

Chip Shielded Wire-wound Power Inductors

Token (TPSME) Miniature Low Profile Power Inductor For New Generation Portable Products

▶ Preview

Token Electronics has added two new ranges of low-profile wirewound chip inductors, TPSME3010 and TPSME3015, for use in DC-DC converter applications to increase flexibility of maximum height measurements with extended electrical characteristics.

The new TPSME series is designed to provide a good balance of height and performance within chip power inductor offering. The TPSME3010 Series was developed to have a low profile height of 1.0mm. The TPSME3015 Series was developed to have a medium range maximum height of 1.5mm. This two TPSME family enables flexibility and efficiency.

Both winding chip coils the TPSME3010 series and TPSME3015 series of inductors offer low DC resistance and large rated current. This is vital for DC-DC converter applications as it prevents energy dissipation from the chip inductor, improving the converter's overall efficiency.

The new ranges deliver a good size/performance ratio with low DC resistances of 0.065ohm (TPSME3010) and 0.040ohm (TPSME3015). Their low-profile 1212 size packaging is designed to save space, measuring 3 x 3 x 1mm (TPSME3010) or 3 x 3 x 1.5mm (TPSME3015). A wide range of inductances is also available: 1.0 μ H to 47 μ H for the TPSME3010 series and 1.0 μ H to 100 μ H for the TPSME3015 series. The parts come with high rated currents, up to 2.35A, and feature magnetic shielding as standard. Operating temperature range is -40°C to +105°C.

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.

Applications :

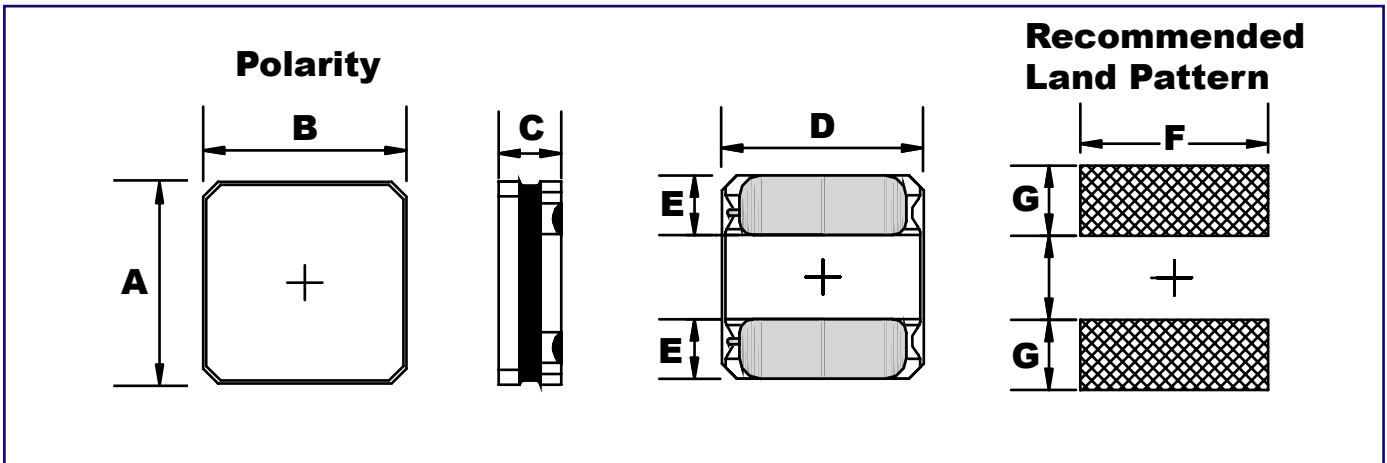
- DC to DC converters.
- Power line filtering.
- DVC/DSC/PDA, LCD display.

Features :

- High current saturation.
- Tape & Reel, RoHS Compliant.
- Magnetically Shielded Structure.
- Lead-free reflow soldering is available.
- Low profile construction and miniature size.
- Small size in 3.0 x 3.0mm with low profile (1.0 mm & 1.5 mm max.).



Dimensions & Configurations (Unit: mm)



Type	A	B	C(max)	D(typ.)	E	F	G
TPSME3010	3.0±0.1	3.0±0.1	1.0	2.7	0.9±0.2	2.7	1.00
TPSME3015	3.0±0.1	3.0±0.1	1.5	2.7	0.9±0.2	2.7	1.00

Construction & Material :

- Wire : H Class Enameled copper wire.
- Coating : Magnetic epoxy resin.
- Core : Ferrite core.
- Terminal : Ni / Cu / Ag alloy with Sn.

(TPSME3010) Electrical Specification

Part Number	Inductance (μ H)	DCR (Ω)		Isat (Amp)		Irms (Amp)		SRF (MHz)	Tolerance
		(Typical)	(Max)	(Typical)	(Max)	(Typical)	(Max)		
TPSME-3010-1R0N	1.0	0.065	0.078	1.95	1.70	1.700	1.525	180	30%
TPSME-3010-1R5N	1.5	0.080	0.096	1.60	1.40	1.650	1.470	140	
TPSME-3010-2R2M	2.2	0.095	0.114	1.45	1.25	1.450	1.270	100	20%
TPSME-3010-3R3M	3.3	0.160	0.192	1.05	0.90	1.300	1.130	80	
TPSME-3010-4R7M	4.7	0.190	0.228	0.95	0.85	1.100	0.925	60	
TPSME-3010-6R8M	6.8	0.300	0.360	0.76	0.66	0.850	0.710	50	
TPSME-3010-100M	10	0.450	0.540	0.61	0.53	0.720	0.630	45	
TPSME-3010-150M	15	0.740	0.888	0.48	0.42	0.560	0.475	35	
TPSME-3010-220M	22	0.980	1.176	0.42	0.36	0.500	0.430	25	
TPSME-3010-330M	33	1.550	1.860	0.34	0.28	0.415	0.345	24	
TPSME-3010-470M	47	2.000	2.400	0.27	0.24	0.320	0.270	19	

Note: Test Frequency : 1MHz.

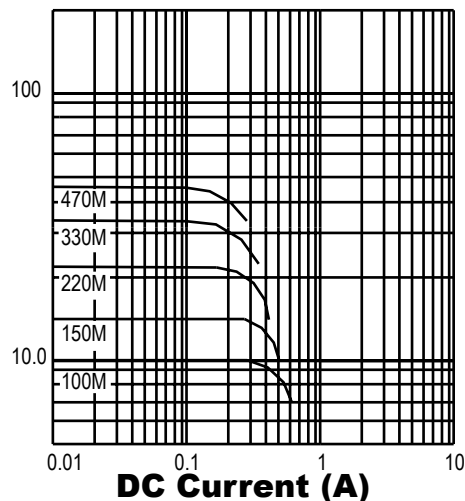
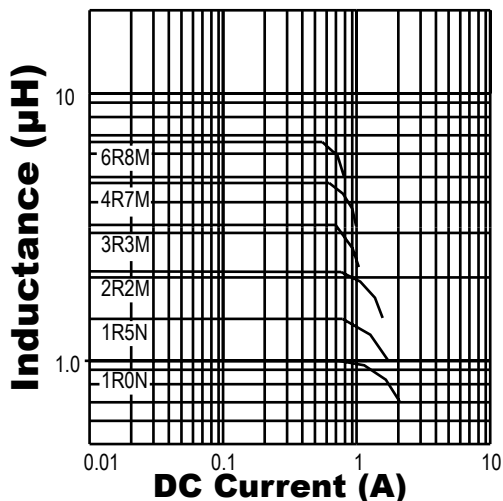
Isat : Based on Inductance decrease 30%; Irms : Based on Temperature increase 40°C.

Test Equipment : L & Q : HP-4286A; SRF : HP-4291B & HP4287A; DCR: HP-4286A & CH16502.

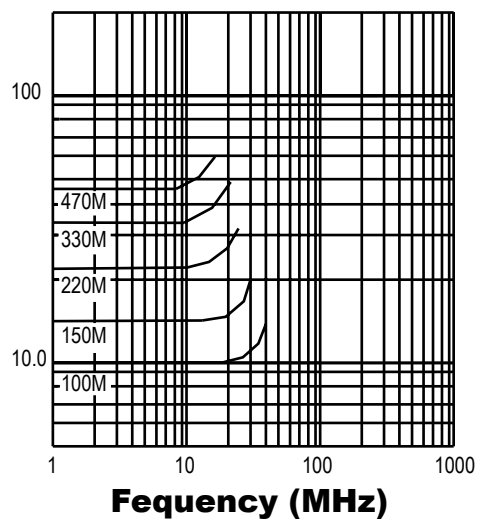
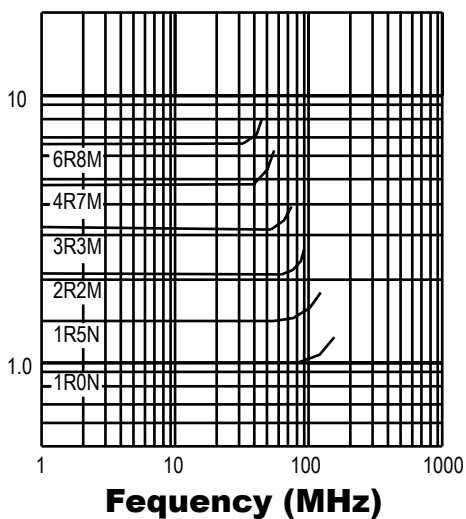
Operating Temp. (Including self-temperature rise) : -40°C ~ +105°C; Storage Temp. : -40°C ~ +85°C.

▶ (TPSME3010) Characteristics

Inductance VS Current



Inductance VS Frequency



▶ (TPSME3015) Electrical Specification

Part Number	Inductance (μ H)	DCR (Ω)		Isat (Amp)		Irms (Amp)		SRF (MHz)	Tolerance
		(Typical)	(Max)	(Typical)	(Max)	(Typical)	(Max)		
TPSME-3015-1R0N	1.0	0.040	0.048	2.35	2.10	2.35	2.10	145	30%
TPSME-3015-1R5N	1.5	0.055	0.066	2.00	1.80	2.10	1.90	130	
TPSME-3015-2R2M	2.2	0.060	0.072	1.65	1.48	1.80	1.60	90	
TPSME-3015-3R3M	3.3	0.093	0.112	1.40	1.21	1.60	1.45	75	20%
TPSME-3015-4R7M	4.7	0.113	0.136	1.20	1.08	1.40	1.25	65	
TPSME-3015-6R8M	6.8	0.176	0.211	1.05	0.90	1.10	0.90	50	
TPSME-3015-100M	10	0.234	0.276	0.88	0.75	1.00	0.87	45	
TPSME-3015-150M	15	0.352	0.422	0.68	0.58	0.80	0.65	33	
TPSME-3015-220M	22	0.510	0.622	0.58	0.47	0.60	0.55	28	
TPSME-3015-330M	33	0.799	0.959	0.46	0.39	0.50	0.45	22	
TPSME-3015-470M	47	1.172	1.406	0.38	0.32	0.40	0.40	18	
TPSME-3015-101M	100	2.433	2.920	0.27	0.23	0.29	0.25	11	

Note: Test Frequency : 1MHz.

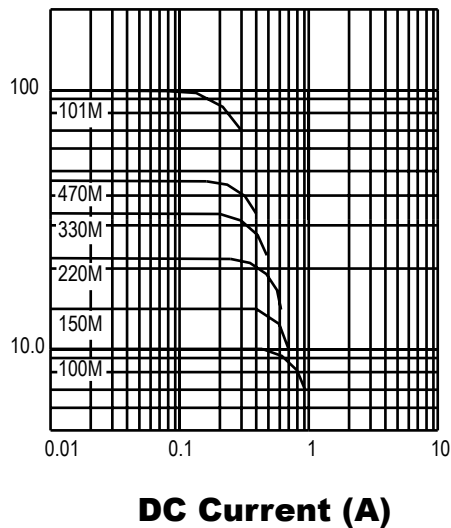
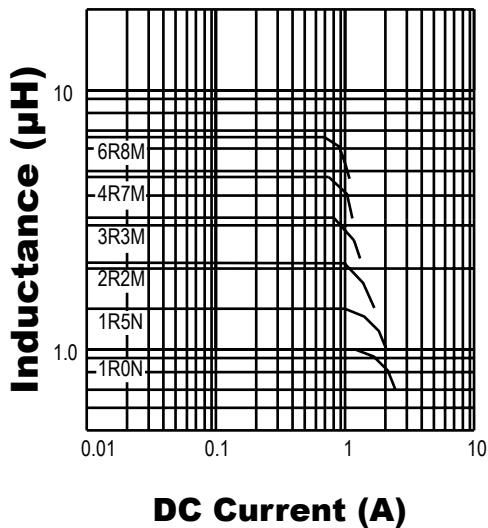
Isat : Based on Inductance decrease 30%; Irms : Based on Temperature increase 40°C.

Test Equipment : L & Q : HP-4286A; SRF : HP-4291B & HP4287A; DCR: HP-4286A & CH16502.

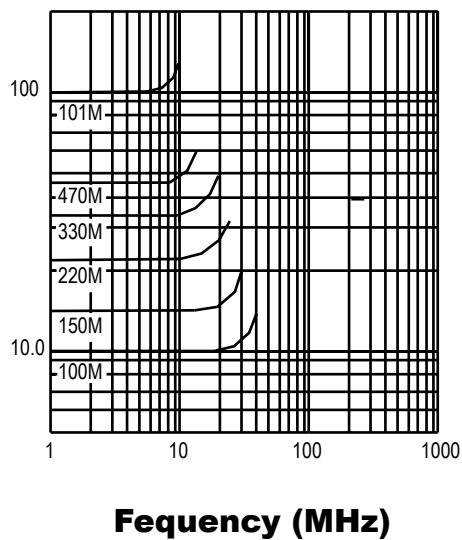
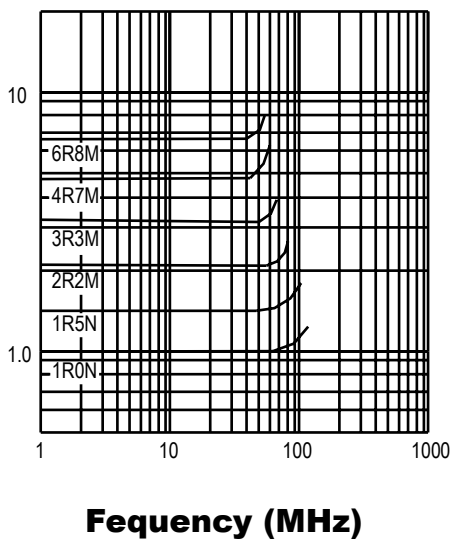
Operating Temp. (Including self-temperature rise) : -40°C ~ +105°C; Storage Temp. : -40°C ~ +85°C.

▶ (TPSME3010) Characteristics

Inductance VS Current



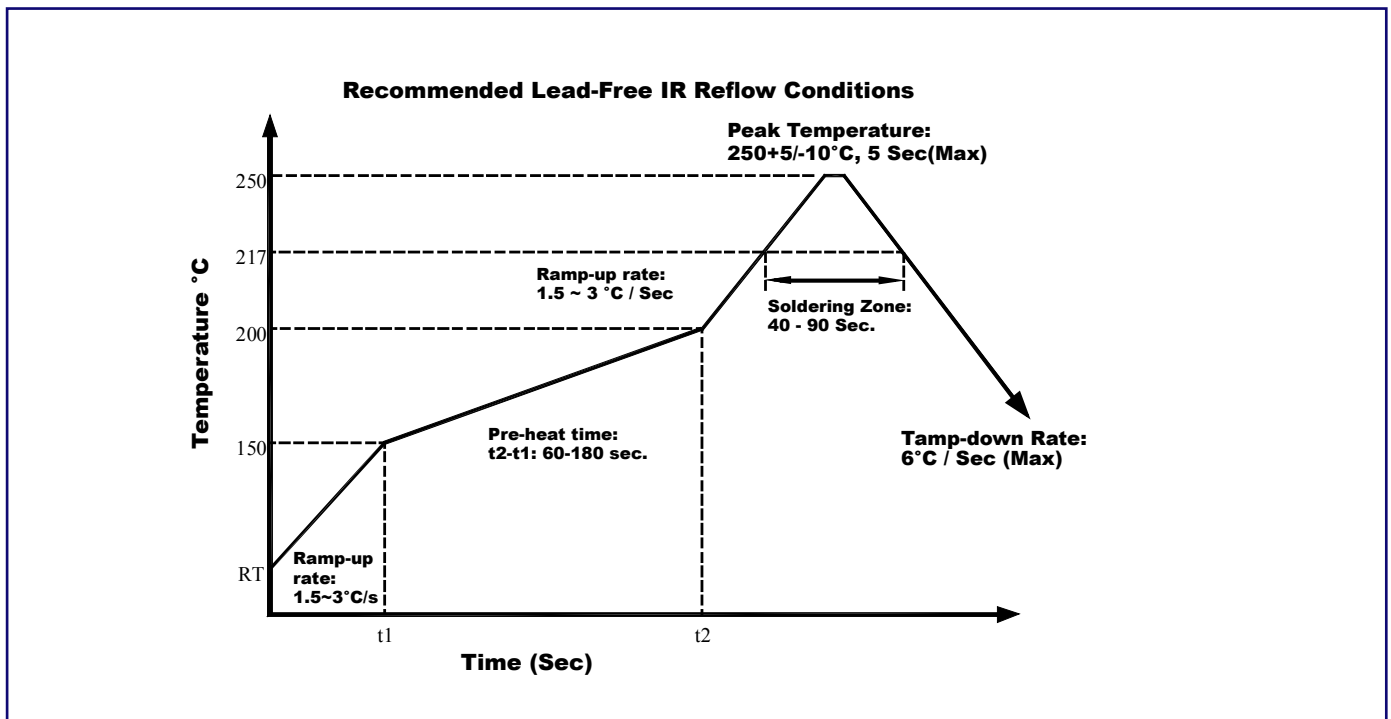
Inductance VS Frequency



Reliability Test

Test Items	Specifications	Test Methods
Solderability tS	More than 90% of the Terminal Electrode Shall be covered with fresh solder.	Preheat: $150 \pm 25^{\circ}\text{C}$ for 60 seconds; Solder Temperature: $235 \pm 5^{\circ}\text{C}$; Solder: Sn96.5 / Ag3 / Cu0.5 or equivalent; Flux: Rosin; Dip Time 4 ± 1 seconds.
High Temperature	Storage Test Electrical Characteristics Variation shall not change more 3%.	Test Conditions: $125 \pm 2^{\circ}\text{C}$ for 48 ± 2 Hours.
Low Temperature Storage Test		Test Conditions: $-40 \pm 2^{\circ}\text{C}$ for 48 ± 2 Hours.
Temperature Cycle Test		Test Conditions: $125 \pm 5^{\circ}\text{C}$ (30 min) ~ $25 \pm 5^{\circ}\text{C}$ (2 Hours) ~ $-40 \pm 5^{\circ}\text{C}$ (30 min); Total Test: 10 cycle.
Humidity Test		Temperature: $40 \pm 2^{\circ}\text{C}$; Humidity: $90 \pm 5\%$; Time: 96 hours.
Thermal Shock Test		Test Conditions: $125 \pm 5^{\circ}\text{C}$ (30 min) ~ $-65 \pm 5^{\circ}\text{C}$ (30 min); Temperature Change: 2 min; Total : 50 cycles.
Life Test		Test Conditions: $70 \pm 5^{\circ}\text{C}$; Total Test: 300 hours.

Lead-Free IR Reflow Conditions



▶ Reel Quantity

Reel		5Reel / Box		6Box / Carton	
Q'ty(Pcs)	Size m/m	Q'ty(Pcs)	Size m/m	Q'ty(Pcs)	Size m/m
2,000	180Ø	10,000	182×182×80	60,000	540×210×205

▶ How to Order

TPSME3010

❶

100

❷

M

❸

❶ Part Number: TPSME3010, TPSME3015

❷ Inductance

Code	Inductance
1R0	1.00μH
470	47.00μH
101	100.00μH

❷ Tolerance

Code	Tolerance
K	10%
L	15%
M	20%
N	30%

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