Notice for TAIYO YUDEN products

Please read this notice before using the TAIYO YUDEN products.

⚠ REMINDERS

- Product information in this catalog is as of October 2013. All of the contents specified herein are subject to change without notice due to technical improvements, etc. Therefore, please check for the latest information carefully before practical application or usage of the Products.

  Please note that TAIYO YUDEN CO., LTD. shall not be responsible for any defects in products or equipment incorporating such products, which are caused under the conditions other than those specified in this catalog or individual specification.

- Please contact TAIYO YUDEN CO., LTD. for further details of product specifications as the individual specification is available.

- Please conduct validation and verification of products in actual condition of mounting and operating environment before commercial shipment of the equipment.

- All electronic components or functional modules listed in this catalog are developed, designed and intended for use in general electronics equipment.(for AV, office automation, household, office supply, information service, telecommunications, (such as mobile phone or PC) etc.). Before incorporating the components or devices into any equipment in the field such as transportation,(automotive control, train control, ship control), transportation signal, disaster prevention, medical, public information network (telephone exchange, base station) etc. which may have direct influence to harm or injure a human body, please contact TAIYO YUDEN CO., LTD. for more detail in advance.
  Do not incorporate the products into any equipment in fields such as aerospace, aviation, nuclear control, submarine system, military, etc. where higher safety and reliability are especially required.

  In addition, even electronic components or functional modules that are used for the general electronic equipment, if the equipment or the electric circuit require high safety or reliability function or performances, a sufficient reliability evaluation check for safety shall be performed before commercial shipment and moreover, due consideration to install a protective circuit is strongly recommended at customer's design stage.

- The contents of this catalog are applicable to the products which are purchased from our sales offices or distributors (so called "TAIYO YUDEN's official sales channel").
  It is only applicable to the products purchased from any of TAIYO YUDEN's official sales channel.

- Please note that TAIYO YUDEN CO., LTD. shall have no responsibility for any controversies or disputes that may occur in connection with a third party's intellectual property rights and other related rights arising from your usage of products in this catalog. TAIYO YUDEN CO., LTD. grants no license for such rights.

- Caution for export
  Certain items in this catalog may require specific procedures for export according to "Foreign Exchange and Foreign Trade Control Law" of Japan, "U.S. Export Administration Regulations", and other applicable regulations. Should you have any question or inquiry on this matter, please contact our sales staff.

SMD POWER INDUCTORS(NR SERIES/NR SERIES H TYPE/S TYPE/V TYPE)



REFLOW

■PARTS NUMBER　　*Operating Temp. : −25～+120℃ (NRS40/50/60/80 : −25～+125℃) (Including self-generated heat)

N R △	4 0 1 8	T △	1 0 0	M	△
①	②	③	④	⑤	⑥

△=Blank space

①Series name

Code	Series name
NR△	Coating resin specification
NRH	
NRS	
NRV	

②Dimensions (L×W×H)

Code	Dimensions (L×W×H) [mm]
2010	2.0×2.0×1.0
2012	2.0×2.0×1.2
2410	2.4×2.4×1.0
2412	2.4×2.4×1.2
3010	3.0×3.0×1.0
3012	3.0×3.0×1.2
3015	3.0×3.0×1.5
4010	4.0×4.0×1.0
4012	4.0×4.0×1.2
4018	4.0×4.0×1.8
5010	4.9×4.9×1.0
5012	4.9×4.9×1.2
5014	4.9×4.9×1.4
5020	4.9×4.9×2.0
5024	4.9×4.9×2.4
5030	4.9×4.9×3.0
5040	4.9×4.9×4.0
6010	6.0×6.0×1.0
6012	6.0×6.0×1.2
6014	6.0×6.0×1.4
6020	6.0×6.0×2.0
6028	6.0×6.0×2.8
6045	6.0×6.0×4.5
8030	8.0×8.0×3.0
8040	8.0×8.0×4.0

③Packaging

Code	Packaging
T△	Taping

④Nominal inductance

Code (example)	Nominal inductance [μH]
2R2	2.2
100	10
101	100

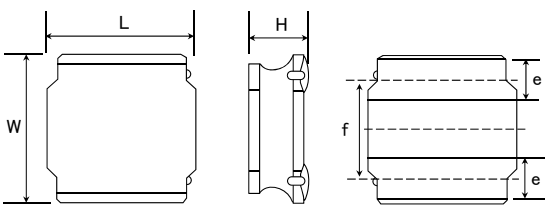
※R=Decimal point

⑤Inductance tolerance

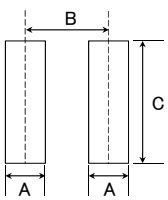
Code	Inductance tolerance
M	±20%
N	±30%

⑥Internal code

■STANDARD EXTERNAL DIMENSIONS / STANDARD QUANTITY



Recommended Land Patterns



Type	A	B	C
NRV2010, NRS2012, NRV2012	0.65	1.35	2.0
NRH2410, NRH2412	0.7	1.45	2.0
NR 3010, NRH3010, NR 3012, NRH3012, NRV3012, NR 3015, NRS3015	0.8	2.2	2.7
NR 4010, NRS4010, NR 4012, NRS4012, NR 4018, NRS4018	1.2	2.8	3.7
NRS8030, NR 8040, NRS8040	1.8	5.6	7.5

Unit : mm

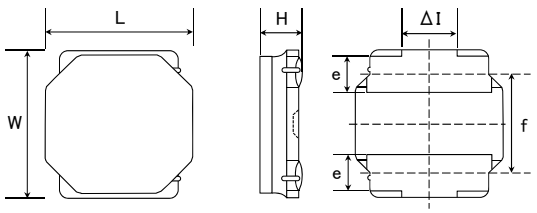
Type	L	W	H	e	f	Standard quantity [pcs] Taping
NRV2010	2.0±0.1 (0.079±0.004)	2.0±0.1 (0.079±0.004)	1.0 max (0.039 max)	0.5±0.2 (0.020±0.008)	1.25±0.2 (0.050±0.008)	2500
NRS2012 NRV2012	2.0±0.1 (0.079±0.004)	2.0±0.1 (0.079±0.004)	1.2 max (0.047 max)	0.5±0.2 (0.020±0.008)	1.25±0.2 (0.050±0.008)	2500
NRH2410	2.4±0.1 (0.095±0.004)	2.4±0.1 (0.095±0.004)	1.0 max (0.039 max)	0.6±0.2 (0.024±0.008)	1.45±0.2 (0.057±0.008)	2500
NRH2412	2.4±0.1 (0.095±0.004)	2.4±0.1 (0.095±0.004)	1.2 max (0.047 max)	0.6±0.2 (0.024±0.008)	1.45±0.2 (0.057±0.008)	2500
NR 3010 NRH3010	3.0±0.1 (0.118±0.004)	3.0±0.1 (0.118±0.004)	1.0 max (0.039 max)	0.9±0.2 (0.035±0.008)	1.9±0.2 (0.075±0.008)	2000

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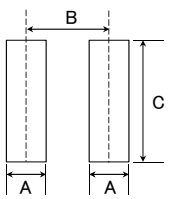
NR 3012 NRH3012 NRV3012	3.0±0.1 (0.118±0.004)	3.0±0.1 (0.118±0.004)	1.2 max (0.047 max)	0.9±0.2 (0.035±0.008)	1.9±0.2 (0.075±0.008)	2000
NR 3015 NRS3015	3.0±0.1 (0.118±0.004)	3.0±0.1 (0.118±0.004)	1.5 max (0.059 max)	0.9±0.2 (0.035±0.008)	1.9±0.2 (0.075±0.008)	2000
NR 4010 NRS4010	4.0±0.2 (0.157±0.008)	4.0±0.2 (0.157±0.008)	1.0 max (0.039 max)	1.1±0.2 (0.043±0.008)	2.5±0.2 (0.098±0.008)	5000
NR 4012 NRS4012	4.0±0.2 (0.157±0.008)	4.0±0.2 (0.157±0.008)	1.2 max (0.047 max)	1.1±0.2 (0.043±0.008)	2.5±0.2 (0.098±0.008)	4500
NR 4018 NRS4018	4.0±0.2 (0.157±0.008)	4.0±0.2 (0.157±0.008)	1.8 max (0.071 max)	1.1±0.2 (0.043±0.008)	2.5±0.2 (0.098±0.008)	3500
NRS8030	8.0±0.2 (0.315±0.008)	8.0±0.2 (0.315±0.008)	3.0 max (0.118 max)	1.60±0.3 (0.063±0.012)	5.6±0.3 (0.22±0.012)	1000
NR 8040 NRS8040	8.0±0.2 (0.315±0.008)	8.0±0.2 (0.315±0.008)	*1) 4.2 max (0.165 max) *2) 4.0 max (0.157 max)	1.60±0.3 (0.063±0.012)	5.6±0.3 (0.22±0.012)	1000

*1) 0R9～6R8 type, *2) 100～101type

Unit: mm (inch)



Recommended Land Patterns



Type	A	B	C
NRS5010	1.5	3.6	4.0
NRS5012			
NRS5014			
NRS5020			
NRS5024			
NRS5030			
NR 5040, NRS5040			
NRS6010	1.6	4.7	5.7
NR 6012, NRS6012			
NRS6014			
NR 6020, NRS6020			
NR 6028, NRS6028			
NR 6045, NRS6045			

Unit: mm

Type	L	W	H	e	f	ΔI	Standard quantity [pcs] Taping
NRS5010	4.9±0.2 (0.193±0.008)	4.9±0.2 (0.193±0.008)	1.0 max (0.039 max)	1.2±0.2 (0.047±0.008)	3.3±0.2 (0.130±0.008)	1.3typ (0.051typ)	1000
NRS5012	4.9±0.2 (0.193±0.008)	4.9±0.2 (0.193±0.008)	1.2 max (0.047 max)	1.2±0.2 (0.047±0.008)	3.3±0.2 (0.130±0.008)	1.3typ (0.051typ)	1000
NRS5014	4.9±0.2 (0.193±0.008)	4.9±0.2 (0.193±0.008)	1.4 max (0.055 max)	1.2±0.2 (0.047±0.008)	3.3±0.2 (0.130±0.008)	1.3typ (0.051typ)	1000
NRS5020	4.9±0.2 (0.193±0.008)	4.9±0.2 (0.193±0.008)	2.0 max (0.079 max)	1.2±0.2 (0.047±0.008)	3.3±0.2 (0.130±0.008)	1.3typ (0.051typ)	800
NRS5024	4.9±0.2 (0.193±0.008)	4.9±0.2 (0.193±0.008)	*3) 2.5 max (0.098 max) *4) 2.4 max (0.094 max)	1.2±0.2 (0.047±0.008)	3.3±0.2 (0.130±0.008)	1.3typ (0.051typ)	2500
NRS5030	4.9±0.2 (0.193±0.008)	4.9±0.2 (0.193±0.008)	*5) 3.1 max (0.122 max) *6) 3.0 max (0.118 max)	1.2±0.2 (0.047±0.008)	3.3±0.2 (0.130±0.008)	1.3typ (0.051typ)	500
NR 5040 NRS5040	4.9±0.2 (0.193±0.008)	4.9±0.2 (0.193±0.008)	*7) 4.1 max (0.161 max) *8) 4.0 max (0.157 max)	1.2±0.2 (0.047±0.008)	3.3±0.2 (0.130±0.008)	1.3typ (0.051typ)	1500
NRS6010	6.0±0.2 (0.236±0.008)	6.0±0.2 (0.236±0.008)	1.0 max (0.039 max)	1.35±0.2 (0.053±0.008)	4.0±0.2 (0.157±0.008)	2.3typ (0.091typ)	1000
NR 6012 NRS6012	6.0±0.2 (0.236±0.008)	6.0±0.2 (0.236±0.008)	1.2 max (0.047 max)	1.35±0.2 (0.053±0.008)	4.0±0.2 (0.157±0.008)	2.3typ (0.091typ)	1000
NRS6014	6.0±0.2 (0.236±0.008)	6.0±0.2 (0.236±0.008)	1.4 max (0.055 max)	1.35±0.2 (0.053±0.008)	4.0±0.2 (0.157±0.008)	2.3typ (0.091typ)	1000
NR 6020 NRS6020	6.0±0.2 (0.236±0.008)	6.0±0.2 (0.236±0.008)	2.0 max (0.079 max)	1.35±0.2 (0.053±0.008)	4.0±0.2 (0.157±0.008)	2.3typ (0.091typ)	2500
NR 6028 NRS6028	6.0±0.2 (0.236±0.008)	6.0±0.2 (0.236±0.008)	2.8 max (0.110 max)	1.35±0.2 (0.053±0.008)	4.0±0.2 (0.157±0.008)	2.3typ (0.091typ)	2000
NR 6045 NRS6045	6.0±0.2 (0.236±0.008)	6.0±0.2 (0.236±0.008)	4.5 max (0.177 max)	1.35±0.2 (0.053±0.008)	4.0±0.2 (0.157±0.008)	2.3typ (0.091typ)	1500

*3) 1R0～1R5 type, *4) 2R2～330 type
*5) R47～100 type, *6) 150～470 type
*7) 1R5～100 type, *8) 150～470 type

Unit: mm (inch)

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■PARTS NUMBER

●NRS2012 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS2012T 1R0N GJ	RoHS	1.0	±30%	—	0.070	1,900	1,700	100
NRS2012T 1R5N GJ	RoHS	1.5	±30%	—	0.090	1,650	1,500	100
NRS2012T 2R2M GJ	RoHS	2.2	±20%	—	0.107	1,350	1,370	100
NRS2012T 3R3M GJ	RoHS	3.3	±20%	—	0.190	1,000	1,020	100
NRS2012T 4R7M GJ	RoHS	4.7	±20%	—	0.241	900	910	100

●NRV2010 type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRV2010T R47N GF	RoHS	0.47	±30%	—	0.052	2,100	2,000	100
NRV2010T R68N GF	RoHS	0.68	±30%	—	0.060	1,850	1,850	100
NRV2010T 1R0N GF	RoHS	1.0	±30%	—	0.080	1,550	1,600	100
NRV2010T 1R5M GF	RoHS	1.5	±20%	—	0.100	1,350	1,450	100
NRV2010T 2R2M GF	RoHS	2.2	±20%	—	0.175	1,100	1,100	100
NRV2010T 3R3M GF	RoHS	3.3	±20%	—	0.250	880	1,000	100
NRV2010T 4R7M GF	RoHS	4.7	±20%	—	0.320	760	820	100

●NRV2012 type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRV2012T 1R0N GF	RoHS	1.0	±30%	—	0.073	2,200	1,650	100
NRV2012T 1R5N GF	RoHS	1.5	±30%	—	0.100	1,800	1,400	100
NRV2012T 2R2M GF	RoHS	2.2	±20%	—	0.129	1,600	1,200	100
NRV2012T 3R3M GF	RoHS	3.3	±20%	—	0.227	1,250	900	100
NRV2012T 4R7M GF	RoHS	4.7	±20%	—	0.325	1,100	750	100

●NRH2410 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRH2410T R68NN 4	RoHS	0.68	±30%	120	0.060	2,200	1,570	100
NRH2410T 1R0NN 4	RoHS	1.0	±30%	106	0.070	1,800	1,410	100
NRH2410T 1R5MN	RoHS	1.5	±20%	94	0.110	1,550	1,160	100
NRH2410T 2R2MN	RoHS	2.2	±20%	77	0.150	1,290	970	100
NRH2410T 3R3MN	RoHS	3.3	±20%	56	0.220	1,000	770	100
NRH2410T 4R7MN	RoHS	4.7	±20%	50	0.290	880	670	100
NRH2410T 6R8MN	RoHS	6.8	±20%	43	0.410	750	570	100
NRH2410T 100MN	RoHS	10	±20%	32	0.690	550	450	100
NRH2410T 150MN	RoHS	15	±20%	27	1.02	470	370	100
NRH2410T 220MN	RoHS	22	±20%	22	1.47	390	300	100

●NRH2412 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRH2412T R47NNGJ	RoHS	0.47	±30%	180	0.050	2,900	2,100	100
NRH2412T 1R0NNGH	RoHS	1.0	±30%	101	0.077	2,350	1,300	100
NRH2412T 1R5NNGH	RoHS	1.5	±30%	89	0.100	2,100	1,150	100
NRH2412T 2R2MNGH	RoHS	2.2	±20%	72	0.140	1,700	1,000	100
NRH2412T 3R3MNGH	RoHS	3.3	±20%	56	0.225	1,400	750	100
NRH2412T 4R7MNGH	RoHS	4.7	±20%	45	0.300	1,150	650	100
NRH2412T 6R8MNGH	RoHS	6.8	±20%	34	0.420	950	550	100
NRH2412T 100MNGH	RoHS	10	±20%	29	0.600	810	450	100

●NRH3010 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRH3010T 1R2NN	RoHS	1.2	±30%	120	0.065	1,700	1,480	100
NRH3010T 1R5NN	RoHS	1.5	±30%	99	0.075	1,440	1,370	100
NRH3010T 2R2MN	RoHS	2.2	±20%	86	0.083	1,300	1,300	100
NRH3010T 3R3MN	RoHS	3.3	±20%	64	0.130	1,000	1,030	100
NRH3010T 4R7MN	RoHS	4.7	±20%	50	0.170	850	900	100
NRH3010T 6R8MN	RoHS	6.8	±20%	44	0.250	700	745	100
NRH3010T 100MN	RoHS	10	±20%	34	0.350	600	620	100
NRH3010T 150MN	RoHS	15	±20%	25	0.550	450	480	100
NRH3010T 220MN	RoHS	22	±20%	22	0.770	380	410	100
NRH3010T 470MN	RoHS	47	±20%	17	2.050	250	285	100

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20℃)
※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40℃. (at 20℃)
※) The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

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■PARTS NUMBER

●NRH3012 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRH3012T R47NN	RoHS	0.47	±30%	160	0.033	2,600	1,900	100
NRH3012T 1R0NN	RoHS	1.0	±30%	111	0.048	2,200	1,710	100
NRH3012T 1R5NN	RoHS	1.5	±30%	95	0.055	1,700	1,600	100
NRH3012T 2R2MN	RoHS	2.2	±20%	78	0.075	1,500	1,370	100
NRH3012T 3R3MN	RoHS	3.3	±20%	61	0.100	1,200	1,210	100
NRH3012T 4R7MN	RoHS	4.7	±20%	50	0.130	1,000	1,060	100
NRH3012T 6R8MN	RoHS	6.8	±20%	43	0.190	850	890	100
NRH3012T 100MN	RoHS	10	±20%	32	0.270	730	720	100
NRH3012T 150MN	RoHS	15	±20%	26	0.450	530	570	100
NRH3012T 220MN	RoHS	22	±20%	22	0.630	500	500	100

●NRV3012 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRV3012T 1R0N	RoHS	1.0	±30%	110	0.065	2,500	1,600	100
NRV3012T 1R5N	RoHS	1.5	±30%	92	0.075	2,100	1,400	100
NRV3012T 2R2M	RoHS	2.2	±20%	70	0.120	1,800	1,100	100
NRV3012T 3R3M	RoHS	3.3	±20%	55	0.150	1,600	1,000	100
NRV3012T 4R7M	RoHS	4.7	±20%	48	0.190	1,250	850	100
NRV3012T 6R8M	RoHS	6.8	±20%	40	0.300	950	650	100
NRV3012T 100M	RoHS	10	±20%	32	0.470	800	550	100

●NRS3015 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS3015T 1R0NNGH	RoHS	1.0	±30%	100	0.030	2,100	2,100	100
NRS3015T 1R5NNGH	RoHS	1.5	±30%	87	0.038	1,800	1,820	100
NRS3015T 2R2MNGH	RoHS	2.2	±20%	64	0.058	1,480	1,500	100
NRS3015T 3R3MNGH	RoHS	3.3	±20%	49	0.078	1,210	1,230	100
NRS3015T 4R7MNGH	RoHS	4.7	±20%	40	0.120	1,020	1,040	100
NRS3015T 6R8MNGH	RoHS	6.8	±20%	36	0.160	870	880	100
NRS3015T 100MNGH	RoHS	10	±20%	28	0.220	700	710	100
NRS3015T 220MNGH	RoHS	22	±20%	20	0.520	470	470	100

●NRS4010 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS4010T 1R0NDGG	RoHS	1.0	±30%	116	0.056	2,000	1,900	100
NRS4010T 2R2MDGG	RoHS	2.2	±20%	73	0.085	1,200	1,500	100
NRS4010T 3R3MDGG	RoHS	3.3	±20%	58	0.100	1,100	1,400	100
NRS4010T 4R7MDGG	RoHS	4.7	±20%	47	0.140	950	1,200	100
NRS4010T 6R8MDGG	RoHS	6.8	±20%	38	0.200	800	1,000	100
NRS4010T 100MDGG	RoHS	10	±20%	31	0.300	620	750	100
NRS4010T 150MDGG	RoHS	15	±20%	24	0.430	540	600	100
NRS4010T 220MDGG	RoHS	22	±20%	19	0.570	450	500	100

●NRS4012 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS4012T 1R0NDGG	RoHS	1.0	±30%	100	0.042	2,800	2,200	100
NRS4012T 2R2MDGJ	RoHS	2.2	±20%	70	0.060	1,650	1,900	100
NRS4012T 3R3MDGJ	RoHS	3.3	±20%	60	0.070	1,400	1,700	100
NRS4012T 4R7MDGJ	RoHS	4.7	±20%	45	0.095	1,200	1,500	100
NRS4012T 6R8MDGJ	RoHS	6.8	±20%	35	0.125	900	1,300	100
NRS4012T 100MDGJ	RoHS	10	±20%	30	0.170	800	1,100	100
NRS4012T 150MDGJ	RoHS	15	±20%	24	0.260	650	750	100
NRS4012T 220MDGJ	RoHS	22	±20%	18	0.400	500	620	100

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20℃)
※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40℃. (at 20℃)
※) The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

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■PARTS NUMBER

●NRS4018 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS4018T 1R0NDGJ	RoHS	1.0	±30%	90	0.027	4,000	3,200	100
NRS4018T 2R2MDGJ	RoHS	2.2	±20%	60	0.042	3,000	2,200	100
NRS4018T 3R3MDGJ	RoHS	3.3	±20%	45	0.055	2,300	2,000	100
NRS4018T 4R7MDGJ	RoHS	4.7	±20%	35	0.070	2,000	1,700	100
NRS4018T 6R8MDGJ	RoHS	6.8	±20%	30	0.098	1,600	1,450	100
NRS4018T 100MDGJ	RoHS	10	±20%	25	0.150	1,300	1,200	100
NRS4018T 150MDGJ	RoHS	15	±20%	18	0.210	1,100	850	100
NRS4018T 220MDGJ	RoHS	22	±20%	15	0.290	900	720	100
NRS4018T 330MDGJ	RoHS	33	±20%	12	0.460	700	550	100
NRS4018T 470MDGJ	RoHS	47	±20%	10	0.650	600	440	100
NRS4018T 680MDGJ	RoHS	68	±20%	8.3	1.00	520	320	100
NRS4018T 101MDGJ	RoHS	100	±20%	6.5	1.45	420	280	100
NRS4018T 151MDGJ	RoHS	150	±20%	5.5	2.30	340	220	100
NRS4018T 221MDGJ	RoHS	220	±20%	4.0	3.80	275	170	100

●NRS5010 type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS5010T 1R0NMGF	RoHS	1.0	±30%	95	0.070	2,350	1,750	100
NRS5010T 2R2NMGF	RoHS	2.2	±30%	65	0.105	1,500	1,400	100
NRS5010T 3R3MMGF	RoHS	3.3	±20%	42	0.125	1,400	1,250	100
NRS5010T 4R7MMGF	RoHS	4.7	±20%	37	0.145	1,200	1,150	100
NRS5010T 6R8MMGF	RoHS	6.8	±20%	33	0.185	1,000	1,000	100
NRS5010T 100MMGF	RoHS	10	±20%	23	0.250	850	900	100
NRS5010T 150MMGF	RoHS	15	±20%	19	0.400	680	650	100
NRS5010T 220MMGF	RoHS	22	±20%	15	0.600	550	450	100

●NRS5012 type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS5012T 1R0NMGF	RoHS	1.0	±30%	100	0.053	4,500	2,300	100
NRS5012T 1R5NMGF	RoHS	1.5	±30%	86	0.070	3,800	2,200	100
NRS5012T 2R2MMGF	RoHS	2.2	±20%	70	0.085	3,100	2,000	100
NRS5012T 3R3MMGF	RoHS	3.3	±20%	48	0.160	2,400	1,450	100
NRS5012T 4R7MMGF	RoHS	4.7	±20%	40	0.180	2,200	1,400	100
NRS5012T 6R8MMGF	RoHS	6.8	±20%	36	0.260	1,700	1,100	100
NRS5012T 100MMGF	RoHS	10	±20%	26	0.420	1,400	850	100
NRS5012T 150MMGF	RoHS	15	±20%	22	0.670	1,200	640	100

●NRS5014 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS5014T R47NMGG	RoHS	0.47	±30%	185	0.025	5,800	3,300	100
NRS5014T 1R2NMGG	RoHS	1.2	±30%	86	0.045	3,800	2,400	100
NRS5014T 2R2NMGG	RoHS	2.2	±30%	56	0.065	2,800	2,000	100
NRS5014T 3R3NMGG	RoHS	3.3	±30%	48	0.080	2,350	1,700	100
NRS5014T 4R7NMGG	RoHS	4.7	±30%	41	0.100	2,050	1,400	100
NRS5014T 6R8MMGG	RoHS	6.8	±20%	33	0.150	1,600	1,200	100
NRS5014T 100MMGG	RoHS	10	±20%	27	0.200	1,400	1,050	100
NRS5014T 150MMGG	RoHS	15	±20%	20	0.320	1,100	650	100
NRS5014T 220MMGG	RoHS	22	±20%	16	0.450	900	550	100

●NRS5020 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS5020T R47NMGJ	RoHS	0.47	±30%	230	0.012	6,100	5,000	100
NRS5020T 1R0NMGJ	RoHS	1.0	±30%	81	0.021	4,000	3,600	100
NRS5020T 1R5NMGJ	RoHS	1.5	±30%	68	0.026	3,350	3,200	100
NRS5020T 2R2NMGJ	RoHS	2.2	±30%	57	0.035	2,900	2,900	100
NRS5020T 3R3NMGJ	RoHS	3.3	±30%	46	0.048	2,400	2,400	100
NRS5020T 4R7MMGJ	RoHS	4.7	±20%	37	0.060	2,000	2,000	100
NRS5020T 6R8MMGJ	RoHS	6.8	±20%	30	0.090	1,600	1,650	100
NRS5020T 100MMGJ	RoHS	10	±20%	24	0.120	1,300	1,450	100
NRS5020T 150MMGJ	RoHS	15	±20%	20	0.165	1,100	1,200	100
NRS5020T 220MMGJ	RoHS	22	±20%	17	0.260	900	1,000	100

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20℃)
※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40℃. (at 20℃)
※) The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

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●NRS5024 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS5024T 1R0NMGJ	RoHS	1.0	±30%	85	0.016	5,800	4,400	100
NRS5024T 1R5NMGJ	RoHS	1.5	±30%	67	0.022	5,200	3,600	100
NRS5024T 2R2NMGJ	RoHS	2.2	±30%	51	0.029	4,100	3,100	100
NRS5024T 3R3NMGJ	RoHS	3.3	±30%	41	0.043	3,100	2,400	100
NRS5024T 4R7MMGJ	RoHS	4.7	±20%	37	0.055	2,700	2,000	100
NRS5024T 6R8MMGJ	RoHS	6.8	±20%	28	0.080	2,200	1,600	100
NRS5024T 100MMGJ	RoHS	10	±20%	21	0.125	1,700	1,200	100
NRS5024T 150MMGJ	RoHS	15	±20%	18	0.170	1,400	1,000	100
NRS5024T 220MMGJ	RoHS	22	±20%	15	0.230	1,200	820	100
NRS5024T 330MMGJ	RoHS	33	±20%	11	0.370	1,000	630	100

●NRS5030 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±30%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS5030T R47NMGJ	RoHS	0.47	±30%	185	0.010	9,000	5,000	100
NRS5030T 1R0NMGJ	RoHS	1.0	±30%	110	0.015	6,600	4,000	100
NRS5030T 2R2NMGJ	RoHS	2.2	±30%	46	0.023	4,200	3,500	100
NRS5030T 3R3MMGJ	RoHS	3.3	±20%	36	0.030	3,600	3,000	100
NRS5030T 4R7MMGJ	RoHS	4.7	±20%	31	0.035	3,100	2,600	100
NRS5030T 6R8MMGJ	RoHS	6.8	±20%	22	0.052	2,500	2,300	100
NRS5030T 100MMGJ	RoHS	10	±20%	20	0.070	2,100	1,700	100
NRS5030T 150MMGJ	RoHS	15	±20%	14	0.125	1,600	1,400	100
NRS5030T 220MMGJ	RoHS	22	±20%	13	0.180	1,400	1,050	100
NRS5030T 330MMGJ	RoHS	33	±20%	10	0.225	1,150	800	100
NRS5030T 470MMGJ	RoHS	47	±20%	9	0.325	950	700	100

●NRS5040 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±30%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS5040T 1R5NMGJ	RoHS	1.5	±30%	60	0.017	6,400	4,500	100
NRS5040T 2R2NMGJ	RoHS	2.2	±30%	42	0.022	5,000	3,700	100
NRS5040T 3R3NMGJ	RoHS	3.3	±30%	32	0.027	4,000	3,300	100
NRS5040T 4R7NMGK	RoHS	4.7	±30%	28	0.029	3,300	3,100	100
NRS5040T 6R8MMGJ	RoHS	6.8	±20%	21	0.049	2,800	2,400	100
NRS5040T 100MMGJ	RoHS	10	±20%	18	0.056	2,300	2,100	100
NRS5040T 150MMGJ	RoHS	15	±20%	13	0.080	2,000	1,800	100
NRS5040T 220MMGK	RoHS	22	±20%	9	0.126	1,500	1,400	100
NRS5040T 330MMGJ	RoHS	33	±20%	7	0.180	1,300	1,200	100
NRS5040T 470MMGJ	RoHS	47	±20%	6	0.310	1,100	900	100

●NRS6010 type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS6010T 1R5MMGF	RoHS	1.5	±20%	77	0.090	2,400	1,900	100
NRS6010T 2R2MMGF	RoHS	2.2	±20%	56	0.110	1,900	1,700	100
NRS6010T 3R3MMGF	RoHS	3.3	±20%	42	0.135	1,600	1,500	100
NRS6010T 4R7MMGF	RoHS	4.7	±20%	36	0.165	1,300	1,400	100
NRS6010T 6R8MMGF	RoHS	6.8	±20%	30	0.220	1,200	1,200	100
NRS6010T 100MMGF	RoHS	10	±20%	25	0.270	1,000	1,100	100
NRS6010T 220MMGF	RoHS	22	±20%	12	0.580	650	700	100

●NRS6012 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS6012T 1R0NMGJ	RoHS	1.0	±30%	95	0.050	3,000	2,400	100
NRS6012T 1R5NMGG	RoHS	1.5	±30%	69	0.067	2,600	2,100	100
NRS6012T 2R5NMGG	RoHS	2.5	±30%	45	0.090	2,100	1,800	100
NRS6012T 3R3NMGG	RoHS	3.3	±30%	42	0.105	1,800	1,700	100
NRS6012T 4R7MMGG	RoHS	4.7	±20%	36	0.125	1,600	1,550	100
NRS6012T 5R3MMGJ	RoHS	5.3	±20%	34	0.125	1,500	1,550	100
NRS6012T 6R8MMGJ	RoHS	6.8	±20%	30	0.165	1,300	1,350	100
NRS6012T 100MMGJ	RoHS	10	±20%	22	0.200	1,000	1,200	100
NRS6012T 150MMGJ	RoHS	15	±20%	18	0.295	800	800	100
NRS6012T 220MMGJ	RoHS	22	±20%	12	0.465	760	650	100
NRS6012T 330MMGJ	RoHS	33	±20%	8	0.580	590	550	100
NRS6012T 470MMGJ	RoHS	47	±20%	6	0.965	520	460	100
NRS6012T 680MMGJ	RoHS	68	±20%	3	1.16	440	410	100
NRS6012T 101MMGJ	RoHS	100	±20%	1	1.67	350	320	100

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20℃)
※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40℃. (at 20℃)
※) The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

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●NRS6014 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS6014T 1R2NMGG	RoHS	1.2	±30%	77	0.042	4,000	2,750	100
NRS6014T 2R2NMGG	RoHS	2.2	±30%	61	0.055	3,000	2,300	100
NRS6014T 3R3NMGG	RoHS	3.3	±30%	41	0.075	2,500	2,000	100
NRS6014T 4R7MMGG	RoHS	4.7	±20%	36	0.090	2,000	1,900	100
NRS6014T 6R8MMGG	RoHS	6.8	±20%	30	0.115	1,700	1,650	100
NRS6014T 100MMGG	RoHS	10	±20%	24	0.140	1,400	1,400	100
NRS6014T 150MMGG	RoHS	15	±20%	20	0.210	1,150	1,200	100
NRS6014T 220MMGG	RoHS	22	±20%	16	0.300	950	1,000	100

●NRS6020 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS6020T 0R8NMGG	RoHS	0.8	±30%	110	0.020	6,400	4,100	100
NRS6020T 1R5NMGJ	RoHS	1.5	±30%	93	0.026	4,300	3,600	100
NRS6020T 2R2NMGJ	RoHS	2.2	±30%	73	0.034	3,200	2,900	100
NRS6020T 3R3NMGJ	RoHS	3.3	±30%	55	0.040	2,800	2,750	100
NRS6020T 4R7NMGJ	RoHS	4.7	±30%	43	0.058	2,400	2,150	100
NRS6020T 6R8NMGJ	RoHS	6.8	±30%	30	0.085	2,000	1,800	100
NRS6020T 100MMGG	RoHS	10	±20%	18	0.125	1,900	1,500	100
NRS6020T 220MMGG	RoHS	22	±20%	11	0.290	1,250	950	100

●NRS6028 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±30%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS6028T 0R9NMGJ	RoHS	0.9	±30%	90	0.013	6,700	4,600	100
NRS6028T 1R5NMGJ	RoHS	1.5	±30%	78	0.016	5,100	4,200	100
NRS6028T 2R2NMGJ	RoHS	2.2	±30%	68	0.020	4,200	3,700	100
NRS6028T 3R0NMGJ	RoHS	3.0	±30%	55	0.023	3,600	3,400	100
NRS6028T 4R7MMGK	RoHS	4.7	±20%	39	0.031	2,700	3,000	100
NRS6028T 6R8MMGJ	RoHS	6.8	±20%	25	0.043	2,600	2,500	100
NRS6028T 100MMGK	RoHS	10	±20%	20	0.065	1,900	1,900	100
NRS6028T 150MMGJ	RoHS	15	±20%	17	0.095	1,600	1,800	100
NRS6028T 220MMGJ	RoHS	22	±20%	12	0.135	1,300	1,400	100
NRS6028T 330MMGJ	RoHS	33	±20%	10	0.220	1,100	1,100	100
NRS6028T 470MMGJ	RoHS	47	±20%	8	0.300	1,000	920	100
NRS6028T 680MMGJ	RoHS	68	±20%	5	0.420	800	770	100
NRS6028T 101MMGJ	RoHS	100	±20%	3	0.600	650	660	100

●NRS6045 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±30%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS6045T 1R0NMGK	RoHS	1.0	±30%	110	0.014	9,800	4,500	100
NRS6045T 1R3NMGK	RoHS	1.3	±30%	95	0.016	8,200	4,200	100
NRS6045T 1R8NMGK	RoHS	1.8	±30%	80	0.019	7,200	3,900	100
NRS6045T 2R3NMGK	RoHS	2.3	±30%	60	0.022	6,400	3,600	100
NRS6045T 3R0NMGK	RoHS	3.0	±30%	45	0.024	5,600	3,300	100
NRS6045T 4R5MMGK	RoHS	4.5	±20%	25	0.030	4,400	3,100	100
NRS6045T 6R3MMGK	RoHS	6.3	±20%	15	0.036	3,600	3,000	100
NRS6045T 100MMGK	RoHS	10	±20%	12	0.046	3,100	2,400	100
NRS6045T 150MMGK	RoHS	15	±20%	10	0.070	2,500	1,900	100
NRS6045T 220MMGK	RoHS	22	±20%	7	0.107	2,000	1,600	100
NRS6045T 330MMGK	RoHS	33	±20%	6	0.141	1,650	1,400	100
NRS6045T 470MMGK	RoHS	47	±20%	5	0.211	1,400	1,150	100
NRS6045T 680MMGK	RoHS	68	±20%	4	0.304	1,100	950	100
NRS6045T 101MMGK	RoHS	100	±20%	3	0.466	900	750	100

●NRS8030 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±30%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS8030T 1R0NJGJ	RoHS	1.0	±30%	120	0.009	7,800	6,200	100
NRS8030T 1R5NJGJ	RoHS	1.5	±30%	80	0.012	6,200	5,300	100
NRS8030T 2R2NJGJ	RoHS	2.2	±30%	60	0.015	4,900	4,800	100
NRS8030T 3R3MJGJ	RoHS	3.3	±20%	50	0.019	4,200	4,300	100
NRS8030T 4R7MJGJ	RoHS	4.7	±20%	40	0.022	3,600	4,000	100
NRS8030T 6R8MJGJ	RoHS	6.8	±20%	32	0.029	3,000	3,400	100
NRS8030T 100MJGJ	RoHS	10	±20%	27	0.033	2,400	3,000	100
NRS8030T 150MJGJ	RoHS	15	±20%	20	0.060	2,000	2,200	100
NRS8030T 220MJGJ	RoHS	22	±20%	16	0.070	1,750	1,900	100
NRS8030T 330MJGJ	RoHS	33	±20%	13	0.120	1,300	1,500	100
NRS8030T 470MJGJ	RoHS	47	±20%	11	0.170	1,100	1,300	100

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20℃)
※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40℃. (at 20℃)
※) The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

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■PARTS NUMBER

●NRS8040 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±30%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NRS8040T 0R9NJGJ	RoHS	0.9	±30%	85	0.006	13,000	7,800	100
NRS8040T 1R4NJGJ	RoHS	1.4	±30%	63	0.007	10,000	7,000	100
NRS8040T 2R0NJGJ	RoHS	2.0	±30%	50	0.009	8,100	6,300	100
NRS8040T 3R6NJGJ	RoHS	3.6	±30%	34	0.015	6,400	4,900	100
NRS8040T 4R7NJGJ	RoHS	4.7	±30%	30	0.018	5,400	4,100	100
NRS8040T 6R8NJGJ	RoHS	6.8	±30%	24	0.025	4,400	3,700	100
NRS8040T 100MJGJ	RoHS	10	±20%	22	0.034	3,800	3,100	100
NRS8040T 150MJGJ	RoHS	15	±20%	16	0.050	2,900	2,400	100
NRS8040T 220MJGJ	RoHS	22	±20%	13	0.066	2,400	2,200	100
NRS8040T 330MJGK	RoHS	33	±20%	12	0.100	2,000	1,700	100
NRS8040T 470MJGJ	RoHS	47	±20%	8	0.140	1,500	1,500	100
NRS8040T 101MJGJ	RoHS	100	±20%	6	0.280	1,100	1,000	100

●NR 3010 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NR 3010T 1R0N	RoHS	1.0	±30%	126	0.065	1,300	1,400	100
NR 3010T 1R5N	RoHS	1.5	±30%	98	0.080	1,200	1,300	100
NR 3010T 2R2M	RoHS	2.2	±20%	82	0.095	1,100	1,100	100
NR 3010T 3R3M	RoHS	3.3	±20%	63	0.140	870	940	100
NR 3010T 4R7M	RoHS	4.7	±20%	56	0.190	750	780	100
NR 3010T 6R8M	RoHS	6.8	±20%	46	0.300	610	630	100
NR 3010T 100M	RoHS	10	±20%	35	0.450	500	510	100
NR 3010T 150M	RoHS	15	±20%	30	0.740	400	400	100
NR 3010T 220M	RoHS	22	±20%	25	1.03	350	350	100
NR 3010T 330M	RoHS	33	±20%	20	1.55	260	275	100
NR 3010T 470M	RoHS	47	±20%	17	2.05	220	235	100

●NR 3012 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NR 3012T 1R0N	RoHS	1.0	±30%	110	0.050	1,500	1,490	100
NR 3012T 1R5N	RoHS	1.5	±30%	92	0.060	1,360	1,400	100
NR 3012T 2R2M	RoHS	2.2	±20%	70	0.080	1,100	1,200	100
NR 3012T 3R3M	RoHS	3.3	±20%	55	0.100	910	1,050	100
NR 3012T 4R7M	RoHS	4.7	±20%	48	0.130	770	980	100
NR 3012T 6R8M	RoHS	6.8	±20%	40	0.190	670	740	100
NR 3012T 100M	RoHS	10	±20%	32	0.290	540	630	100
NR 3012T 150M	RoHS	15	±20%	27	0.450	440	485	100
NR 3012T 220M	RoHS	22	±20%	22	0.630	375	420	100
NR 3012T 330M	RoHS	33	±20%	19	1.03	310	330	100
NR 3012T 470M	RoHS	47	±20%	17	1.45	250	280	100

●NR 3015 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NR 3015T 1R0N	RoHS	1.0	±30%	100	0.030	2,100	2,100	100
NR 3015T 1R5N	RoHS	1.5	±30%	87	0.040	1,800	1,820	100
NR 3015T 2R2M	RoHS	2.2	±20%	64	0.060	1,480	1,500	100
NR 3015T 3R3M	RoHS	3.3	±20%	49	0.080	1,210	1,230	100
NR 3015T 4R7M	RoHS	4.7	±20%	40	0.120	1,020	1,040	100
NR 3015T 6R8M	RoHS	6.8	±20%	36	0.160	870	880	100
NR 3015T 100M	RoHS	10	±20%	28	0.230	700	710	100
NR 3015T 150M	RoHS	15	±20%	23	0.360	560	560	100
NR 3015T 220M	RoHS	22	±20%	20	0.520	470	470	100
NR 3015T 330M	RoHS	33	±20%	18	0.840	390	370	100
NR 3015T 470M	RoHS	47	±20%	17	1.34	320	300	100

●NR 4010 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NR 4010T 1R0N	RoHS	1.0	±30%	116	0.100	1,800	1,050	100
NR 4010T 2R2N	RoHS	2.2	±30%	73	0.150	1,150	890	100
NR 4010T 3R3M	RoHS	3.3	±20%	58	0.180	1,100	820	100
NR 4010T 4R7M	RoHS	4.7	±20%	47	0.210	900	750	100
NR 4010T 6R8M	RoHS	6.8	±20%	38	0.300	740	620	100
NR 4010T 100M	RoHS	10	±20%	31	0.380	560	600	100
NR 4010T 150M	RoHS	15	±20%	24	0.510	470	510	100
NR 4010T 220M	RoHS	22	±20%	19	0.870	360	400	100
NR 4010T 330M	RoHS	33	±20%	15	1.54	280	300	100
NR 4010T 470M	RoHS	47	±20%	13	1.81	240	280	100

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20℃)
※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40℃. (at 20℃)
※) The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

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■PARTS NUMBER

●NR 4012 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NR 4012T 1R0N	RoHS	1.0	±30%	131	0.060	2,500	1,500	100
NR 4012T 2R2M	RoHS	2.2	±20%	66	0.090	1,650	1,200	100
NR 4012T 3R3M	RoHS	3.3	±20%	50	0.130	1,200	980	100
NR 4012T 4R7M	RoHS	4.7	±20%	45	0.140	1,050	960	100
NR 4012T 6R8M	RoHS	6.8	±20%	35	0.180	900	840	100
NR 4012T 100M	RoHS	10	±20%	28	0.240	740	770	100
NR 4012T 150M	RoHS	15	±20%	23	0.400	560	600	100
NR 4012T 220M	RoHS	22	±20%	18	0.480	510	540	100
NR 4012T 330M	RoHS	33	±20%	15	0.810	400	420	100
NR 4012T 470M	RoHS	47	±20%	12	1.00	350	370	100

●NR 4018 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NR 4018T 1R0N	RoHS	1.0	±30%	80	0.030	4,000	1,830	100
NR 4018T 2R2M	RoHS	2.2	±20%	52	0.060	2,700	1,440	100
NR 4018T 3R3M	RoHS	3.3	±20%	44	0.070	2,000	1,230	100
NR 4018T 4R7M	RoHS	4.7	±20%	34	0.090	1,700	1,200	100
NR 4018T 6R8M	RoHS	6.8	±20%	29	0.110	1,450	1,060	100
NR 4018T 100M	RoHS	10	±20%	24	0.180	1,200	840	100
NR 4018T 150M	RoHS	15	±20%	19	0.250	940	650	100
NR 4018T 220M	RoHS	22	±20%	16	0.360	800	590	100
NR 4018T 330M	RoHS	33	±20%	12	0.530	650	490	100
NR 4018T 470M	RoHS	47	±20%	10	0.650	570	420	100
NR 4018T 680M	RoHS	68	±20%	8.3	1.00	470	320	100
NR 4018T 101M	RoHS	100	±20%	6.5	1.50	400	270	100
NR 4018T 151M	RoHS	150	±20%	5.5	2.50	310	220	100
NR 4018T 221M	RoHS	220	±20%	4.0	4.00	270	170	100

●NR 5040 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±30%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NR 5040T 1R5N	RoHS	1.5	±30%	60	0.020	6,000	3,600	100
NR 5040T 2R2N	RoHS	2.2	±30%	42	0.022	4,600	3,500	100
NR 5040T 3R3N	RoHS	3.3	±30%	32	0.027	3,800	3,300	100
NR 5040T 4R7N	RoHS	4.7	±30%	28	0.029	3,300	3,100	100
NR 5040T 6R8M	RoHS	6.8	±20%	21	0.049	2,600	2,300	100
NR 5040T 100M	RoHS	10	±20%	18	0.056	2,300	2,100	100
NR 5040T 150M	RoHS	15	±20%	13	0.080	2,000	1,800	100
NR 5040T 220M	RoHS	22	±20%	9	0.126	1,600	1,400	100
NR 5040T 330M	RoHS	33	±20%	7	0.180	1,300	1,200	100
NR 5040T 470M	RoHS	47	±20%	6	0.310	1,100	900	100

●NR 6012 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NR 6012T 2R5NE	RoHS	2.5	±30%	45	0.090	2,100	1,730	100
NR 6012T 4R0NE	RoHS	4.0	±30%	39	0.105	1,800	1,570	100
NR 6012T 5R3ME	RoHS	5.3	±20%	34	0.125	1,500	1,400	100
NR 6012T 6R8ME	RoHS	6.8	±20%	30	0.165	1,300	1,180	100
NR 6012T 100ME	RoHS	10	±20%	22	0.235	1,000	1,000	100
NR 6012T 150ME	RoHS	15	±20%	18	0.330	800	790	100
NR 6012T 220ME	RoHS	22	±20%	12	0.530	760	630	100
NR 6012T 330ME	RoHS	33	±20%	8	0.700	590	530	100
NR 6012T 470ME	RoHS	47	±20%	6	1.05	520	460	100
NR 6012T 680ME	RoHS	68	±20%	3	1.35	440	410	100
NR 6012T 101ME	RoHS	100	±20%	1	2.18	350	320	100

●NR 6020 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±20%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NR 6020T 0R8N	RoHS	0.8	±30%	110	0.020	5,500	3,800	100
NR 6020T 1R5N	RoHS	1.5	±30%	93	0.026	4,000	3,200	100
NR 6020T 2R2N	RoHS	2.2	±30%	73	0.034	3,200	2,700	100
NR 6020T 3R3N	RoHS	3.3	±30%	55	0.040	2,800	2,600	100
NR 6020T 4R7N	RoHS	4.7	±30%	43	0.058	2,400	2,000	100
NR 6020T 6R8N	RoHS	6.8	±30%	30	0.085	2,000	1,800	100
NR 6020T 100M	RoHS	10	±20%	18	0.125	1,700	1,400	100
NR 6020T 220M	RoHS	22	±20%	11	0.290	1,050	950	100

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20℃)
※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40℃. (at 20℃)
※) The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

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●NR 6028 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±30%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NR 6028T 0R9N	RoHS	0.9	±30%	90	0.013	6,600	4,600	100
NR 6028T 1R5N	RoHS	1.5	±30%	78	0.016	5,000	4,200	100
NR 6028T 2R2N	RoHS	2.2	±30%	68	0.020	4,200	3,700	100
NR 6028T 3R0N	RoHS	3.0	±30%	55	0.023	3,600	3,400	100
NR 6028T 4R7M	RoHS	4.7	±20%	39	0.031	2,700	3,000	100
NR 6028T 6R0M	RoHS	6.0	±20%	30	0.040	2,500	2,500	100
NR 6028T 100M	RoHS	10	±20%	20	0.065	1,900	1,900	100
NR 6028T 150M	RoHS	15	±20%	17	0.095	1,600	1,800	100
NR 6028T 220M	RoHS	22	±20%	12	0.135	1,300	1,400	100
NR 6028T 330M	RoHS	33	±20%	10	0.220	1,100	1,100	100
NR 6028T 470M	RoHS	47	±20%	8	0.300	950	920	100
NR 6028T 680M	RoHS	68	±20%	5	0.420	760	770	100
NR 6028T 101M	RoHS	100	±20%	3	0.600	620	660	100

●NR 6045 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±30%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NR 6045T 1R0N	RoHS	1.0	±30%	110	0.014	8,500	4,200	100
NR 6045T 1R3N	RoHS	1.3	±30%	95	0.016	8,000	4,000	100
NR 6045T 1R8N	RoHS	1.8	±30%	80	0.018	7,000	3,700	100
NR 6045T 2R3N	RoHS	2.3	±30%	60	0.021	6,000	3,500	100
NR 6045T 3R0N	RoHS	3.0	±30%	45	0.024	5,000	3,200	100
NR 6045T 4R5M	RoHS	4.5	±20%	25	0.031	4,000	3,000	100
NR 6045T 6R3M	RoHS	6.3	±20%	15	0.038	3,800	2,800	100
NR 6045T 100M	RoHS	10	±20%	12	0.047	3,000	2,500	100
NR 6045T 150M	RoHS	15	±20%	10	0.077	2,300	1,900	100
NR 6045T 220M	RoHS	22	±20%	7	0.115	1,900	1,500	100
NR 6045T 330M	RoHS	33	±20%	6	0.145	1,500	1,400	100
NR 6045T 470M	RoHS	47	±20%	5	0.220	1,300	1,100	100
NR 6045T 680M	RoHS	68	±20%	4	0.330	1,000	900	100
NR 6045T 101M	RoHS	100	±20%	3	0.500	800	700	100

●NR 8040 Shielded type

Parts number	EHS	Nominal inductance [μH]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (±30%)	Rated current ※) [mA]		Measuring frequency [kHz]
						Saturation current Idc1	Temperature rise current Idc2	
NR 8040T 0R9N	RoHS	0.9	±30%	85	0.006	11,000	7,800	100
NR 8040T 1R4N	RoHS	1.4	±30%	63	0.007	9,000	7,000	100
NR 8040T 2R0N	RoHS	2.0	±30%	50	0.009	7,400	6,300	100
NR 8040T 3R6N	RoHS	3.6	±30%	34	0.015	5,300	4,900	100
NR 8040T 4R7N	RoHS	4.7	±30%	30	0.018	4,700	4,100	100
NR 8040T 6R8N	RoHS	6.8	±30%	24	0.025	4,000	3,700	100
NR 8040T 100M	RoHS	10	±20%	22	0.034	3,400	3,100	100
NR 8040T 150M	RoHS	15	±20%	16	0.050	2,700	2,400	100
NR 8040T 220M	RoHS	22	±20%	13	0.066	2,200	2,200	100
NR 8040T 330M	RoHS	33	±20%	12	0.100	1,900	1,700	100
NR 8040T 470M	RoHS	47	±20%	8	0.150	1,500	1,400	100
NR 8040T 680M	RoHS	68	±20%	7	0.230	1,200	1,100	100
NR 8040T 101M	RoHS	100	±20%	6	0.290	1,000	1,000	100

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20℃)
※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40℃. (at 20℃)
※) The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

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SMD POWER INDUCTORS (NR SERIES/NR SERIES H TYPE/S TYPE/V TYPE)

■PACKAGING

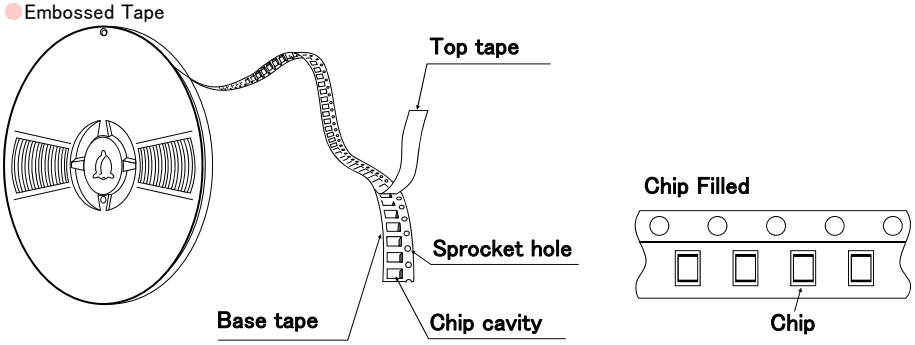
①Minimum Quantity

Type	Standard Quantity [pcs]
	Tape & Reel
NRV2010	2500
NRS2012 NRV2012	2500
NRH2410	2500
NRH2412	2500
NR 3010 NRH3010	2000
NR 3012 NRH3012 NRV3012	2000
NR 3015 NRS3015	2000
NR 4010 NRS4010	5000
NR 4012 NRS4012	4500
NR 4018 NRS4018	3500

Type	Standard Quantity [pcs]
	Tape & Reel
NRS5010	1000
NRS5012	1000
NRS5014	1000
NRS5020	800
NRS5024	2500
NRS5030	500
NR 5040 NRS5040	1500
NRS6010	1000
NR 6012 NRS6012	1000
NRS6014	1000
NR 6020 NRS6020	2500
NR 6028 NRS6028	2000
NR 6045 NRS6045	1500
NRS8030	1000
NR 8040 NRS8040	1000

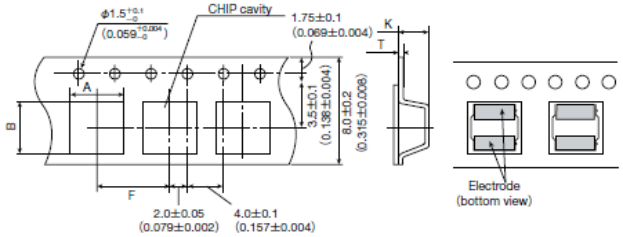
②Tape Material

Embossed Tape



③Taping dimensions

Embossed tape 8mm wide (0.315 inches wide)

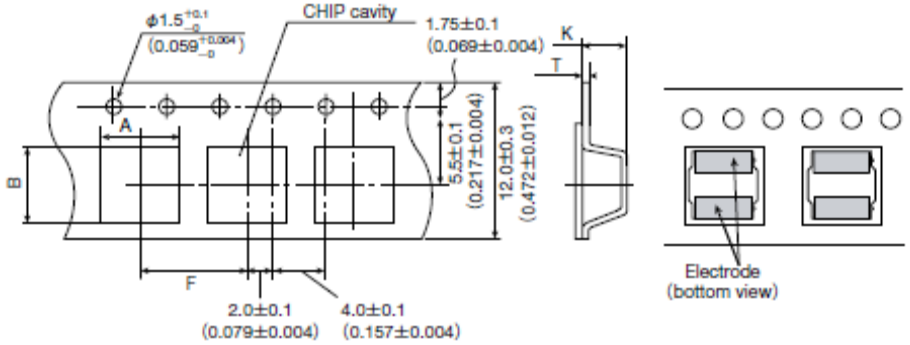


Type	Chip cavity		Insertion pitch	Tape thickness	
	A	B	F	T	K
NRV2010 NRS2012 NRV2012	2.2±0.1 (0.102±0.004)	2.2±0.1 (0.102±0.004)	4.0±0.1 (0.157±0.004)	0.25±0.05 (0.009±0.002)	1.3±0.1 (0.051±0.004)
NRH2410 NRH2412	2.6±0.1 (0.087±0.004)	2.6±0.1 (0.102±0.004)		0.25±0.05 (0.009±0.002)	1.3±0.1 (0.051±0.004)
NR 3010 NRH3010	3.2±0.1 (0.126±0.004)	3.2±0.1 (0.126±0.004)		0.3±0.05 (0.012±0.002)	1.4±0.1 (0.055±0.004)
NR 3012 NRH3012 NRV3012					1.6±0.1 (0.063±0.004)
NR 3015 NRS3015					1.9±0.1 (0.075±0.004)

Unit : mm (inch)

▸ This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification.
For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (http://www.ty-top.com/) .

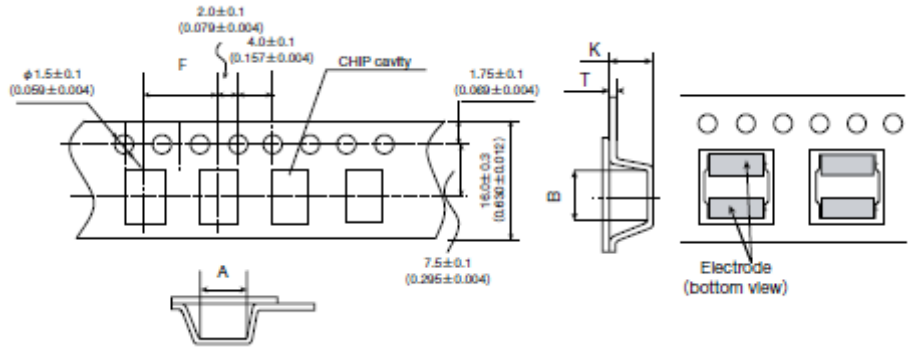
Embossed tape 12mm wide (0.47 inches wide)



Type	Chip cavity		Insertion pitch	Tape thickness	
	A	B	F	T	K
NR 4010 NRS4010	4.3±0.1 (0.169±0.004)	4.3±0.1 (0.169±0.004)	8.0±0.1 (0.315±0.004)	0.3±0.1 (0.012±0.004)	1.4±0.1 (0.055±0.004)
NR 4012 NRS4012					1.6±0.1 (0.063±0.004)
NR 4018 NRS4018					2.1±0.1 (0.083±0.004)
NRS5010	5.25±0.1 (0.207±0.004)	5.25±0.1 (0.207±0.004)			1.4±0.1 (0.055±0.004)
NRS5012					1.4±0.1 (0.055±0.004)
NRS5014					1.6±0.1 (0.063±0.004)
NRS5020					2.3±0.1 (0.091±0.004)
NRS5024					2.7±0.1 (0.106±0.004)
NRS5030	5.15±0.1 (0.203±0.004)	5.15±0.1 (0.203±0.004)		0.4±0.1 (0.016±0.004)	3.2±0.1 (0.126±0.004)
NR 5040 NRS5040	5.15±0.1 (0.203±0.004)	5.15±0.1 (0.203±0.004)			4.2±0.1 (0.165±0.004)
NRS6010	6.3±0.1 (0.248±0.004)	6.3±0.1 (0.248±0.004)			1.4±0.1 (0.055±0.004)
NR 6012 NRS6012					1.6±0.1 (0.063±0.004)
NRS6014					1.6±0.1 (0.063±0.004)
NR 6020 NRS6020					2.3±0.1 (0.090±0.004)
NR 6028 NRS6028					3.1±0.1 (0.122±0.004)
NR 6045 NRS6045					4.7±0.1 (0.185±0.004)

Unit : mm (inch)

Embossed tape 16mm wide (0.63 inches wide)



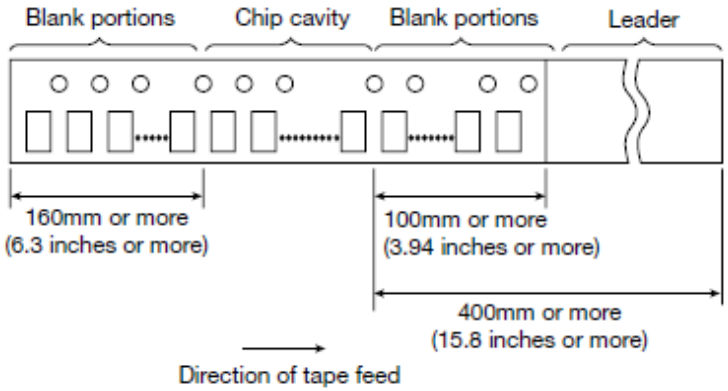
Type	Chip cavity		Insertion pitch	Tape thickness	
	A	B	F	T	K
NRS8030	8.3±0.1 (0.327±0.004)	8.3±0.1 (0.327±0.004)	12.0±0.1 (0.472±0.004)	0.5±0.1 (0.020±0.004)	3.4±0.1 (0.134±0.004)
NR 8040 NRS8040					4.5±0.1 (0.177±0.004)

Unit : mm (inch)

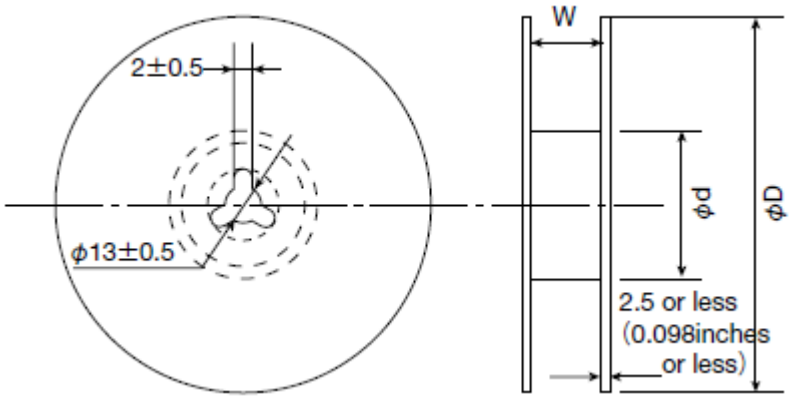
▸ This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification.
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④Leader and Blank portion

NR, NRH, NRS, NRV

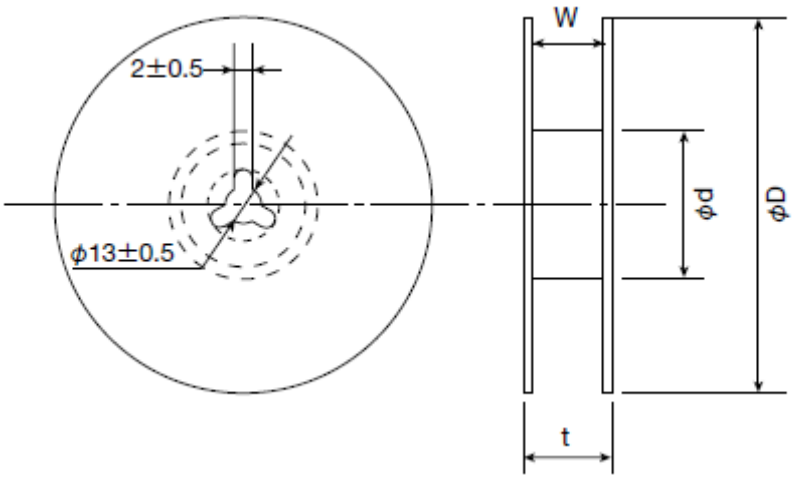


⑤Reel size



Type	Reel size (Reference values)		
	ϕD	ϕd	W
NRV2010	180±0.5 (7.087±0.019)	60±1.0 (2.36±0.04)	10.0±1.5 (0.394±0.059)
NRS2012 NRV2012			
NRH2410			
NRH2412			
NR 3010 NRH3010			
NR 3012 NRH3012 NRV3012			
NR 3015 NRS3015			
NRS5010	180±3.0 (7.087±0.118)	60±2.0 (2.36±0.08)	14.0±1.5 (0.551±0.059)
NRS5012			
NRS5014			
NRS5020			
NRS5030			
NRS6010			
NR 6012 NRS6012			
NRS6014			

Unit : mm (inch)

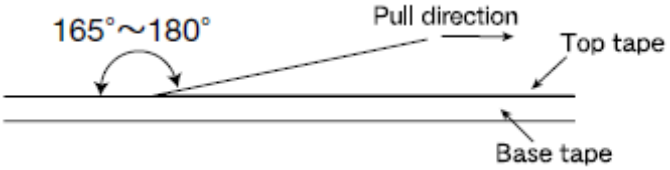


Type	Reel size (Reference values)			
	ϕD	ϕd	t(max.)	W
NR 4010 NRS4010	330±3.0 (12.99±0.118)	80±2.0 (3.15±0.078)	18.5 (0.72)	13.5±1.0 (0.531±0.04)
NR 4012 NRS4012				
NR 4018 NRS4018				
NRS5024				
NR 5040 NRS5040				
NR 6020 NRS6020				
NR 6028 NRS6028				
NR 6045 NRS6045				
NRS8030			22.5 (0.89)	17.5±1.0 (0.689±0.04)
NR 8040 NRS8040				

Unit:mm(inch)

⑥Top Tape Strength

The top tape requires a peel-off force of 0.1 to 1.3N in the direction of the arrow as illustrated below.



SMD inductor （NR□, NS series）

■RELIABILITY DATA

1. Operating Temperature Range		
Specified Value	NR30/40/50/60/80, NRS20, NRV20/30, NRH24/30 Type	－25～＋120℃
	NRS40/50/60/80 Type	－25～＋125℃
	NR10050 Type	－25～＋105℃
	NS101, NS125 Type	－40～＋125℃
Test Methods and Remarks	Including self-generated heat	

2. Storage Temperature Range		
Specified Value	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type	－40～＋85℃
	NR10050 Type	
	NS101, NS125 Type	
Test Methods and Remarks	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type： －5 to 40℃ for the product with taping.	

3. Rated current		
Specified Value	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type	Within the specified tolerance
	NR10050 Type	
	NS101, NS125 Type	

4. Inductance		
Specified Value	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type	Within the specified tolerance
	NR10050 Type	
	NS101, NS125 Type	
Test Methods and Remarks	Measuring equipment : LCR Meter （HP 4285A or equivalent） Measuring frequency : Specified frequency NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type ： Measuring equipment : LCR Meter （HP 4285A or equivalent） Measuring frequency : 100kHz, 1V NR10050 Type： Measuring equipment : LCR Meter （HP 4263A or equivalent） Measuring frequency : 100kHz, 1V	

5. DC Resistance		
Specified Value	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type	Within the specified tolerance
	NR10050 Type	
	NS101, NS125 Type	
Test Methods and Remarks	Measuring equipment : DC ohmmeter （HIOKI 3227 or equivalent）	

6. Self resonance frequency		
Specified Value	NR30/40/50/60/80, NRV30, NRH24/30, NRS40/50/60/80 Type	Within the specified tolerance
	NR10050 Type	
	NS101, NS125 Type	－
Test Methods and Remarks	NR30/40/50/60/80, NRV30, NRH24/30, NRS40/50/60/80 Type, NR10050 Type： Measuring equipment : Impedance analyzer/material analyzer（HP4291A or equivalent HP4191A, 4192A or equivalent）	

7. Temperature characteristic

Specified Value	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type	Inductance change : Within ±20%
	NR10050 Type	
	NS101, NS125 Type	Inductance change : Within ±15%

Test Methods and Remarks

NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type :
Measurement of inductance shall be taken at temperature range within −25℃～+85℃.
With reference to inductance value at +20℃., change rate shall be calculated.

NS101, NS125 Type :
Measurement of inductance shall be taken at temperature range within −40℃～+125℃.
With reference to inductance value at +20℃., change rate shall be calculated.
Change of maximum inductance deviation in step 1 to 5

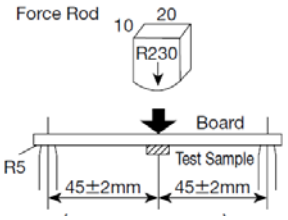
Step	Temperature(℃)
1	20
2	Minimum operating temperature
3	20 (Standard temperature)
4	Maximum operating temperature
5	20

8. Resistance to flexure of substrate

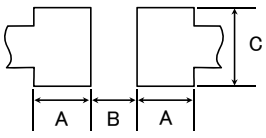
Specified Value	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type	No damage
	NR10050 Type	—
	NS101, NS125 Type	No damage

Test Methods and Remarks

NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NS101/125 Type :
The test samples shall be soldered to the test board by the reflow. As illustrated below, apply force in the direction of the arrow indicating until deflection of the test board reaches to 2 mm.
Test board size : 100×40×1.0
Test board material : glass epoxy-resin
Solder cream thickness : 0.10mm (NR30, NRS20, NRH24/30, NRV20/30)
: 0.15mm(NR40/50/60/80, NRS40/50/60, NS101/125Type)



Land dimension



Type	A	B	C
NRS20, NRV20	0.65	0.7	2.0
NRH24	0.7	0.75	2.0
NR30, NRV30, NRH30	0.8	1.4	2.7
NR40, NRS40	1.2	1.6	3.7
NR50, NRS50	1.5	2.1	4.0
NR60, NRS60	1.6	3.1	5.7
NR80, NRS80	1.8	3.8	7.5

Type	A	B	C
NS101	2.5	5.6	3.2
NS125	2.5	8.6	3.2

9. Insulation resistance : between wires

Specified Value	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type	—
	NR10050 Type	
	NS101, NS125 Type	

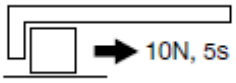
10. Insulation resistance : between wire and core

Specified Value	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type	—
	NR10050 Type	
	NS101, NS125 Type	

11. Withstanding voltage : between wire and core

Specified Value	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type	—
	NR10050 Type	
	NS101, NS125 Type	

12. Adhesion of terminal electrode

Specified Value	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type	Shall not come off PC board
	NR10050 Type	
	NS101, NS125 Type	
Test Methods and Remarks	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NS101/125 Type : The test samples shall be soldered to the test board by the reflow. Applied force : 10N to X and Y directions. Duration : 5s. Solder cream thickness : 0.10mm (NR30, NRS20, NRH24/30, NRV20/30) : 0.15mm (NR40/50/60/80, NRS40/50/60, NS101/125Type) NR10050 Type : Applied force : 5N to X and Y directions. Duration : 5s.	

13. Resistance to vibration

Specified Value	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type	Inductance change : Within ±10% No significant abnormality in appearance.
	NR10050 Type	
	NS101, NS125 Type	

Test Methods and Remarks

NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type :
The test samples shall be soldered to the test board by the reflow.
Then it shall be submitted to below test conditions.

Frequency Range	10～55Hz	
Total Amplitude	1.5mm (May not exceed acceleration 196m/s^2)	
Sweeping Method	10Hz to 55Hz to 10Hz for 1min.	
Time	X	For 2 hours on each X, Y, and Z axis.
	Y	
	Z	

Recovery : At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48hrs.

14. Solderability

Specified Value	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type	At least 90% of surface of terminal electrode is covered by new solder.
	NR10050 Type	
	NS101, NS125 Type	

Test Methods and Remarks

The test samples shall be dipped in flux, and then immersed in molten solder as shown in below table.
Flux : Methanol solution containing rosin 25%.
NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type

Solder Temperature	245±5℃
Time	5±1.0 sec.

※Immersion depth : All sides of mounting terminal shall be immersed.

15. Resistance to soldering heat

Specified Value	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type	Inductance change : Within ±10% No significant abnormality in appearance.
	NR10050 Type	
	NS101, NS125 Type	
Test Methods and Remarks	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type : The test sample shall be exposed to reflow oven at 230±5℃ for 40 seconds, with peak temperature at 260±5℃ for 5 seconds, 2 times. NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80Type, NS101/125 Type Test board material : glass epoxy-resin Test board thickness : 1.0mm NR10050 Type Test board material : glass epoxy-resin Test board thickness : 1.6mm	

16. Thermal shock

Specified Value	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type	Inductance change : Within ±10% No significant abnormality in appearance.
	NR10050 Type	
	NS101, NS125 Type	

Test Methods and Remarks

NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type :
The test samples shall be soldered to the test board by the reflow. The test samples shall be placed at specified temperature for specified time by step 1 to step 4 as shown in below table in sequence. The temperature cycle shall be repeated 100 cycles.

Conditions of 1 cycle		
Step	Temperature (℃)	Duration (min)
1	−40±3	30±3
2	Room temperature	Within 3
3	+85±2	30±3
4	Room temperature	Within 3

17. Damp heat

Specified Value	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type	Inductance change : Within ±10% No significant abnormality in appearance.
	NR10050 Type	−
	NS101, NS125 Type	Inductance change : Within ±10% No significant abnormality in appearance.

Test Methods and Remarks

NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NS101/125 Type :
The test samples shall be soldered to the test board by the reflow.
The test samples shall be placed in thermostatic oven set at specified temperature and humidity as shown in below table.

Temperature	60±2℃
Humidity	90～95%RH
Time	500+24/−0 hour

18. Loading under damp heat

Specified Value	NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type	Inductance change : Within ±10% No significant abnormality in appearance.
	NR10050 Type	
	NS101, NS125 Type	

Test Methods and Remarks

NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type :
The test samples shall be soldered to the test board by the reflow.
The test samples shall be placed in thermostatic oven set at specified temperature and humidity and applied the rated current continuously as shown in below table.

Temperature	60±2℃
Humidity	90～95%RH
Applied current	Rated current
Time	500+24/−0 hour

<table>
<tr><th colspan="3">19. Low temperature life test</th></tr>
<tr><td rowspan="3">Specified Value</td><td>NR30/40/50/60/80, NRV20/30,
NRH24/30, NRS20/40/50/60/80 Type</td><td rowspan="3">Inductance change : Within ±10%
No significant abnormality in appearance.</td></tr>
<tr><td>NR10050 Type</td></tr>
<tr><td>NS101, NS125 Type</td></tr>
<tr><td>Test Methods and Remarks</td><td colspan="2">NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type :
The test samples shall be soldered to the test board by the reflow. After that, the test samples shall be placed at test conditions as shown in below table.
<table>
<tr><td>Temperature</td><td>−40±2℃</td></tr>
<tr><td>Time</td><td>500+24/−0 hour</td></tr>
</table></td></tr>
</table>

<table>
<tr><th colspan="3">20. High temperature life test</th></tr>
<tr><td rowspan="3">Specified Value</td><td>NR30/40/50/60/80, NRV20/30,
NRH24/30, NRS20/40/50/60/80 Type</td><td>—</td></tr>
<tr><td>NR10050 Type</td><td>—</td></tr>
<tr><td>NS101, NS125 Type</td><td>—</td></tr>
<tr><td>Test Methods and Remarks</td><td colspan="2">NR10050 Type :
<table>
<tr><td>Temperature</td><td>105±3℃</td></tr>
<tr><td>Time</td><td>500+24/−0 hour</td></tr>
</table>
Recovery : At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48hrs.</td></tr>
</table>

<table>
<tr><th colspan="3">21. Loading at high temperature life test</th></tr>
<tr><td rowspan="3">Specified Value</td><td>NR30/40/50/60/80, NRV20/30,
NRH24/30, NRS20/40/50/60/80 Type</td><td>Inductance change : Within ±10%
No significant abnormality in appearance.</td></tr>
<tr><td>NR10050 Type</td><td>—</td></tr>
<tr><td>NS101, NS125 Type</td><td>Inductance change : Within ±10%
No significant abnormality in appearance.</td></tr>
<tr><td>Test Methods and Remarks</td><td colspan="2">NR30/40/50/60/80, NRV30, NRH24/30, NRS40/50/60/80 Type, NS12555, NS12565, NS12575 Type :
The test samples shall be soldered to the test board by the reflow soldering.
<table>
<tr><td>Temperature</td><td>85±2℃</td></tr>
<tr><td>Applied current</td><td>Rated current</td></tr>
<tr><td>Time</td><td>500+24/−0 hour</td></tr>
</table></td></tr>
</table>

<table>
<tr><th colspan="3">22. Standard condition</th></tr>
<tr><td rowspan="3">Specified Value</td><td>NR30/40/50/60/80, NRV20/30,
NRH24/30, NRS20/40/50/60/80 Type</td><td rowspan="3">Standard test condition :
Unless otherwise specified, temperature is 20±15℃ and 65±20%of relative humidity.
When there is any question concerning measurement result: In order to provide correlation data, the test shall be condition of 20±2℃ of temperature, 65±5% relative humidity.
Inductance is in accordance with our measured value.</td></tr>
<tr><td>NR10050 Type</td></tr>
<tr><td>NS101, NS125 Type</td></tr>
</table>

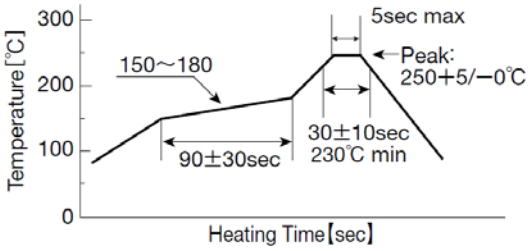
SMD inductor （NR□, NS series）

■PRECAUTIONS

1. Circuit Design	
Precautions	◆Operating environment 1. The products described in this specification are intended for use in general electronic equipment,(office supply equipment, telecommunications systems, measuring equipment, and household equipment). They are not intended for use in mission-critical equipment or systems requiring special quality and high reliability (traffic systems, safety equipment, aerospace systems, nuclear control systems and medical equipment including life-support systems,) where product failure might result in loss of life, injury or damage. For such uses, contact TAIYO YUDEN Sales Department in advance.

2. PCB Design	
Precautions	◆Land pattern design 1. Please refer to a recommended land pattern.
Technical considerations	◆Land pattern design Surface Mounting ・ Mounting and soldering conditions should be checked beforehand. ・ Applicable soldering process to this products is reflow soldering only.

3. Considerations for automatic placement	
Precautions	◆Adjustment of mounting machine 1. Excessive impact load should not be imposed on the products when mounting onto the PC boards. 2. Mounting and soldering conditions should be checked beforehand.
Technical considerations	◆Adjustment of mounting machine 1. When installing products, care should be taken not to apply distortion stress as it may deform the products.

4. Soldering	
Precautions	◆Reflow soldering 1. Please contact any of our offices for a reflow soldering, and refer to the recommended condition specified. 2. The product shall be used reflow soldering only. 3. Please do not add any stress to a product until it returns in normal temperature after reflow soldering. ◆Lead free soldering 1. When using products with lead free soldering, we request to use them after confirming adhesion, temperature of resistance to soldering heat, soldering etc sufficiently. ◆Recommended conditions for using a soldering iron (NR10050 Type) ・ Put the soldering iron on the land-pattern. ・ Soldering iron's temperature – Below 350℃ ・ Duration – 3 seconds or less ・ The soldering iron should not directly touch the inductor.
Technical considerations	◆Reflow soldering 1. If products are used beyond the range of the recommended conditions, heat stresses may deform the products, and consequently degrade the reliability of the products. ・NR30/40/50/60/80, NRV20/30, NRH24/30, NRS20/40/50/60/80 Type, NR10050 Type, NS101/125 Type Recommended reflow condition (Pb free solder) 

5. Cleaning	
Precautions	◆Cleaning conditions 1. Washing by supersonic waves shall be avoided.
Technical considerations	◆Cleaning conditions 1. If washed by supersonic waves, the products might be broken.

6. Handling	
Precautions	◆Handling 1. Keep the product away from all magnets and magnetic objects. ◆Breakaway PC boards (splitting along perforations) 1. When splitting the PC board after mounting product, care should be taken not to give any stresses of deflection or twisting to the board. 2. Board separation should not be done manually, but by using the appropriate devices. ◆Mechanical considerations 1. Please do not give the product any excessive mechanical shocks. 2. Please do not add any shock and power to a product in transportation. ◆Pick-up pressure 1. Please do not push to add any pressure to a winding part. Please do not give any shock and push into a ferrite core exposure part. ◆Packing 1. Please avoid accumulation of a packing box as much as possible.
Technical considerations	◆Handling 1. There is a case that a characteristic varies with magnetic influence. ◆Breakaway PC boards (splitting along perforations) 1. The position of the product on PCBs shall be carefully considered to minimize the stress caused from splitting of the PCBs. ◆Mechanical considerations 1. There is a case to be damaged by a mechanical shock. 2. There is a case to be broken by the handling in transportation. ◆Pick-up pressure 1. Damage and a characteristic can vary with an excessive shock or stress. ◆Packing 1. If packing boxes are accumulated, that could cause a deformation on packing tapes or a damage on the products.

7. Storage conditions	
Precautions	◆Storage 1. To maintain the solderability of terminal electrodes and to keep the packing material in good condition, temperature and humidity in the storage area should be controlled. ・ Recommended conditions Ambient temperature : −5～40℃ Humidity : Below 70% RH ・ The ambient temperature must be kept below 30℃. Even under ideal storage conditions, solderability of products electrodes may decrease as time passes. For this reason, product should be used within 6 months from the time of delivery. In case of storage over 6 months, solderability shall be checked before actual usage.
Technical considerations	◆Storage 1. Under a high temperature and humidity environment, problems such as reduced solderability caused by oxidation of terminal electrodes and deterioration of taping/packaging materials may take place.