DR1050

Shielded power inductors



Description

- Shielded drum core
- Inductance range from 0.7 µH to 1000 µH
- Current range from 0.43 A to 13.5 A
- 10.5 mm x 10.3 mm footprint surface mount package in a 5.0 mm height
- Ferrite core material
- Halogen free, lead free, RoHS compliant

Applications

- LED/LCD backlighting
- High definition televisions (HDTV)
- Server and desktop power supplies
- Graphics cards and battery powered systems
- Point-of-load (POL) modules
- Printers and peripherals
- Portable electronics

Environmental Data

- Storage temperature range (Component): -40 °C to +125 °C
- Operating temperature range: -40 °C to +125 °C (ambient plus self-temperature rise)
- Solder reflow temperature: J-STD-020D compliant

Pb HALOGEN HF FREE RoHS

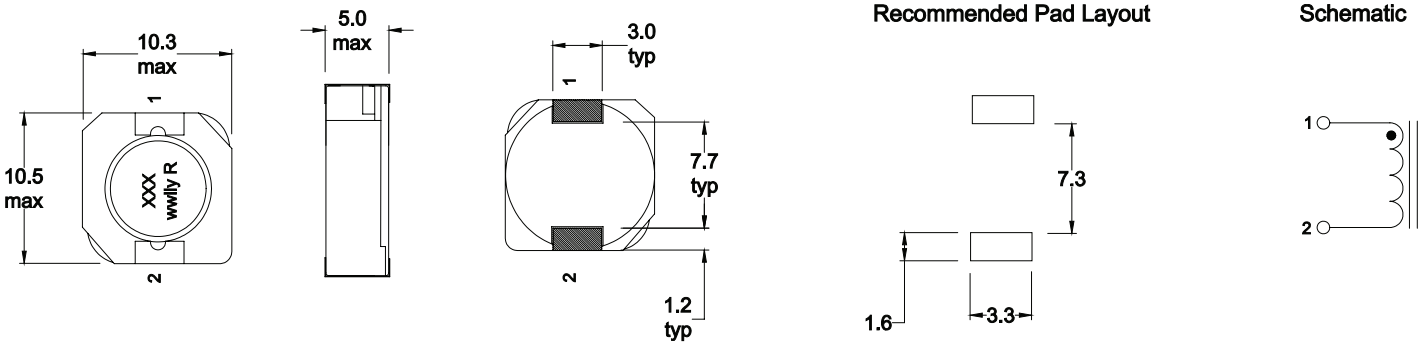
Powering Business Worldwide

Product Specifications

Part Number[5]	OCL[1] (µH) ±30%	I_{rms}[2] (A)	I_{sat}[3] (A)	DCR (mΩ) typical @ 20°C	DCR (mΩ) maximum @ 20°C	K-factor[4]
DR1050-R80-R	0.70	9.70	13.5	3.2	4.0	20.47
DR1050-1R5-R	1.37	8.60	10.5	4.0	5.0	14.62
DR1050-2R2-R	2.27	7.52	9.3	5.6	6.8	11.37
DR1050-3R3-R	3.21	6.50	8.2	8.0	10	9.30
DR1050-4R7-R	4.43	6.13	6.7	10	12	7.87
DR1050-6R8-R	6.30	5.45	5.8	13	17	6.82
DR1050-8R2-R	8.09	5.24	5.0	15	19	6.02
DR1050-100-R	10.1	4.80	4.6	18	23	5.39
DR1050-120-R	11.6	3.94	4.1	24	30	4.87
DR1050-150-R	14.8	3.80	3.7	26	33	4.45
DR1050-180-R	17.5	3.39	3.3	33	41	4.09
DR1050-220-R	23.5	3.12	3.0	39	48	3.53
DR1050-270-R	26.9	2.82	2.8	43	53	3.30
DR1050-330-R	34.3	2.56	2.5	58	72	2.92
DR1050-390-R	38.3	2.35	2.35	61	76	2.77
DR1050-470-R	47.1	2.06	2.10	89	111	2.50
DR1050-560-R	56.7	1.96	1.94	98	123	2.27
DR1050-680-R	67.2	1.84	1.70	111	139	2.09
DR1050-820-R	84.4	1.60	1.58	147	184	1.86
DR1050-101-R	97.5	1.52	1.45	164	205	1.73
DR1050-121-R	118	1.30	1.30	223	279	1.57
DR1050-151-R	149	1.26	1.15	238	298	1.40
DR1050-181-R	184	1.18	1.08	273	341	1.26
DR1050-221-R	222	1.00	0.98	377	472	1.15
DR1050-271-R	264	0.96	0.90	410	513	1.06
DR1050-331-R	321	0.83	0.80	554	693	0.96
DR1050-391-R	397	0.76	0.72	648	810	0.86
DR1050-471-R	481	0.64	0.62	855	1069	0.78
DR1050-561-R	573	0.62	0.60	970	1213	0.72
DR1050-681-R	708	0.56	0.55	1095	1369	0.64
DR1050-821-R	819	0.54	0.50	1185	1481	0.60
DR1050-102-R	1000	0.43	0.48	1528	1950	0.54

1. Open Circuit Inductance (OCL) Test Parameters: 100 kHz, 0.1 Vrms, 0.0 Adc, +25 °C
2. I_{rms}: DC current for an approximate temperature rise of 40 °C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceed 125 °C under worst case operating conditions verified in the end application.
3. I_{sat}: Peak current for approximately 35% rolloff @ +25 °C
4. K-factor: K-factor: Used to determine Bp-p for core loss (see graph). Bp-p = K * L * ΔI. Bp-p: (mT), K: (K-factor from table), L: (Inductance in µH), ΔI (Peak to peak ripple current in Amps).
5. Part Number Definition: DR1050-xxx-R
   DR1050 = Product code and size
   -xxx= inductance value in µH, R= decimal point,
   If no R is present then last character equals number of zeros
   -R suffix = RoHS compliant

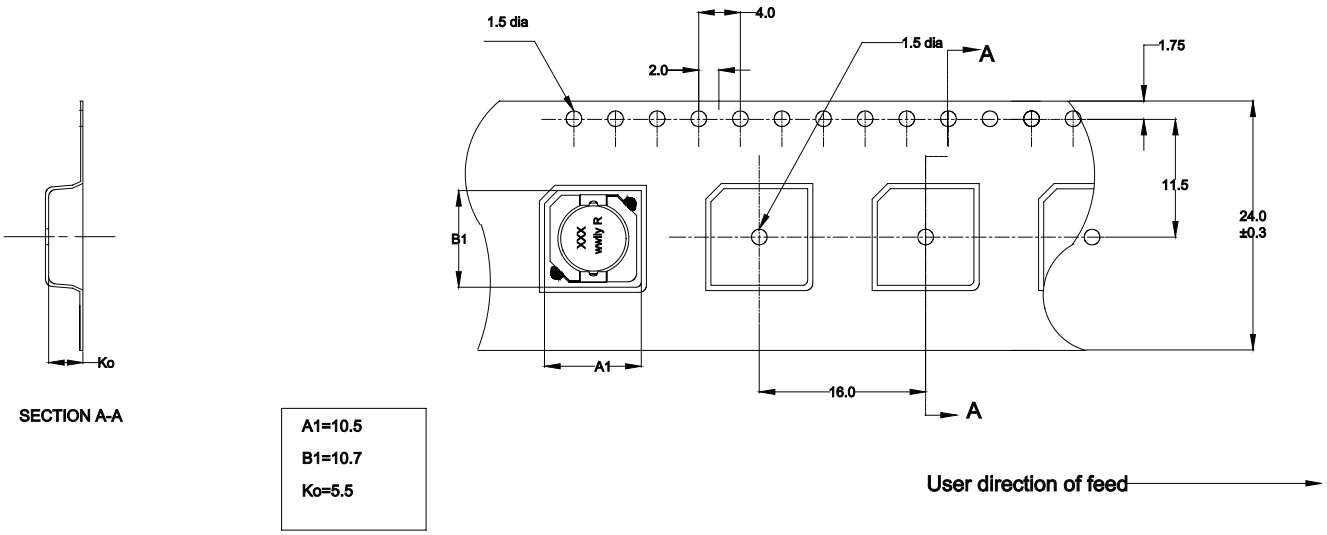
Dimensions (mm)



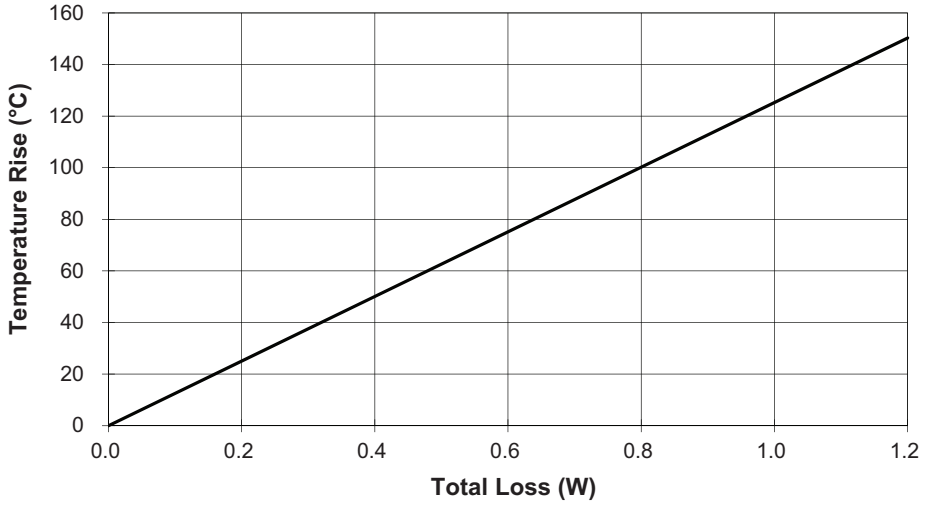
Part marking: inductance value in uH. R = decimal point. If no R is present then last character equals number of zeroes.
wwlly = date code, R = revision level
Do not route traces or vias underneath the inductor

Packaging information (mm)

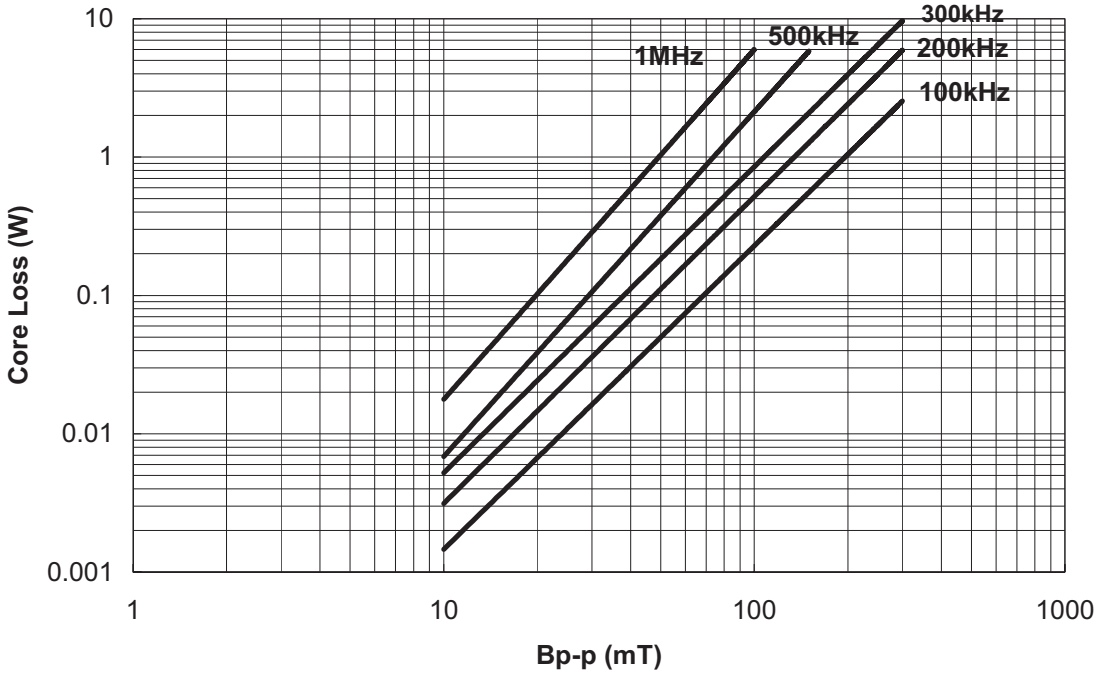
Supplied in tape and reel packaging , 500 parts per 13" diameter reel



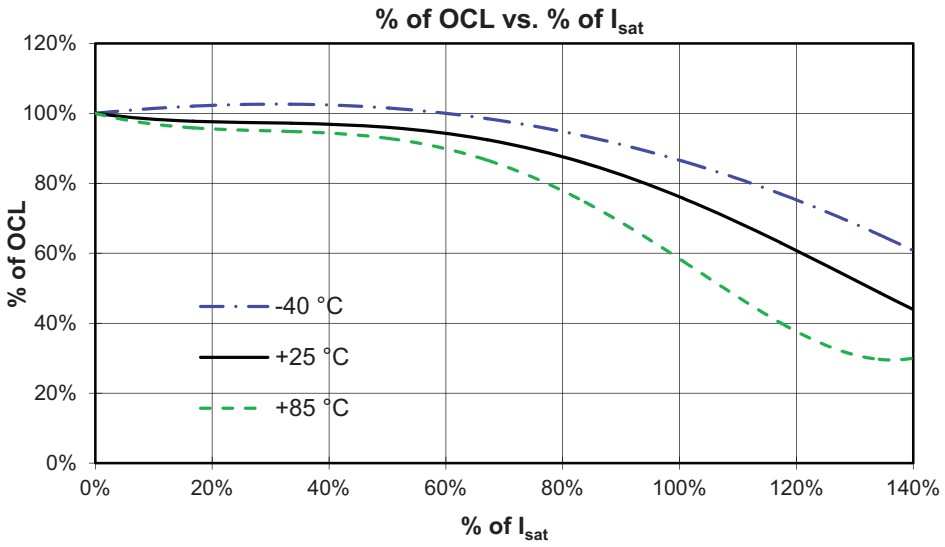
Temperature rise vs. total loss



Core loss vs. B_{p-p}



Inductance characteristics



Solder reflow profile

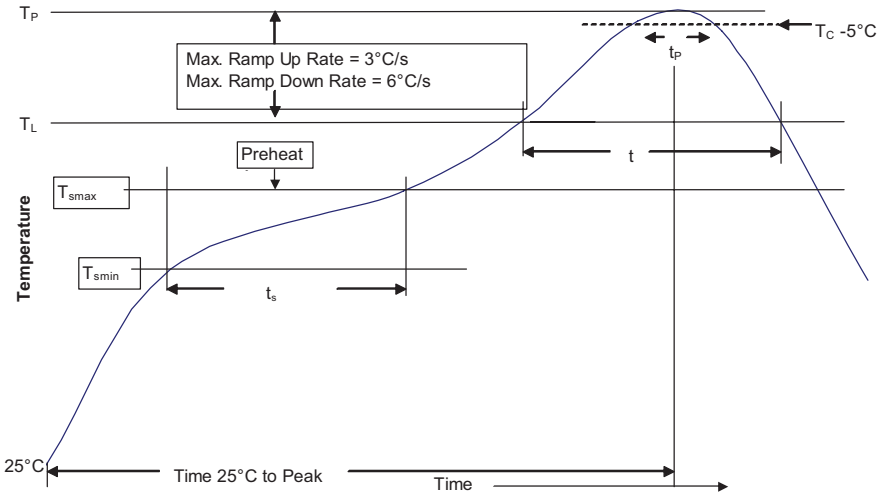


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm3 <350	Volume mm3 ≥350
<2.5mm)	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_C)

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-020D

Profile Feature		Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak	• Temperature min. (T_{smin})	100°C	150°C
	• Temperature max. (T_{smax})	150°C	200°C
	• Time (T_{smin} to T_{smax}) (t_s)	60-120 Seconds	60-120 Seconds
Average ramp up rate T_{smax} to T_p		3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T_L) Time at liquidous (t_L)		183°C 60-150 Seconds	217°C 60-150 Seconds
Peak package body temperature (T_P)*		Table 1	Table 2
Time (t_p)** within 5 °C of the specified classification temperature (T_C)		20 Seconds**	30 Seconds**
Average ramp-down rate (T_p to T_{smax})		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_p) is defined as a supplier minimum and a user maximum.
** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

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