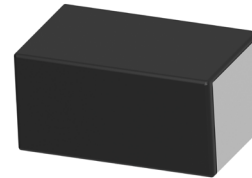


WIRE WOUND SMD POWER INDUCTOR

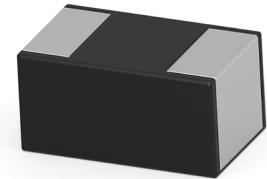
TYPE 3657 SERIES

INTRODUCTION

TE Connectivity (TE) introduces its Wirewound SMD Power Inductors, engineered for high saturation current and low DC resistance, delivering high conversion efficiency and reduced temperature rise. Designed with a magnetically shielded structure, they offer enhanced electromagnetic compatibility (EMC) performance and high-resolution signal integrity.



TOP VIEW



BOTTOM VIEW

FEATURES

- High saturation current
- Low DC resistance
- Magnetically shielded structure
- Halogen free, lead free, RoHS compliant
- MSL Level 1

Note: SMD (Surface mount devices) resistors and inductors should be kept in their original packaging to protect them from ESD (Electrostatic Discharge). The full reels can be broken into smaller quantities, without exposing them to ESD, as long as the components are still in the plastic or paper tape. These resistors and inductors should not be removed from the plastic or paper tape unless they are in an ESD protected environment.

CHARACTERISTICS

- Isat: DC current that will cause Li to drop approximately 30%
 - Irms: DC current that will cause an approximate ΔT of 40°C
 - Operating temperature range: -40°C - 125°C (including self-temperature rising)
 - The rated current value is either Isat (typ.) or Irms (typ.), which ever is the lowest value
 - The part temperature (ambient + temp rise) should not exceed 125°C under worst case operating conditions. Circuit design, component placement, PCB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.
 - Rated voltage: 20V DC (max.)
 - All test data is referenced to 25°C ambient
- Test equipment:
 L: HP4285A LCR meter or equivalent
 DCR: Micro-ohm meter RM3542 or equivalent.

APPLICATIONS

- Smart phone and tablet
- Thin-type power supply modules
- DC-DC converters

3657 0803/0805

- HDD's, DSC's, tablets
- LCD, LED display

Wire Wound SMD Power Inductor

Type 3657 Series

ELECTRICAL CHARACTERISTICS

STANDARD

3657 0803

Part No.	Inductance (μH)	Tolerance	Test Condition	DCR (mΩ) 25°C		*Isat(A) Typ.	**Irms(A) Typ.	SRF (MHz) typ.	Q typ.
				Typ.	Max.				
365703MR24T	0.24	±20%	1MHz, 0.1V	22	26	6.70	5.00	>120	25
365703MR47T	0.47	±20%	1MHz, 0.1V	29	35	4.60	4.00	>120	25

3657 0805

Part No.	Inductance (μH)	Tolerance	Test Condition	DCR (mΩ) 25°C		*Isat (A) Typ.	**Irms (A) Typ.	SRF (MHz) typ.	Q typ.
				Typ.	Max.				
365705M1R0T	1.0	±20%	1MHz, 0.1V	58	67	3.40	3.00	>120	25

3657 0806

Part No.	Inductance (μH)	Tolerance	Test Condition	DCR (mΩ) 25°C		*Isat (A) Typ.	**Irms (A) Typ.	SRF (MHz) typ.	Q typ.
				Typ.	Max.				
365706MR24T	0.24	±20%	1MHz, 0.1V	17	21	5.60	5.00	>120	30
365706MR33T	0.33	±20%	1MHz, 0.1V	24	29	5.00	4.10	>120	30
365706MR47T	0.47	±20%	1MHz, 0.1V	33	40	4.40	3.50	>120	30
365706MR68T	0.68	±20%	1MHz, 0.1V	41	49	3.70	3.40	>120	30
365706M1R0T	1.0	±20%	1MHz, 0.1V	60	69	2.90	2.60	100	30
365706M1R5T	1.5	±20%	1MHz, 0.1V	114	129	2.50	2.00	75	30
365706M2R2T	2.2	±20%	1MHz, 0.1V	135	150	1.90	1.70	65	30

3657 1004

Part No.	Inductance (μH)	Tolerance	Test Condition	DCR (mΩ) 25°C		*Isat (A) Typ.	**Irms (A) Typ.	SRF (MHz) typ.	Q typ.
				Typ.	Max.				
365704MR22T	0.22	±20%	1MHz, 0.1V	9	12.5	7.90	5.90	>120	30
365704MR33T	0.33	±20%	1MHz, 0.1V	21	26	6.60	4.40	>120	30
365704MR47T	0.47	±20%	1MHz, 0.1V	27	32	5.00	3.90	>120	30
365704MR68T	0.68	±20%	1MHz, 0.1V	37	44	4.30	3.40	110	30
365704M1R0T	1.0	±20%	1MHz, 0.1V	45	54	3.40	3.00	95	30
365704M1R5T	1.5	±20%	1MHz, 0.1V	76	91	2.60	2.50	75	30
365704M2R2T	2.2	±20%	1MHz, 0.1V	99	119	2.40	2.30	60	30
365704M4R7T	4.7	±20%	1MHz, 0.1V	220	262	1.80	1.36	35	30

* Isat: DC current that will cause Li to drop approximately 30%

** Irms: DC current that will cause an approximately ΔT40°C

All test referenced to 25°C ambient

Wire Wound SMD Power Inductor

Type 3657 Series

3657 1008

Part No.	Inductance (μH)	Tolerance	Test Condition	DCR (mΩ) 25°C		*Isat (A)	**Irms (A)	SRF (MHz) typ.	Q typ.
				Typ.	Max.	Typ.	Typ.		
365708MR47T	0.47	±20%	1MHz, 0.1V	21	25	5.30	4.60	>120	30
365708MR68T	0.68	±20%	1MHz, 0.1V	29	35	5.00	3.70	100	30
365708M1R0T	1.0	±20%	1MHz, 0.1V	41	49	4.40	3.50	85	30
365708M1R5T	1.5	±20%	1MHz, 0.1V	64	77	3.20	2.50	75	30
365708M2R2T	2.2	±20%	1MHz, 0.1V	85	98	3.00	2.27	65	30
365708M3R3T	3.3	±20%	1MHz, 0.1V	125	150	2.10	2.00	40	30
365708M4R7T	4.7	±20%	1MHz, 0.1V	196	235	1.90	1.61	40	30

3657 1310

Part No.	Inductance (μH)	Tolerance	Test Condition	DCR (mΩ) 25°C		*Isat (A)	**Irms (A)	SRF (MHz) typ.	Q typ.
				Typ.	Max.	Typ.	Typ.		
365710MR47T	0.47	±20%	1MHz, 0.1V	15	19	7.70	5.80	>120	25
365710MR68T	0.68	±20%	1MHz, 0.1V	16	20	6.20	5.30	100	25
365710M1R0T	1.0	±20%	1MHz, 0.1V	25	32	5.50	4.90	85	25
365710M1R5T	1.5	±20%	1MHz, 0.1V	45	54	4.80	3.40	65	25
365710M2R2T	2.2	±20%	1MHz, 0.1V	60	72	4.00	3.00	50	25
365710M3R3T	3.3	±20%	1MHz, 0.1V	95	109	3.40	2.30	40	25
365710M4R7T	4.7	±20%	1MHz, 0.1V	150	168	2.80	1.70	35	25
365710M6R8T	6.8	±20%	1MHz, 0.1V	190	210	2.40	1.50	30	25

* Isat: DC current that will cause Li to drop approximately 30%

** Irms: DC current that will cause an approximately ΔT40°C

All test referenced to 25°C ambient

Wire Wound SMD Power Inductor

Type 3657 Series

HIGH CURRENT

3657HC 0806

Part No.	Inductance (μH)	Tolerance	Test Condition	***DCR (mΩ) 25°C		*Isat (A)	**Irms (A)	SRF (MHz) typ.	Q typ.
				Typ.	Typ.	Typ.	Typ.		
3657HC06MR10T	0.10	±20%	1MHz, 0.1V	7	11	12.20	9.50	>120	30
3657HC06MR15T	0.15	±20%	1MHz, 0.1V	10	16	10.00	7.50	>120	30
3657HC06MR22T	0.22	±20%	1MHz, 0.1V	15	19	7.90	6.50	>120	30
3657HC06MR24T	0.24	±20%	1MHz, 0.1V	17	20	6.80	5.80	>120	30
3657HC06MR33T	0.33	±20%	1MHz, 0.1V	21	26	6.70	4.70	>120	30
3657HC06MR47T	0.47	±20%	1MHz, 0.1V	23	30	6.10	4.50	>120	30
3657HC06MR68T	0.68	±20%	1MHz, 0.1V	40	47	4.70	4.00	>120	30
3657HC06M1R0T	1.0	±20%	1MHz, 0.1V	48	60	3.90	3.20	90	30
3657HC06M1R5T	1.5	±20%	1MHz, 0.1V	86	99	3.40	2.40	80	30
3657HC06M2R2T	2.2	±20%	1MHz, 0.1V	117	140	2.60	2.20	60	30
3657HC06M3R3T	3.3	±20%	1MHz, 0.1V	200	220	1.90	1.80	40	30
3657HC06M4R7T	4.7	±20%	1MHz, 0.1V	240	288	1.80	1.30	40	30

3657HC 1004

Part No.	Inductance (μH)	Tolerance	Test Condition	***DCR (mΩ) 25°C		*Isat (A)	**Irms (A)	SRF (MHz) typ.	Q typ.
				Typ.	Typ.	Typ.	Typ.		
3657HC04MR22T	0.22	±20%	1MHz, 0.1V	10	13.5	10.50	6.90	>120	30
3657HC04MR24T	0.24	±20%	1MHz, 0.1V	11.5	14.5	8.80	6.60	>120	30
3657HC04MR33T	0.33	±20%	1MHz, 0.1V	17	22	7.80	5.60	>120	30
3657HC04MR47T	0.47	±20%	1MHz, 0.1V	23	29	6.60	5.20	>120	30
3657HC04MR68T	0.68	±20%	1MHz, 0.1V	30	36	5.50	4.30	90	30
3657HC04M1R0T	1.0	±20%	1MHz, 0.1V	41	52	4.40	3.40	70	30
3657HC04M1R5T	1.5	±20%	1MHz, 0.1V	62	72	3.80	2.90	60	30
3657HC04M2R2T	2.2	±20%	1MHz, 0.1V	88	110	3.30	2.40	50	30
3657HC04M3R3T	3.3	±20%	1MHz, 0.1V	140	160	2.50	1.90	40	30
3657HC04M4R7T	4.7	±20%	1MHz, 0.1V	200	240	2.20	1.60	30	30

3657HC 1008

Part No.	Inductance (μH)	Tolerance	Test Condition	***DCR (mΩ) 25°C		*Isat (A)	**Irms (A)	SRF (MHz) typ.	Q typ.
				Typ.	Typ.	Typ.	Typ.		
3657HC08MR47T	0.47	±20%	1MHz, 0.1V	16	22	6.80	5.80	>120	30
3657HC08M1R0T	1.0	±20%	1MHz, 0.1V	36	44	4.80	3.90	70	30
3657HC08M1R5T	1.5	±20%	1MHz, 0.1V	54	63	4.00	2.90	60	30
3657HC08M2R2T	2.2	±20%	1MHz, 0.1V	74	89	3.50	2.50	50	30
3657HC08M3R3T	3.3	±20%	1MHz, 0.1V	116	130	2.80	2.10	40	30
3657HC08M4R7T	4.7	±20%	1MHz, 0.1V	160	180	2.20	1.80	35	30

* Isat: DC current that will cause Li to drop approximately 30%

** Irms: DC current that will cause an approximately ΔT40°C

All test referenced to 25°C ambient

Wire Wound SMD Power Inductor

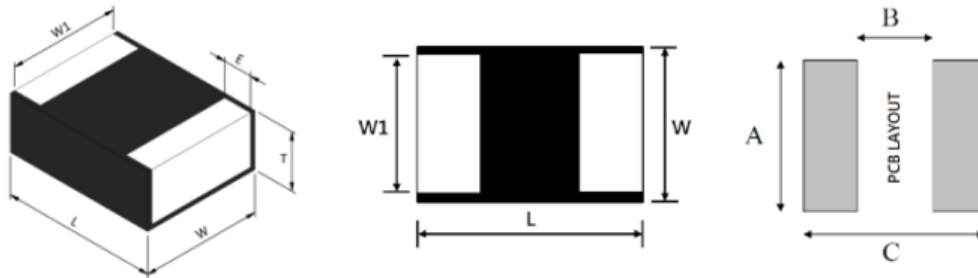
Type 3657 Series

ENVIRONMENTAL CHARACTERISTICS

Item	Requirement	Test Method
Resistance to soldering heat	Appearance: No damage more than 95% of the terminal. Electrode should be covered with solder. Inductance: within $\pm 20\%$ of initial value	Flux: Rosin Solder temperature: $260 \pm 5^\circ\text{C}$ Immersion time: 10 ± 1 sec.
Adhesive test	No mechanical damage soldering the products on PCB after the pull test force $> 5\text{N}$	Reflow temperature: 245°C it should be soldered onto the substrate applying direction parallel to the substrate Apply force(F): 5N Test Time: 10 sec.
Temperature cycle	No mechanical damage Inductance: within $\pm 20\%$ of initial value	Temperature: -50°C - 125°C for 30 minutes each Cycle: 500 cycles Measurement: at ambient temperature 24 hours after test completion
Dry heat test		Temperature: $85 \pm 2^\circ\text{C}$ Testing time: 500 hrs Applied current: full rated current Measurement: at ambient temperature 24 hours after test completion
Humidity test		Temperature: $60 \pm 2^\circ\text{C}$ Humidity: 90-95% RH Testing time: 500 hrs Applied current: full rated current Measurement: at ambient temperature 24 hours after test completion

- Storage temperature: 5 - 40°C ; humidity: $< 65\%$ RH
- Shelf life: 1 year max

DIMENSIONS (Unit: mm)

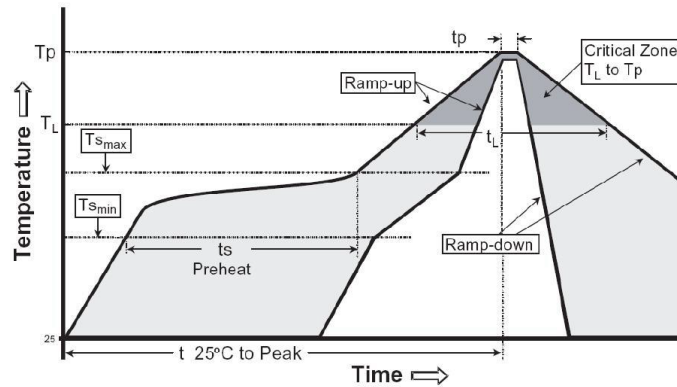


Type	L	W	W1	T	E	A	B	C
3657 0803	2.00 ± 0.20	1.20 ± 0.20	-	0.80 max	0.50 ± 0.30	1.2	0.9	2.0
3657 0805	2.00 ± 0.20	1.20 ± 0.20	1.00 ± 0.20	1.00 max	0.50 ± 0.20	1.2	0.9	2.0
3657 0806	2.00 ± 0.20	1.20 ± 0.20	1.40 ± 0.20	1.00 max	0.50 ± 0.20	1.6	0.9	2.0
3657 1004	2.50 ± 0.20	1.20 ± 0.20	1.80 ± 0.20	1.00 max	0.60 ± 0.30	2.0	2.0	2.8
3657 1008	2.50 ± 0.20	1.20 ± 0.20	1.80 ± 0.20	1.20 max	0.60 ± 0.30	2.0	2.0	2.8
3657 1310	3.20 ± 0.20	1.20 ± 0.20	2.30 ± 0.20	1.10 ± 0.10	0.60 ± 0.20	2.5 typ	1.7 typ	3.2 typ
3657HC 0806	2.00 ± 0.20	1.20 ± 0.20	1.40 ± 0.20	1.00 max	0.60 ± 0.30	2.0	0.9	2.0
3657HC 1004	2.50 ± 0.20	1.20 ± 0.20	1.80 ± 0.20	1.00 max	0.60 ± 0.30	2.0	2.0	2.8
3657HC 1008	2.50 ± 0.20	1.20 ± 0.20	1.80 ± 0.20	1.20 max	0.60 ± 0.30	2.0	2.0	2.8

Wire Wound SMD Power Inductor

Type 3657 Series

REFLOW SOLDERING PROFILE

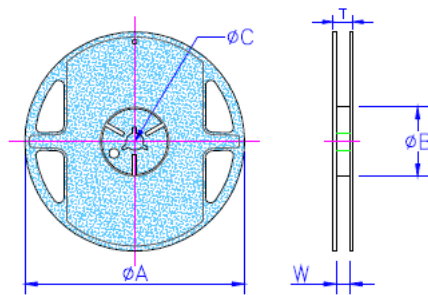


Profile Feature	Pb-Free Assembly
Average Ramp Rate (T_s max to T_p)	3 °C/second max.
Preheat Temperature Min (T_{smin}) Temperature Max (T_{smax}) Time (T_{smin} to T_{smax})	150 °C 200 °C 60-180 seconds
Time maintained above: Temperature (T_l) Time (t_l)	217 °C 60-150 seconds
Peak temperature (T_p)	260 °C +0/-5 °C
Time within 5 °C of actual Peak Temperature (T_p)	20-40 seconds
Ramp-Down Rate	6 °C/second max.
Time 25 °C to Peak Temperature	8 minutes max.

PACKAGING

REEL SPECIFICATION

Dimensions (mm)

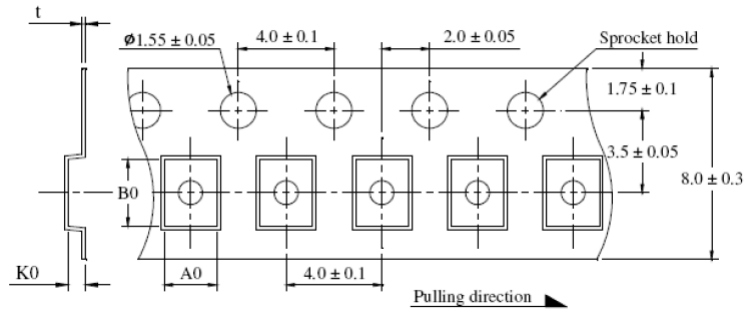


Type	A	B	C	W	T	Reel Quantity
3657 0803	1.78±1	60.0±0.5	13.0±0.2	9.00±0.5	12.0±0.15	3000
3657 0805	1.78±1	60.0±0.5	13.0±0.2	9.00±0.5	12.0±0.15	3000
3657 0806	1.78±1	60.0±0.5	13.0±0.2	9.00±0.5	12.0±0.15	3000
3657 1004	1.78±1	60.0±0.5	13.0±0.2	9.00±0.5	12.0±0.15	3000
3657 1008	1.78±1	60.0±0.5	13.0±0.2	9.00±0.5	12.0±0.15	3000
3657 1310	1.78±1	60.0±0.5	13.0±0.2	9.00±0.5	12.0±0.15	3000
3657HC 0806	1.78±1	60.0±0.5	13.0±0.2	9.00±0.5	12.0±0.15	3000
3657HC 1004	1.78±1	60.0±0.5	13.0±0.2	9.00±0.5	12.0±0.15	3000
3657HC 1008	1.78±1	60.0±0.5	13.0±0.2	9.00±0.5	12.0±0.15	3000

Wire Wound SMD Power Inductor

Type 3657 Series

CONSTRUCTION AND DIMENSIONS (Unit: mm)



Type	A0	B0	K0	t
3657 0803	1.45±0.10	2.20±0.10	1.12±0.10	0.22±0.05
3657 0805	1.45±0.10	2.20±0.10	1.12±0.10	0.22±0.05
3657 0806	1.82±0.05	2.23±0.05	1.15±0.05	0.22±0.05
3657 1004	1.45±0.10	2.20±0.10	1.35±0.10	0.22±0.05
3657 1008	2.25±0.05	2.80±0.10	1.35±0.10	0.22±0.05
3657 1310	2.80±0.10	3.45±0.10	1.34±0.10	0.23±0.05
3657HC 0806	1.82±0.05	2.23±0.05	1.15±0.05	0.22±0.05
3657HC 1004	2.25±0.05	2.20±0.10	1.35±0.10	0.22±0.05
3657HC 1008	2.25±0.05	2.80±0.10	1.35±0.10	0.22±0.05

ORDERING INFORMATION

Typical product code
3657 03 M R24 T

Common Part

3657	Standard
3657HC	High current

Size

03	0803
05	0805
06	0806
04	1004
08	1008
10	1310

Resistance Codes

T	Taped & Reeled - 3000 pieces/reel
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Power Rating

R24	.24
R33	.33
1R0	1.0
4R7	4.7

Tolerance

M	20%
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