

Revision Record					
Control No.	Revision	Description	Date	Drawn	Approved
	A0	Initial release TMAX-1043-R50-MW TMAX-1043-R68-MW TMAX-1043-R82-MW TMAX-1043-1R8-MW	2018/12/11	He er	Roger

TMAX-1043-XXX-MW Molded Power Inductor

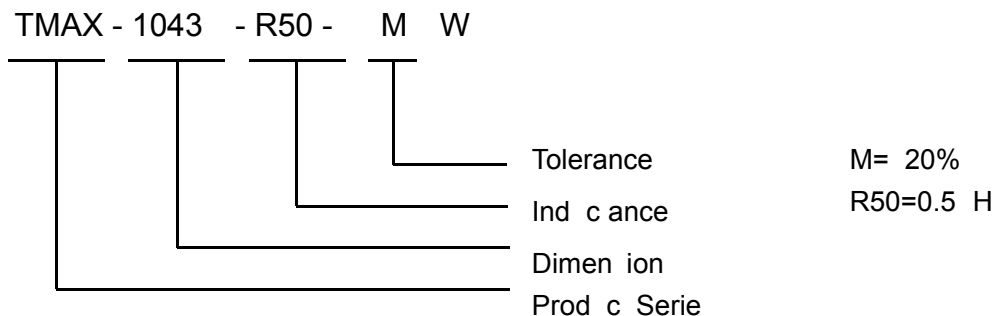
Features

- Low profile
- Low core loss and low DCR
- High rated current
- High performance (large) realized by metal die core
- RoHS compliant and Halogen Free
- Low EMI and low noise

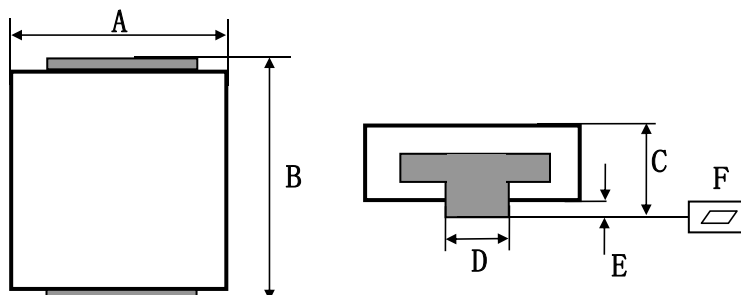
Applications

- Voltage Regulator or Module
- DC/DC converter
- Thin type on-board power supply module for charger
- Graphic card
- Laptop and PC
- SSD module

Product Description

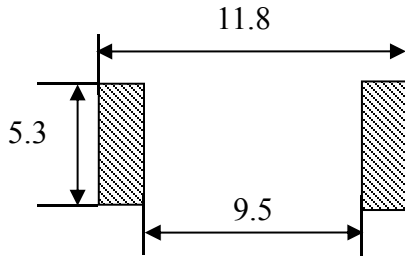


Dimensions in millimeter



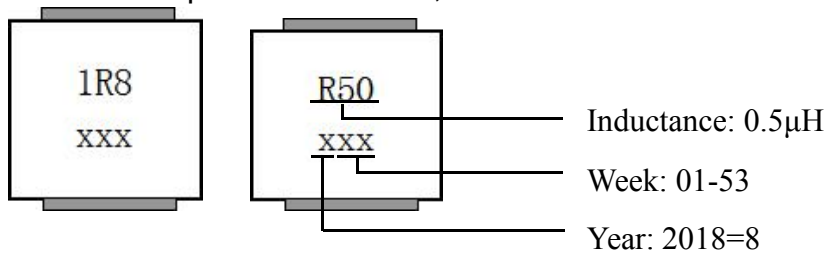
A	11.05 Max.
B	10.0±0.3
C	5.63 Max.
D	4.7±0.3
E	1.2 Min
F	0.10

Recommend Land Pattern Dimensions in millimeter



Marking

- The inductor is marked with a 6-digit code by ink.
- For example: 1R8 1.8 H, R50 0.5 H.



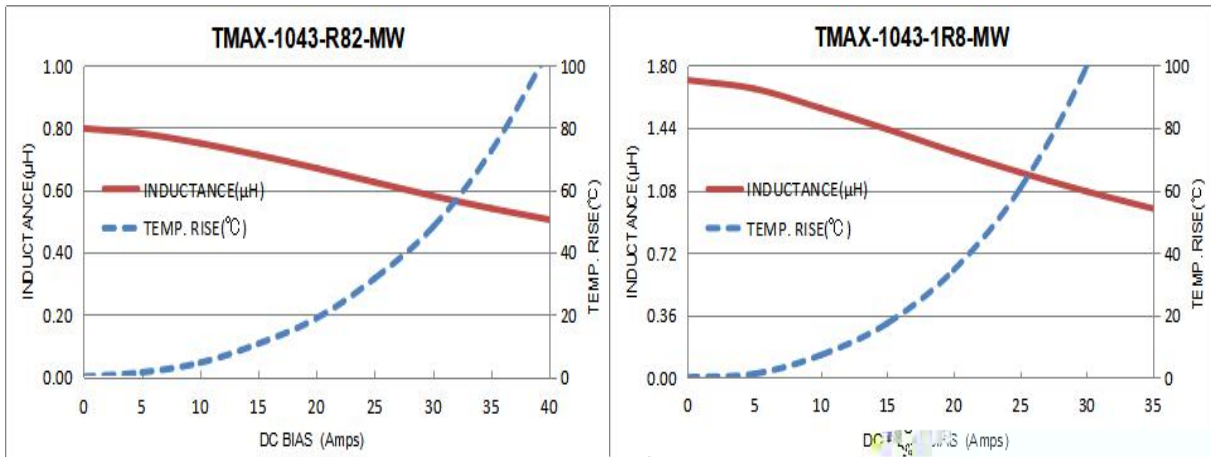
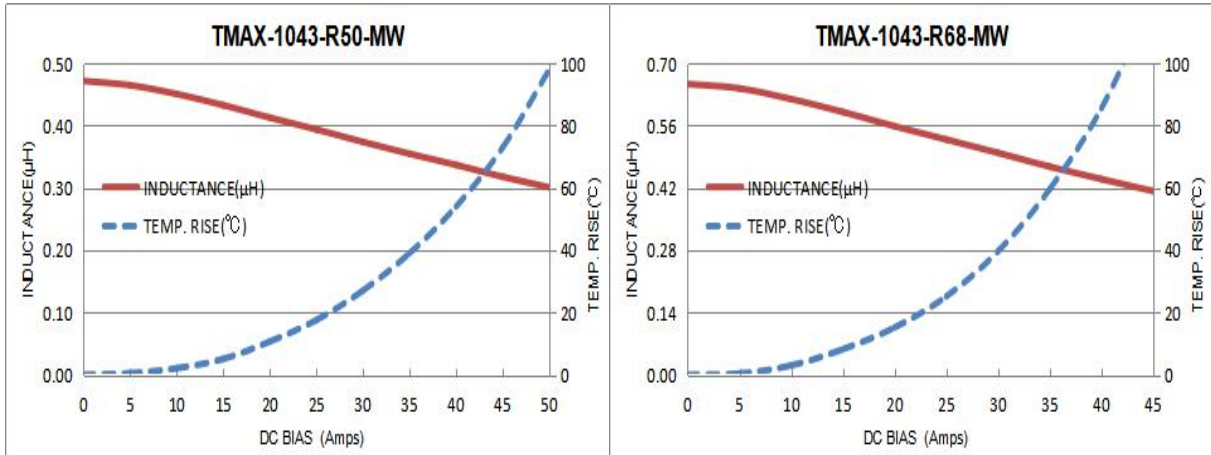
Specifications

Part No.	Inductance		DCR (mΩ)		Saturation Current	Heat Rating Current
	L ₀ (μH)	Tolerance	T p.	Max.	Isat (Amps.)	Idc (Amps.)
					T p.	T p.
TMAX-1043-R50-MW	0.50	20%	1.75	1.90	30	29
TMAX-1043-R68-MW	0.68	20%	2.15	2.3	29	28
TMAX-1043-R82-MW	0.82	20%	2.30	2.6	27	26
TMAX-1043-1R8-MW	1.8	20%	4.0	4.5	20	17

Notes:

- All electrical data is referenced to 23 ± 3 °C and 45%RH to 70%RH ambient.
- Test Instrument: 3260B LCR Meter, 3265B Bias Current Source (100kHz, 1V), EUCOL-U2516B DC Load ohmmeter.
- Operating temperature range -55 °C to +125 °C (ambient + self-emp. rise).
- I_a: DC current (A) has a tolerance of L₀ or drop approximately 30%.
- I_{dc}: DC current (A) has a tolerance of an approximately 40% of T of 40 °C.
- The part temperature (ambient + emp. rise) should not exceed 125 °C under normal operating conditions. Circuit design, component placement, PCB trace size and thickness, airflow and other cooling provision all affect the part temperature. Part temperature should be verified in the end application.
- The rated current is defined either the rated current or the heating current depending on which is lower.

Inductance and Temperature Rise vs. DC Current



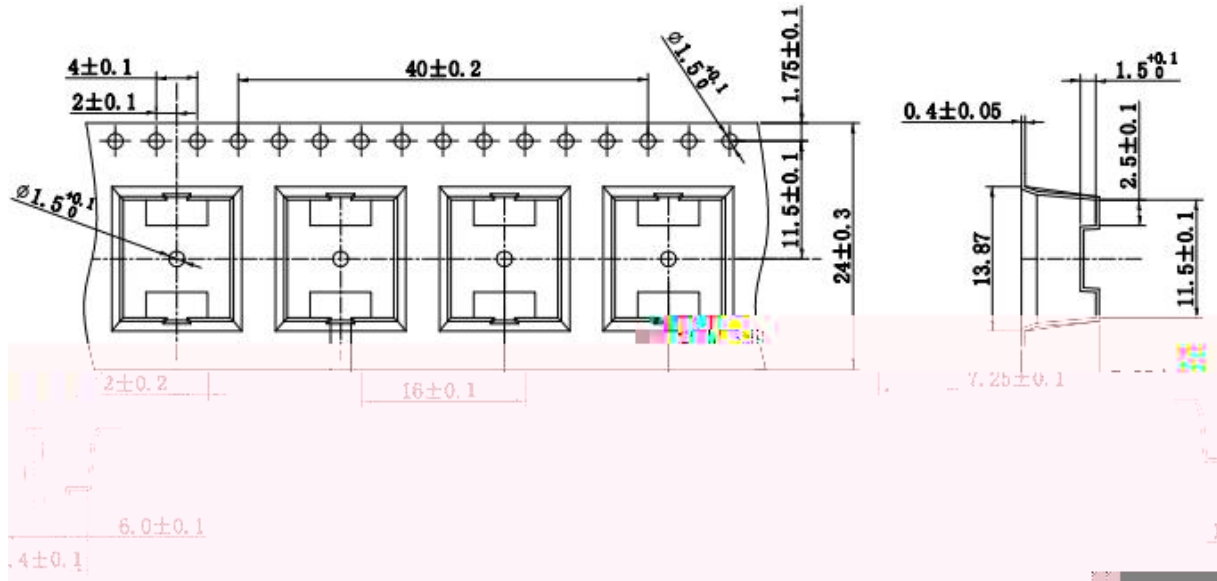
Reliability:

Item	Test Method	Specification and Requirement
Solderability	Solder heat proof : 1.Preheating: 160 ± 10 C for 90 seconds 2.Reflow time: 245 ± 5 °C for 2 ± 0.5 seconds	The surface of terminal immersed shall be minimum of 95% covered with a thin coating of solder.
Vibration	1.Vibration frequency : (10Hz to 55Hz to 10Hz) in 60 seconds at a period 2.Vibration time: period completed	

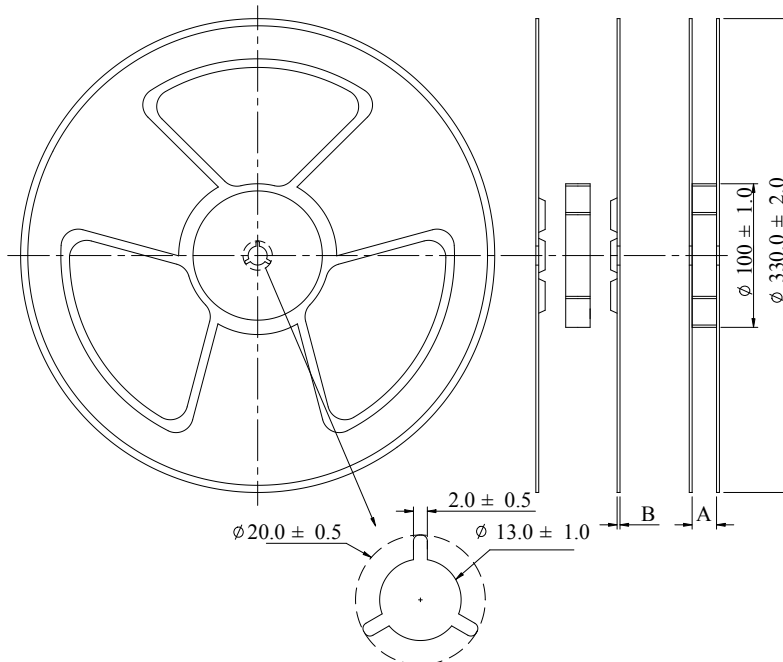
Reliability:

Item	Test Method	Specification and Requirement
Thermal Shock	1.Repeat 100 cycles as follows : (-55 ± 2 C,30 ± 3min)→(Room temperature, 5 min)→(+125 ± 2 C,30 ± 3min)→ (Room temperature, 5 min) 2.Recovery : 48 + 4 / - 0 hours of recovery under the standard condition after the test	
High Temperature Reliability	1.Environmental Temperature : 85 ± 2 C 2.Applied Current : Rated current 3.Duration : 1,000 + 4 / - 0 hours	L/L ₀ ± 5%
Humidity Reliability	1.Environmental Temperature : 60 ± 2 C 2.Relative Humidity : 90-95% 3.Duration : 1,000 + 4 / - 0 hours	No discernible damage in appearance.
Low Temperature Store	1.Store temperature : -55 ± 2 C for a total of 1,000 + 4 / - 0 hours	
High Temperature Store	1.Store temperature : +125 ± 2 C for a total of 1,000 + 4 / - 0 hours	

Packaging Dimensions in millimeter



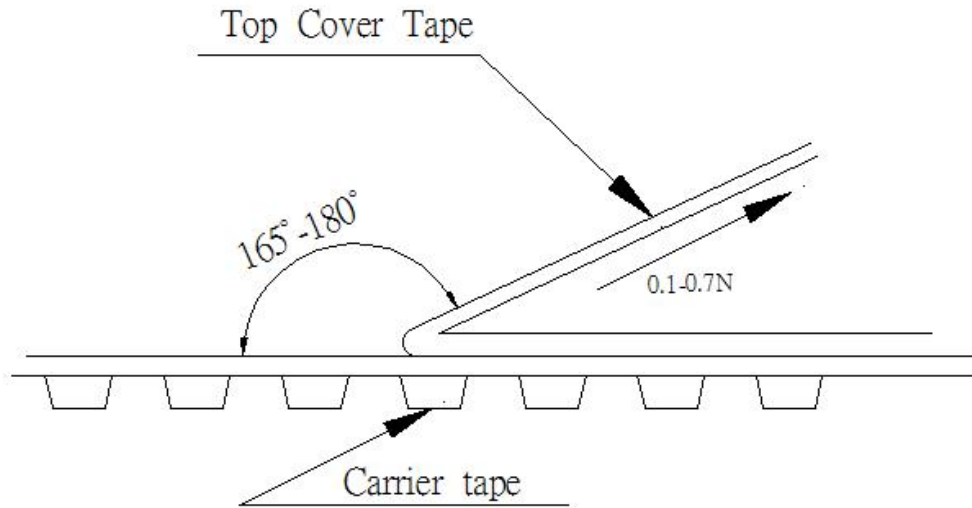
Reel Dimensions in millimeter



A	B	Color
24.5 ± 0.2	2.0 ± 0.2	Blue

Peeling of top cover tape

- The peeling speed shall be about 300 mm/min.
- The peeling force shall be between 0.1 to 0.7 N.



Reflow Profile

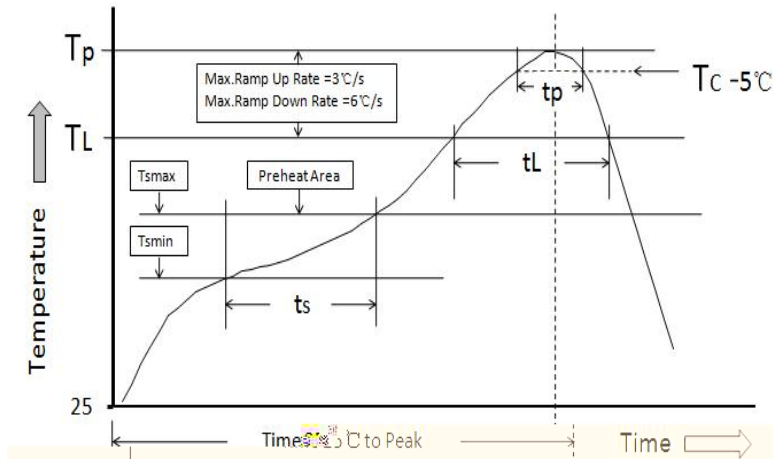


Table1-StandardSnPb Solder(Tc)

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

Table2-Lead(Pb)Free Solder(Tc)

Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >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

Reference JDEC J-STD-020(latest revision)

Profile Feature		Standard SnPb solder	Lead(Pb) Free Solder
Preheat and Soak	Temperature min.(T min)	100°C	150°C
	Temperature max.(T max)	150°C	200°C
	Time():T min to T max	60-120 Second	60-120 Second
Average ramp rate TL to Tp		3°C/Second Max.	3°C/Second Max.
Liquidus temperature(TL)		183°C	183°C
Time at liquidus (L)		60-150 Second	60-150 Second
Peak package body temperature(Tp)*		Table 1	Table 2
Time (p)** within 5°C of the specified classification temperature(Tc)		20 second **	30 second **
Average ramp-down rate Tp to TL		6°C/Second Max.	6°C/Second Max.
Time 25°C to Peak Temperature		6 Minute Max.	8 Minute Max.

*Tolerance for peak profile temperature (Tp) is defined as a supplier minimum and a maximum.

** Tolerance for time at peak profile temperature (p) is defined as a supplier minimum and a maximum.

Numbers of taping

- 500 piece /reel

Label marking

- The following information shall be marked on the production and shipping
- Label on the reel

Production Label

- ✓ Par No.
- ✓ Description
- ✓ Quantity
- ✓ Product No.
- ✓ Taping No.

Shipping Label

- ✓ Customer Name
- ✓ Customer Part No.
- ✓ Manufacturer Part No.
- ✓ Manufacturer Name
- ✓ Manufacturer Country

Care note for use

- **Storage Condition:** Temperature 25 to 35 C, Humidity 45 to 75% RH
- **Use Temperature:**
 - ✓ Minimum Temperature: -55 C Ambient temperature of molded power inductor.
 - ✓ Maximum Temperature: +125 C The range of temperature including ambient of the transformer and temperature rise of molded power inductor.
 - ✓ There is no problem from -55 C to +125 C in a reliability test.
 - ✓ However, this does not mean a temperature grade guarantee of UL.
- **Model:** When this molded power inductor is used in a similar or new product to the original one, sometimes it might be unable to satisfy the specification due to difference of condition of usage.
- **Drop:** If the molded power inductor is offered mechanical stress such as drop, characteristic may become poor (due to damage on coil bobbin, etc.). Nevertheless, check the tested molded power inductor.

Care note for Safety

➤ **Protection of Abnormal Condition**

This molded power inductor itself does not have an protective function in abnormal condition such as overload, short-circuit and open-circuit condition, etc. Therefore, it shall be confirmed after the end product has been in no risk of smoking, fire, dielectric discharge and aging, insulation resistance, etc. in abnormal condition of provide protective device and/or protection circuit in the end product.

➤ **Temperature Rise**

Temperature rise of molded power inductor depends on the insulation condition on end product. It shall be confirmed on the actual end product has temperature rise of molded power inductor in the limit of specified temperature class.

➤ **Dielectric Strength**

Dielectric discharge with higher aging than specific electrical life damage in insulating material and shorten its life.

➤ **Water**

This molded power inductor must not be used in the condition of water, coffee or any liquid because the insulation strength becomes weaker on the condition.

➤ **Painting**

If this molded power inductor is painted in some compound, coating material of magnetic core might be occasionally damaged. Please ask if you intend to paint this molding.

➤ **Deformation**

Please consult your company once in case of this because the confirmation of reliability etc. is needed when the aging medicine is used for the molded power inductor.

➤ **Note**

This electronic component has been designed and developed for usage in general electronic equipment only, not for usage in areas such as military, aerospace, aviation, transportation (automotive control, train control, ship control) etc.. TDG Holding Co., Ltd. must be informed about the intended usage before the design-in stage and the partner must have executed an agreement specifically governing this. In addition, sufficient reliability evaluation check for safety must be performed on every electronic component.