Product : Shielded SMD power inductor

Description

- RoHS, Halogen Free and REACH Compliance
- Shielded with magnetic resin
- Various package size and wide inductance range
- Optimize electrical characteristics by using different ferrite core figures

Application

- Smartphones, tablets and wearable devices
- AP Routers, STBs
- LCD TVs, monitors and panels
- Game consoles
- DC/DC converters

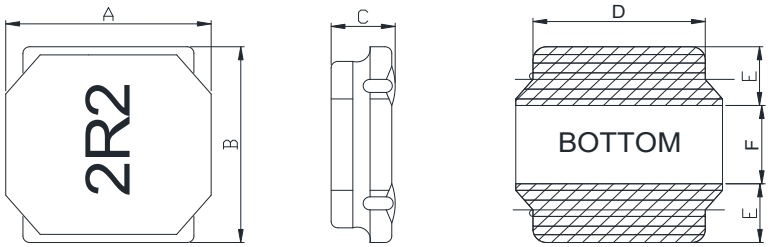
Temperature range

Operating temperature : - 50°C to + 125°C
Storage temperature : - 40°C to + 125°C

P/N Description

Model	Size	Inductance	Tolerance	Internal
NRF	2512	100	M	W / EW / TW

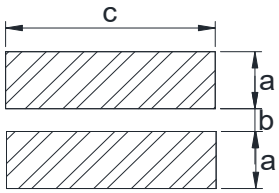
Mechanical / Dimensions



Unit : mm

Size	A	B	C	D	E	F
2512	2.2 ± 0.2	2.6 ± 0.2	1.25 max	2.2 ref	0.8 ref	1.0 ref
3010	3.0 ± 0.2	3.0 ± 0.2	1.20 max	2.5 ref	0.9 ref	1.2 ref
3015	3.0 ± 0.2	3.0 ± 0.2	1.50 max	2.5 ref	0.9 ref	1.2 ref
4018	4.0 ± 0.2	4.0 ± 0.2	1.85 max	3.4 ref	1.2 ref	1.6 ref
4030	4.0 ± 0.2	4.0 ± 0.2	3.00 max	3.4 ref	1.35 ref	1.3 ref
5020	5.0 ± 0.2	5.0 ± 0.2	2.00 max	4.0 ref	1.4 ref	2.3 ref
5040	5.0 ± 0.2	5.0 ± 0.2	4.10 max	4.0 ref	1.5 ref	2.0 ref
6045	6.0 ± 0.2	6.0 ± 0.2	4.50 max	4.9 ref	1.6 ref	2.8 ref
8040	8.0 ± 0.3	8.0 ± 0.3	4.20 max	6.3 ref	2.3 ref	3.2 ref

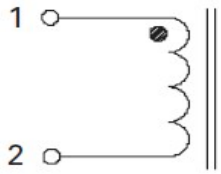
Recommended Pad Layout



Unit : mm

Size	a	b	c
2512	1.1 ref	0.7 ref	2.5 ref
3010	1.1 ref	1.0 ref	3.2 ref
3015	1.1 ref	1.0 ref	3.2 ref
4018	1.5 ref	1.2 ref	3.7 ref
4030	1.5 ref	1.2 ref	3.7 ref
5020	1.6 ref	2.0 ref	4.2 ref
5040	1.6 ref	2.0 ref	4.2 ref
6045	1.85 ref	2.6 ref	5.2 ref
8040	2.5 ref	3.4 ref	7.5 ref

Schematic



Environmental

Electrical Specifications

Part number	Initial Inductance (uH)	Tolerance (±%)	Maximum DCR (mΩ)	Saturation Current (Amps)	Heating Current (Amps)
NRF2512-R24N-W	0.24	30	32	4.05	4.05
NRF2512-R33N-W	0.33	30	42	4.00	3.35
NRF2512-R47N-W	0.47	30	42	3.60	2.90
NRF2512-R56N-W	0.56	30	42	3.30	2.30
NRF2512-R68N-W	0.68	30	55	2.70	2.10
NRF2512-1R0N-W	1.0	30	64	2.45	2.00
NRF2512-1R5N-W	1.5	30	84	2.05	1.95
NRF2512-2R2N-W	2.2	30	115	1.90	1.80
NRF2512-3R3N-W	3.3	30	156	1.50	1.40
NRF2512-4R7M-W	4.7	20	229	1.35	1.20
NRF2512-6R8M-W	6.8	20	325	1.00	0.95
NRF2512-100M-W	10.0	20	492	0.75	0.80
NRF2512-150M-W	15.0	20	648	0.56	0.57
NRF2512-180M-W	18.0	20	1000	0.50	0.57
NRF2512-220M-W	22.0	20	1020	0.50	0.54

Initial Inductance : Testing at 1MHz / 0.1Vrms, 0.0Adc.

Saturation Curren : DC current that will cause initial Inductance to drop approximately 30%.

Heating Current : DC current that will cause an approximate ΔT of 40°C.

Note : All test data is referenced to 25°C ambient.

Electrical Specifications

Part number	Initial Inductance (uH)	Tolerance (±%)	Maximum DCR (mΩ)	Saturation Current (Amps)	Heating Current (Amps)
NRF3010-1R0N-EW	1.0	30	85	1.40	1.45
NRF3010-1R5N-EW	1.5	30	104	1.27	1.30
NRF3010-2R2N-EW	2.2	30	143	1.15	1.09
NRF3010-3R3N-EW	3.3	30	189	0.97	0.96
NRF3010-4R7M-EW	4.7	20	293	0.75	0.77
NRF3010-6R8M-EW	6.8	20	397	0.55	0.66
NRF3010-100M-EW	10.0	20	520	0.55	0.58
NRF3010-150M-EW	15.0	20	850	0.42	0.47
NRF3010-220M-EW	22.0	20	1300	0.35	0.38
NRF3010-330M-EW	33.0	20	2050	0.29	0.30
NRF3010-470M-EW	47.0	20	2535	0.22	0.26

Initial Inductance : Testing at 100kHz / 0.25Vrms, 0.0Adc.

Saturation Curren : DC current that will cause initial Inductance to drop approximately 30%.

Heating Current : DC current that will cause an approximate ΔT of 40°C.

Note : All test data is referenced to 25°C ambient.

Electrical Specifications

Part number	Initial Inductance (uH)	Tolerance (±%)	Maximum DCR (mΩ)	Saturation Current (Amps)	Heating Current (Amps)
NRF3015-1R0N-EW	1.0	30	48	2.32	2.35
NRF3015-1R5N-EW	1.5	30	65	2.10	1.70
NRF3015-2R2M-EW	2.2	20	78	1.60	1.60
NRF3015-3R3M-EW	3.3	20	137	1.30	1.32
NRF3015-4R7M-EW	4.7	20	160	1.10	1.09
NRF3015-6R8M-EW	6.8	20	234	0.85	0.85
NRF3015-100M-EW	10.0	20	338	0.70	0.77
NRF3015-150M-EW	15.0	20	438	0.60	0.61
NRF3015-220M-EW	22.0	20	598	0.52	0.57
NRF3015-330M-EW	33.0	20	1066	0.44	0.43
NRF3015-470M-EW	47.0	20	1600	0.35	0.35

Initial Inductance : Testing at 100kHz / 0.25Vrms, 0.0Adc.

Saturation Curren : DC current that will cause initial Inductance to drop approximately 30%.

Heating Current : DC current that will cause an approximate ΔT of 40°C.

Note : All test data is referenced to 25°C ambient.

Electrical Specifications

Part number	Initial Inductance (uH)	Tolerance (±%)	Maximum DCR (mΩ)	Saturation Current (Amps)	Heating Current (Amps)
NRF4018-1R0N-EW	1.0	30	33	4.50	2.00
NRF4018-1R2N-EW	1.2	30	48	3.50	1.80
NRF4018-2R2M-EW	2.2	20	59	2.70	1.65
NRF4018-3R3M-EW	3.3	20	84	2.15	1.23
NRF4018-4R7M-EW	4.7	20	117	2.00	1.20
NRF4018-5R6M-EW	5.6	20	130	1.65	1.15
NRF4018-6R8M-EW	6.8	20	143	1.60	1.06
NRF4018-100M-EW	10	20	234	1.30	0.84
NRF4018-150M-EW	15	20	325	0.95	0.65
NRF4018-220M-EW	22	20	468	0.80	0.59
NRF4018-330M-EW	33	20	689	0.65	0.49
NRF4018-470M-EW	47	20	845	0.57	0.42
NRF4018-680M-EW	68	20	1300	0.41	0.32
NRF4018-101M-EW	100	20	1950	0.52	0.25
NRF4018-151M-EW	150	20	3120	0.32	0.22
NRF4018-221M-EW	220	20	4800	0.28	0.17

Initial Inductance : Testing at 100kHz / 0.25Vrms, 0.0Adc.

Saturation Curren : DC current that will cause initial Inductance to drop approximately 30%.

Heating Current : DC current that will cause an approximate ΔT of 40°C.

Note : All test data is referenced to 25°C ambient.

Electrical Specifications

Part number	Initial Inductance (uH)	Tolerance (±%)	Maximum DCR (mΩ)	Saturation Current (Amps)	Heating Current (Amps)
NRF4030-1R0N-EW	1.0	30	29	5.00	4.15
NRF4030-1R5N-EW	1.5	30	42	4.80	3.34
NRF4030-2R2M-EW	2.2	20	46	4.50	2.95
NRF4030-3R3M-EW	3.3	20	65	3.00	2.30
NRF4030-4R7M-EW	4.7	20	78	2.90	2.00
NRF4030-6R8M-EW	6.8	20	130	2.20	1.50
NRF4030-100M-EW	10	20	156	2.00	1.50
NRF4030-150M-EW	15	20	260	1.70	1.11
NRF4030-220M-EW	22	20	293	1.30	1.00
NRF4030-330M-EW	33	20	468	1.10	0.84
NRF4030-470M-EW	47	20	598	0.98	0.72
NRF4030-560M-EW	56	20	694	0.88	0.65
NRF4030-680M-EW	68	20	1087	0.77	0.52
NRF4030-101M-EW	100	20	1443	0.70	0.45
NRF4030-151M-EW	150	20	1820	0.50	0.30
NRF4030-221M-EW	220	20	4550	0.33	0.25

Initial Inductance : Testing at 100kHz / 0.25Vrms, 0.0Adc.

Saturation Curren : DC current that will cause initial Inductance to drop approximately 30%.

Heating Current : DC current that will cause an approximate ΔT of 40°C.

Note : All test data is referenced to 25°C ambient.

Electrical Specifications

Part number	Initial Inductance (uH)	Tolerance (±%)	Maximum DCR (mΩ)	Saturation Current (Amps)	Heating Current (Amps)
NRF5020-1R0N-TW	1.0	30	26	4.33	3.80
NRF5020-1R5N-TW	1.5	30	34	4.10	3.20
NRF5020-2R2M-TW	2.2	30	49	3.60	2.90
NRF5020-3R3M-TW	3.3	30	59	3.00	2.50
NRF5020-4R7M-TW	4.7	20	78	2.50	2.20
NRF5020-6R8M-TW	6.8	20	108	2.05	1.80
NRF5020-100M-TW	10	20	156	1.44	1.40
NRF5020-150M-TW	15	20	234	1.40	1.25
NRF5020-220M-TW	22	20	294	1.15	1.10
NRF5020-270M-TW	27	20	390	1.05	0.93
NRF5020-330M-TW	33	20	463	1.00	0.90
NRF5020-470M-TW	47	20	657	0.82	0.77
NRF5020-680M-TW	68	20	832	0.59	0.57
NRF5020-101M-TW	100	20	1327	0.55	0.53
NRF5020-221M-TW	220	20	2860	0.28	0.25
NRF5020-102M-TW	1000	20	18200	0.10	0.08

Initial Inductance : Testing at 100kHz / 0.25Vrms, 0.0Adc.

Saturation Curren : DC current that will cause initial Inductance to drop approximately 30%.

Heating Current : DC current that will cause an approximate ΔT of 40°C.

Note : All test data is referenced to 25°C ambient.

Electrical Specifications

Part number	Initial Inductance (uH)	Tolerance (±%)	Maximum DCR (mΩ)	Saturation Current (Amps)	Heating Current (Amps)
NRF5040-1R0N-EW	1.0	30	18	7.35	4.90
NRF5040-1R5N-EW	1.5	30	28	5.00	4.20
NRF5040-2R2M-EW	2.2	20	26	4.90	3.80
NRF5040-3R3M-EW	3.3	20	34	3.95	3.40
NRF5040-4R7M-EW	4.7	20	42	3.50	3.00
NRF5040-6R8M-EW	6.8	20	59	2.90	2,5
NRF5040-100M-EW	10	20	78	2.30	2.10
NRF5040-150M-EW	15	20	104	2.00	2.00
NRF5040-220M-EW	22	20	169	1.60	1.50
NRF5040-330M-EW	33	20	208	1.40	1.20
NRF5040-470M-EW	47	20	234	1.30	1.10
NRF5040-560M-EW	56	20	403	1.02	1.00
NRF5040-680M-EW	68	20	442	1.00	0.80
NRF5040-101M-EW	100	20	650	0.85	0.75
NRF5040-151M-EW	150	20	728	0.66	0.62
NRF5040-221M-EW	220	20	2340	0.40	0.37

Initial Inductance : Testing at 100kHz / 0.25Vrms, 0.0Adc.

Saturation Curren : DC current that will cause initial Inductance to drop approximately 30%.

Heating Current : DC current that will cause an approximate ΔT of 40°C.

Note : All test data is referenced to 25°C ambient.

Electrical Specifications

Part number	Initial Inductance (uH)	Tolerance (±%)	Maximum DCR (mΩ)	Saturation Current (Amps)	Heating Current (Amps)
NRF6045-1R0N-TW	1.0	30	14	9.85	5.14
NRF6045-1R5N-TW	1.5	30	16	9.00	4.95
NRF6045-2R2M-TW	2.2	30	23	6.90	4.60
NRF6045-3R3M-TW	3.3	30	27	5.90	3.70
NRF6045-4R7M-TW	4.7	20	34	5.00	3.30
NRF6045-6R8M-TW	6.8	20	40	3.90	3.00
NRF6045-100M-TW	10	20	60	3.30	2.45
NRF6045-220M-TW	22	20	150	2.08	1.80
NRF6045-330M-TW	33	20	182	1.65	1.45
NRF6045-470M-TW	47	20	260	1.44	1.20
NRF6045-680M-TW	68	20	377	1.40	1.00
NRF6045-101M-TW	100	20	541	0.98	0.80
NRF6045-121M-TW	120	20	606	0.88	0.77
NRF6045-221M-TW	220	20	1044	0.72	0.59
NRF6045-331M-TW	330	20	2600	0.50	0.47
NRF6045-102M-TW	1000	20	6760	0.24	0.23

Initial Inductance : Testing at 100kHz / 0.25Vrms, 0.0Adc.

Saturation Curren : DC current that will cause initial Inductance to drop approximately 30%.

Heating Current : DC current that will cause an approximate ΔT of 40°C.

Note : All test data is referenced to 25°C ambient.

Electrical Specifications

Part number	Initial Inductance (uH)	Tolerance (±%)	Maximum DCR (mΩ)	Saturation Current (Amps)	Heating Current (Amps)
NRF8040-1R0N-TW	1.0	30	9	10.15	6.30
NRF8040-1R5N-TW	1.5	30	13	8.15	5.65
NRF8040-2R2M-TW	2.2	30	16	8.00	5.20
NRF8040-3R3M-TW	3.3	30	22	6.50	4.40
NRF8040-4R7M-TW	4.7	20	25	5.90	4.10
NRF8040-6R8M-TW	6.8	20	31	4.95	3.60
NRF8040-100M-TW	10	20	52	4.30	3.30
NRF8040-150M-TW	15	20	68	2.95	2.60
NRF8040-220M-TW	22	20	86	2.50	2.10
NRF8040-330M-TW	33	20	143	2.07	1.80
NRF8040-470M-TW	47	20	182	1.75	1.55
NRF8040-680M-TW	68	20	255	1.45	1.25
NRF8040-101M-TW	100	20	377	1.15	1.00
NRF8040-221M-TW	220	20	780	0.85	0.80
NRF8040-331M-TW	330	20	1157	0.68	0.64
NRF8040-471M-TW	470	20	1950	0.55	0.50

Initial Inductance : Testing at 100kHz / 0.25Vrms, 0.0Adc.

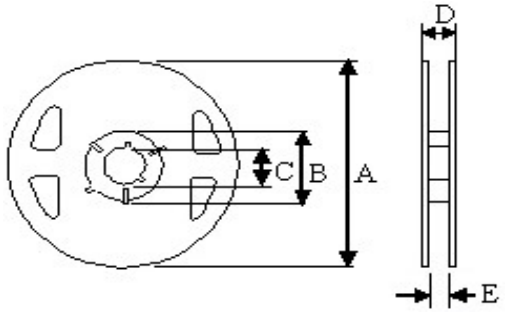
Saturation Curren : DC current that will cause initial Inductance to drop approximately 30%.

Heating Current : DC current that will cause an approximate ΔT of 40°C.

Note : All test data is referenced to 25°C ambient.

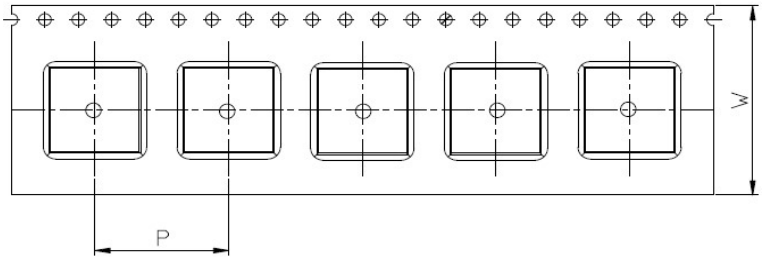
Packaging Information

Reel Dimension



Reel type	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)
7"	180	60	13	---	10
13"	330	80	13	---	13

Tape Dimension



Series	Reel type	W(mm)	P(mm)	PCS/Reel
NRF2512	7"	8	4	2000
NRF3010	7"	8	4	2000
NRF3015	7"	8	4	2000
NRF4018	13"	12	8	3000
NRF4030	13"	12	8	2000
NRF5020	13"	12	8	2500
NRF5040	13"	12	8	1500
NRF5040	13"	16	12	1000
NRF5040	13"	16	12	1000

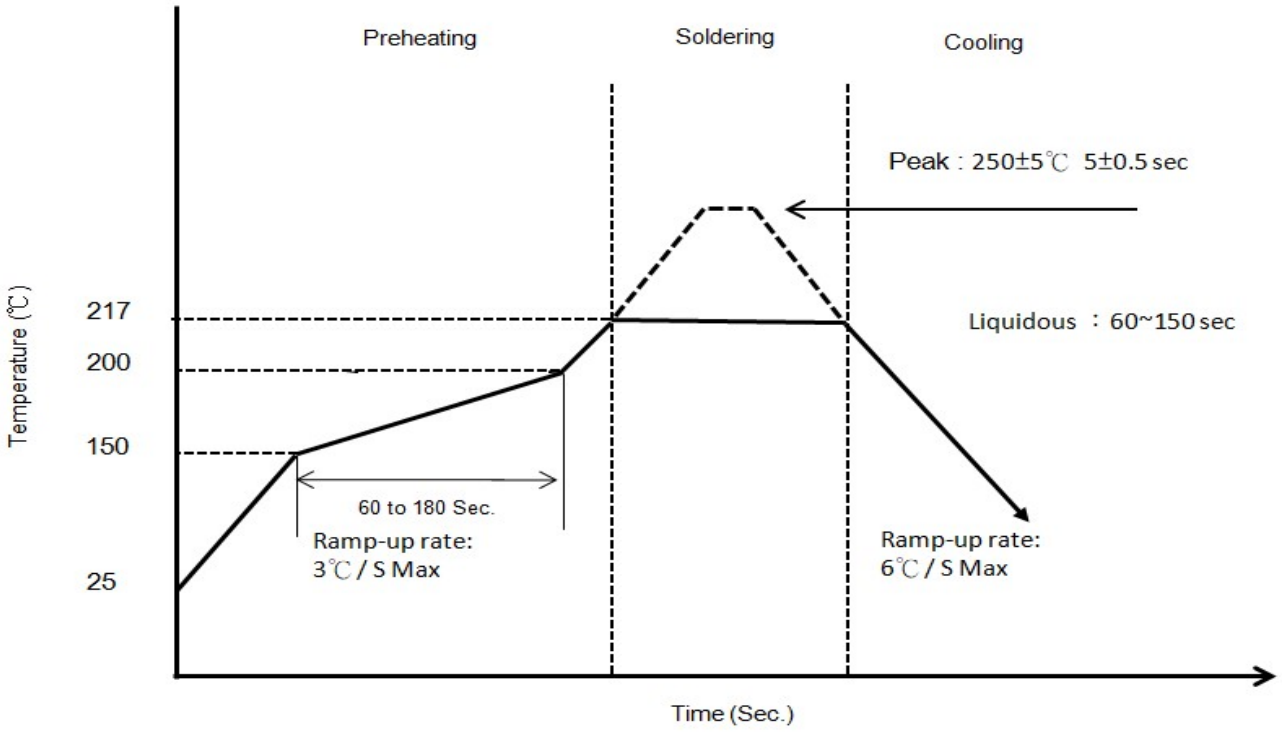
Storage

1. Temperature conditions: Less than - 40°C to + 125°C
2. Recommended products should be used within 6 months form the time of delivery.
3. The packaging material should be kept where no chlorine or sulfur exists in the air.

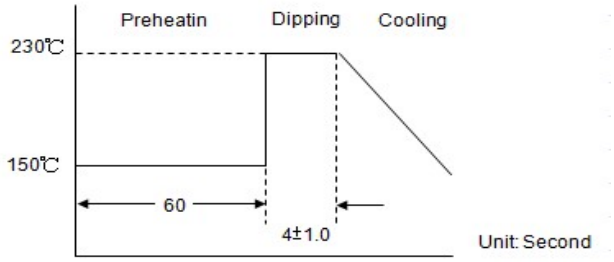
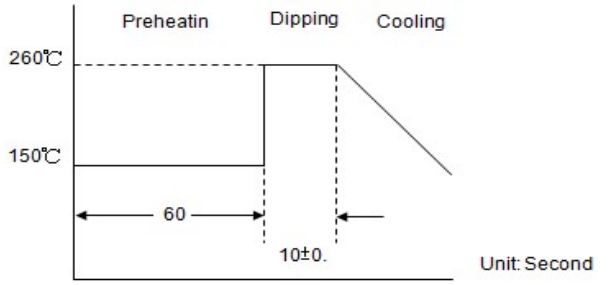
Transportation

1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

Recommended Soldering Conditions



Reliability

Item	Specification	Conditions
Storage temperature and humidity range	25±5℃ , 70% RH Max.	
Solderability	More than 90% of the terminal electrode should be covered with solder.	
Solder Heat Resistance	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	
Heat resistance	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	After 1000 hours in 125±5℃ and 2 hour drying under normal condition.
Cold resistance	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	After 1000 hours in 125±5℃ and 2 hour drying under normal condition.
Thermal shock	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	After 100 cycles of following condition. Step / Temperature (℃) / Times (min.) 1 / -40±2 / 30 2 / Room Temperature / Within 3 3 / 125±5 / 30 4 / Room Temperature / Within 3
Humidity Resistance	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	After 1000 hours in 125±2℃ and 2 hour drying under normal condition.
Vibration Test	Inductance within ±5% of initial value and appearance shall not break.	After vibration for 1hour, In each of three orientations at sweep vibration (10~55~10Hz) with 1.52mm P-P Amplitudes.