TYS Low Profile SMD Power Inductors

CATALOGUE

Laird™

www.lairdtech.com

ABOUT **LAIRD TECHNOLOGIES**

Laird Technologies designs and manufactures customized, performance-critical products for wireless and other advanced electronics applications.

The company is a global market leader in the design and supply of electromagnetic interference (EMI) shielding, thermal management products, mechanical actuation systems, signal integrity components, and wireless antennae solutions, as well as radio frequency (RF) modules and systems.

Laird Technologies partners with its customers to customize product solutions for applications in many industries including:

- Network Equipment
- Handsets
- Telecommunications
- Data Transfer & Information Technology
- Computers
- Automotive Electronics
- Aerospace
- Defense
- Medical Equipment
- Consumer Electronics
- Industrial

Laird Technologies offers its customers unique product solutions, dedication to research and development, as well as a seamless network of manufacturing and customer support facilities across the globe.

Laird™

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All parts listed in this catalog are lead free and RoHS compliant.

NOTICE

Laird Technologies' products or subcomponents are not specifically designed or tested by Laird Technologies for use in any medical applications, surgical applications, medical device manufacturing, or any similar procedure or process requiring approval, testing, or certification by the United States food and drug administration or other similar Governmental entity. Applications with unusual environmental requirements such as military, medical, life-support or Life-sustaining equipment are specifically not recommended without additional testing for such application.

FEATURES AND APPLICATIONS

FEATURES

- Magnetic shielded structure
- Low DCR and high efficiency
- Low profile and small size
- High reliability

APPLICATIONS

- DC-DC converters and power suppliers
- LCD TV's, Blu-ray and gaming consoles
- Tablets, notebooks, servers and printers
- Smart phones, GPS, set top box and base stations
- LED lighting

RoHS

PART NUMBER EXPLANATION

T Y S	3 0 1 0	4 R 7	M	- 1 0
Product series code	Part size code	Inductance value code (i.e. 4R7: 4.7μH)	Tolerance % (i.e. M: ±20% • N:±30%)	Standard catalog part

Note:
Please contact territory sales for automotive inquiry and confirmation on an automotive grade component. If it is available, a new customized part number will be assigned for an automotive application.

ELECTRICAL SPECIFICATIONS

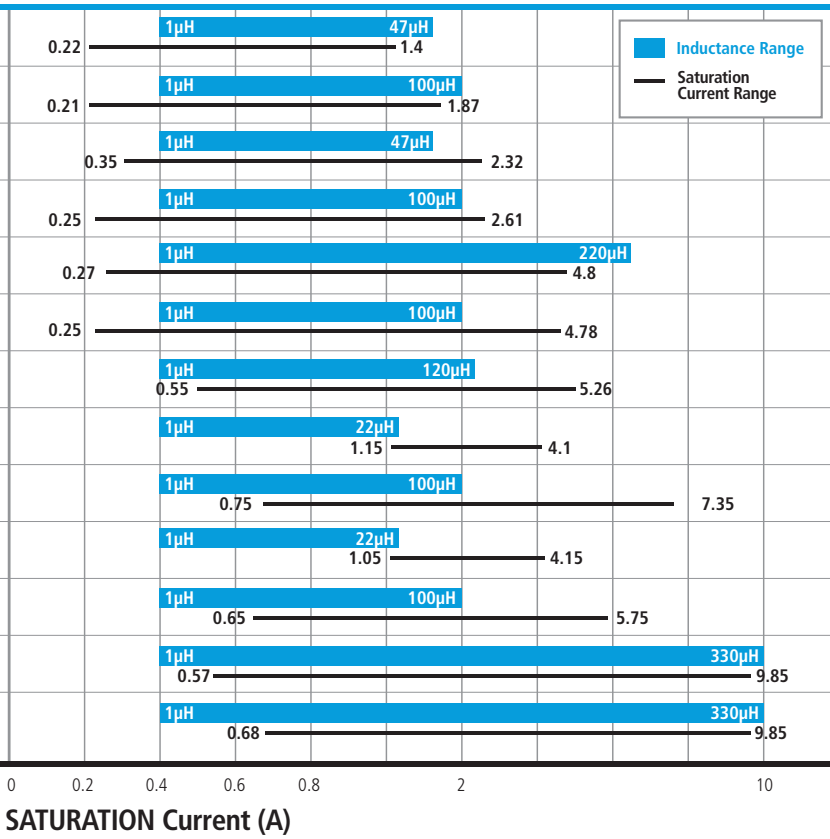
- Electrical specifications at 20°C
- Tolerance: M: ±20%, N:±30%
- Inductance tested at 100KHz, 1V
- RMS Current is defined based on temperature rise 40°C from 20°C ambient.
- Saturation Current is the DC current at which the inductance drops approximate 30% from its value without current.
- Operate temperature range: -40°C ~ +125°C(including self-heating temperature rise)
- Storage temperature range (packaging conditions):-10°C ~ 40°C and RH 70%(MAX.)

Note: RMS current is tested on a typical PCB and apply a constant current in still air. The temperature rise is dependent on the application system condition including PCB PAD pattern, trace width and thickness and adjacent components etc. It's suggest to verify the temperature rise of the component under the real operation application conditions.

TYS SERIES PRODUCT SELECTION GUIDE

Inductance Range

PART SIZE CODE	DIMENSIONS	PG NO.
3010	3.0 x 3.0 x 1.0	7
3012	3.0 x 3.0 x 1.2	7
3015	3.0 x 3.0 x 1.5	7
4012	4.0 x 4.0 x 1.2	9
4018	4.0 x 4.0 x 1.8	9
4020	4.0 x 4.0 x 2.0	9
4030	4.0 x 4.0 x 3.0	9
5020	5.0 x 5.0 x 2.0	11
5040	5.0 x 5.0 x 4.0	11
6020	6.0 x 6.0 x 2.0	13
6028	6.0 x 6.0 x 2.8	13
6045	6.0 x 6.0 x 4.5	13
8040	8.0 x 8.0 x 4.0	15



TYS SERIES SHAPES AND DIMENSIONS

SERIES (UNIT: mm)	FIGURE	A	B	C	D	E	a	b	c
TYS3010	A	3.0±0.2	3.0±0.2	1.0 +0.2/-0.3	0.75±0.2	1.50±0.2	2.3	0.8	2.7
TYS3012				1.2 +0.2/-0.3	1.10±0.3	0.80±0.3	1.9	1.3	3.0
TYS3015				1.5 +0.2/-0.3					
TYS4012	B	4.0±0.2	4.0±0.2	1.2 +0.2/-0.3	1.30±0.3	1.40±0.3	2.7	1.5	4.0
TYS4018				1.8 +0.2/-0.3					
TYS4020				2.0Max.	0.95±0.2	2.10±0.2	3.0	1.1	3.7
TYS4030				3.0Max.	1.30±0.3	1.40±0.3	2.7	1.5	4.0
TYS5020	B	5.0±0.2	5.0±0.2	2.0 +0.2/-0.3	1.25±0.2	2.5±0.2	3.75	1.4	5.0
TYS5040				4.0 +0.2/-0.3	1.60±0.3	1.8±0.3	3.4	1.8	5.0
TYS6020	B	6.0±0.3	6.0±0.3	2.0 +0.2/-0.3	1.60±0.3	2.8±0.3	4.4	1.8	6.0
TYS6028				2.8 +0.2/-0.3	1.80±0.3	2.4±0.3	4.2	2.0	6.0
TYS6045				4.5 +0.2/-0.3					
TYS8040	B	8.0±0.3	8.0±0.3	4.0 +0.2/-0.3	2.45±0.3	3.1±0.3	5.5	2.5	8.0

FIGURE A

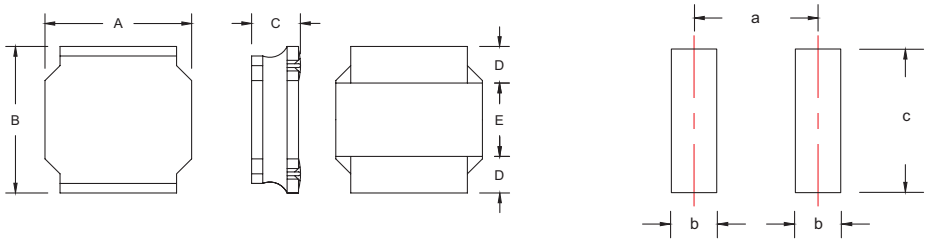
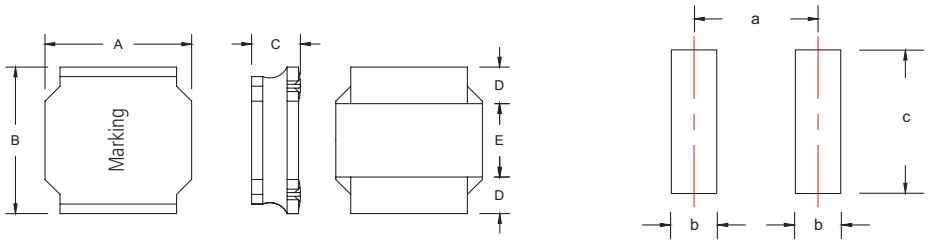


FIGURE B



TYS SERIES 3010/3012/3015

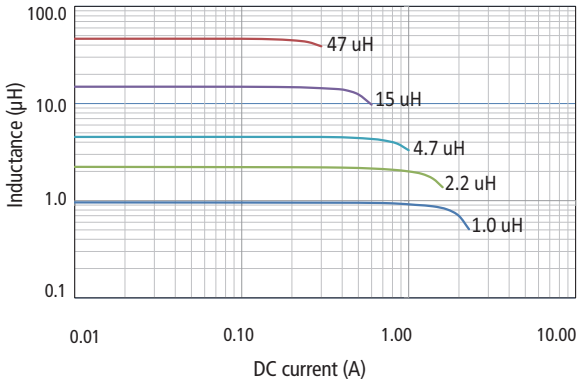
ELECTRICAL SPECIFICATIONS

PART NO.	INDUCTANCE (µH)	Rdc (Ω) Max	SATURATION CURRENT (A)	RMS CURRENT (A)	SRF MHZ (REF)
TYS30101R0N-10	1	0.0850	1.40	1.45	180
TYS30101R5N-10	1.5	0.1040	1.27	1.30	120
TYS30102R2N-10	2.2	0.1430	1.15	1.09	100
TYS30103R3N-10	3.3	0.1890	0.97	0.96	74
TYS30104R7M-10	4.7	0.2930	0.75	0.77	59
TYS30106R8M-10	6.8	0.3970	0.55	0.66	42
TYS3010100M-10	10	0.5200	0.55	0.58	39
TYS3010150M-10	15	0.7930	0.42	0.47	30
TYS3010220M-10	22	1.2090	0.35	0.38	28
TYS3010330M-10	33	2.0150	0.29	0.30	18
TYS3010470M-10	47	2.5350	0.22	0.26	18
TYS30121R0N-10	1	0.0520	1.87	2.20	120
TYS30121R5N-10	1.5	0.0585	1.62	2.01	110
TYS30122R2N-10	2.2	0.0975	1.20	1.55	84
TYS30123R3M-10	3.3	0.1300	1.05	1.36	64
TYS30124R7M-10	4.7	0.1560	0.90	1.24	61
TYS30126R8M-10	6.8	0.2470	0.75	0.98	61
TYS3012100M-10	10	0.3445	0.60	0.83	42
TYS3012150M-10	15	0.5980	0.45	0.71	27
TYS3012220M-10	22	0.8385	0.42	0.53	23
TYS3012330M-10	33	1.1375	0.36	0.46	18
TYS3012470M-10	47	1.8850	0.27	0.35	14
TYS3012680M-10	68	2.1710	0.24	0.33	12
TYS3012101M-10	100	3.7180	0.21	0.25	12
TYS30151R0N-10	1	0.0450	2.32	2.35	150
TYS30151R5N-10	1.5	0.0650	2.30	1.70	100
TYS30152R2N-10	2.2	0.0780	1.60	1.60	86
TYS30153R3M-10	3.3	0.1140	1.32	1.36	68
TYS30154R7M-10	4.7	0.1625	1.10	1.09	46
TYS30156R8M-10	6.8	0.2600	0.85	0.85	39
TYS3015100M-10	10	0.3250	0.72	0.77	41
TYS3015150M-10	15	0.4940	0.66	0.65	30
TYS3015220M-10	22	0.5980	0.52	0.57	23
TYS3015330M-10	33	1.0660	0.44	0.43	20
TYS3015470M-10	47	1.6250	0.35	0.35	14

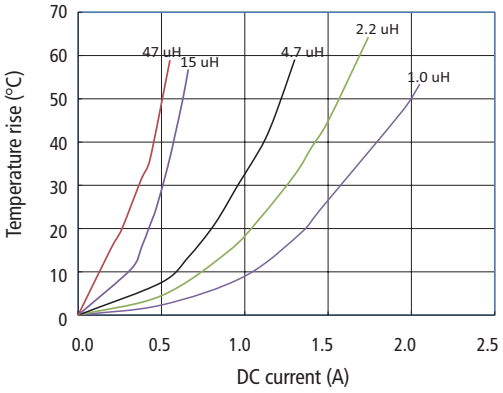
TYS SERIES 3010 / 3012 / 3015

TYPICAL ELECTRICAL CHARACTERISTICS

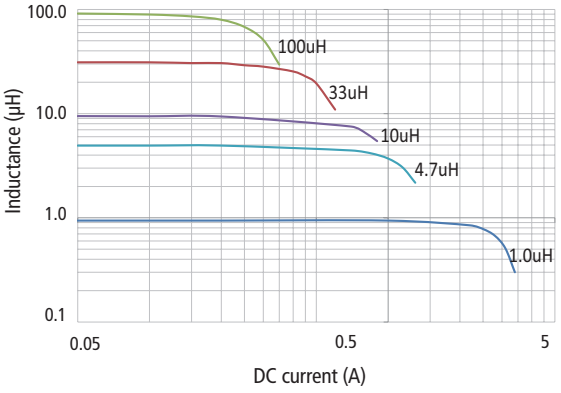
TYS3010 Typical L vs DC Current



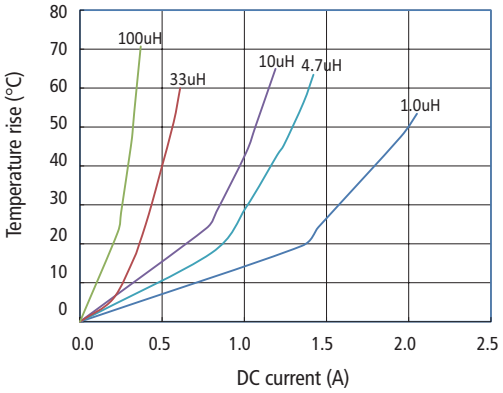
TYS3010 Temperature Rise vs DC Current



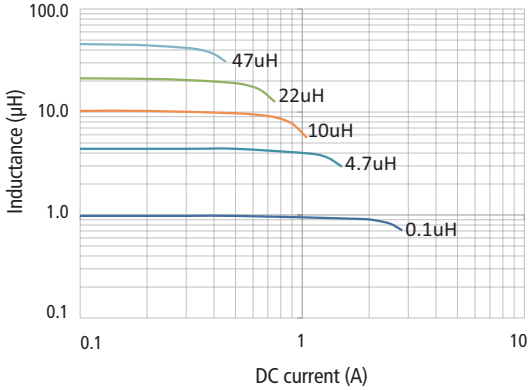
TYS3012 Typical L vs DC Current



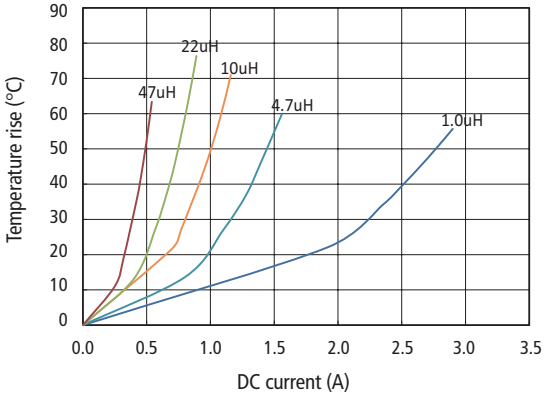
TYS3012 Temperature Rise vs DC Current



TYS3015 Typical L vs DC Current



TYS3015 Temperature Rise vs DC Current



TYS SERIES 4012 / 4018 / 4020 / 4030

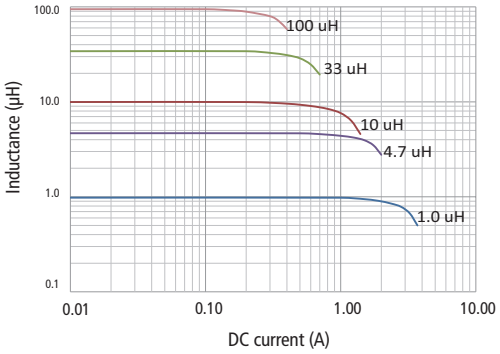
ELECTRICAL SPECIFICATIONS

PART NO.	INDUCTANCE (µH)	Rdc (Ω) Max	SATURATION CURRENT (A)	RMS CURRENT (A)	SRF MHZ (REF)
TYS40121R0N-10	1	0.0650	2.61	1.65	120
TYS40122R2N-10	2.2	0.1040	1.76	1.32	74
TYS40123R3N-10	3.3	0.1430	1.72	1.12	60
TYS40124R7N-10	4.7	0.1630	1.15	1.05	50
TYS40125R6N-10	5.6	0.1820	1.00	1.00	42
TYS40126R8M-10	6.8	0.2570	0.85	0.84	40
TYS4012100M-10	10	0.3450	0.80	0.77	33
TYS4012150M-10	15	0.4420	0.56	0.64	25
TYS4012220M-10	22	0.7630	0.46	0.49	20
TYS4012330M-10	33	1.0530	0.42	0.42	17
TYS4012470M-10	47	1.4300	0.35	0.37	12
TYS4012680M-10	68	2.5350	0.38	0.27	11
TYS4012101M-10	100	2.8730	0.25	0.25	9.4
TYS40181R0N-10	1	0.0325	4.80	2.00	80
TYS40182R2M-10	2.2	0.0590	2.70	1.65	52
TYS40184R7M-10	4.7	0.1170	1.70	1.20	34
TYS40186R8M-10	6.8	0.1430	1.45	1.06	29
TYS4018100M-10	10	0.2340	1.30	0.84	24
TYS4018150M-10	15	0.3250	0.94	0.65	19
TYS4018220M-10	22	0.4680	0.80	0.59	16
TYS4018330M-10	33	0.6890	0.65	0.49	12
TYS4018470M-10	47	0.8450	0.57	0.42	10
TYS4018680M-10	68	1.3000	0.47	0.32	8.3
TYS4018101M-10	100	2.2750	0.40	0.25	6.5
TYS4018151M-10	150	3.2500	0.31	0.22	5.5
TYS4018221M-10	220	5.2000	0.27	0.17	4
TYS40201R0N-10	1	0.0377	4.78	2.15	75
TYS40202R2N-10	2.2	0.0520	3.40	1.85	49
TYS40203R3M-10	3.3	0.0910	3.20	1.40	44
TYS40204R7M-10	4.7	0.0975	2.35	1.34	42
TYS40206R8M-10	6.8	0.1625	2.20	1.04	33
TYS4020100M-10	10	0.2145	1.60	0.90	26
TYS4020150M-10	15	0.2990	1.35	0.77	24
TYS4020220M-10	22	0.4550	1.05	0.62	15
TYS4020330M-10	33	0.7150	0.85	0.49	11
TYS4020470M-10	47	1.4300	0.35	0.37	12
TYS4020680M-10	68	2.5350	0.38	0.27	11
TYS4020101M-10	100	2.8370	0.25	0.25	9.4
TYS40301R0N-10	1	0.0182	5.26	4.15	70
TYS40301R5N-10	1.5	0.0260	4.84	3.34	62
TYS40302R2N-10	2.2	0.0390	4.90	2.95	52
TYS40303R3M-10	3.3	0.0520	3.30	2.40	38
TYS40304R7M-10	4.7	0.0780	2.90	2.00	31
TYS40306R8M-10	6.8	0.1170	2.75	1.60	24
TYS4030100M-10	10	0.1300	1.95	1.50	21
TYS4030150M-10	15	0.2470	1.65	1.11	16
TYS4030220M-10	22	0.2925	1.30	1.00	10
TYS4030330M-10	33	0.4290	1.10	0.84	10
TYS4030470M-10	47	0.6370	0.95	0.72	8.4
TYS4030680M-10	68	1.1284	0.72	0.52	7
TYS4030101M-10	100	1.4950	0.60	0.45	5.6
TYS4030121M-10	120	1.7550	0.55	0.42	5.4

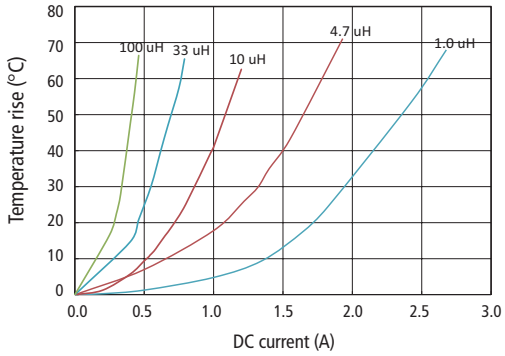
TYS SERIES 4012 / 4018 / 4020 / 4030

TYPICAL ELECTRICAL CHARACTERISTICS

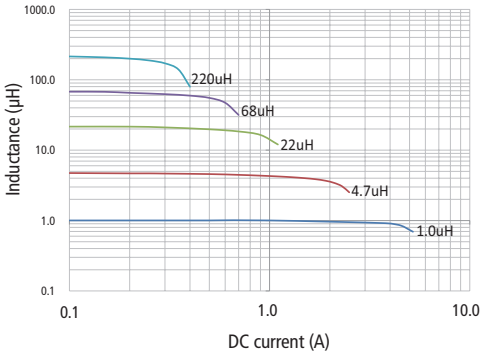
TYS4012 Typical L vs DC Current



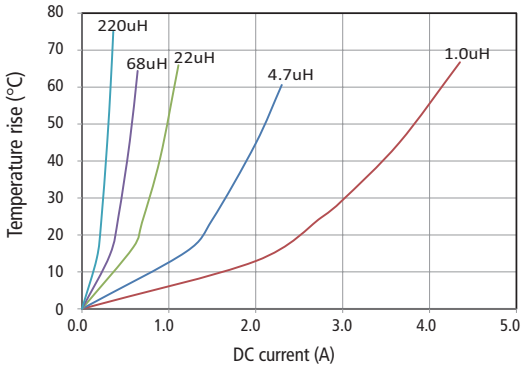
TYS4012 Temperature Rise vs DC Current



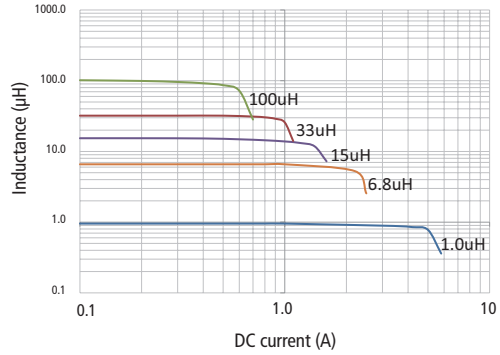
TYS4018 Typical L vs DC Current



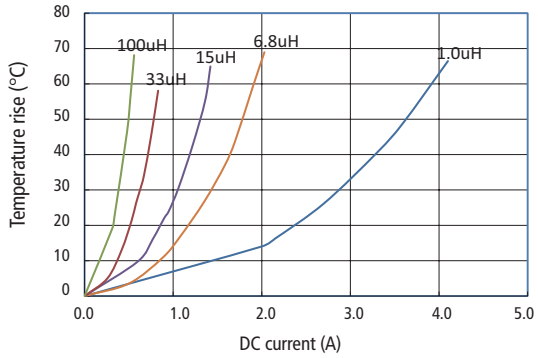
TYS4018 Temperature Rise vs DC Current



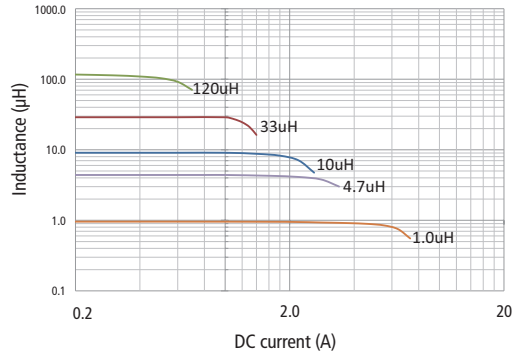
TYS4020 Typical L vs DC Current



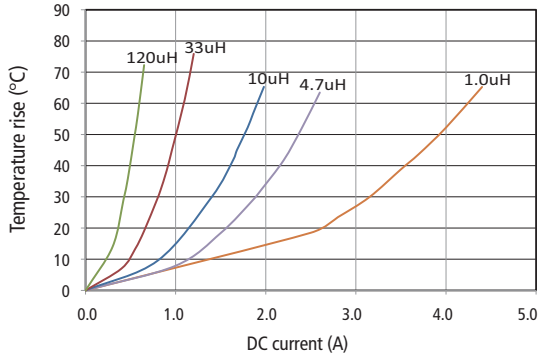
TYS4020 Temperature Rise vs DC Current



TYS4030 Typical L vs DC Current



TYS4030 Temperature Rise vs DC Current



TYS SERIES 5020 / 5040

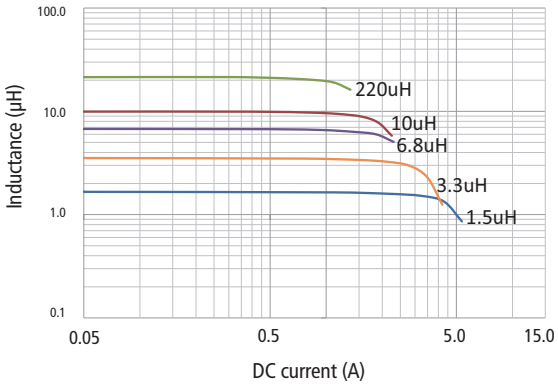
ELECTRICAL SPECIFICATIONS

PART NO.	INDUCTANCE (µH)	Rdc (Ω) Max	SATURATION CURRENT (A)	RMS CURRENT (A)	SRF MHZ (REF)
TYS50201R0N-10	1	0.0260	4.10	3.80	114
TYS50201R5N-10	1.5	0.0340	4.10	3.20	68
TYS50202R2N-10	2.2	0.0416	3.20	2.90	57
TYS50203R3N-10	3.3	0.0560	2.55	2.50	46
TYS50203R6N-10	3.6	0.0560	2.80	2.50	43
TYS50204R7M-10	4.7	0.0740	2.50	2.20	37
TYS50206R8M-10	6.8	0.1080	2.05	1.80	30
TYS5020100M-10	10	0.1430	1.70	1.55	24
TYS5020150M-10	15	0.2150	1.35	1.25	20
TYS5020220M-10	22	0.2940	1.15	1.10	14
TYS50401R0N-10	1	0.0144	7.35	4.90	117
TYS50401R5N-10	1.5	0.0180	6.30	4.30	86
TYS50402R2N-10	2.2	0.0228	4.90	3.80	50
TYS50403R3N-10	3.3	0.0288	3.95	3.40	32
TYS50404R7N-10	4.7	0.0360	3.50	3.00	28
TYS50406R8M-10	6.8	0.0516	2.90	2.50	21
TYS5040100M-10	10	0.0768	2.35	2.10	18
TYS5040150M-10	15	0.1030	2.00	2.00	13
TYS5040220M-10	22	0.1550	1.60	1.50	11
TYS5040330M-10	33	0.2260	1.30	1.20	9.1
TYS5040470M-10	47	0.3260	1.10	1.00	6.7
TYS5040680M-10	68	0.4800	0.90	0.80	5.7
TYS5040101M-10	100	0.6720	0.75	0.70	4.7

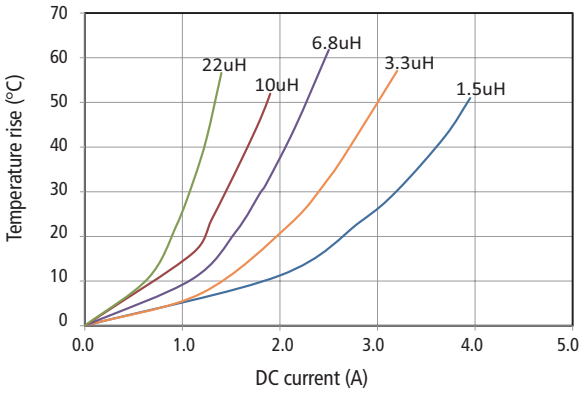
TYS SERIES 5020 / 5040

TYPICAL ELECTRICAL CHARACTERISTICS

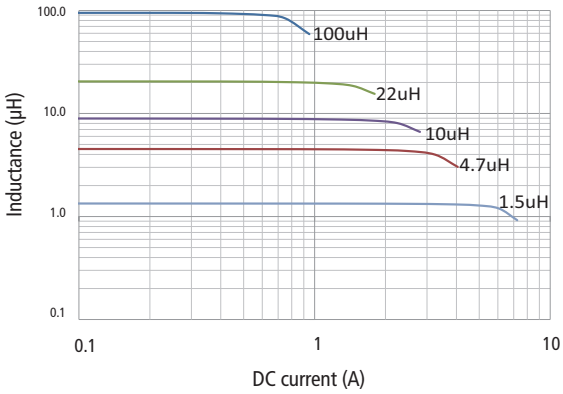
TYS5020 Typical L vs DC Current



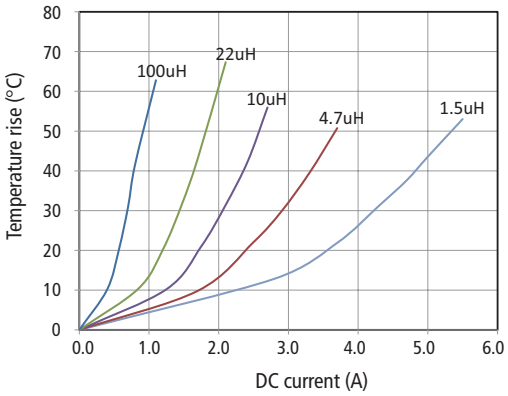
TYS5020 Temperature Rise vs DC Current



TYS5040 Typical L vs DC Current



TYS5040 Temperature Rise vs DC Current



TYS SERIES 6020 / 6028 / 6045

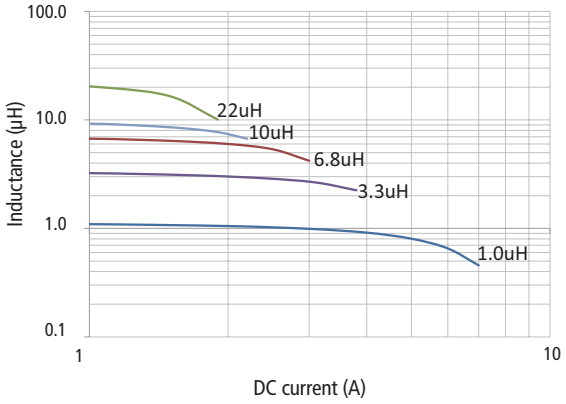
ELECTRICAL SPECIFICATIONS

PART NO.	INDUCTANCE (µH)	Rdc (Ω) Max	SATURATION CURRENT (A)	RMS CURRENT (A)	SRF MHZ (REF)
TYS60201R0N-10	1	0.0260	4.15	3.50	100
TYS60201R5N-10	1.5	0.0286	4.25	3.20	79
TYS60202R2N-10	2.2	0.0364	3.75	2.75	61
TYS60203R3N-10	3.3	0.0455	3.15	2.60	51
TYS60204R7N-10	4.7	0.0754	3.00	2.00	41
TYS60206R8N-10	6.8	0.1027	2.20	1.80	31
TYS6020100M-10	10	0.1365	1.75	1.40	27
TYS6020220M-10	22	0.2652	1.05	1.00	16
TYS60281R0N-10	1	0.0130	5.75	5.20	70
TYS60281R3N-10	1.3	0.0169	6.00	4.58	65
TYS60281R5N-10	1.5	0.0169	6.00	4.58	65
TYS60282R2N-10	2.2	0.0260	5.10	3.75	48
TYS60283R3N-10	3.3	0.0325	4.15	3.48	41
TYS60284R7N-10	4.7	0.0390	3.00	3.08	35
TYS60286R8M-10	6.8	0.0611	2.60	2.40	27
TYS6028150M-10	15	0.1625	1.75	1.45	18
TYS6028220M-10	22	0.1820	1.45	1.40	14
TYS6028330M-10	33	0.2405	1.35	1.22	12
TYS6028470M-10	47	0.4095	1.15	1.06	9.5
TYS6028680M-10	68	0.4680	0.80	0.86	7.7
TYS6028101M-10	100	0.6500	0.65	0.70	7.1
TYS60451R0N-10	1	0.0143	9.85	5.14	100
TYS60451R3N-10	1.3	0.0130	8.35	5.40	100
TYS60451R5N-10	1.5	0.0156	8.80	4.95	65
TYS60451R8N-10	1.8	0.0156	7.60	4.95	74
TYS60452R2N-10	2.2	0.0182	6.75	4.60	52
TYS60452R3N-10	2.3	0.0273	6.00	3.50	60
TYS60453R0N-10	3	0.0260	5.60	3.80	35
TYS60453R3N-10	3.3	0.0273	5.90	3.70	32
TYS60454R5M-10	4.5	0.0338	4.97	3.30	24
TYS60454R7M-10	4.7	0.0338	4.97	3.30	24
TYS60456R3M-10	6.3	0.0455	4.43	3.00	26
TYS60456R8M-10	6.8	0.0403	3.90	3.00	20
TYS6045100M-10	10	0.0624	3.20	2.45	15
TYS6045150M-10	15	0.0884	2.50	2.05	12
TYS6045220M-10	22	0.1157	2.05	1.80	10
TYS6045470M-10	47	0.2600	1.40	1.20	6.4
TYS6045680M-10	68	0.3757	1.20	1.00	6.4
TYS6045101M-10	100	0.5630	0.95	0.80	4.2
TYS6045221M-10	220	1.0840	0.70	0.59	3.5
TYS6045331M-10	330	1.6510	0.57	0.57	2.8

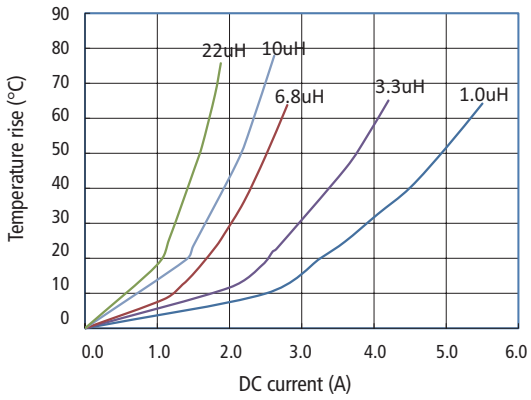
TYS SERIES 6020 / 6028 / 6045

TYPICAL ELECTRICAL CHARACTERISTICS

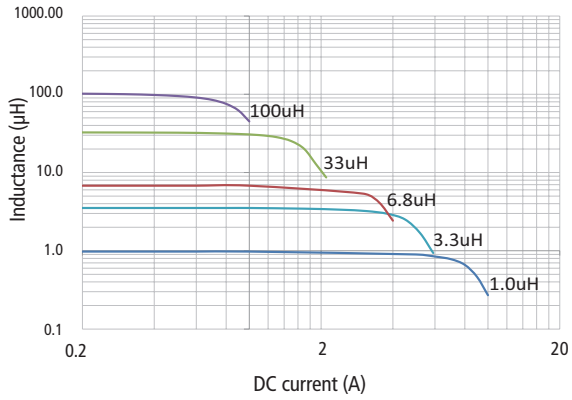
TYS6020 Typical L vs DC Current



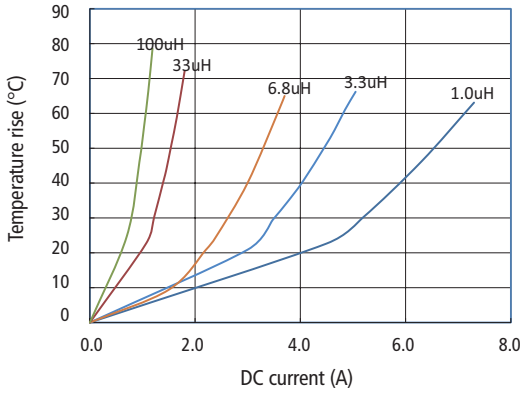
TYS6020 Temperature Rise vs DC Current



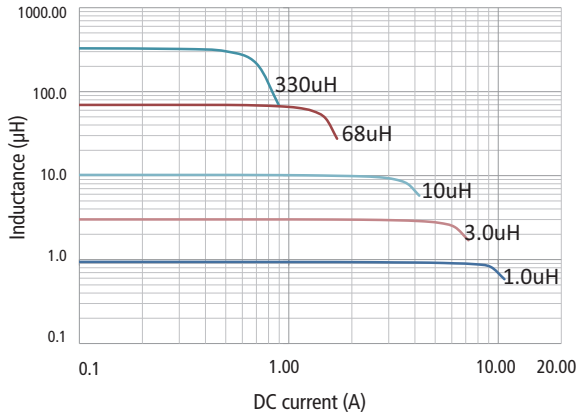
TYS6028 Typical L vs DC Current



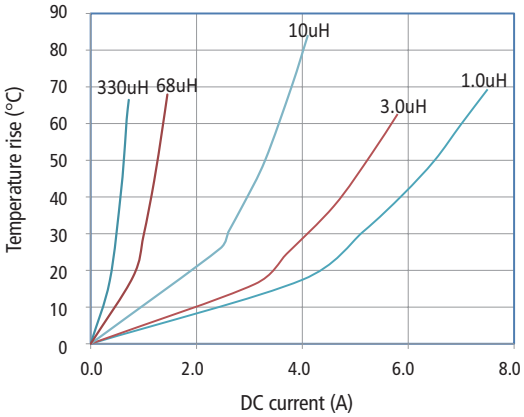
TYS6028 Temperature Rise vs DC Current



TYS6045 Typical L vs DC Current



TYS6045 Temperature Rise vs DC Current



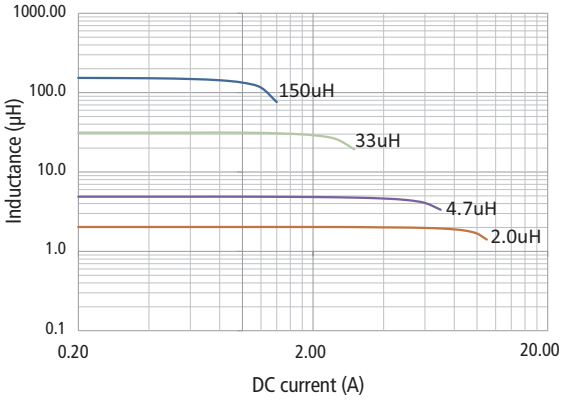
TYS SERIES 8040

ELECTRICAL SPECIFICATIONS

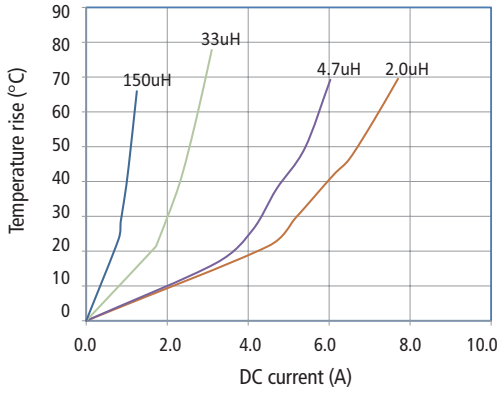
PART NO.	INDUCTANCE (µH)	Rdc (Ω) Max	SATURATION CURRENT (A)	RMS CURRENT (A)	SRF MHZ (REF)
TYS80401R0N-10	1	0.0104	9.85	6.30	89
TYS80401R4N-10	1.4	0.0130	8.15	5.65	67
TYS80402R0N-10	2	0.0156	9.25	5.15	43
TYS80402R2N-10	2.2	0.0156	7.10	5.15	41
TYS80403R3N-10	3.3	0.0221	6.50	4.40	27
TYS80403R6N-10	3.6	0.0221	7.52	4.35	30
TYS80404R7N-10	4.7	0.0247	5.90	4.10	24
TYS80406R8M-10	6.8	0.0312	4.55	3.60	20
TYS8040100M-10	10	0.0377	3.60	3.30	15
TYS8040220M-10	22	0.0897	2.40	2.10	9.5
TYS8040330M-10	33	0.1261	2.05	1.80	7.8
TYS8040470M-10	47	0.1768	1.75	1.55	6.4
TYS8040680M-10	68	0.2548	1.45	1.25	4.9
TYS8040101M-10	100	0.3770	1.15	1.00	4.2
TYS8040151M-10	150	0.5330	1.10	0.85	3.5
TYS8040221M-10	220	0.7787	0.85	0.80	3.5
TYS8040331M-10	330	1.1557	0.68	0.64	2.8

TYPICAL ELECTRICAL CHARACTERISTICS

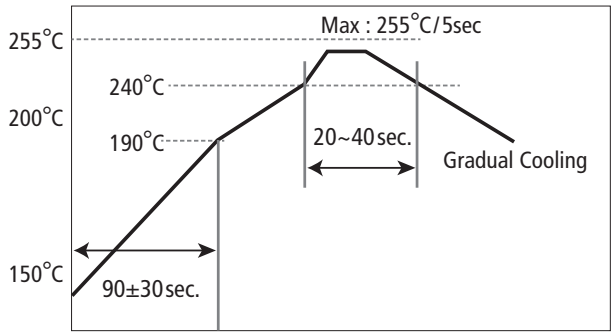
TYS8040 Typical L vs DC Current



TYS8040 Temperature Rise vs DC Current



TEMPERATURE PROFILE OF REFLOW SOLDERING

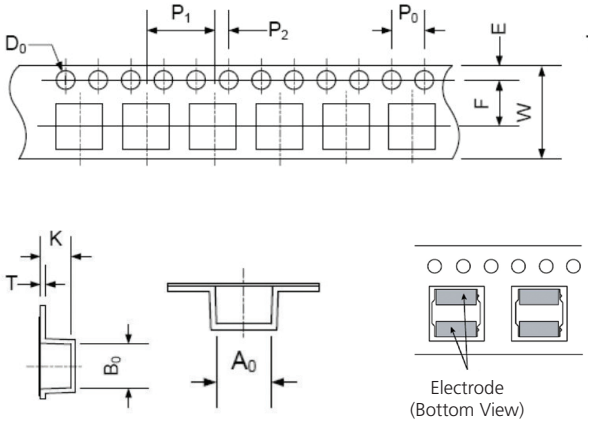


TYS SERIES PACKAGING INFORMATION

STANDARD QUANTITY

SERIES	TAPE AND REEL QUANTITY (PCS)
TYS3010	2000
TYS3012	2000
TYS3015	2000
TYS4012	4500
TYS4018	3000
TYS4020	3000
TYS4030	2000
TYS5020	2500
TYS5040	1500
TYS6020	2500
TYS6028	2000
TYS6045	1500
TYS8040	1000

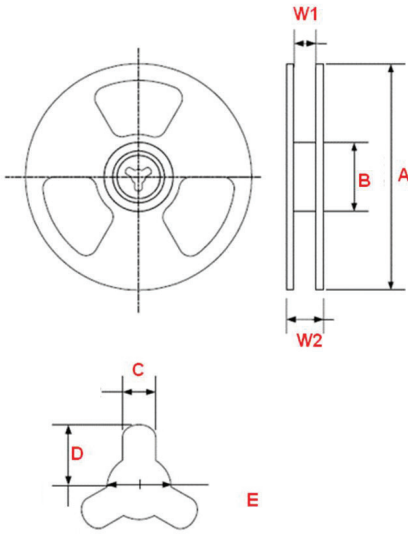
TAPING DIMENSIONS



SERIES (UNIT: mm)	A_0	B_0	F	K	T	D_0	P_0	P_1	P_2	W	E
TYS3010	3.3±0.1	3.3±0.1	3.5±0.05	1.4±0.1	0.25±0.03	1.5+0.1/-0	4±0.1	4±0.1	2±0.1	8±0.3	1.75±0.1
TYS3012				1.6±0.1							
TYS3015				1.9±0.1							
TYS4012	4.3±0.1	4.3±0.1	5.5±0.05	1.4±0.1	0.35±0.03			8±0.1		12±0.3	
TYS4018			5.5±0.1	2.1±0.1							
TYS4020				2.4±0.1	0.4±0.03						
TYS4030				3.2±0.1							
TYS5020	5.4±0.1	5.4±0.1		2.2±0.1	0.35±0.03						
TYS5040	5.3±0.1	5.3±0.1		4.2±0.1	0.4±0.03					16±0.3	
TYS6020	6.3±0.1	6.3±0.1	7.5±0.1	2.5±0.1							
TYS6028	6.4±0.1	6.4±0.1		3.3±0.1							
TYS6045				4.7±0.1							
TYS8040	8.35±0.1	8.35±0.1		4.4±0.1				12±0.1			

REEL DIMENSIONS

SERIES (UNIT: mm)	A	W1	W2	B	C	D	E
TYS3010	178±2.0	8.4+1.5/-0.0	<14.4	58±2.0	2.45±0.2	/	13.5±0.2
TYS3012							
TYS3015							
TYS4012	330	12.4+0.2 /-0.0	<18.4	100	2.30±0.2	10.75±0.2	13.0+0.2/-0
TYS4018							
TYS4020							
TYS4030							
TYS5020							
TYS5040							
TYS6020		16.4+0.2 /-0.0	<22.4				
TYS6028							
TYS6045							
TYS8040							



SAMPLE KIT LISTS

KIT NO:K-510 TYS IND

It contains parts of each single series as following lists

SERIES	PART NUMBER QTY	SAMPLE QTY / PN
TYS3010	11	5
TYS3012	13	5
TYS3015	11	5
TYS4012	13	5
TYS4018	13	5
TYS4020	12	5
TYS4030	14	5
TYS5020	10	5
TYS5040	13	5
TYS6020	8	5
TYS6028	13	5
TYS6045	20	5
TYS8040	17	3

NOTES

Americas: +1 800 634.2673 Option 1
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Asia: +86 757.2563.8860

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