

Power Choke Coil (Automotive Grade)

Series: **PCC-M0648M-LE(MC)**
PCC-M0748M-LE(MC)



High heat resistance and high reliability
 Using metal composite core (MC)

Industrial Property : patents 3 (Registered 2/Pending 1)

Features

- Low loss (Low DC resistance)
- High heat resistance : Operation up to 150 °C including self-heating
- SMD type
- High-reliability : High vibration resistance as result of newly developed integral construction; under severe reliability conditions of automotive and other strenuous applications
- High bias current : Excellent inductance stability using ferrous alloy magnetic material
- Temp. stability : Excellent inductance stability over broad temp. range
- Low audible (buzz) noise : A gapless structure achieved with metal composite core
- High efficiency : Low DC resistance of winding and low eddy-current loss of the core
- Shielded construction
- AEC-Q200 Automotive qualified
- RoHS compliant

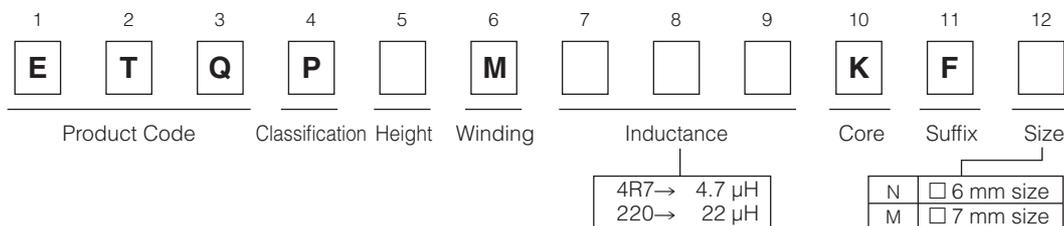
Recommended Applications

- Noise filter for various drive circuitry requiring high temp. operation and peak current handling capability
- Boost-Converter, Buck-Converter DC/DC

Standard Packing Quantity (Minimum Quantity/Packing Unit)

- 1,000 pcs./box (2 reel)

Explanation of Part Numbers



Temperature rating

Operating temperature range		Tc : -40 °C to +150 °C(Including self-temperature rise)
Storage condition	After PWB mounting	
	Before PWB mounting	Ta : -5 °C to +35 °C 85%RH max.

1. Series PCC-M0648M-LE (ETQP4M□□□KFN)

Standard Parts

Series	Part No.	Inductance *1		DCR (at 20 °C) (mΩ)		Rated Current (Typ. : A)		
		L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	ΔT=40K		ΔL=-30%
						(*2)	(*3)	
PCC-M0648M-LE [6.4×6.0×4.8(mm)]	ETQP4M3R3KFN	3.30	±20	13.10 (14.41)	±10	7.2	9.2	12.0
	ETQP4M4R7KFN	4.70		20.70 (22.77)		5.7	7.3	9.3
	ETQP4M100KFN	10.00		40.40 (44.44)		4.1	5.2	8.1
	ETQP4M150KFN	15.00		63.80 (70.18)		3.3	4.2	6.7

(*1) Measured at 100k Hz.

(*2) DC current which causes temperature rise of 40K. Parts are soldered by reflow on four-layer PWB (1.6 mm FR4) and measured at room temperature. See also (*5)

(*3) DC current which causes temperature rise of 40K. Parts are soldered by reflow on multilayer PWB with high heat dissipation performance. Note: Heat radiation constant are approx. 30 K/W measured on 6.4×6.0×4.8 mm case size. See also (*5)

(*4) Saturation rated current : DC current which causes L(0) drop -30 %.

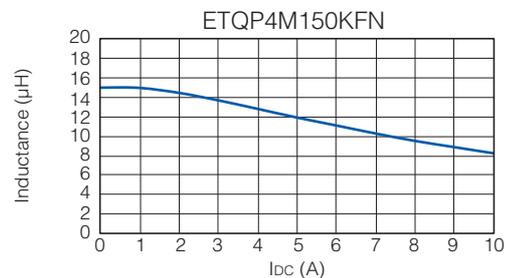
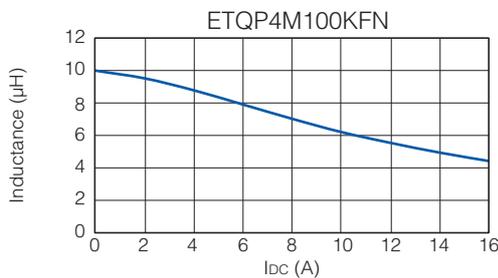
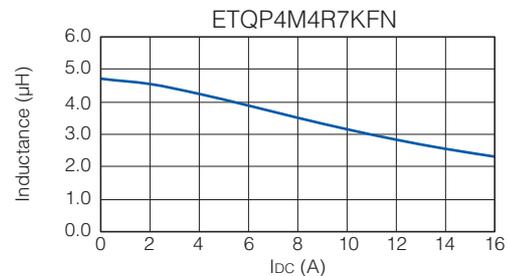
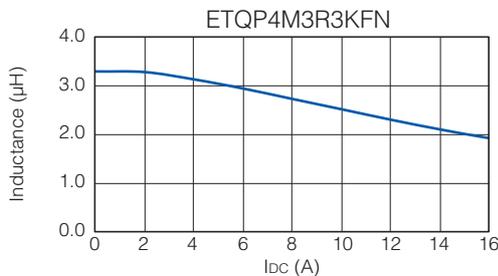
(*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode.

In normal case, the max.standard operating temperature of +150 °C should not be exceeded.

For higher operating temperature conditions, please contact Panasonic representative in your area.

Performance Characteristics (Reference)

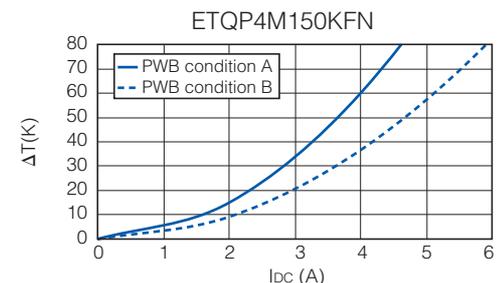
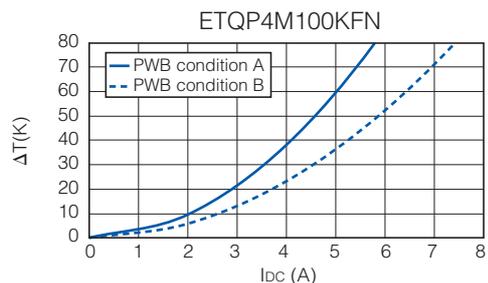
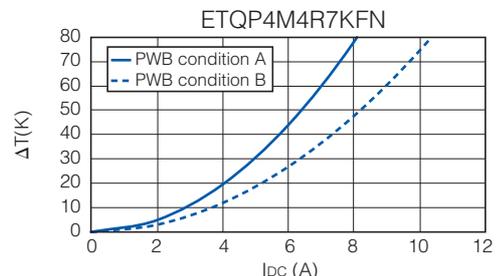
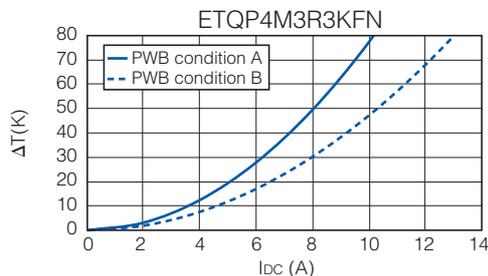
● Inductance vs DC Current



● Case Temperature vs DC Current

PWB condition A : Four-layer PWB (1.6 mm FR4), See also (*2)

PWB condition B : Multilayer PWB with high heat dissipation performance. See also (*3)



2. Series PCC-M0748M-LE (ETQP4M□□□KFM)

Standard Parts

Series	Part No.	Inductance *1		DCR (at 20 °C) (mΩ)		Rated Current (Typ. : A)		
		L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	ΔT=40K		ΔL=-30%
						(*2)	(*3)	
PCC-M0748M-LE [7.4×7.0×4.8(mm)]	ETQP4M4R7KFM	4.70	±20	16.80(18.48)	±10	6.5	8.8	10.7
	ETQP4M100KFM	10.00		36.00(39.60)		4.5	6.0	9.6
	ETQP4M220KFM	22.00		84.10(92.51)		2.9	3.9	4.6
	ETQP4M470KFM	47.00		148.60(163.46)		2.2	2.9	3.7

(*1) Measured at 100k Hz.

(*2) DC current which causes temperature rise of 40K. Parts are soldered by reflow on four-layer PWB (1.6 mm FR4) and measured at room temperature. See also (*5)

(*3) DC current which causes temperature rise of 40K. Parts are soldered by reflow on multilayer PWB with high heat dissipation performance. Note: Heat radiation constant are approx. 30 K/W measured on 7.4×7.0×4.8 mm case size. See also (*5)

(*4) Saturation rated current : DC current which causes L(0) drop -30 %.

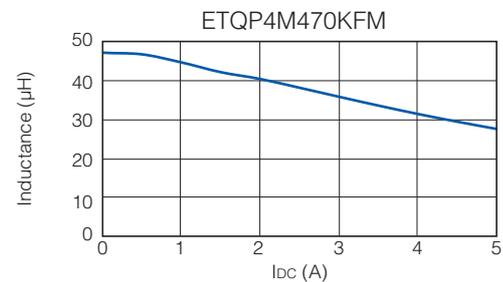
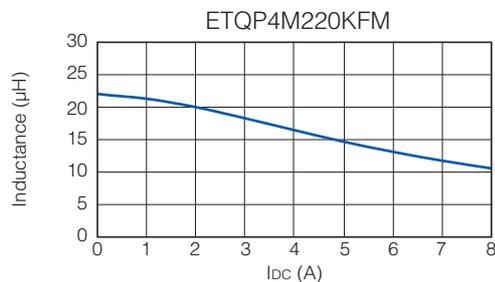
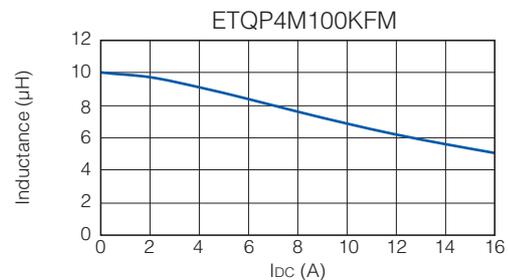
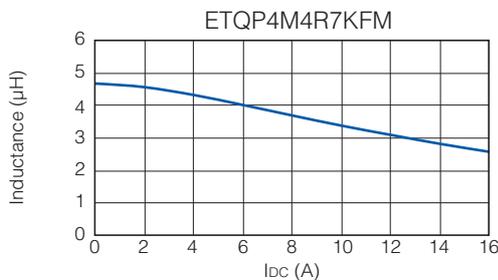
(*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode.

In normal case, the max.standard operating temperature of +150 °C should not be exceeded.

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Performance Characteristics (Reference)

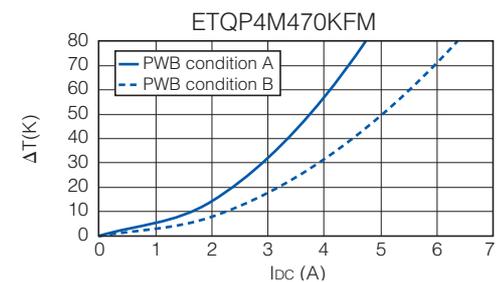
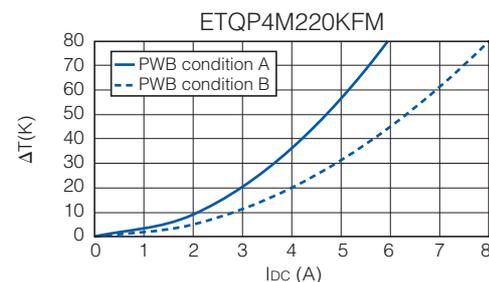
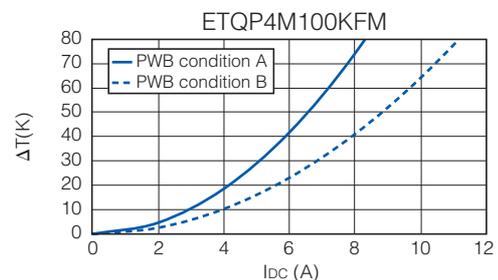
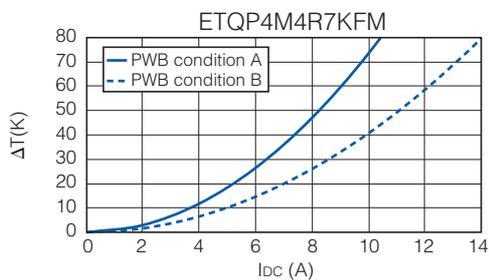
● Inductance vs DC Current



● Case Temperature vs DC Current

PWB condition A : Four-layer PWB (1.6 mm FR4), See also (*2)

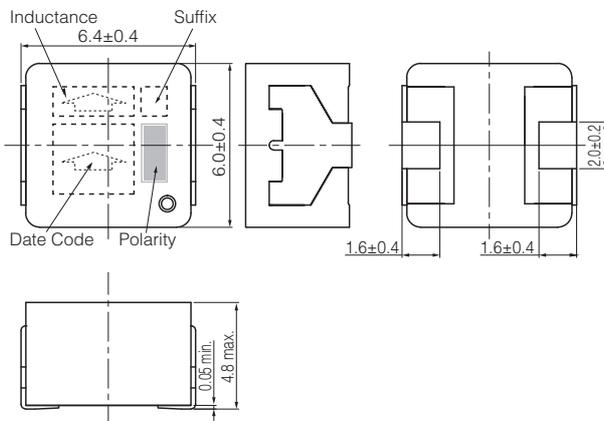
PWB condition B : Multilayer PWB with high heat dissipation performance. See also (*3)



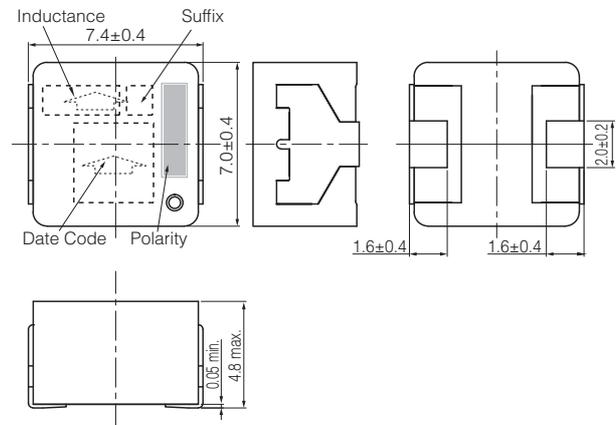
Dimensions in mm (not to scale)

Dimensional tolerance unless noted : ± 0.5

Series PCC-M0648M-LE
(ETQP4M□□□KFN)



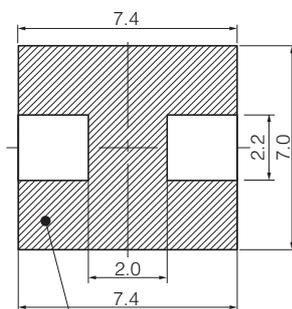
Series PCC-M0748M-LE
(ETQP4M□□□KFM)



Recommended Land Pattern in mm (not to scale)

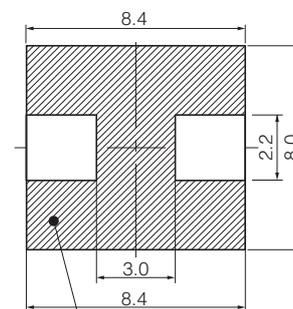
Dimensional tolerance unless noted : ± 0.5

Series PCC-M0648M-LE
(ETQP4M□□□KFN)



Don't wire on the pattern on shaded portion the PWB.

Series PCC-M0748M-LE
(ETQP4M□□□KFM)



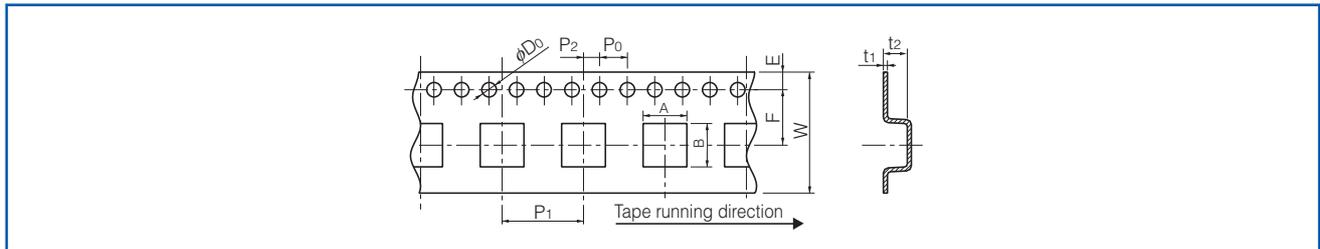
The same as the left.

■ As for Soldering Conditions and Safety Precautions (Power Choke Coils (Automotive Grade)),

Please see Data Files

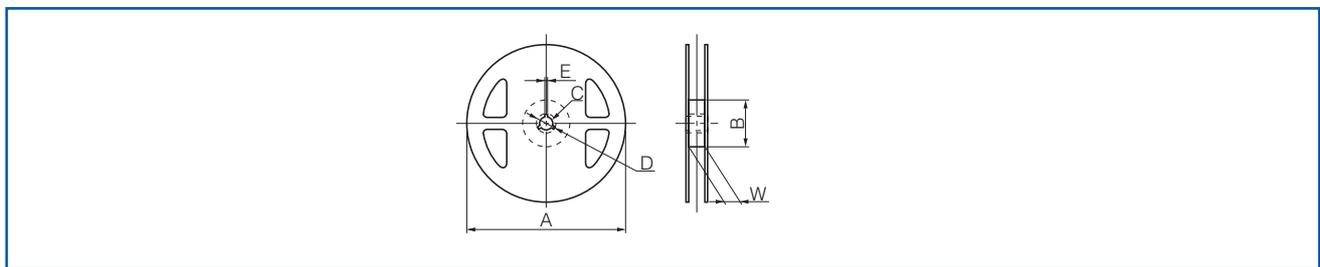
Packaging Methods (Taping)

- Embossed Carrier Tape Dimensions in mm (not to scale)



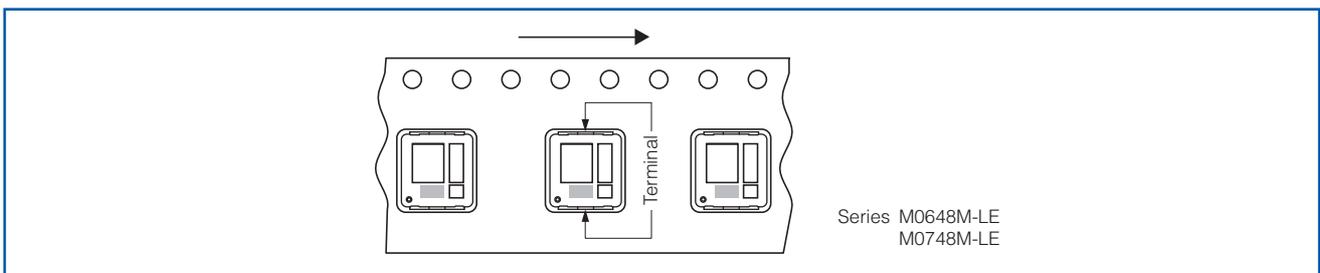
Series	A	B	W	E	F	P ₁	P ₂	P ₀	φD ₀	t ₁	t ₂
PCC-M0648M-LE	6.6	7.1	16	1.75	7.5	12	2	4	1.5	0.4	5.0
PCC-M0748M-LE	7.6	8.1	16	1.75	7.5	12	2	4	1.5	0.4	6.0

- Taping Reel Dimensions in mm (not to scale)



Series	A	B	C	D	E	W
PCC-M0648M-LE PCC-M0748M-LE	330	(100)	13	21	2	17.5

Component Placement (Taping)



Standard Packing Quantity/Reel

Series	Part No.	Minimum Quantity / Packing Unit	Quantity per reel
PCC-M0648M-LE	ETQP4M□□□KFN	1,000 pcs. / box (2 reel)	500 pcs.
PCC-M0748M-LE	ETQP4M□□□KFM	1,000 pcs. / box (2 reel)	500 pcs.