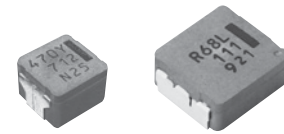


Power Choke Coil for Automotive application

Series: **PCC-M0530M (MC) PCC-M0540M (MC)**
PCC-M0630M (MC) PCC-M0645M (MC)
PCC-M0754M (MC) PCC-M0750M (MC)
PCC-M0854M (MC) PCC-M0850M (MC)
PCC-M1054M (MC) PCC-M1050M (MC)
PCC-M1050ML (MC) PCC-M1060ML (MC)



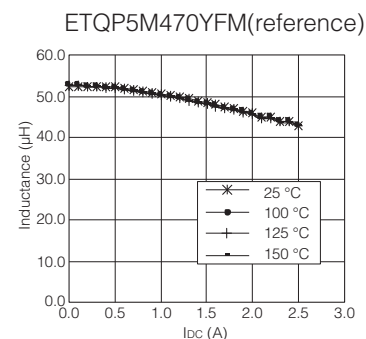
High heat resistance and high reliability
 Using metal composite core (MC)

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

Features

- High heat resistance : Operation up to 150 °C including self-heating
- 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 (Fig.1)
- Temp. stability : Excellent inductance stability over broad temp. range (Fig.1)
- Low audible (buzz) noise : New metal composite core technology
- High efficiency : Low R_{DC} of winding and low eddy-current loss of the core
- AEC-Q200 Automotive qualified
- RoHS compliant

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



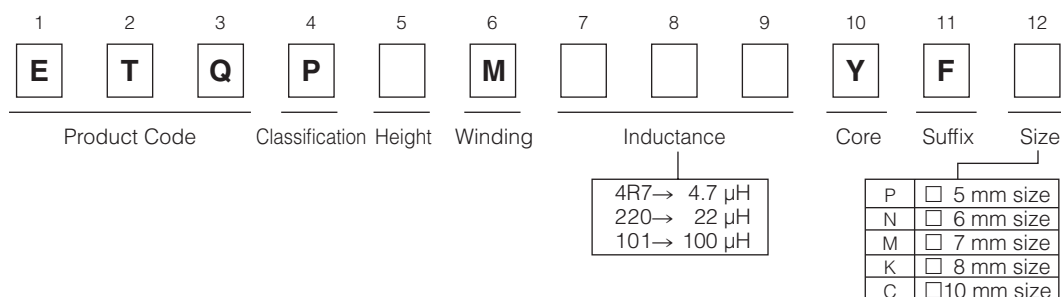
Recommended Applications

- 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) : PCC-M0645M, M0754M, M0750M, M0854M, M0850M, M1054M, M1050M, M1050ML, M1060ML
- 2,000 pcs./box (2 reel) : PCC-M0530M, M0540M, M0630M

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-M0530M/PCC-M0540M (ETQP3M□□□YFP/ETQP4M□□□YFP)

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)	(*4)
PCC-M0530M [5.5×5.0×3.0(mm)]	ETQP3M2R2YFP	2.2	±20	22.6 (24.8)	±10	4.8	5.8	10.9
	ETQP3M3R3YFP	3.3		31.3 (34.4)		4.1	5.0	8.6
PCC-M0540M [5.5×5.0×4.0(mm)]	ETQP4M4R7YFP	4.7		36.0 (39.6)		4.0	4.8	7.7
	ETQP4M220YFP	22	163 (179)	1.9	2.3	3.1		

(*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 are approx. 52 K/W measured on 5.5×5.0×3.0 mm case size and approx. 48 K/W measured on 5.5×5.0×4.0 mm case size. See also (*5)

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

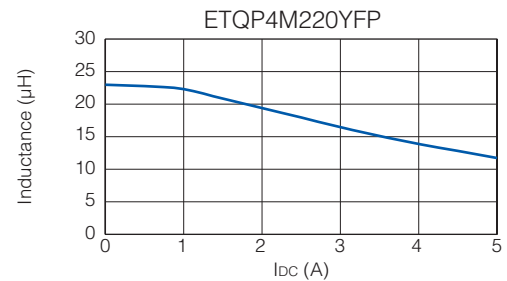
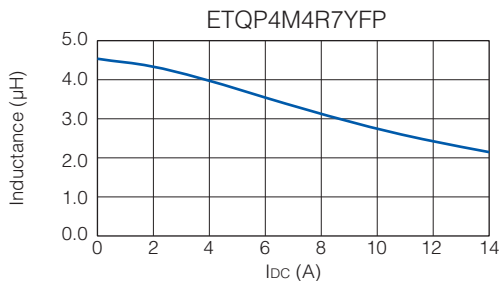
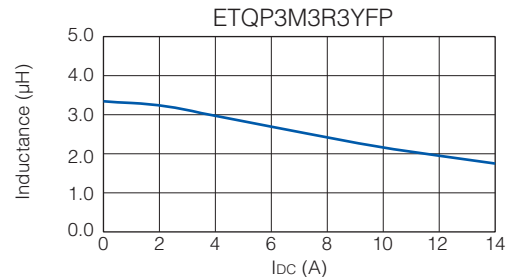
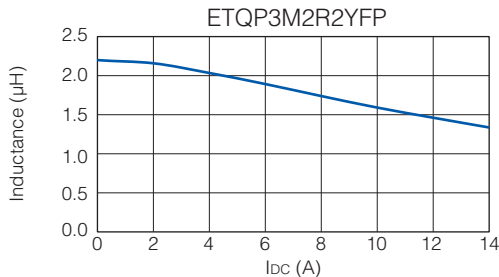
(*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode.

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)

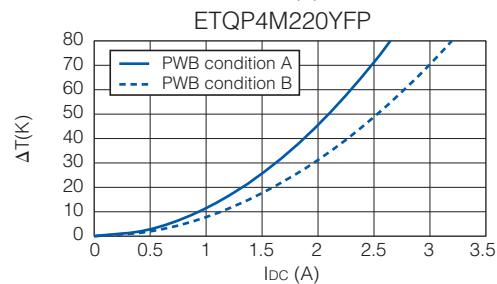
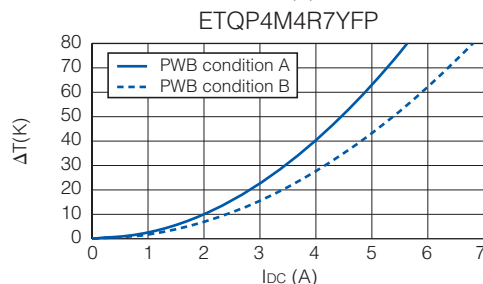
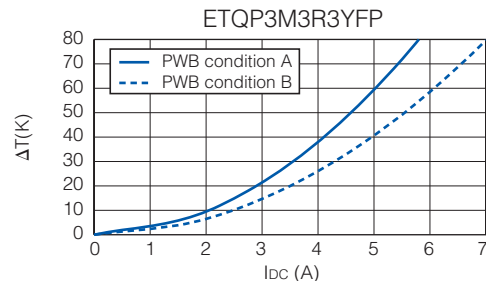
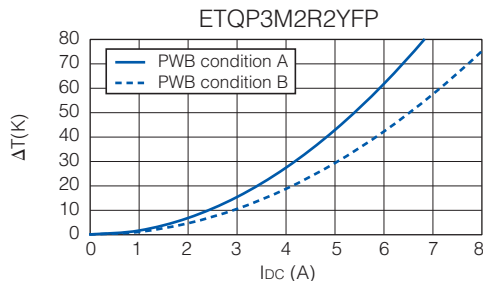
● Inductance vs DC Current



● 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-M0630M/PCC-M0645M (ETQP3M□□□YFN/ETQP4M□□□YFN)

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)	(*4)
PCC-M0630M [6.5×6.0×3.0(mm)]	ETQP3MR68YFN	0.68	±20	6.3 (6.9)	±10	9.8	12.0	24.0
	ETQP3M1R0YFN	1.0		7.9 (8.7)		8.8	10.7	20.0
PCC-M0645M [6.5×6.0×4.5(mm)]	ETQP4M6R8YFN	6.8	±20	39.3 (43.2)	±10	4.1	5.2	10.0
	ETQP4M100YFN	10		54.2 (59.6)		3.3	4.5	8.3
	ETQP4M470YFN	47		210 (231)		1.8	2.2	3.8

(*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. 44 K/W measured on 6.5×6.0×3.0 mm case size and approx. 37 K/W measured on 6.5×6.0×4.5 mm case size. See also (*5)

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

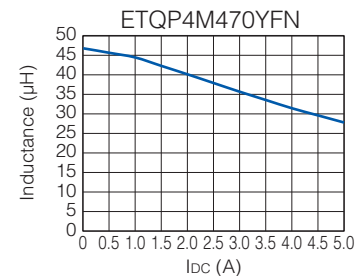
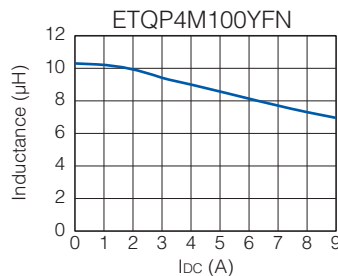
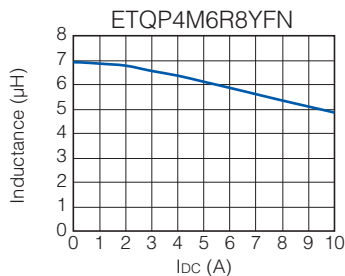
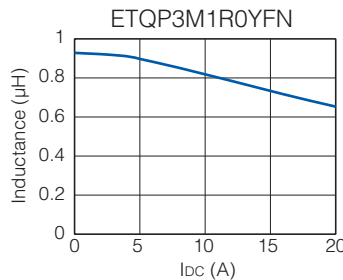
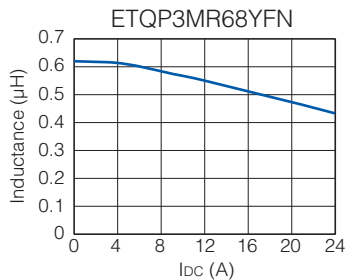
(*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode.

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)

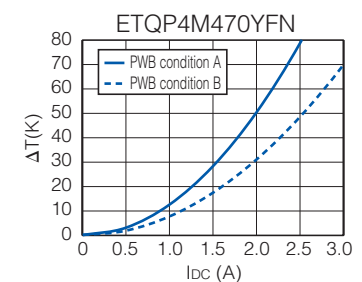
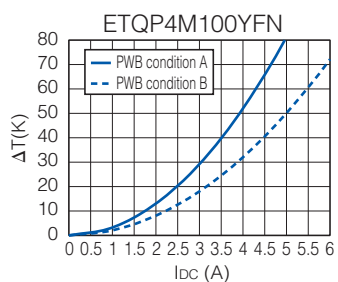
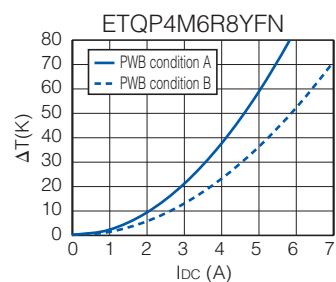
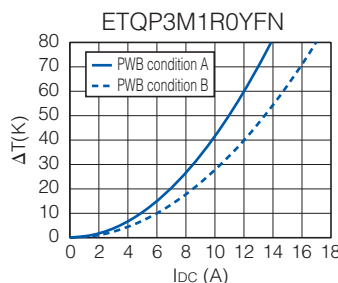
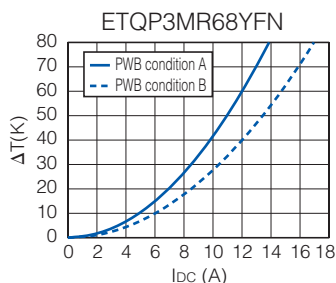
● Inductance vs DC Current



● 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)



3. Series PCC-M0754M/PCC-M0750M (ETQP5M□□□YFM/ETQP5M□□□YGM)

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)	(*4)
PCC-M0754M [7.5×7.0×5.4(mm)]	ETQP5M4R7YFM	4.7	±20	20(23)	±10	6.3	8.0	13.1
	ETQP5M6R8YFM	6.8		26.7(29.4)		5.5	6.9	12.1
	ETQP5M100YFM	10		37.6(41.3)		4.7	5.7	10.6
	ETQP5M220YFM	22		92(102)		3.0	3.7	5.8
	ETQP5M330YFM	33		120(132)		2.6	3.3	4.8
	ETQP5M470YFM	48		156(172)		2.3	2.9	4.1
PCC-M0750M [7.5×7.0×5.0(mm)]	ETQP5M101YGM	95		348(382.8)		1.4	1.9	3.1

(*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 7.5×7.0×5.4 mm case size and approx. 29 K/W measured on 7.5×7.0×5.0 mm case size. See also (*5)

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

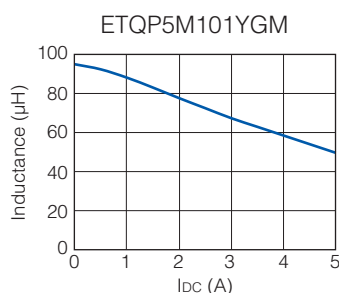
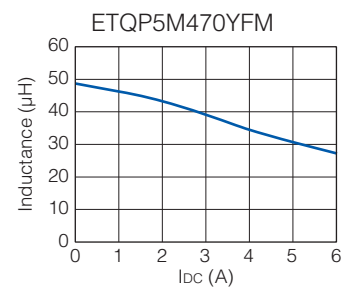
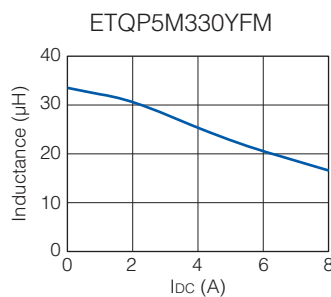
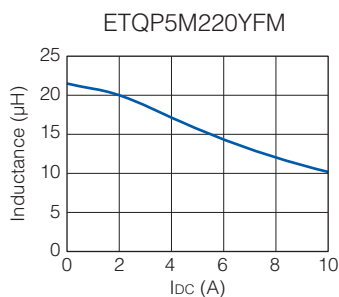
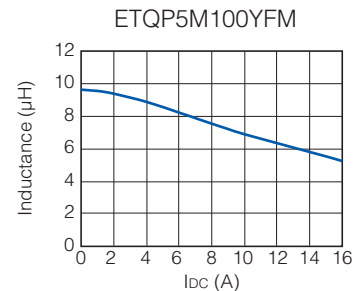
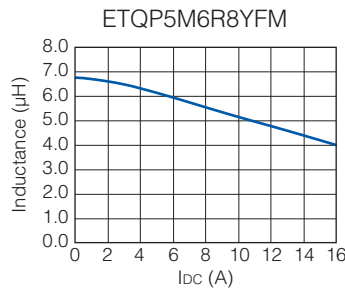
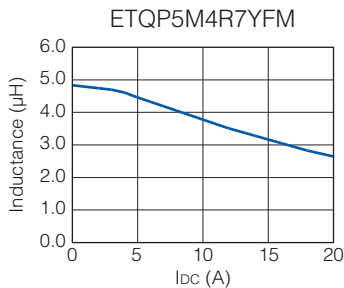
(*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode.

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)

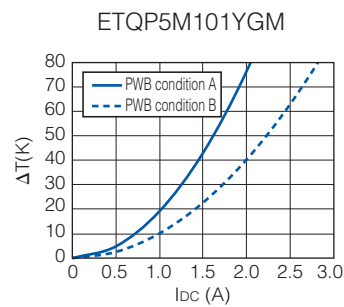
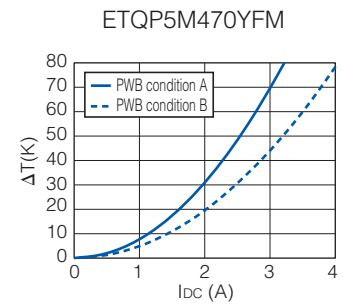
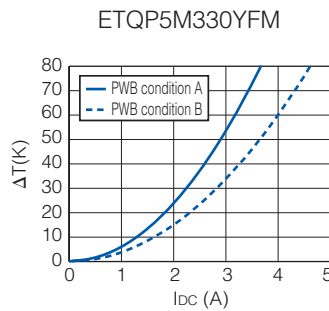
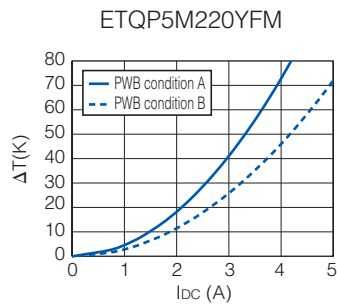
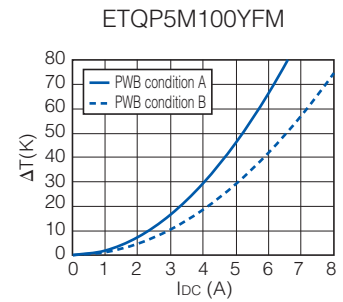
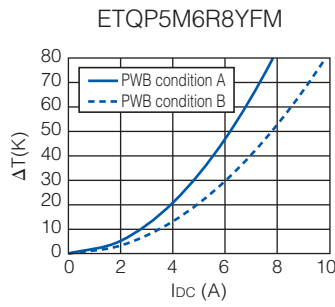
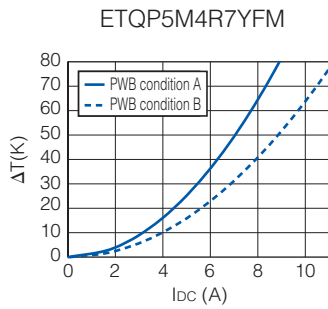
● Inductance vs DC Current



● 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)



4. 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 (%)	ΔT=40K		ΔL=-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
	ETQP5M150YFK	15		48.2(53.1)		4.7	5.5	7.2
	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		302(333)		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 8.5×8.0×5.4 mm case size and approx. 29 K/W measured on 8.5×8.0×5.0 mm case size. See also (*5)

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

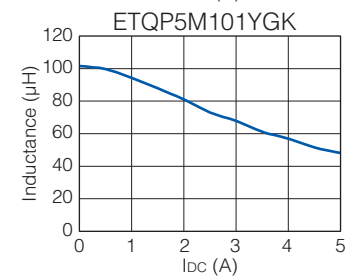
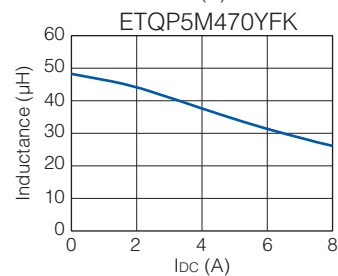
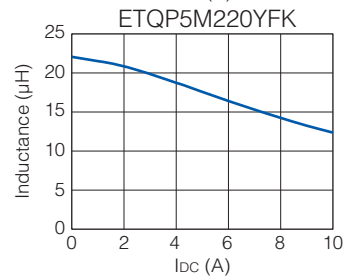
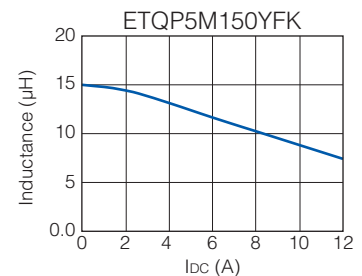
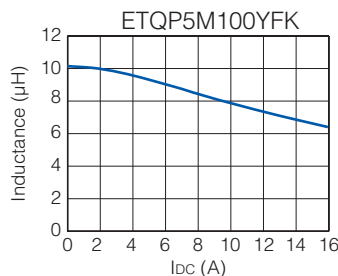
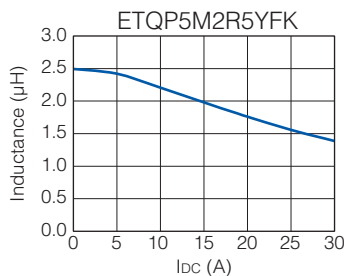
(*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode.

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)

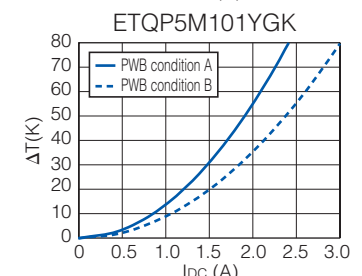
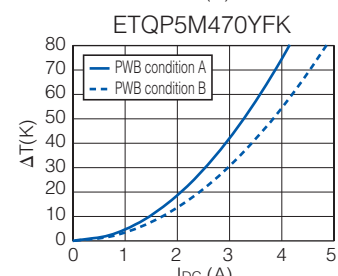
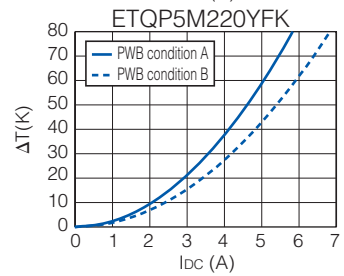
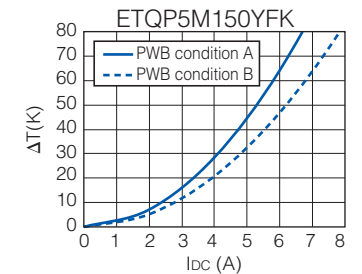
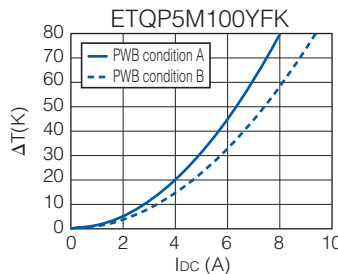
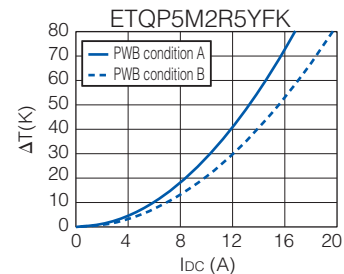
● Inductance vs DC Current



● 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)



5. 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 (%)	ΔT=40K (*2)	ΔT=40K (*3)	ΔL=-30% (*4)
PCC-M1054M [10.7×10.0×5.4(mm)]	ETQP5M1R5YFC	1.45	±20	3.8(4.2)	±10	17.9	21.4	35.1
	ETQP5M2R5YFC	2.5		5.3(5.9)		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	8.8
	ETQP5M330YFC	32.5		68.5(75.4)		4.2	5.0	7.6
	ETQP5M470YFC	47		99(108.9)		3.5	4.2	6.8
PCC-M1050M [10.7×10.0×5.0(mm)]	ETQP5M680YFC	66	136(149.6)	3.0	3.6	4.9		
	ETQP5M101YGC	97	208(229)	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 10.7×10.0×5.4 mm case size and approx. 26 K/W measured on 10.7×10.0×5.0 mm case size. See also (*5)

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

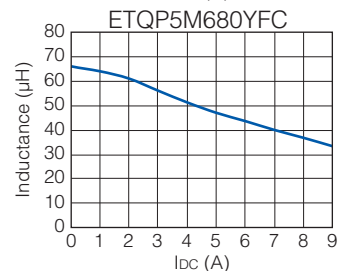
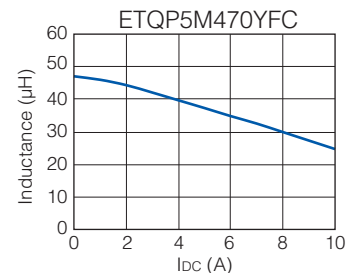
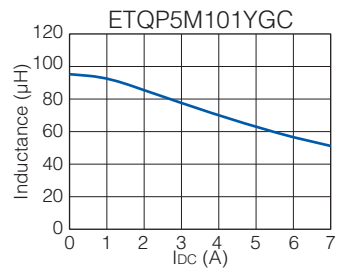
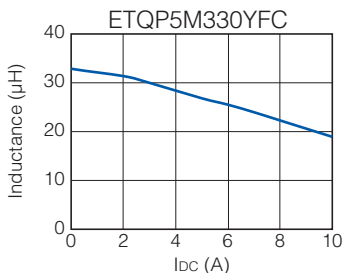
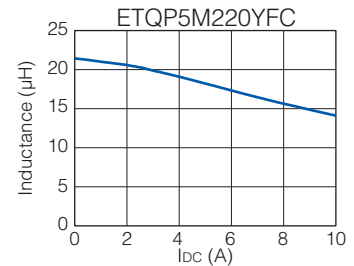
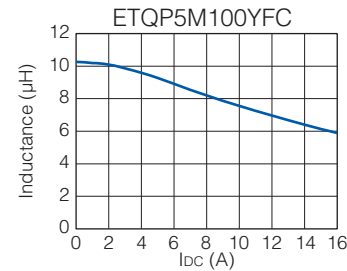
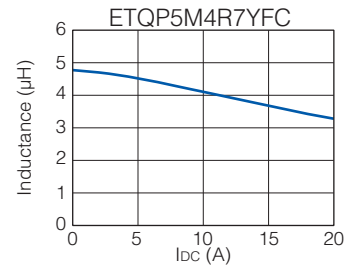
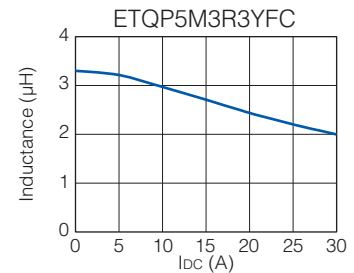
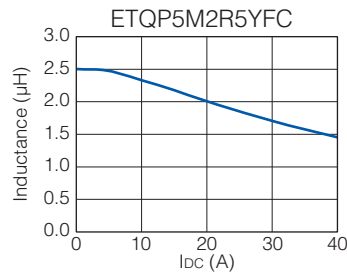
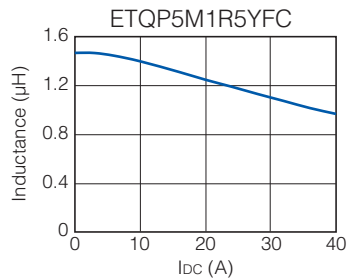
(*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode.

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)

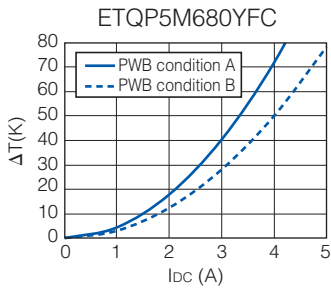
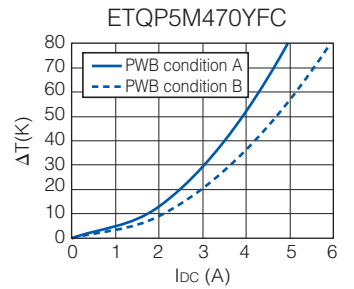
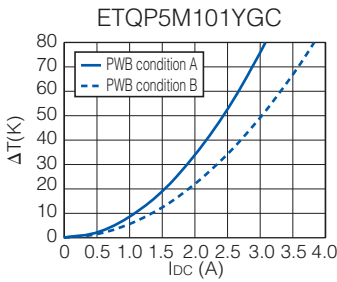
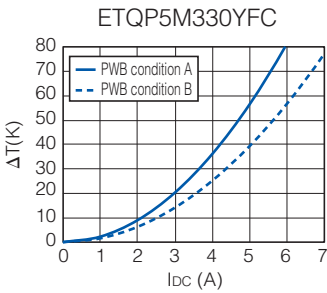
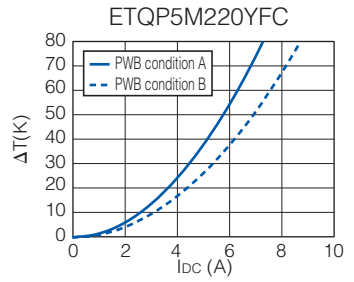
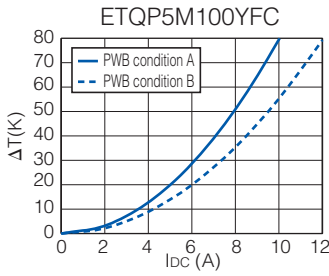
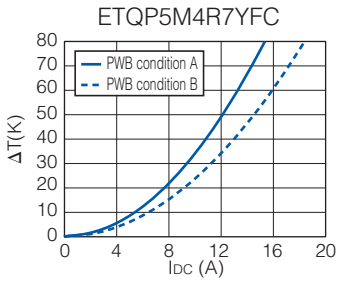
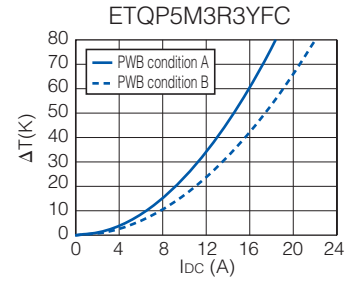
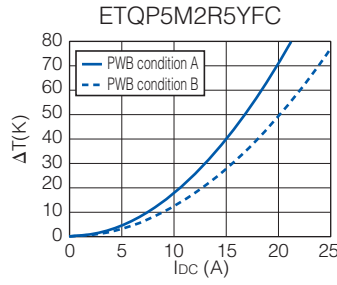
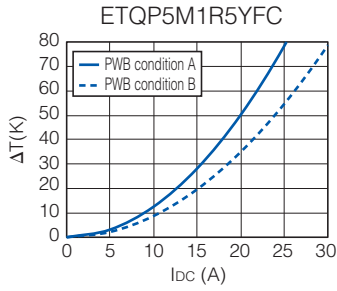
● Inductance vs DC Current



● 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)



6. Series PCC-M1050ML/PCC-M1060ML (ETQP5M□□□YLC/ETQP6M□□□YLC)

Standard Parts

Series	Part No.	Inductance *1		DCR (at 20 °C) (mΩ)		Rated Current (Typ. : A)		
		L0 (μH)	Tolerance (%)	Typ. (max.)	Tolerance (%)	ΔT=40K		
						(*2)	(*3)	(*4)
PCC-M1050ML [10.9×10.0×5.0(mm)]	ETQP5MR68YLC	0.68	±20	1.75(1.93)	±10	26.3	31.5	42.0
	ETQP5M1R0YLC	1.0		2.3(2.53)		23.0	27.5	38.0
	ETQP5M2R0YLC	2.0		4.6(5.06)		16.2	19.4	22.7
PCC-M1060ML [10.9×10.0×6.0(mm)]	ETQP6M1R5YLC	1.5	±20	3.2(3.52)	±10	19.5	23.3	26.8
	ETQP6M2R5YLC	2.5		4.5(5.0)		16.3	19.6	27.0
	ETQP6M3R3YLC	3.3		6.0(6.6)		14.2	17.0	26.0
	ETQP6M4R7YLC	4.7		8.7(9.57)		11.8	14.1	13.2

(*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 10.9×10.0×5.0 mm case size and approx. 23 K/W measured on 10.9×10.0×6.0 mm case size. See also (*5)

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

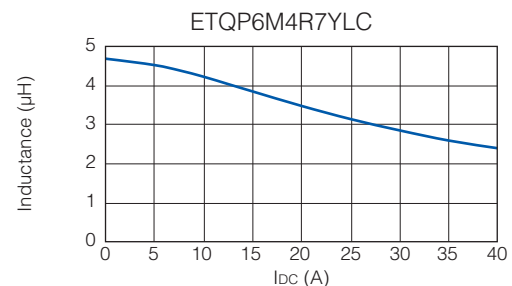
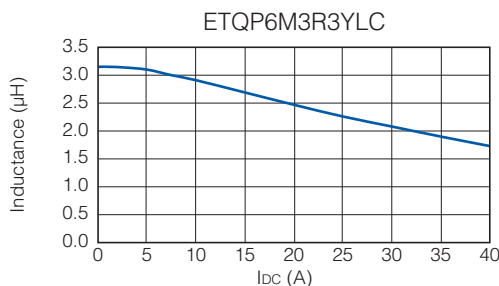
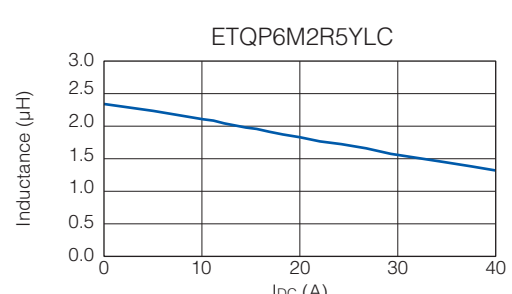
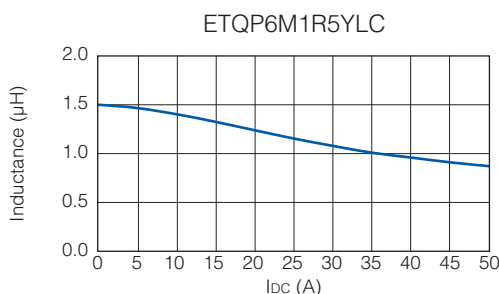
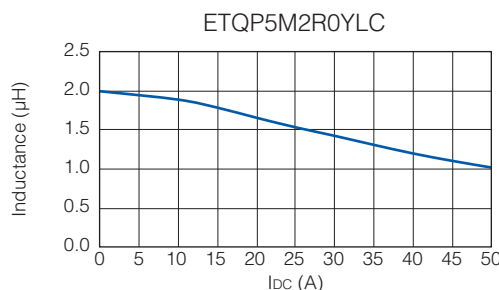
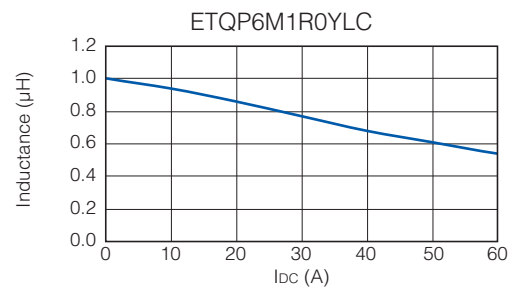
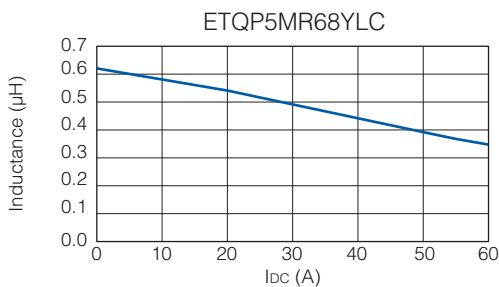
(*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode.

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)

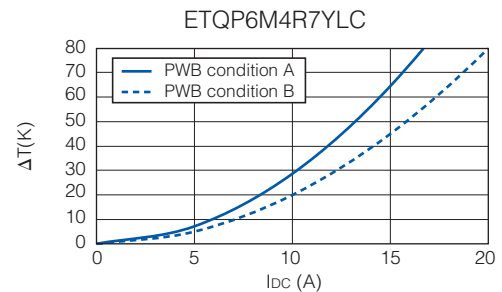
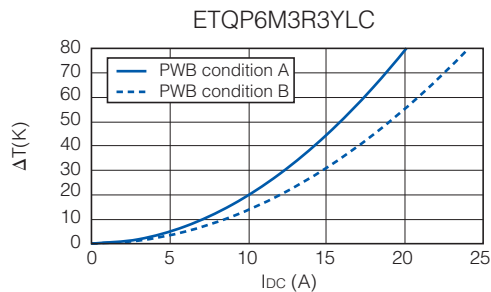
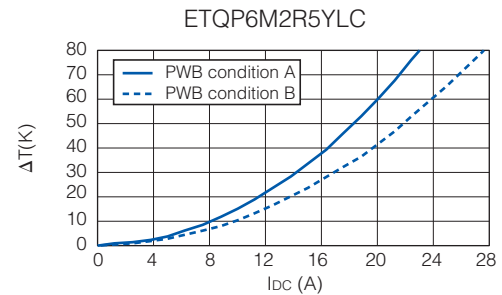
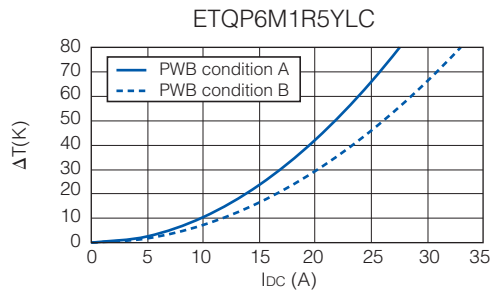
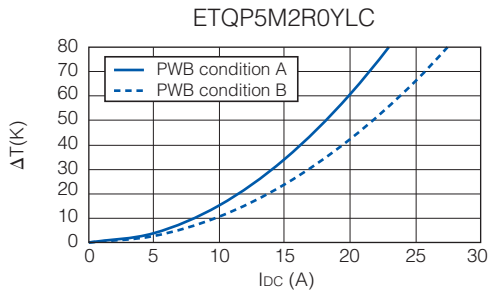
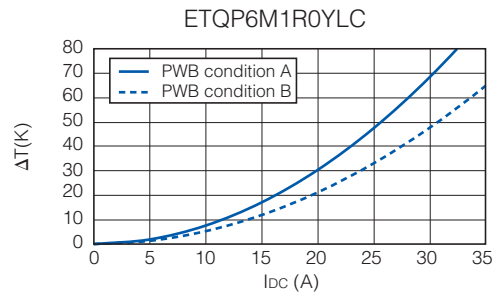
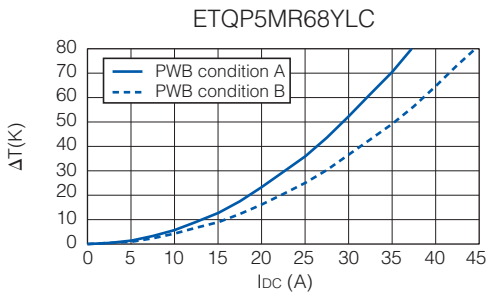
● Inductance vs DC Current



● Case Temperature vs DC Current

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

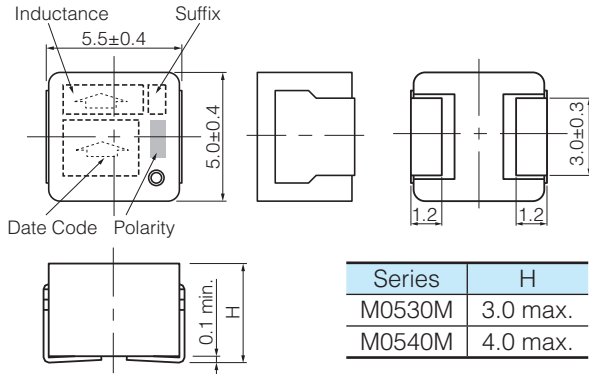
PWB condition B : Multilayer PWB with high heat dissipation performance. See also (*3)



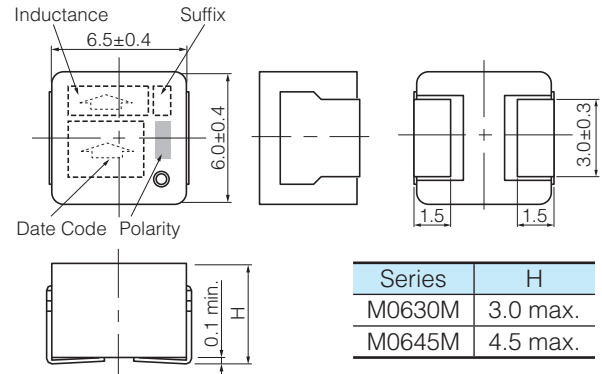
Dimensions in mm (not to scale)

Dimensional tolerance unless noted : ± 0.5

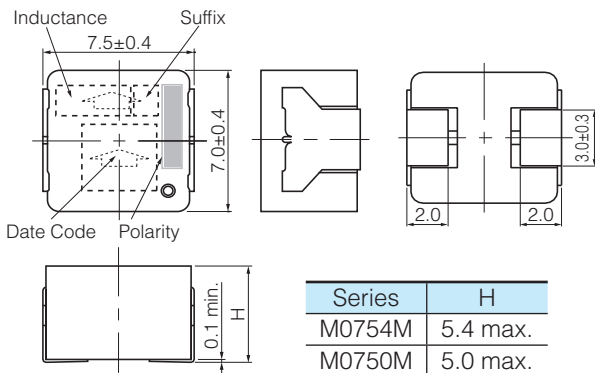
Series PCC-M0530M
Series PCC-M0540M
(ETQP3M□□□YFP/ETQP4M□□□YFP)



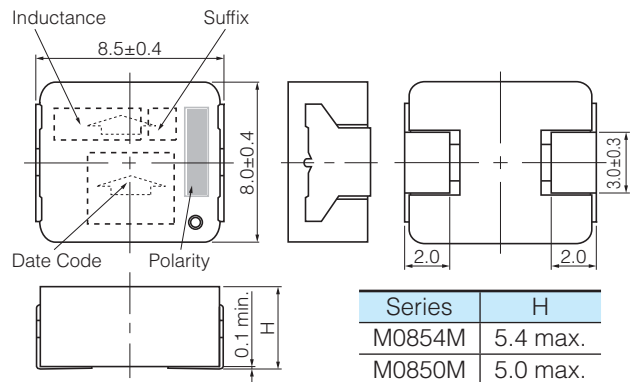
Series PCC-M0630M
Series PCC-M0645M
(ETQP3M□□□YFN/ETQP4M□□□YFN)



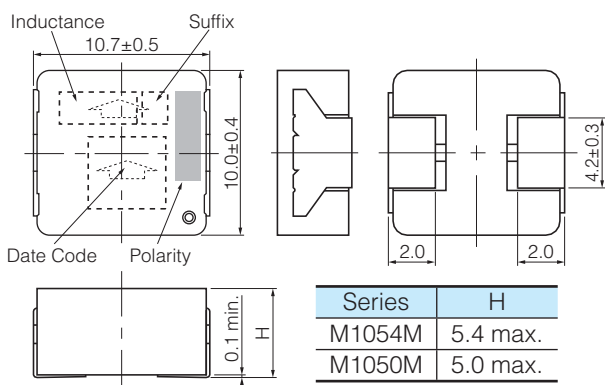
Series PCC-M0754M
Series PCC-M0750M
(ETQP5M□□□YFM/YGM)



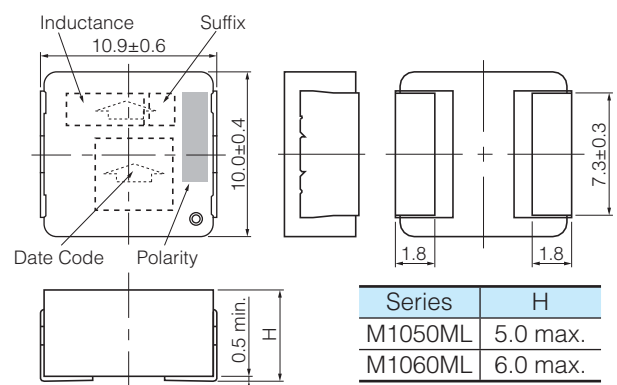
Series PCC-M0854M
Series PCC-M0850M
(ETQP5M□□□YFK/YGK)



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



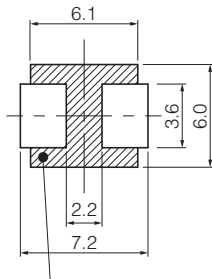
Series PCC-M1050ML
Series PCC-M1060ML
(ETQP5M□□□YLC/ETQP6M□□□YLC)



Recommended Land Pattern in mm (not to scale)

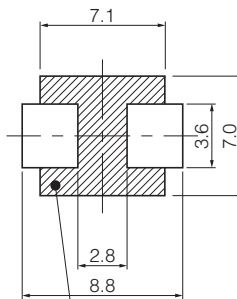
Dimensional tolerance unless noted : ± 0.5

Series PCC-M0530M
Series PCC-M0540M
(ETQP3M□□□YFP/ETQP4M□□□YFP)



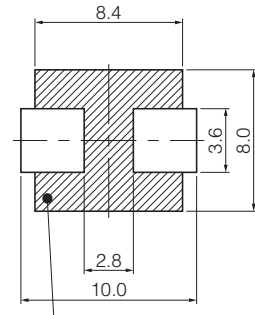
Don't wire on the pattern on shaded portion the PWB.

Series PCC-M0630M
Series PCC-M0645M
(ETQP3M□□□YFN/ETQP4M□□□YFN)



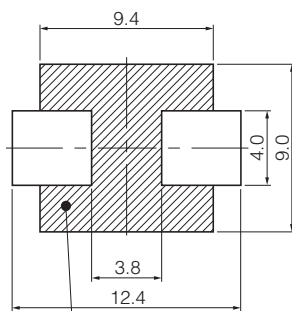
The same as the left.

Series PCC-M0754M
Series PCC-M0750M
(ETQP5M□□□YFM/YGM)



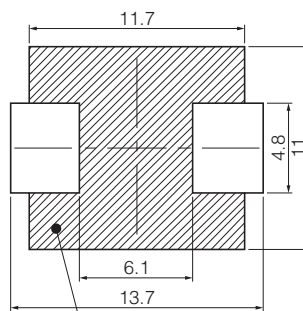
The same as the left.

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



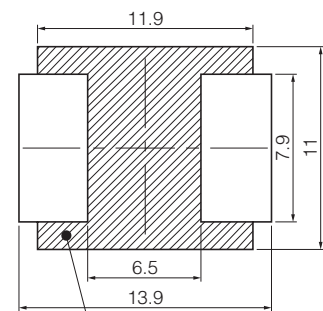
Don't wire on the pattern on shaded portion the PWB.

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



The same as the left.

Series PCC-M1050ML
Series PCC-M1060ML
(ETQP5M□□□YLC/ETQP6M□□□YLC)



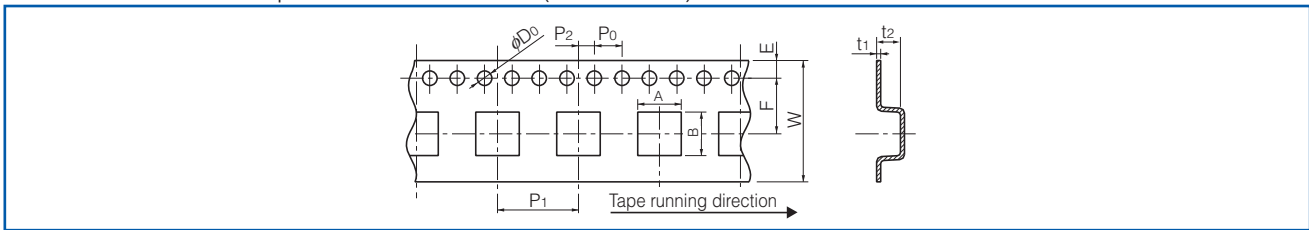
The same as the left.

■ As for Packaging Methods, Soldering Conditions and Safety Precautions (Power Choke Coils for Automotive application),

Please see Data Files

Packaging Methods (Taping)

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



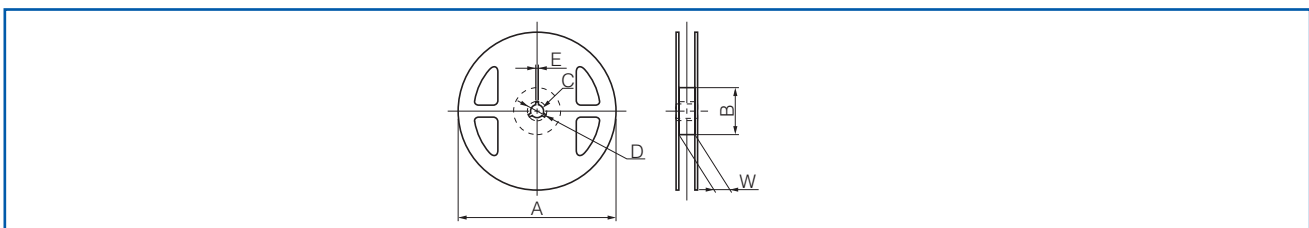
Power Choke Coils for Automotive application

Series	A	B	W	E	F	P ₁	P ₂	P ₀	φD ₀	t ₁	t ₂		
PCC-M0530M	5.6	6.1	16.0	1.75	7.5	12.0	2.0	4.0	1.5	0.4	3.3		
PCC-M0540M											4.3		
PCC-M0630M											3.3		
PCC-M0645M	5.0												
PCC-M0754M/M0750M	8.1	7.6			24.0	11.5					16.0	0.5	6.3
PCC-M0854M/M0850M	9.1	8.6											
PCC-M1054M/M1050M	10.7	11.9											
PCC-M1050ML/M1060ML													

Power Choke Coils for consumer use

Series	A	B	W	E	F	P ₁	P ₂	P ₀	φD ₀	t ₁	t ₂		
PCC-M0512W	5.6	5.85	12.0	1.75	5.5	8.0	2.0	4.0	1.5	0.4	1.4		
PCC-M0630L	7.1	8.0			7.5						12.0	16.0	5.2
PCC-M0630W	7.2	7.5											
PCC-M0730L	7.6	8.9	24.0		11.5	16.0					5.2		
PCC-M0740L	7.6	8.9										4.2	
PCC-M1040W	10.6	11.0	13.0		13.0	6.0					6.0		
PCC-M1040L	10.6	11.8		4.3									
PCC-M1250L	13.1	14.8		5.2									
PCC-D124H	13.5	13.5	24.0	11.5	16.0	5.2							
PCC-D125H							6.2						
PCC-D126H							6.0						
PCC-D126F	13.0	13.0	24.0	11.5	16.0	5.2							
PCC-F126F							6.0						

- Taping Reel Dimensions in mm (not to scale)



Power Choke Coils for Automotive application

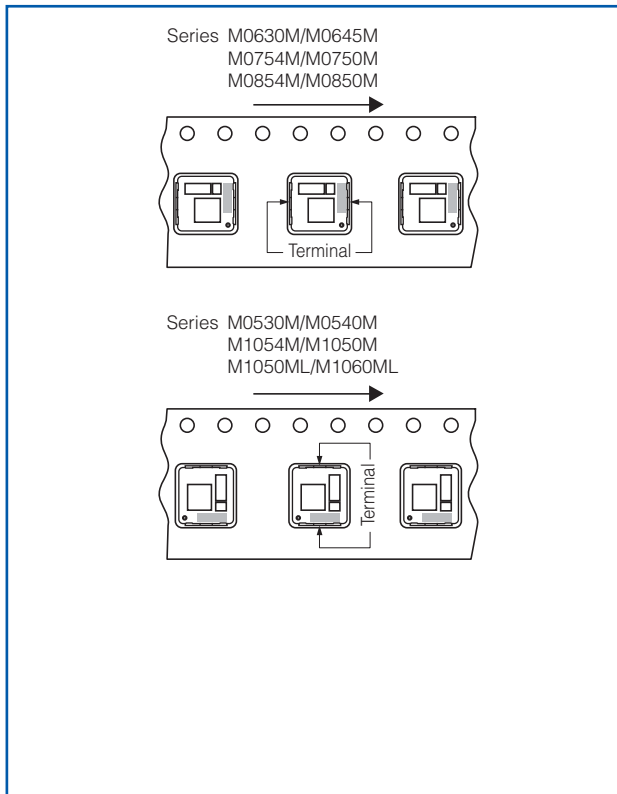
Series	A	B	C	D	E	W
PCC-M0530M/M0540M	330	100	13	21	2	17.5
PCC-M0630M/M0645M						25.5
PCC-M0754M/M0750M						
PCC-M0854M/M0850M						
PCC-M1054M/M1050M	380	80	13	21	2	25.4
PCC-M1050ML/M1060ML						

Power Choke Coils for consumer use

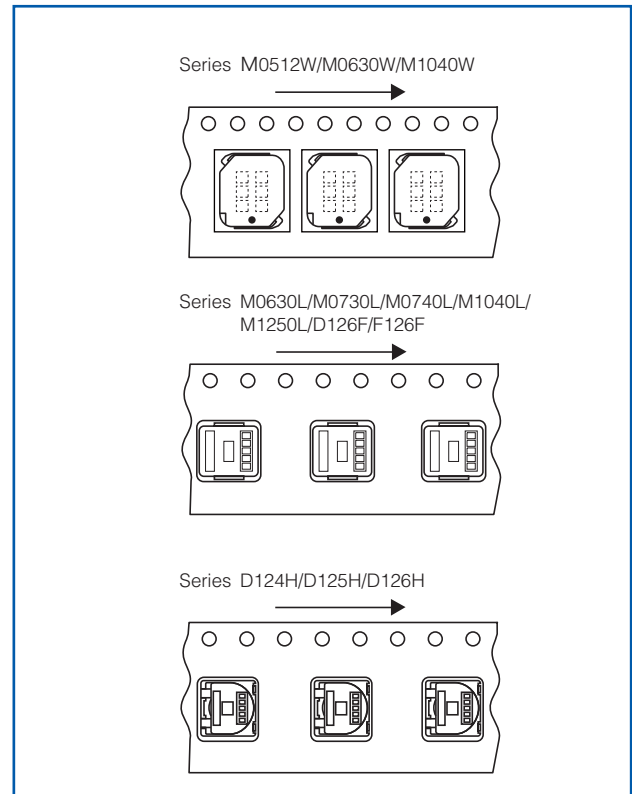
Series	A	B	C	D	E	W
PCC-M0512W	330	(80)	13	21	2	13.5
PCC-M0630L/M0630W						17.5
PCC-M1040W						25.5
PCC-M0730L/M0740L	380	80	13	21	2	17.5
PCC-M1040L						25.4
PCC-M1250L/D124H/D125H/ D126H/D126F/F126F						

Component Placement (Taping)

● Power Choke Coils for Automotive application



● Power Choke Coils for consumer use



Standard Packing Quantity/Reel

● Power Choke Coils for Automotive application

Series	Minimum Quantity / Packing Unit	Quantity per reel
PCC-M0530M/M0540M	2,000 pcs. / box (2 reel)	1,000 pcs.
PCC-M0630M		
PCC-M0645M	1,000 pcs. / box (2 reel)	500 pcs.
PCC-M0754M/M0750M		
PCC-M0854M/M0850M		
PCC-M1054M/M1050M		
PCC-M1050ML/M1060ML		

● Power Choke Coils for consumer use

Series	Minimum Quantity / Packing Unit	Quantity per reel
PCC-M0512W	6,000 pcs. / box (2 reel)	3,000 pcs.
PCC-M0730L	3,000 pcs. / box (2 reel)	1,500 pcs.
PCC-M0740L		
PCC-M0630L	2,000 pcs. / box (2 reel)	1,000 pcs.
PCC-M0630W		
PCC-M1040L		
PCC-M1040L (ETQP4LR19WFC)	1,000 pcs. / box (2 reel)	500 pcs.
PCC-M1040W		
PCC-M1250L		
PCC-D124H		
PCC-D125H		
PCC-D126H		
PCC-D126F		
PCC-F126F		