

ETQ-P5M480YFK Datasheet



DiGi Electronics Part Number ETQ-P5M480YFK-DG

Manufacturer Panasonic Electronic Components

Manufacturer Product Number ETQ-P5M480YFK

Description FIXED IND 48UH 4.5A 156 MOHM SMD

Detailed Description 48 µH Shielded Inductor 4.5 A 156mOhm 2-SMD, J-

Lead

https://www.DiGi-Electronics.com



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RFQ Email: Info@DiGi-Electronics.com

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Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
ETQ-P5M480YFK	Panasonic Electronic Components
Series:	Product Status:
PCC-M0854M	Obsolete
Type:	Material - Core:
-	Metal Composite
Inductance:	Tolerance:
48 µH	±20%
Current Rating (Amps):	Current - Saturation (Isat):
4.5 A	
Shielding:	DC Resistance (DCR):
Shielded	156mOhm
Q @ Freq:	Frequency - Self Resonant:
Ratings:	Operating Temperature:
AEC-Q200	-40°C ~ 150°C
Inductance Frequency - Test:	Mounting Type:
100 kHz	Surface Mount
Package / Case:	Supplier Device Package:
2-SMD, J-Lead	
Size / Dimension:	Height - Seated (Max):
0.335" L x 0.315" W (8.50mm x 8.00mm)	0.213" (5.40mm)
Base Product Number:	
FTO-D5	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
ECCN:	HTSUS:
EAR99	8504.50.8000



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

: Excellent inductance stability using ferrous alloy High bias current

magnetic material (Fig.1)

: Excellent inductance stability over broad temp. range (Fig.1) Temp. stability

• Low audible (buzz) noise: New metal composite core technology

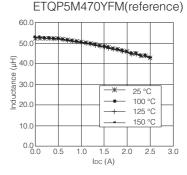
High efficiency : Low RDC of winding and low eddy-current loss of the core

Shielded construction

AEC-Q200 Automotive qualified

RoHS compliant

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



Recommended Applications

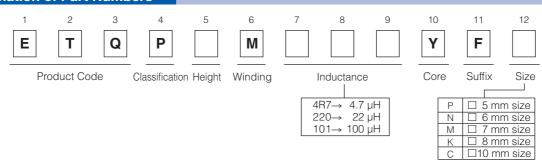
- Noise filter for various drive circuitry requiring high temp. operation and peak current handling capability
- Boost-Converter, Buck-Converter DC/DC

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

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

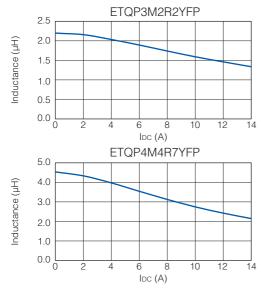
1. Series PCC-M0530M/PCC-M0540M (ETQP3M□□□YFP/ETQP4M□□□YFP)

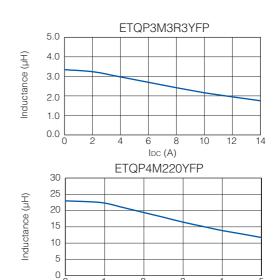
Standard Parts									
		Inductance *1		DCR (at 20 °C) (mΩ)		Rated	Rated Current (Typ. : A)		
Series	Part No.	LO	Tolerance	Тур.	Tolerance	△T=	:40K	△L=-30%	
		(μH)	(%)	(max.)	(%)	(*2)	(*3)	(*4)	
PCC-M0530M	ETQP3M2R2YFP	2.2		22.6 (24.8)		4.8	5.8	10.9	
$[5.5 \times 5.0 \times 3.0 (mm)]$	ETQP3M3R3YFP	3.3	±20	31.3 (34.4)	±10	4.1	5.0	8.6	
PCC-M0540M	ETQP4M4R7YFP	4.7	±20	36.0 (39.6)	± 10	4.0	4.8	7.7	
[5.5×5.0×4.0(mm)]	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

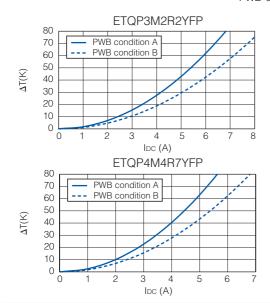


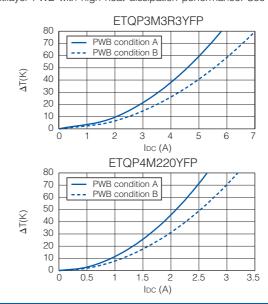


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IDC (A)

- 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)





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2. Series PCC-M0630M/PCC-M0645M (ETQP3M PYFN/ETQP4M PYFN)

Standard Parts								
		Inducta	ance *1	DCR (at 20 °C) (mΩ)		Rated Current (Typ. : A)		
Series	Part No.	L0	Tolerance	Тур.	Tolerance	△T=	-40K	△L=-30%
		(μH)	(%)	(max.)	(%)	(*2)	(*3)	(*4)
PCC-M0630M [6.5×6.0×3.0(mm)]	ETQP3MR68YFN	0.68		6.3 (6.9)		9.8	12.0	24.0
	ETQP3M1R0YFN	1.0		7.9 (8.7)		8.8	10.7	20.0
	ETQP4M6R8YFN	6.8		39.3 (43.2)		4.1	5.2	10.0
DOO 1400 4514	ETQP4M100YFN	10	±20	54.2 (59.6)	±10	3.3	4.5	8.3
PCC-M0645M [6.5×6.0×4.5(mm)]	ETQP4M220YFN	22		126(138.6)		2.3	2.9	6.0
[0.07(0.07(1.0(11111))]	ETQP4M330YFN	33		172(189.2)		2.0	2.5	4.1
	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. Partsare 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 %.

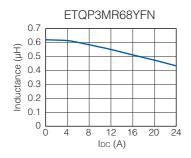
(*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode.

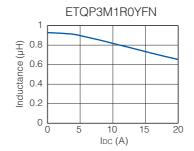
In normal case, the max.standard operating temperature of +150 °C should not be exceeded.

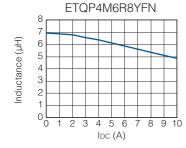
For higher operating temperature conditions, please contact Panasonic representative in your area.

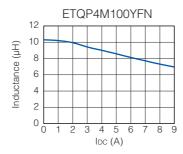
Performance Characteristics (Reference)

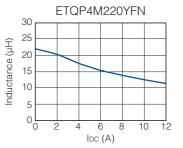
• Inductance vs DC Current

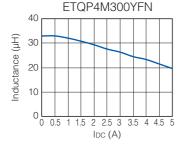


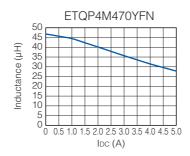










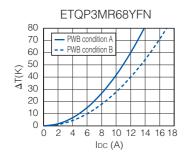


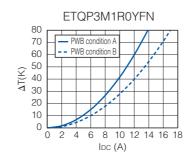
Panasonic

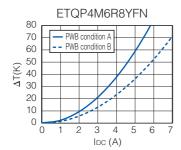
Power Inductors

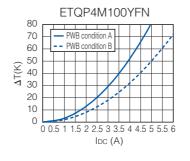
• Case Temperature vs DC Current

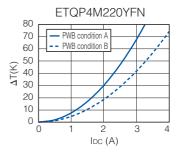
PWB condition A: Four-layer PWB (1.6 mm FR4), See also (*2) PWB condition B: Multilayer PWB with high heat dissipation performance. See also (*3)

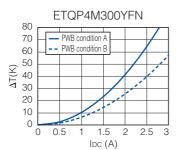


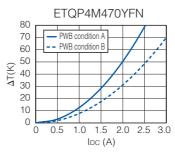














3. Series PCC-M0754M/PCC-M0750M (ETQP5M□□□YFM/ETQP5M□□□YGM)

Standard Parts

		Inducta	Inductance *1		DCR (at 20 °C) (mΩ)		Rated Current (Typ. : A)		
Series	Part No.	LO	Tolerance	Тур.	Tolerance	△T=40K		△L=-30%	
		(µH)	(%)	(max.)	(%)	(*2)	(*3)	(*4)	
	ETQP5M4R7YFM	4.7		20(23)		6.3	8.0	13.1	
	ETQP5M6R8YFM	6.8		26.7(29.4)		5.5	6.9	12.1	
PCC-M0754M	ETQP5M100YFM	10		37.6(41.3)		4.7	5.7	10.6	
$[7.5 \times 7.0 \times 5.4 (mm)]$	ETQP5M220YFM	22	±20	92(102)] _{±10} [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

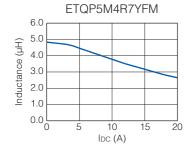
heat dissipation performance. Note: Heat radiation constant is approx. 31 K/W measured on 7.5×7.0×5.4 mm case size and approx. 29 K/W measured on 7.5×7.0×5.0 mm case size. See also (*5) (*4) Saturation rated current: DC current which causes L(0) drop –30 %.

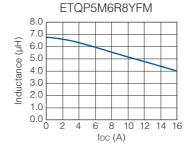
(*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max.standard operating temperature of +150 °C should not be exceeded.

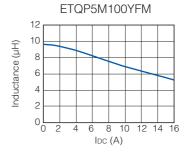
For higher operating temperature conditions, please contact Panasonic representative in your area.

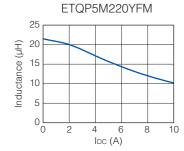
Performance Characteristics (Reference)

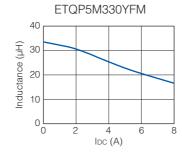
• Inductance vs DC Current

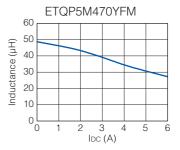


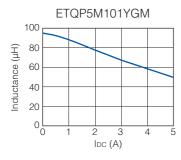










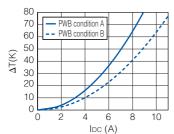


Case Temperature vs DC Current

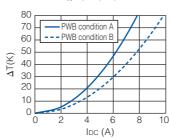
PWB condition A: Four-layer PWB (1.6 mm FR4), See also (*2)

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

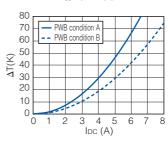




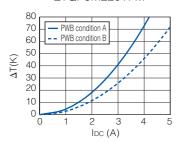
ETQP5M6R8YFM



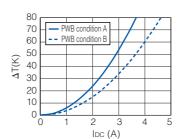
ETQP5M100YFM



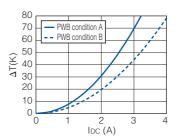
ETQP5M220YFM



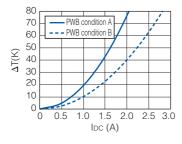
ETQP5M330YFM



ETQP5M470YFM



ETQP5M101YGM



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

Standard Parts								
		Inducta	ance *1	DCR (at 20 °C) (mΩ)		Rated Current (Typ		Тур. : А)
Series	Part No.	L0	Tolerance	Тур.	Tolerance	△T=40K		△L=-30%
		(µH)	(%)	(max.)	(%)	(*2)	(*3)	(*4)
	ETQP5M2R5YFK	2.5	-	7.6(8.4)		11.9	14.0	20.1
PCC-M0854M	ETQP5M100YFK	10		33(37)		5.7	6.7	13.0
$[8.5 \times 8.0 \times 5.4 (\text{mm})]$	ETQP5M150YFK	15		48.2(53.1)		4.7	5.5	7.2
[0.5×6.0×5.4(11111)]	ETQP5M220YFK	22	±20	63(70)	±10	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)

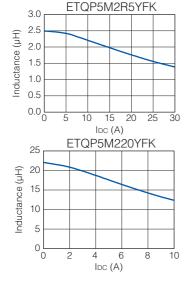
(*3) DC current which causes temperature rise of 40 K. Parts are soldered by reflow on multilayer PWB with high heat dissipation performance. Note: Heat radiation constant are approx. 27 K/W measured on 8.5×8.0×5.4 mm case size and approx. 29 K/W measured on 8.5×8.0×5.0 mm case size. See also (*5) (*4) Saturation rated current: DC current which causes L(0) drop -30 %.

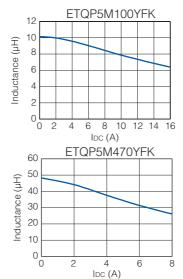
(*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode. In normal case, the max standard operating temperature of + 150 °C should not be exceeded.

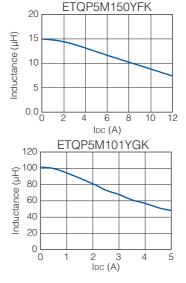
For higher operating temperature conditions, please contact Panasonic representative in your area.

Performance Characteristics (Reference)

Inductance vs DC Current

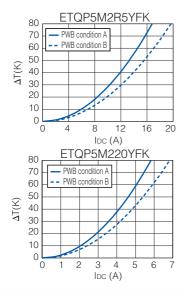


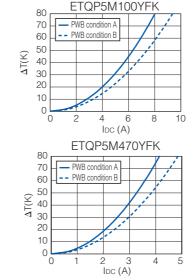


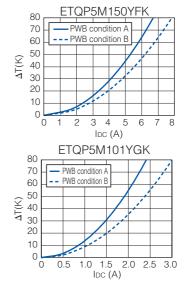


Case Temperature vs DC Current









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

Standard Parts								
		Inducta	ance *1	DCR (at 20 °C) (mΩ)		Rated Current (Typ. : A)		
Series	Part No.	L0	Tolerance	Тур.	Tolerance	△T=	40K	△L=-30%
		(µH)	(%)	(max.)	(%)	(*2)	(*3)	(*4)
	ETQP5M1R5YFC	1.45		3.8(4.2)		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
PCC-M1054M	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
$[10.7 \times 10.0 \times 5.4(mm)]$	ETQP5M220YFC	22	±20	45(50)	±10 [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
	ETQP5M680YFC	66		136(149.6)		3.0	3.6	4.9
PCC-M1050M [10.7×10.0×5.0(mm)]	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)

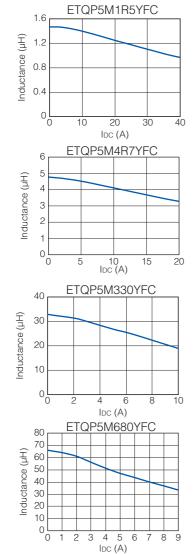
(*2) DC current which causes temperature rise of 40 K. Parts are soldered by reflow on four-layer PWB (1.6 mm FH4) and measured at room temperature. See also (*5)
(*3) DC current which causes temperature rise of 40 K. Parts are soldered by reflow on multilayer PWB with high heat dissipation performance. Note: Heat radiation constant are approx. 23 K/W measured on 10.7×10.0×5.0 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.

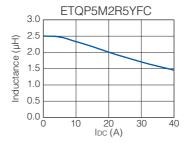
In normal case, the max.standard operating temperature of +150 °C should not be exceeded.

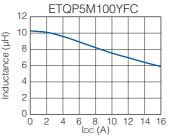
For higher operating temperature conditions, please contact Panasonic representative in your area.

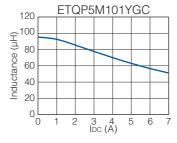
Performance Characteristics (Reference)

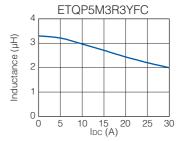
Inductance vs DC Current

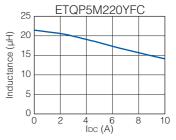


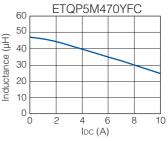






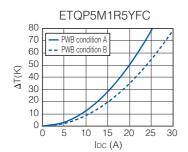


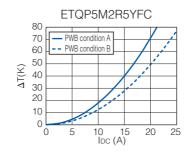


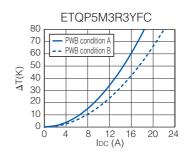


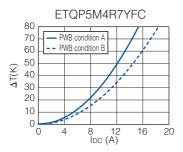
• Case Temperature vs DC Current

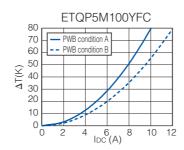
PWB condition A: Four-layer PWB (1.6 mm FR4), See also (*2) PWB condition B: Multilayer PWB with high heat dissipation performance. See also (*3)

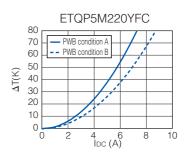


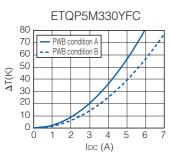


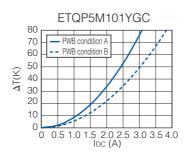


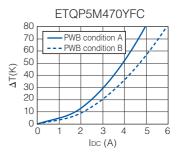


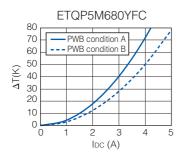












6. Series PCC-M1050ML/PCC-M1060ML (ETQP5M□□□YLC/ETQP6M□□□YLC)

Standard Parts								
		Inductance *1		DCR (at 20 °C) (mΩ)		Rated Current (Typ. : A)		
Series	Part No.	LO	Tolerance	Тур.	Tolerance	△T=	40K	△L=-30%
		(µH)	(%)	(max.)	(%)	(*2)	(*3)	(*4)
PCC-M1050ML	ETQP5MR33YLC	0.33		1.1(1.21)		33.2	39.7	56.7
	ETQP5MR68YLC	0.68		1.75(1.93)		26.3	31.5	40.0
[10.9×10.0×5.0(mm)]	ETQP5M1R0YLC	1.0		2.3(2.53)		23.0	27.5	37.8
	ETQP5M2R0YLC	2.0	±20	4.6(5.06)	±10	16.2	19.4	31.3
	ETQP6M1R5YLC	1.5		3.2(3.52)] = 10 [19.5	23.3	32.0
PCC-M1060ML	ETQP6M2R5YLC	2.5		4.55(5.0)		16.3	19.6	25.8
[10.9×10.0×6.0(mm)]	ETQP6M3R3YLC	3.3		6.0(6.6)		14.2	17.0	26.3
	ETQP6M4R7YLC	4.7		8.7(9.57)		11.8	14.1	22.5

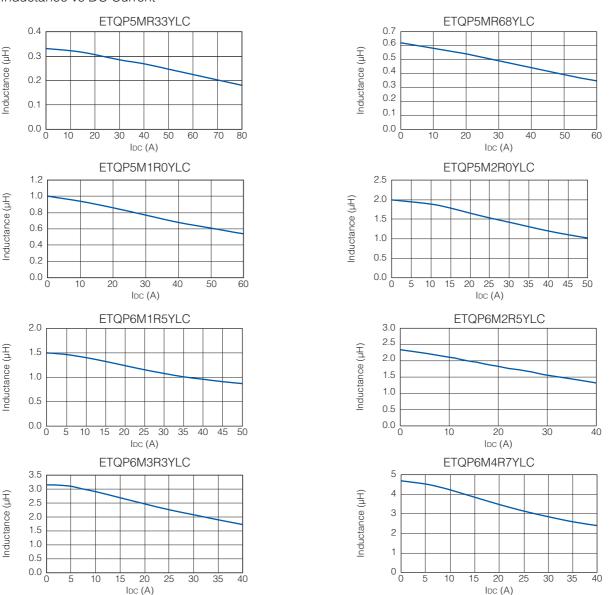
Measured at 100 kHz.

(*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.

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.

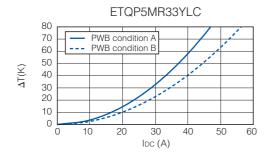
Performance Characteristics (Reference)

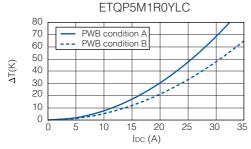
Inductance vs DC Current

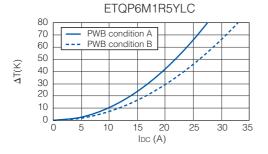


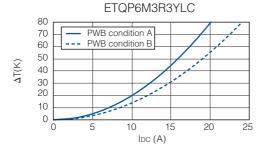
Case Temperature vs DC Current

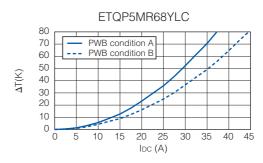
PWB condition A: Four-layer PWB (1.6 mm FR4), See also (*2) PWB condition B: Multilayer PWB with high heat dissipation performance. See also (*3)

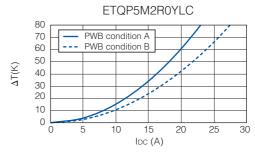


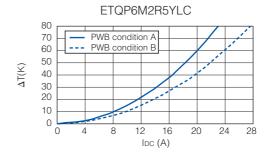


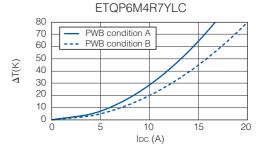










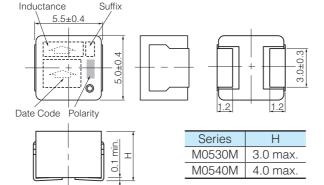


Panasonic

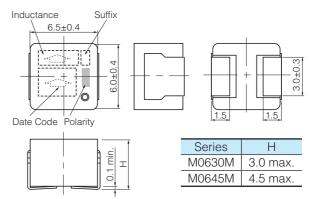
Dimensions in mm (not to scale)

Dimensional tolerance unless noted: ±0.5

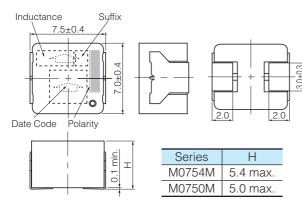
Series PCC-M0530M Series PCC-M0540M (ETQP3MDDDYFP/ETQP4MDDDYFP)



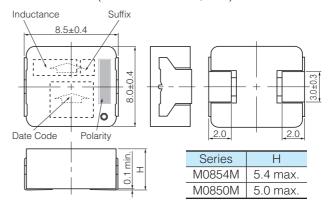
Series PCC-M0630M Series PCC-M0645M (ETQP3MUUUYFN/ETQP4MUUUYFN)



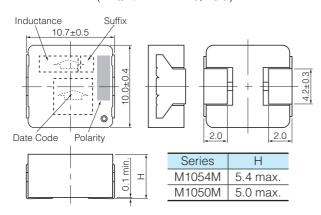
Series PCC-M0754M Series PCC-M0750M (ETQP5MDDDYFM/YGM)



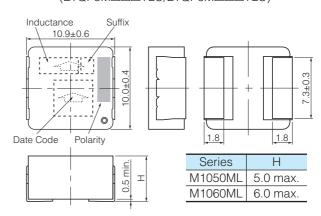
Series PCC-M0854M Series PCC-M0850M (ETQP5MDDDYFK/YGK)



Series PCC-M1054M Series PCC-M1050M (ETQP5MDDDTFC/YGC)



Series PCC-M1050ML Series PCC-M1060ML (ETQP5MDDDYLC/ETQP6MDDDYLC)



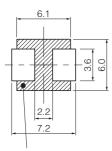
Recommended Land Pattern in mm (not to scale)

Dimensional tolerance unless noted: ±0.5

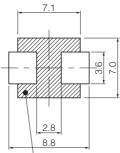
Series PCC-M0530M Series PCC-M0540M (ETQP3MDDDYFP/ETQP4MDDDYFP)

Series PCC-M0630M Series PCC-M0645M (ETQP3MDDDYFN/ETQP4MDDDYFN)

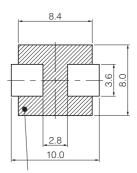
Series PCC-M0754M Series PCC-M0750M (ETQP5MUUUYFM/YGM)



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

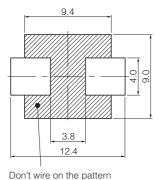


The same as the left



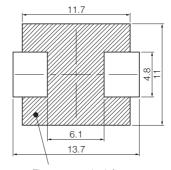
The same as the left

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



on shaded portion the PWB

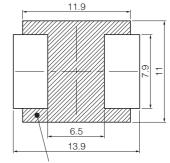
Series PCC-M1054M Series PCC-M1050M $(ETQP5M\Box\Box\BoxYFC/YGC)$



The same as the left.

Series PCC-M1050ML Series PCC-M1060ML

 $(ETQP5M\Box\Box\BoxYLC/ETQP6M\Box\Box\BoxYLC)$



The same as the left.

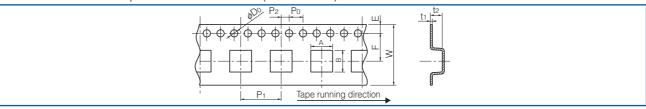
■ As for Soldering Conditions and Safety Precautions (Power Choke Coils for Automotive application),

Please see Data Files

Panasonic

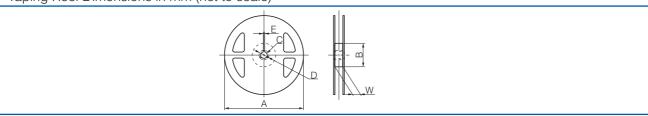
Packaging Methods (Taping)

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



Series	Α	В	W	Е	F	P ₁	P ₂	P ₀	φDo	t ₁	t ₂
PCC-M0530M	5.6	6.1									3.3
PCC-M0540M	5.0	0.1									4.3
PCC-M0630M	7.1	6.6	16.0		7.5	12.0				0.4	3.3
PCC-M0645M	7.1	0.0	10.0	1.75	7.5	12.0	2.0	4.0	1.5	0.4	5.0
PCC-M0754M/M0750M	8.1	7.6		1.75			2.0	4.0	1.5		6.0
PCC-M0854M/M0850M	9.1	8.6									0.0
PCC-M1054M/M1050M PCC-M1050ML/M1060ML	10.7	11.9	24.0		11.5	16.0				0.5	6.3

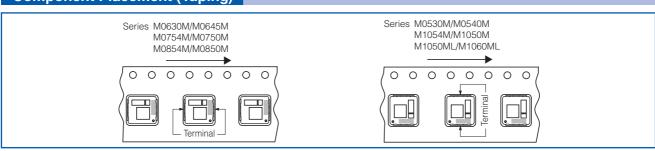
• Taping Reel Dimensions in mm (not to scale)



Standard Reel Dimensions

Series	А	В	С	D	Е	W
PCC-M0530M/M0540M PCC-M0630M/M0645M PCC-M0754M/M0750M PCC-M0854M/M0850M	330	100	13	21	2	17.5
PCC-M1054M/M1050M PCC-M1050ML/M1060ML						25.5

Component Placement (Taping)



Standard Packing Quantity/Reel

Series	Part No.	Minimum Quantity / Packing Unit	Quantity per reel		
PCC-M0530M	ETQP3M□□□YFP	, ,	<u> </u>		
PCC-M0540M	ETQP4M□□□YFP	2,000 pcs. / box (2 reel)	1,000 pcs.		
PCC-M0630M	ETQP3M□□□YFN				
PCC-M0645M	ETQP4M□□□YFN				
PCC-M0754M	ETQP5M□□□YFM				
PCC-M0750M	ETQP5M□□□YGM				
PCC-M0854M	ETQP5M□□□YFK				
PCC-M0850M	ETQP5M□□□YGK	1,000 pcs. / box (2 reel)	500 pcs.		
PCC-M1054M	ETQP5M□□□YFC				
PCC-M1050M	ETQP5M□□□YGC				
PCC-M1050ML	ETQP5M□□□YLC				
PCC-M1060ML	ETQP6M□□□YLC				



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