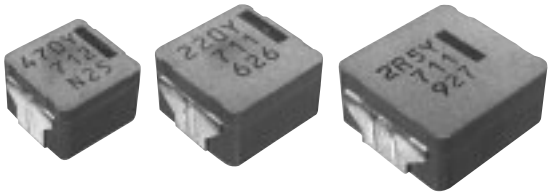
Power Choke Coil for Automotive application

Series: **PCC-M0754M (MC)**
PCC-M0854M (MC)
PCC-M0850M (MC)
PCC-M1054M (MC)
PCC-M1050M (MC)



M0754M M0854M M0850M M1054M M1050M

Realize high heat resistance and high reliability with metal composite core(MC)

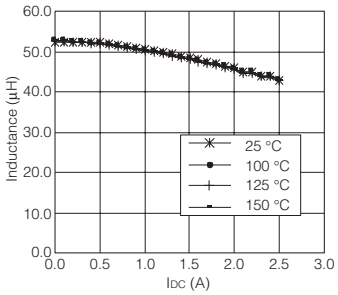
Industrial Property : patents 21 (Registered 2/Pending 19)

■ Features

- ● High heat resistance : Operation up to 150 °C
- ● High-reliability : High vibration resistance due to newly developed integral construction and severe reliability condition of automotive application is covered
- ● High bias current : Excellent inductance stability by using ferrous alloy magnetic material(Fig.1)
- ● Temp. stability : Excellent inductance stability in wide temp. range (Fig.1)
- ● Low buzz noise : New metal composite core technology
- ● High efficiency : Low R_{DC} of winding and low eddy-current loss of the core
- ● RoHS compliant

● Fig.1 Inductance v.s. DC current, Temp.

ETQP5M470YFM(reference)



■ Recommended Applications

- ● Noise filter for various drive circuitry requiring high temp. operation and peak current handling capability
- ● DC-DC converters

■ Standard Packing Quantity

- ● 500 pcs./Reel

■ Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	T	Q	P		M				Y	F	
Product Code			Classification	Height	Winding	Inductance			Core	Suffix	Size

Inductance	
4R7→	4.7 µH
220→	22 µH
101→	100 µH

Size	
M	□ 7 mm size
K	□ 8 mm size
C	□10 mm size

■ 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-M0754M (ETQP5M□□□YFM)

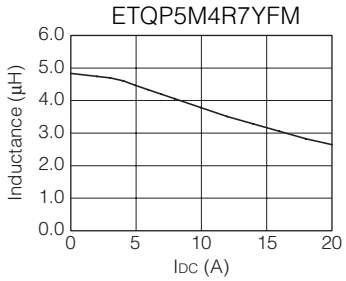
■ Standard Parts

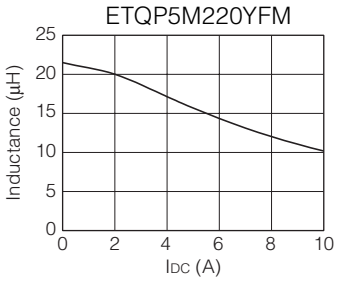
Series	Part No.	Inductance *1		DCR (at 20 °C) (mΩ)		Rated Current (Typ. : A)		
		L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T=40K (*2)	△T=40K (*3)	△L=–30% (*4)
PCC-M0754M [7.5×7.0×5.4(mm)]	ETQP5M4R7YFM	4.7	±20	20(23)	±10	6.3	8.0	13.1
	ETQP5M220YFM	22		92(102)		3.0	3.7	5.8
	ETQP5M330YFM	34		120(132)		2.6	3.3	4.8
	ETQP5M470YFM	48		156(172)		2.3	2.9	4.1

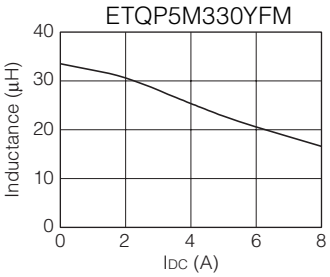
(*1) Measured at 100 kHz.
(*2) DC current which causes temperature rise of 40 K. Parts are soldered by reflow on four-layer PWB (1.6 mm FR4) and measured at room temperature. See also (*5)
(*3) DC current which causes temperature rise of 40 K. Parts are soldered by reflow on multilayer PWB with high heat dissipation performance. Note: Heat radiation constant is approx. 31 K/W measured on 7.5x7.0x5.4 mm case size. See also (*5)
(*4) 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.

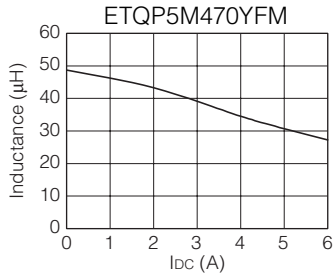
■ Performance Characteristics (Reference)

● Inductance vs DC Current



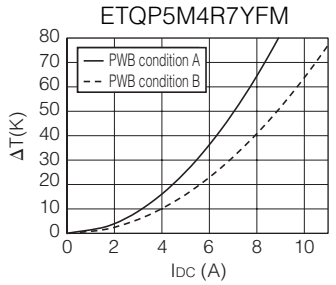


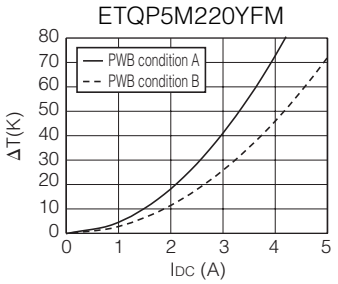


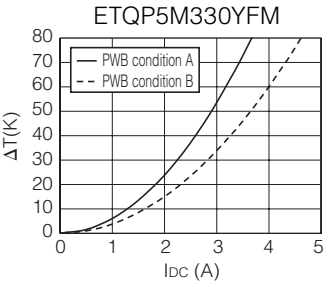


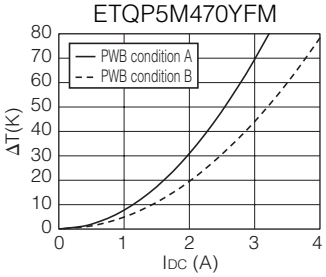
● Case Temperature vs DC Current

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-M0854M/PCC-M0850M (ETQP5M□□□YFK/ETQP5M□□□YGK)

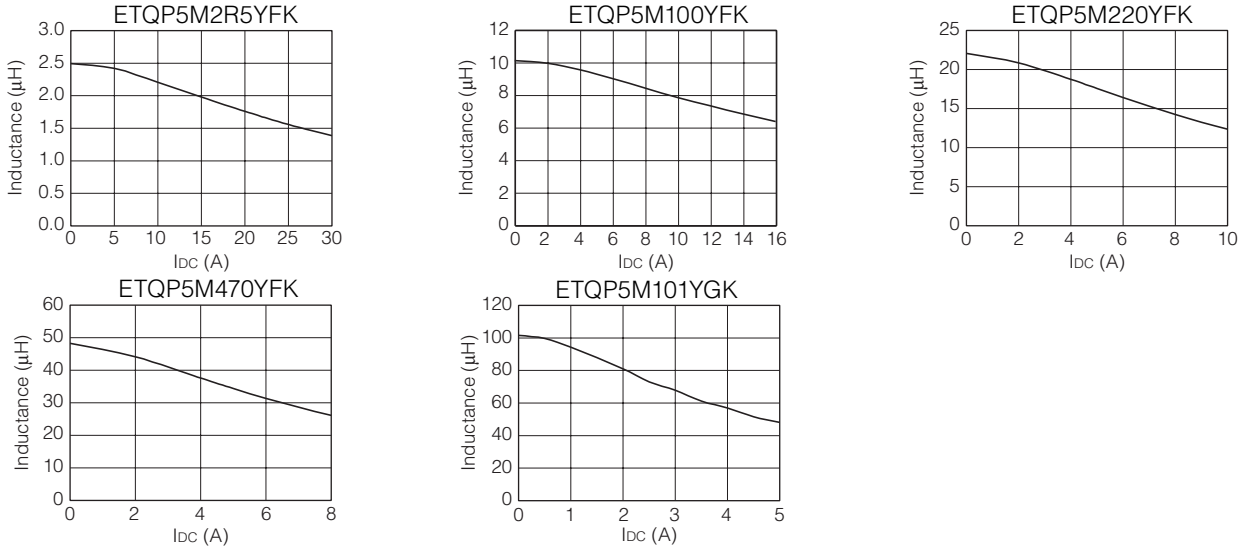
■ Standard Parts

Series	Part No.	Inductance *1		DCR (at 20 °C) (mΩ)		Rated Current (Typ. : A)		
		L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T=40K		△L=–30%
						(*2)	(*3)	(*4)
PCC-M0854M [8.5×8.0×5.4(mm)]	ETQP5M2R5YFK	2.5	±20	7.6(8.4)	±10	11.9	14.0	20.1
	ETQP5M100YFK	10		33(37)		5.7	6.7	13.0
	ETQP5M220YFK	22		63(70)		4.1	4.8	6.9
	ETQP5M470YFK	48		125(138)		2.9	3.4	5.4
PCC-M0850M [8.5×8.0×5.0(mm)]	ETQP5M101YGK	100	±20	302(333)	±10	1.7	2.1	3.0

(*1) Measured at 100 kHz.
(*2) DC current which causes temperature rise of 40 K. 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 40 K. Parts are soldered by reflow on multilayer PWB with high heat dissipation performance. Note: Heat radiation constant are approx. 27 K/W measured on 8.5x8.0x5.4 mm case size and approx. 29 K/W measured on 8.5x8.0x5.0 mm case size. See also (*5)
(*4) 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.

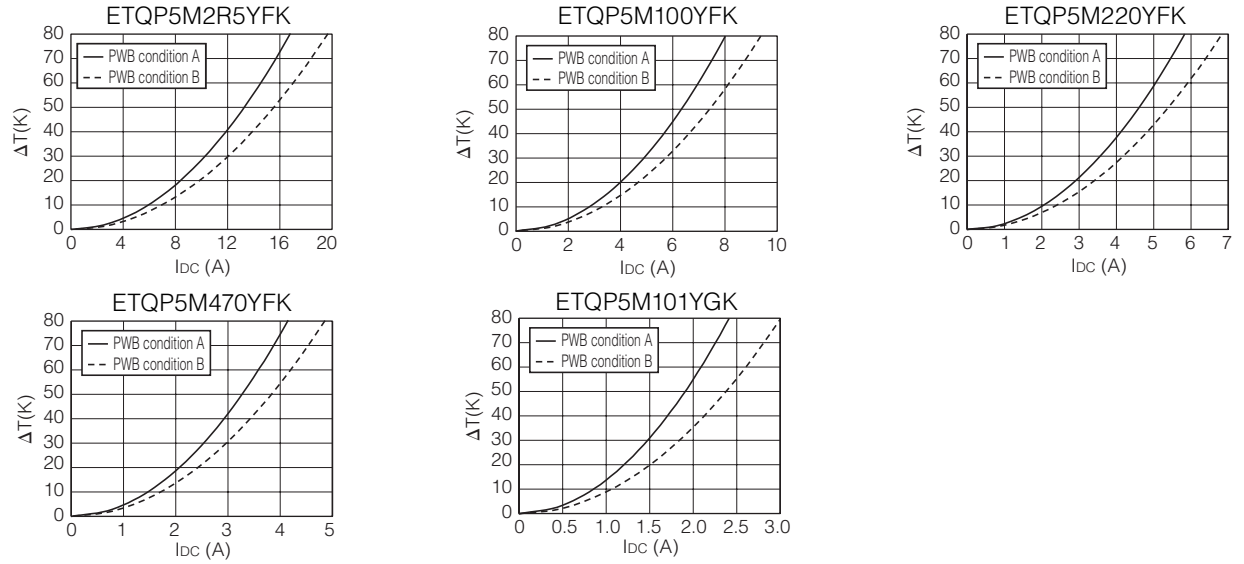
■ Performance Characteristics (Reference)

● 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)



3. Series PCC-M1054M/PCC-M1050M (ETQP5M□□□YFC/ETQP5M□□□YGC)

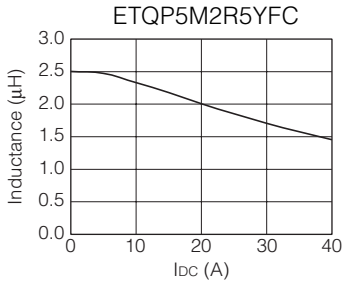
■ Standard Parts

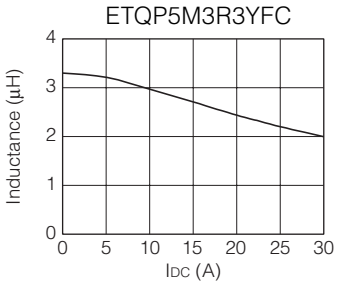
Series	Part No.	Inductance *1		DCR (at 20 °C) (mΩ)		Rated Current (Typ. : A)		
		L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	△T=40K		△L=–30%
						(*2)	(*3)	(*4)
PCC-M1054M [10.5×10.0×5.4(mm)]	ETQP5M2R5YFC	2.5	±20	5.3(5.9)	±10	15.1	18.1	27.2
	ETQP5M3R3YFC	3.3		7.1(7.9)		13.1	15.7	22.7
	ETQP5M4R7YFC	4.7		10.2(11.3)		10.9	13.1	20.0
	ETQP5M100YFC	10		23.8(26.2)		7.1	8.5	10.7
	ETQP5M220YFC	22		45(50)		5.2	6.2	6.7
PCC-M1050M [10.5×10.0×5.0(mm)]	ETQP5M101YGC	97	±20	208(229)	±10	2.2	2.7	3.0

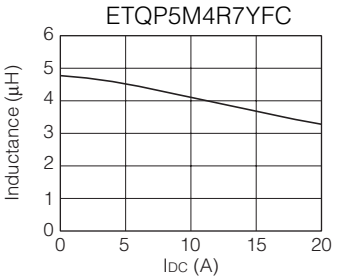
(*1) Measured at 100 kHz.
(*2) DC current which causes temperature rise of 40 K. Parts are soldered by reflow on four-layer PWB (1.6 mm FR4) and measured at room temperature. See also (*5)
(*3) DC current which causes temperature rise of 40 K. Parts are soldered by reflow on multilayer PWB with high heat dissipation performance. Note: Heat radiation constant are approx. 23 K/W measured on 10.5×10.0×5.4 mm case size and approx. 26 K/W measured on 10.5×10.0×5.0 mm case size. See also (*5)
(*4) 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.

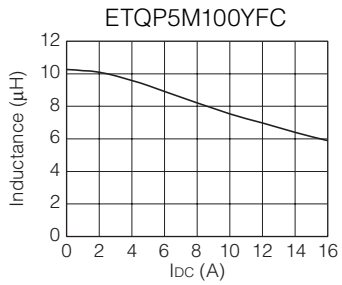
■ Performance Characteristics (Reference)

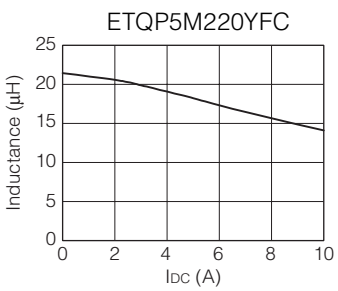
● Inductance vs DC Current

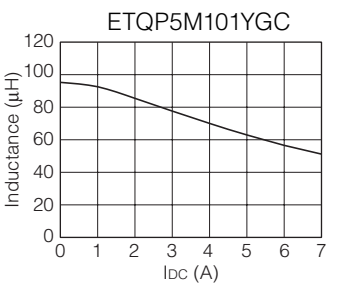








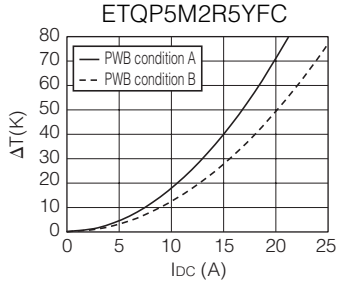




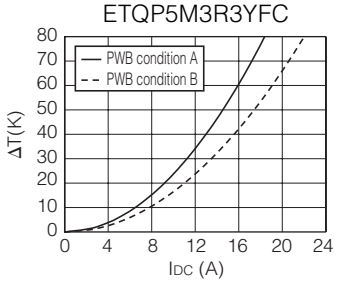
● Case Temperature vs DC Current

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)

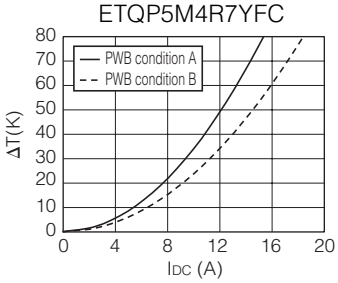
ETQP5M2R5YFC



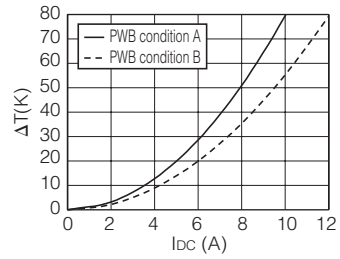
ETQP5M3R3YFC



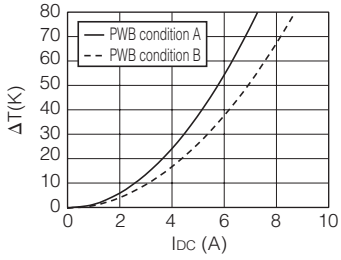
ETQP5M4R7YFC



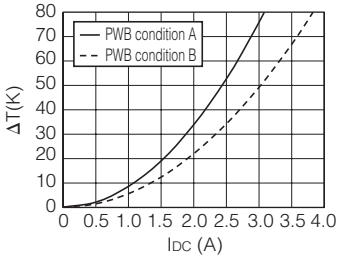
ETQP5M100YFC



ETQP5M220YFC

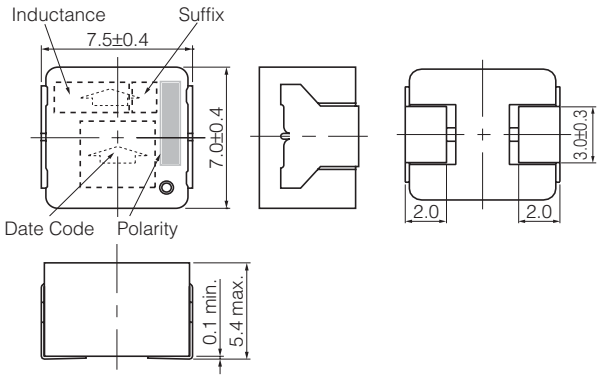


ETQP5M101YGC

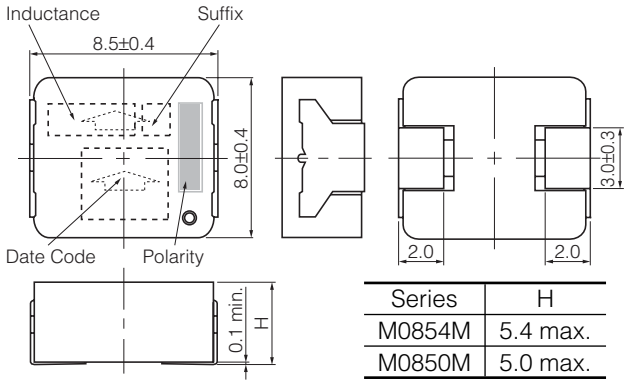


■ Dimensions in mm (not to scale)
Dimensional tolerance unless noted : ±0.5

PCC-M0754M Series
(ETQP5M□□□YFM)

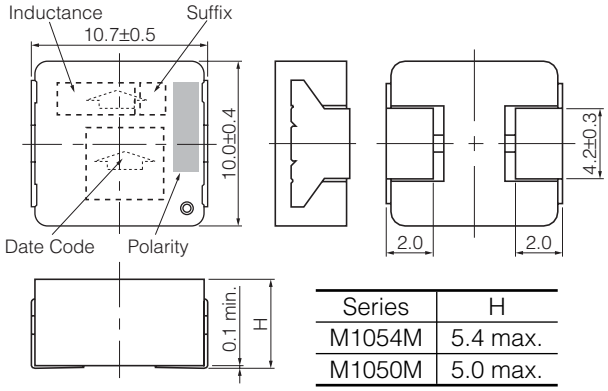


PCC-M0854M Series
PCC-M0850M Series
(ETQP5M□□□YFK/YGK)



Series	H
M0854M	5.4 max.
M0850M	5.0 max.

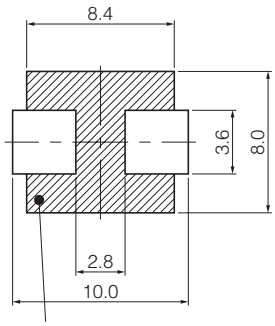
PCC-M1054M Series
PCC-M1050M Series
(ETQP5M□□□YFC/YGC)



Series	H
M1054M	5.4 max.
M1050M	5.0 max.

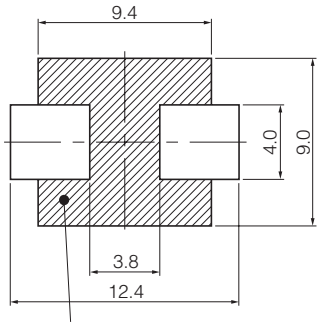
■ Recommended Land Pattern in mm (not to scale)
Dimensional tolerance unless noted : ±0.5

PCC-M0754M Series
(ETQP5M□□□YFM)



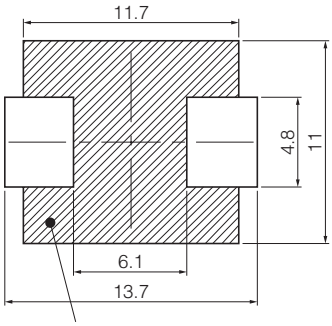
Don't wire on the pattern
on shaded portion the PWB.

PCC-M0854M Series
PCC-M0850M Series
(ETQP5M□□□YFK/YGK)



The same as the left.

PCC-M1054M Series
PCC-M1050M Series
(ETQP5M□□□YFC/YGC)



The same as the left.

■Packaging Methods Please see Pages 202 to 203

■Soldering Conditions Please see Page 204

■⚠Safety Precautions Please see Pages 177 to 178