub>) is defined as a supplier minimum and a user maximum.

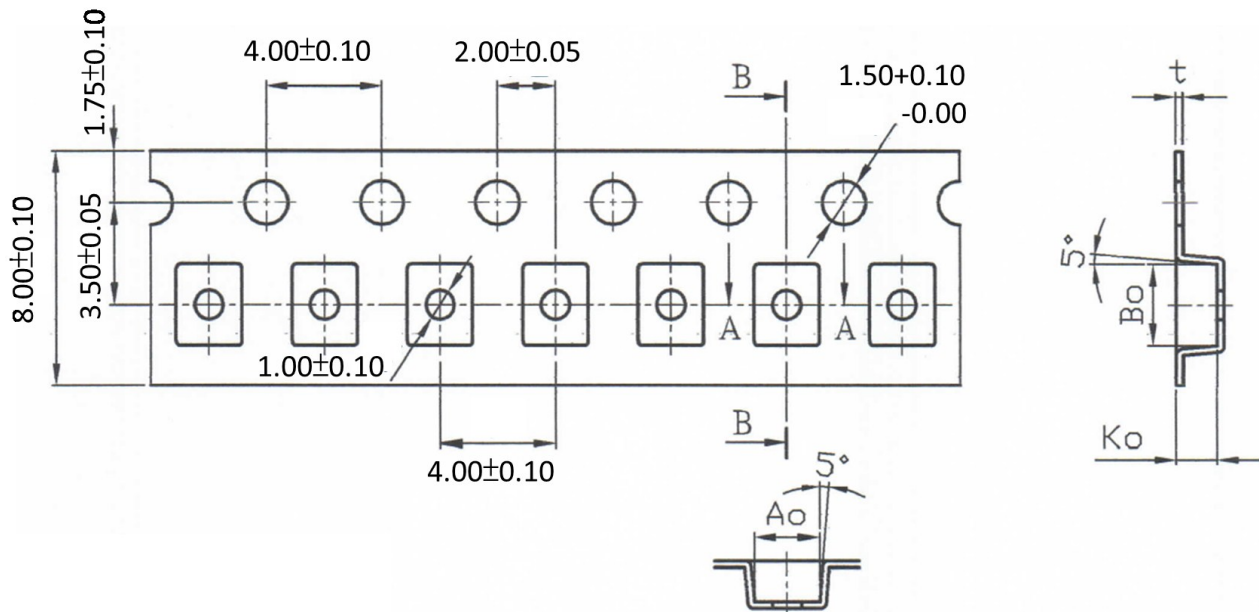
Table 1 - Standard SnPb Solder (T<sub>C</sub>)

Table 2 - Lead (Pb) Free Solder (T<sub>C</sub>)

Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥350
<2.5mm	235°C	220°C
≥2.5mm	220°C	220°C

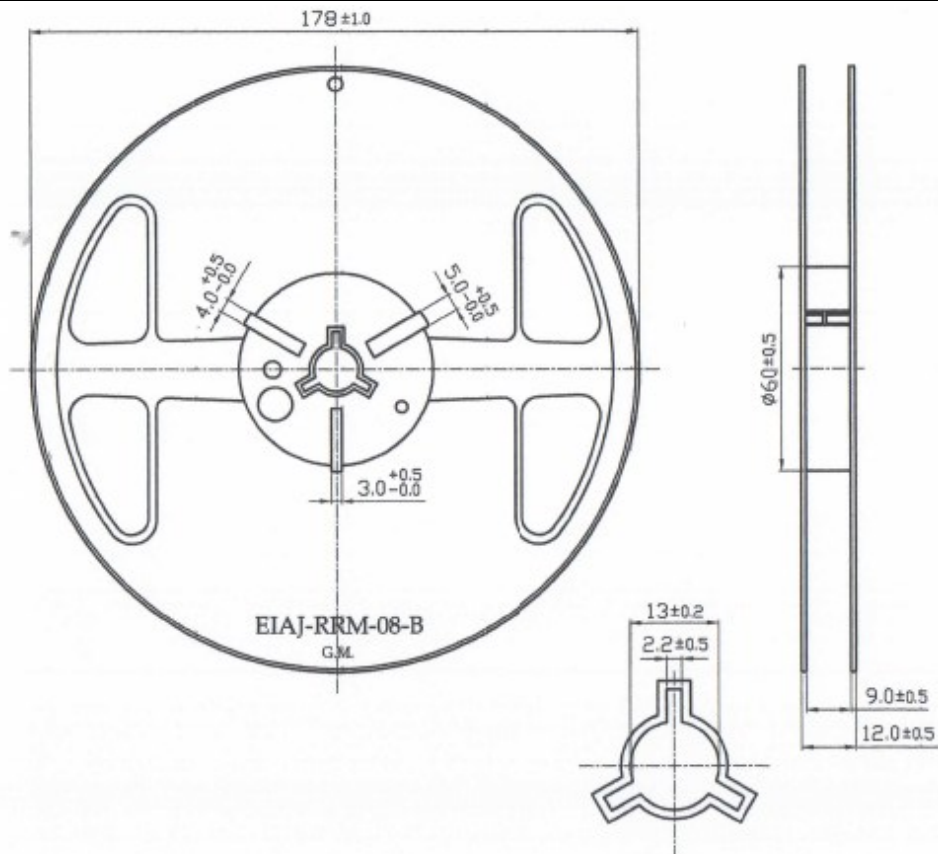
Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350 - 2000	Volume mm <sup>3</sup> >2000
<1.6mm	260°C	260°C	260°C
1.6 – 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

## Tape Packaging Dimensions



Series	A0	B0	K0	t
IPC-2520AB	$2.27 \pm 0.10$	$2.74 \pm 0.10$	$1.40 \pm 0.10$	$0.23 \pm 0.05$

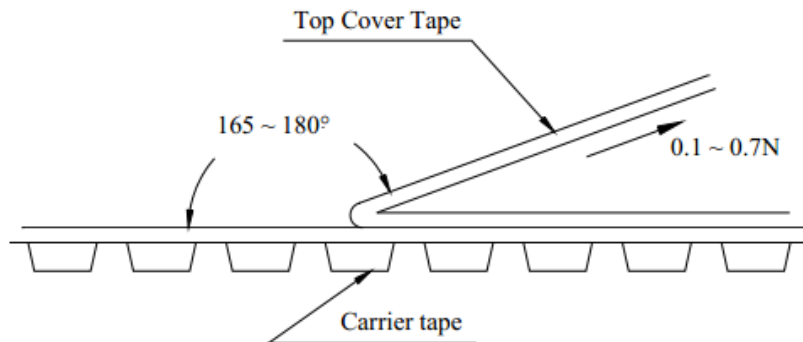
## Reel Dimensions



- Peel force of top cover tape

The peel speed shall be about 300mm/minute

The peel force of top cover tape shall be between 0.1 to 0.7 N



- Numbers of taping

3000pieces/reel

- Label making

The following items shall be marked on the production and shipping.

Label on the reel.

- Production Label

- Model.
- P/N.
- Quantity
- Lot No.

- Care note

- Care note for Use

- (1) Storage Condition:

- Room Temperature, Humidity 60% RH

- (2) Use Temperature:

- a. Minimum Temperature:  $-55^{\circ}\text{C}$  Ambient temperature of power choke coil.

- b. Maximum Temperature:  $+125^{\circ}\text{C}$  The value of temperature including ambient of the transformer and temperature rise of power choke coil.

- c. There is not a problem form  $-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$  in a reliability test.

- d. However, this is not meant a temperature grade guarantee of UL.

- (3) Model:

- When this power choke coil was used in a similar or new product to the original one,

- Something it might be unable to satisfy the specifications due to difference of condition of usage.

- (4) Drop:

- If the power choke coil suffered mechanical stress such as drop, characteristics may become poor ( due to damage on coil bobbin, etc.)

- Never use such stressed power choke coil.



• Care note for Safety

(1) Provision to Abnormal Condition

This power choke coil itself does not have any protective function in abnormal condition such as overload, Short-circuit and open-circuit conditions, etc.

Therefore, it shall be confirmed as the end product that there is no risk of smoking, fire, dielectric withstand voltage, Insulation resistance ,etc. in abnormal conditions to provide protective devices and/or protection circuit in the end product.

(2) Temperature Rise

Temperature rise of power choke coil depends on the installation condition end products.

It shall be confirmed on the actual end product that temperature rise of power choke coil is in the limit of specified temperature class.

(3) Dielectric Strength

Dielectric withstanding test with higher voltage than specific value will damage insulating material and shorten its life.

(4) Water

This power choke coil must not be used in wet condition by water, coffee or any liquid because insulation strength becomes very low on the condition.

(5) Potting

If this power choke coil is some compound, coating material of magnet wire might be occasionally damaged .

Please ask us if you intend to pot this power choke coil.

(6) Detergent

Please consult our company once in case of this because the confirmation of reliability etc. is needed when the washing medicine is used for the power choke coil.