

High Saturation Inductors Power Inductors

Surface Mount High Saturation Power Wirewound Inductors - TPSPA Series

► Preview

Token Power Inductor Enhances Low DCR High Saturation Current With Up To 1MHz High Frequency. Token's (TPSPA) inductor features high saturation current and low direct current resistance (DCR) in a rugged surface-mount package. Available in three industry-standard footprint (6.8 mm x 7.1 mm), (10.5 mm x 11.5 mm), and (12.8 mm x 13.2 mm) with a profile from 3.0 mm to 6.5 mm maximum, the TPSPA series inductors use an advanced core material that operating temperature range from -25°C to +125°C, and are said to provide the lowest DCR of any inductor in this size and profile.



These high saturation current inductors are suitable for use in voltage regulator module applications in desktop computers, notebook computers, point-of-load converters, workstations and servers as well as DC-DC applications, and other high-power, high-density, high-ambient temperature applications.

Token (TPSPA) series provides a high peak saturation current and a maximum operating current rating that enables the inductors to handle the high current requirements of microprocessors with significant saturation margin. The series also offers a saturation current range from 2.25 A up to 120 A, heat rating current from 2.9 A to 60 A, typical DCR from 0.47 mΩ to 249.0 mΩ, and maximum DCR from 0.50 mΩ to 270 mΩ, which results in lower copper losses and maximizes the current rating for higher component performance and system efficiency. The inductance values range from 0.1μH to 100μH.

The (TPSPA) inductors are RoHS compliant and meet standard EIA481 requirements. Custom parts are available on request. Token will also produce devices outside these specifications to meet specific customer requirements, please contact our sales for more information.

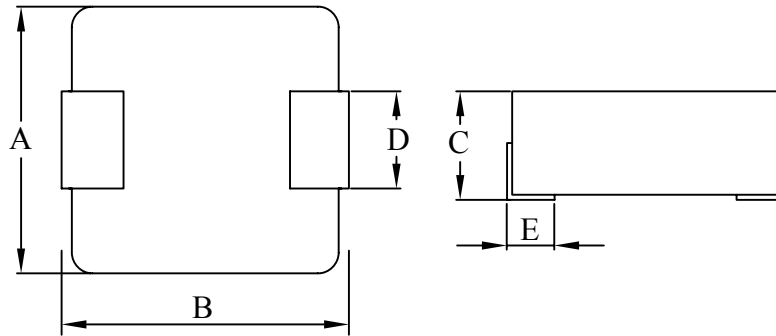
Features :

- Low Profile: 3.0mm ~ 6.5mm.
- Low DCR, SMT Power Inductor.
- For Large Current Use: 10 amp ~ 60 amp.
- High Frequency (up to 1MHz).

Applications :

- DC-DC converter or VRM applications.
- Notebook, Laptop Computer, Graphic Card, VGA Module.
- Thin type on-board power supply module for exchanger.
- Inductor for general purpose use.

▶ Dimensions & Configurations (TPSPA)



Type	A	B	C	D	E
TPSPA0603	6.8max	7.1 ± 0.3	3.0 max.	3.0 ± 0.3	1.6 ± 0.3
TPSPA0603A	6.8max	7.1 ± 0.3	3.0 max.	3.0 ± 0.3	1.6 ± 0.3
TPSPA1040	10.5 ± 0.5	11.5 ± 1.0	4.0 max.	3.0 ref.	2.3 ref.
TPSPA1040A	10.5 ± 0.5	11.5 ± 1.0	4.0 max.	2.5 ref.	2.3 ref.
TPSPA1040B	10.5 ± 0.5	11.5 ± 1.0	4.0 max.	3.0 ref.	2.3 ref.
TPSPA1040C	10.5 ± 0.5	11.5 ± 1.0	4.0 max.	3.0 ref.	2.3 ref.
TPSPA1235	12.8 ± 0.5	13.2 ± 1.0	3.5 max.	3.8 ref.	2.5 ref.
TPSPA1240	12.8 ± 0.5	13.2 ± 1.0	4.0 max.	3.8 ref.	2.5 ref.
TPSPA1250	12.8 ± 0.5	13.2 ± 1.0	5.0 max.	3.8 ref.	2.5 ref.
TPSPA1265	12.8 ± 0.5	13.2 ± 1.0	6.5 max.	3.8 ref.	2.5 ref.

▶ **Electrical Characteristics (TPSPA0603)**

Part Number	L ₀ Inductance (μH) ±20% @0A	DCR (mΩ)		Heat Rating Current Idc (Amp) Typical	Saturation Current Isat (Amp) Typical
		(Typical)	(Max)		
TPSPA-0603-R10M	0.10	1.5	1.7	32.5	60
TPSPA-0603-R15M	0.15	1.9	2.5	26	52
TPSPA-0603-R20M	0.20	2.4	3.0	24	41
TPSPA-0603-R22M	0.22	2.5	2.8	23	40
TPSPA-0603-R33M	0.33	3.5	3.9	20	30
TPSPA-0603-R47M	0.47	4.0	4.2	17.5	26
TPSPA-0603-R68M	0.68	5.0	5.5	15.5	25
TPSPA-0603-R82M	0.82	6.7	8.0	13	24
TPSPA-0603-1R0M	1.0	9	10.0	11	22
TPSPA-0603-1R5M	1.5	14	15.0	9	18
TPSPA-0603-2R2M	2.2	18	20.0	8	14
TPSPA-0603-3R3M	3.3	28	30.0	6	13.5
TPSPA-0603-4R7M	4.7	37	40.0	5.5	10
TPSPA-0603-6R8M	6.8	54	60.0	4.5	8
TPSPA-0603-8R2M	8.2	64	68.0	4	7.5
TPSPA-0603-100M	10.0	102	105.0	3	7

Note : All test Data is referenced to 25°C ambient.
 Typical Heat Rating DC Current would cause an approximately ΔT of 40°C.
 Typical Saturation DC Current would cause L₀ to drop approximately 20%.
 Operating Temperature Range: -25°C to +125°C.

Electrical Characteristics (TPSPA0603A)

Part Number	L ₀ Inductance (μH) ±20% @0A	DCR (mΩ)		Heat Rating Current Idc (Amp) Typical	Saturation Current Isat (Amp) Typical
		(Typical)	(Max)		
TPSPA-0603A-1R0M	1.0	7.6	8.0	12.5	9.5
TPSPA-0603A-1R5M	1.5	11.7	12.5	10.5	8.0
TPSPA-0603A-2R2M	2.2	15.7	16.5	9.0	7.0
TPSPA-0603A-3R3M	3.3	24.8	26.0	7.0	6.5
TPSPA-0603A-4R7M	4.7	31.8	33.4	6.0	4.0
TPSPA-0603A-6R8M	6.8	44.6	46.8	5.5	4.0
TPSPA-0603A-8R2M	8.2	52.3	54.9	5.0	4.0
TPSPA-0603A-100M	10.0	67.8	71.2	4.0	3.5
TPSPA-0603A-220M	22.0	128.9	135.0	2.9	2.5

Note : All test Data is referenced to 25°C ambient.
 Typical Heat Rating DC Current would cause an approximately ΔT of 40°C.
 Typical Saturation DC Current would cause Lo to drop approximately 20%.
 Operating Temperature Range: -25°C to +125°C.

Electrical Characteristics (TPSPA1040)

Part Number	L ₀ Inductance (μH) ±20% @0A	DCR (mΩ)		Heat Rating Current Idc (Amp) Typical	Saturation Current Isat (Amp) Typical
		(Typical)	(Max)		
TPSPA-1040-R19M	0.19	0.50	0.60	44	44
TPSPA-1040-R24M	0.24	0.70	0.80	38	38
TPSPA-1040-R36M	0.36	0.85	0.95	35	35
TPSPA-1040-R47M	0.47	1.20	1.40	32	32
TPSPA-1040-R56M	0.56	1.25	1.35	30	30
TPSPA-1040-R68M	0.68	1.60	1.80	25	30
TPSPA-1040-R78M	0.78	1.60	1.70	25	25
TPSPA-1040-1R0M	1.0	2.20	2.50	20	20
TPSPA-1040-1R8M	1.8	4.50	5.00	15	15
TPSPA-1040-2R0M	2.0	5.20	5.80	14	14

Note : All test Data is referenced to 25°C ambient.
 Typical Heat Rating DC Current would cause an approximately ΔT of 40°C.
 Typical Saturation DC Current would cause Lo to drop approximately 20%.
 Operating Temperature Range: -25°C to +125°C.

▶ Electrical Characteristics (TPSPA1040A)

Part Number	L ₀ Inductance (μH) ±20% @0A	DCR (mΩ)		Heat Rating Current I _{dc} (Amp) Typical	Saturation Current I _{sat} (Amp) Typical
		(Typical)	(Max)		
TPSPA-1040A-R19M	0.19	0.70	0.80	38	60
TPSPA-1040A-R22M	0.22	0.60	0.80	38	50
TPSPA-1040A-R36M	0.36	1.10	1.20	30	50
TPSPA-1040A-R47M	0.47	1.50	1.70	28	45
TPSPA-1040A-R56M	0.56	1.60	1.70	25	40
TPSPA-1040A-R68M	0.68	1.60	1.80	25	30
TPSPA-1040A-1R0M	1.0	2.80	3.20	21	30
TPSPA-1040A-1R5M	1.5	4.50	5.00	15	20
TPSPA-1040A-2R5M	2.5	8.50	9.50	13	18

Note : All test Data is referenced to 25°C ambient.
 Typical Heat Rating DC Current would cause an approximately ΔT of 40°C.
 Typical Saturation DC Current would cause L₀ to drop approximately 20%.
 Operating Temperature Range: -25°C to +125°C.

▶ Electrical Characteristics (TPSPA1040B)

Part Number	L ₀ Inductance (μH) ±20% @0A	DCR (mΩ)		Heat Rating Current I _{dc} (Amp) Typical	Saturation Current I _{sat} (Amp) Typical
		(Typical)	(Max)		
TPSPA-1040B-R19M	0.19	0.875	0.95	40	90
TPSPA-1040B-R36M	0.36	1.30	1.40	31.5	60
TPSPA-1040B-R56M	0.56	1.70	1.80	27.5	49
TPSPA-1040B-1R0M	1.0	3.70	4.10	17.5	36
TPSPA-1040B-1R5M	1.5	5.30	5.80	15	27.5
TPSPA-1040B-2R2M	2.2	8.20	9.00	12	25.5
TPSPA-1040B-3R3M	3.3	10.80	11.80	10	18.6
TPSPA-1040B-4R7M	4.7	15.00	16.50	9.5	17
TPSPA-1040B-5R6M	5.6	17.60	19.30	8.5	16
TPSPA-1040B-6R8M	6.8	21.20	23.30	8.0	13.5
TPSPA-1040B-8R2M	8.2	31.00	34.00	7.0	12.5
TPSPA-1040B-100M	10	33.20	36.50	6.8	12

Note : All test Data is referenced to 25°C ambient.
 Typical Heat Rating DC Current would cause an approximately ΔT of 40°C.
 Typical Saturation DC Current would cause L₀ to drop approximately 20%.
 Operating Temperature Range: -25°C to +125°C.

Electrical Characteristics (TPSPA1040C)

Part Number	L _o Inductance (μH) ±20% @0A	DCR (mΩ)		Heat Rating Current I _{dc} (Amp) Typical	Saturation Current I _{sat} (Amp) Typical
		(Typical)	(Max)		
TPSPA-1040C-R19M	0.19	0.70	0.80	40.0	46
TPSPA-1040C-R24M	0.24	0.85	0.95	33	44
TPSPA-1040C-R36M	0.36	1.05	1.15	32	30
TPSPA-1040C-R47M	0.47	1.53	1.68	30	30
TPSPA-1040C-R56M	0.56	1.60	1.80	32	22
TPSPA-1040C-R78M	0.78	1.80	1.90	27	22
TPSPA-1040C-1R0M	1.0	2.30	2.50	25	20
TPSPA-1040C-1R8M	1.8	4.50	5.00	17	16
TPSPA-1040C-2R0M	2.0	5.20	5.80	16	14
TPSPA-1040C-4R7M	4.7	12.90	14.20	9.5	7.6
TPSPA-1040C-6R8M	6.8	17.50	19.30	9.0	7.5
TPSPA-1040C-100M	10	27.80	30.50	7.5	7.1
TPSPA-1040C-150M	15	40.90	45.00	6.25	6.0
TPSPA-1040C-220M	22	60.40	66.00	5.0	4.5
TPSPA-1040C-330M	33	87.50	94.50	4.4	4.0
TPSPA-1040C-470M	47	132.0	145.0	4.0	3.0
TPSPA-1040C-101M	100	249.0	270.0	3.00	2.25

Note : All test Data is referenced to 25°C ambient.
 Typical Heat Rating DC Current would cause an approximately ΔT of 40°C.
 Typical Saturation DC Current would cause L_o to drop approximately 20%.
 Operating Temperature Range: -25°C to +125°C.

► **Electrical Characteristics (TPSPA1235)**

Part Number	L ₀ Inductance (μH) ±20% @0A	DCR (mΩ)		Heat Rating Current Idc (Amp) Typical	Saturation Current Isat (Amp) Typical
		(Typical)	(Max)		
TPSPA-1235-R10M	0.10	0.8	0.96	43	84
TPSPA-1235-R15M	0.15	1.0	1.2	41	75
TPSPA-1235-R22M	0.22	1.1	1.3	38.5	65
TPSPA-1235-R33M	0.33	1.3	1.5	36.5	62
TPSPA-1235-R47M	0.47	1.6	2.0	32	55
TPSPA-1235-R60M	0.60	1.8	2.2	29	51
TPSPA-1235-R68M	0.68	2.3	2.5	28	49
TPSPA-1235-R82M	0.82	2.6	3.0	25	44
TPSPA-1235-1R0M	1.0	3.3	3.5	24	40
TPSPA-1235-1R5M	1.5	5.1	5.5	19	35
TPSPA-1235-1R8M	1.8	6.5	7.0	16.5	30
TPSPA-1235-2R2M	2.2	7.2	8.0	16	29
TPSPA-1235-3R3M	3.3	11.0	12.0	12	27
TPSPA-1235-4R7M	4.7	14.3	15.0	10	24
TPSPA-1235-5R6M	5.6	17.1	18.0	9.5	19
TPSPA-1235-6R8M	6.8	19.8	22.0	9	18
TPSPA-1235-8R2M	8.2	24.8	28.0	8.5	16
TPSPA-1235-100M	10	30.4	34.0	7	14

Note : All test Data is referenced to 25°C ambient.
 Typical Heat Rating DC Current would cause an approximately ΔT of 40°C.
 Typical Saturation DC Current would cause L₀ to drop approximately 20%.
 Operating Temperature Range: -25°C to +125°C.

Electrical Characteristics (TPSPA1240)

Part Number	L _o Inductance (μH) ±20% @0A	DCR (mΩ)		Heat Rating Current Idc (Amp) Typical	Saturation Current Isat (Amp) Typical
		(Typical)	(Max)		
TPSPA-1240-R10M	0.10	0.90	1.10	43	75
TPSPA-1240-R22M	0.22	1.20	1.40	41	70
TPSPA-1240-R33M	0.33	1.30	1.50	38	60
TPSPA-1240-R47M	0.47	1.40	1.90	32	55
TPSPA-1240-R60M	0.60	2.00	2.30	30	50
TPSPA-1240-R68M	0.68	2.10	2.50	28	46
TPSPA-1240-R82M	0.82	2.70	3.10	25	44
TPSPA-1240-0R9M	0.9	3.00	3.50	24	40
TPSPA-1240-1R0M	1.0	3.00	3.70	24	38
TPSPA-1240-1R2M	1.2	3.00	3.70	20	25
TPSPA-1240-1R5M	1.5	5.50	6.00	19	30
TPSPA-1240-1R8M	1.8	6.40	7.60	16	26
TPSPA-1240-2R2M	2.2	6.40	7.60	16	22
TPSPA-1240-3R3M	3.3	7.50	8.40	14	20
TPSPA-1240-4R7M	4.7	10.50	12.00	11	15

Note : All test Data is referenced to 25°C ambient.
 Typical Heat Rating DC Current would cause an approximately ΔT of 40°C.
 Typical Saturation DC Current would cause L_o to drop approximately 20%.
 Operating Temperature Range: -25°C to +125°C.

► **Electrical Characteristics (TPSPA1250)**

Part Number	L ₀ Inductance (μH) ±20% @0A	DCR (mΩ)		Heat Rating Current Idc (Amp) Typical	Saturation Current Isat (Amp) Typical
		(Typical)	(Max)		
TPSPA-1250-R10M	0.10	0.53	0.60	55	118
TPSPA-1250-R22M	0.22	0.64	0.80	51	110
TPSPA-1250-R33M	0.33	0.85	1.10	42	80
TPSPA-1250-R47M	0.47	1.10	1.30	38	65
TPSPA-1250-R56M	0.56	1.30	1.50	36	55
TPSPA-1250-R68M	0.68	1.50	1.70	34	54
TPSPA-1250-R82M	0.82	2.00	2.30	31	53
TPSPA-1250-1R0M	1.0	2.10	2.50	29	50
TPSPA-1250-1R2M	1.2	2.80	3.50	25	49
TPSPA-1250-1R5M	1.5	3.40	4.10	23	48
TPSPA-1250-1R8M	1.8	4.20	4.90	19	40
TPSPA-1250-2R2M	2.2	4.60	5.50	20	32
TPSPA-1250-3R3M	3.3	7.70	9.20	15	32
TPSPA-1250-4R7M	4.7	12.8	15.0	12	27
TPSPA-1250-5R6M	5.6	14.0	16.5	11.5	22
TPSPA-1250-6R8M	6.8	15.4	18.5	11	21
TPSPA-1250-7R8M	7.8	17.2	20.5	10	18
TPSPA-1250-8R2M	8.2	18.9	22.5	9.5	18
TPSPA-1250-100M	10	21.4	25.5	9	16

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

Typical Heat Rating DC Current would cause an approximately ΔT of 40°C.

Typical Saturation DC Current would cause L₀ to drop approximately 20%.

Operating Temperature Range: -25°C to +125°C.

Electrical Characteristics (TPSPA1265)

Part Number	L ₀ Inductance (μH) ±20% @0A	DCR (mΩ)		Heat Rating Current Idc (Amp) Typical	Saturation Current Isat (Amp) Typical
		(Typical)	(Max)		
TPSPA-1265-R10M	0.10	0.47	0.50	60	120
TPSPA-1265-R15M	0.15	0.53	0.60	55	118
TPSPA-1265-R22M	0.22	0.63	0.70	53	112
TPSPA-1265-R30M	0.30	0.70	0.80	48	72
TPSPA-1265-R33M	0.33	0.83	0.90	46	65
TPSPA-1265-R40M	0.40	0.90	1.00	44	64
TPSPA-1265-R47M	0.47	1.00	1.20	41	63
TPSPA-1265-R56M	0.56	1.20	1.40	37	62
TPSPA-1265-R68M	0.68	1.40	1.60	35	60
TPSPA-1265-R82M	0.82	1.60	1.90	33	50
TPSPA-1265-1R0M	1.0	1.70	2.00	32	49
TPSPA-1265-1R2M	1.2	2.10	2.50	30	48
TPSPA-1265-1R5M	1.5	2.50	3.00	27	45
TPSPA-1265-1R8M	1.8	2.80	3.20	24	41
TPSPA-1265-2R2M	2.2	3.50	4.20	22	40
TPSPA-1265-3R3M	3.3	5.70	6.80	18	35
TPSPA-1265-4R7M	4.7	9.30	11.2	13.5	30
TPSPA-1265-5R6M	5.6	9.30	10.0	13.5	26.5
TPSPA-1265-6R8M	6.8	13.1	14.0	11.5	16.5
TPSPA-1265-8R2M	8.2	14.5	15.5	10.5	16.0
TPSPA-1265-100M	10	15.8	16.8	10	15.5

Note : All test Data is referenced to 25°C ambient.
 Typical Heat Rating DC Current would cause an approximately ΔT of 40°C.
 Typical Saturation DC Current would cause L₀ to drop approximately 20%.
 Operating Temperature Range: -25°C to +125°C.

▶ How to Order

TPSPA

❶

1265

❷

R10

❸

M

❹

❶ Part Number: TPSPA

❷ Size (L×M)(mm)

Code	Size
0603	6.8×7.1
0603A	6.8×7.1
1040	10.5×11.5
1040A	10.5×11.5
1040B	10.5×11.5
1040C	10.5×11.5
1235	12.8×13.2
1240	12.8×13.2
1250	12.8×13.2
1265	12.8×13.2

❸ Inductance

Code	Inductance
R10	0.10μH
1R0	1.00μH

❹ Tolerance

Code	Tolerance
M	20%

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