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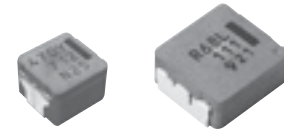
Classification	Product Item	Type · Series	Part Number	Page	
Power Inductors (SMD)	Power Choke Coils	PCC- M0530M/M0540M M0630M/M0645M M0754M/M0750M/M0854M M0850M/M1054M/M1050M M1050ML/M1060ML (MC) for automotive use	ETQ P3M□□□Y ETQ P4M□□□Y ETQ P5M□□□Y ETQ P6M□□□Y	2	
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**All products in this catalog comply with the RoHS Directive.**

The RoHS Directive is “the Directive (2011/65/EU) on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment “ and its revisions.

## 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)**



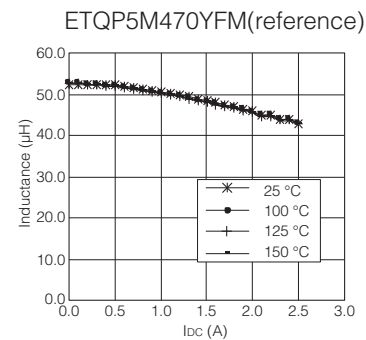
High heat resistance and high reliability  
 Using metal composite core (MC)

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.



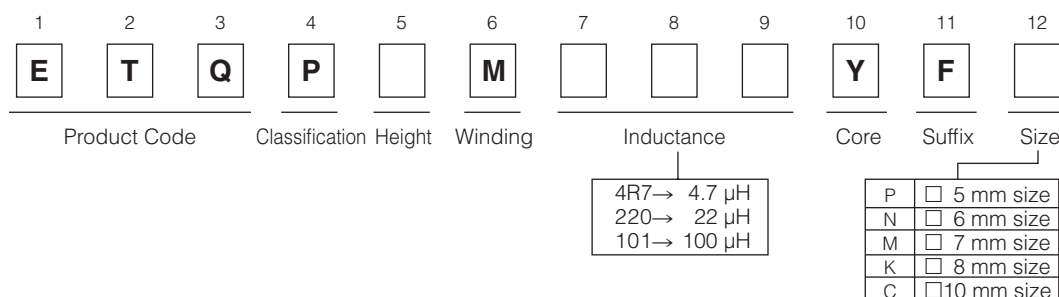
### Recommended Applications

- 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.

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.  
 Should a safety concern arise regarding this product, please be sure to contact us immediately.

## 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 (*2)	ΔT=40K (*3)	ΔL=-30% (*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 %.

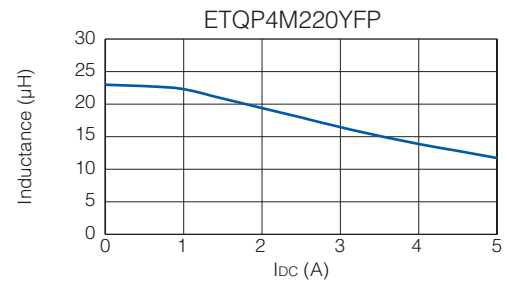
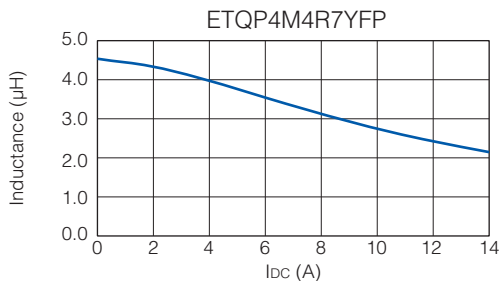
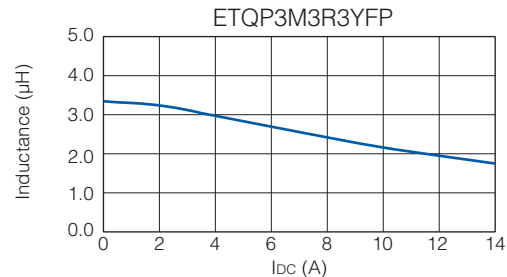
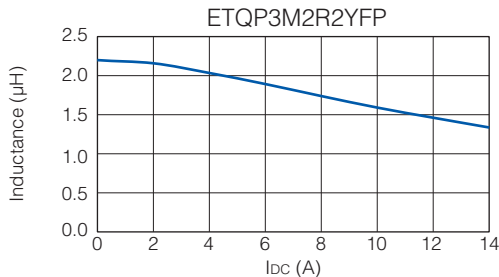
(\*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode.

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)

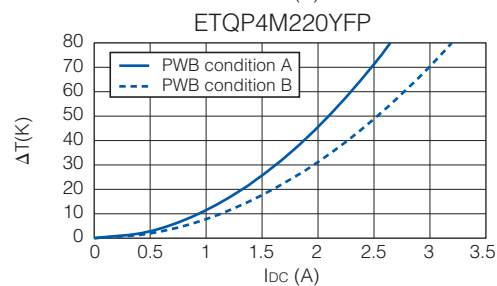
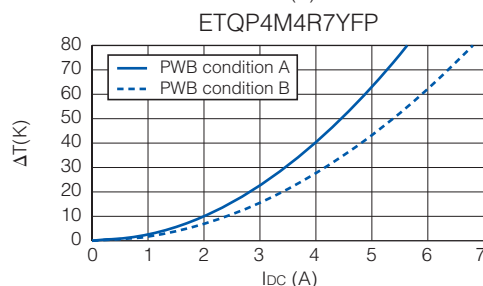
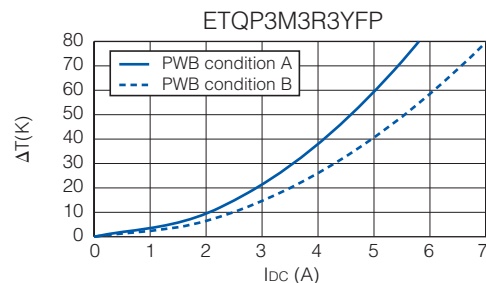
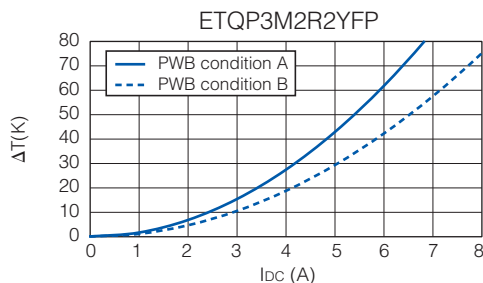
#### ● Inductance vs DC Current



#### ● 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)



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.

Should a safety concern arise regarding this product, please be sure to contact us immediately.

## 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 %.

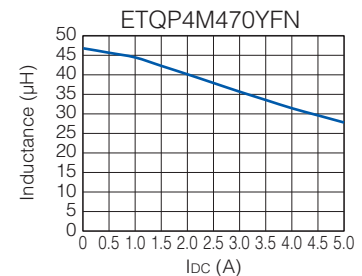
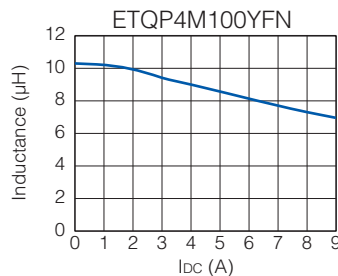
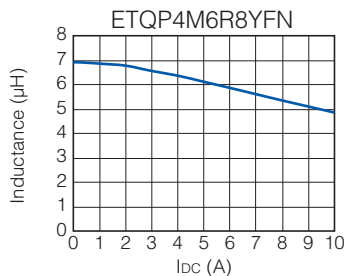
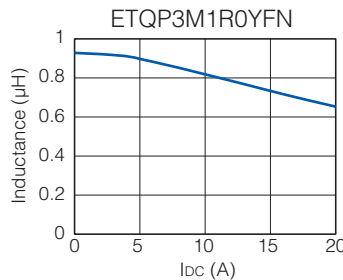
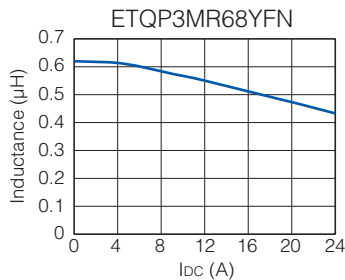
(\*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode.

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)

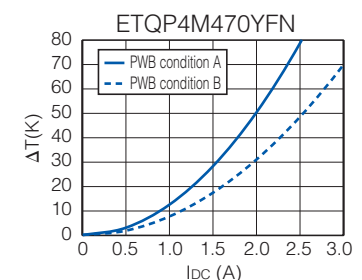
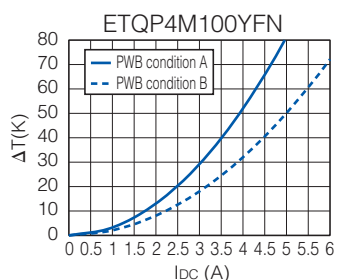
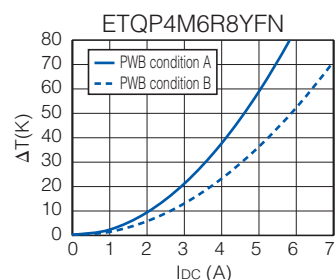
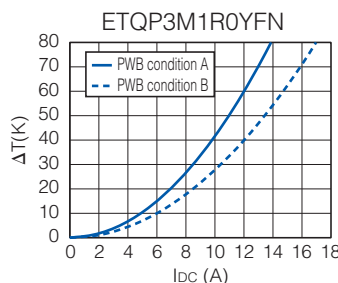
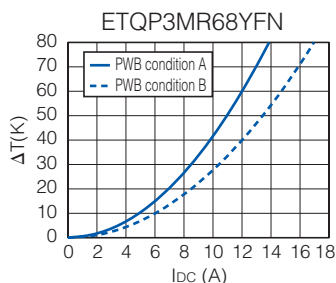
#### ● Inductance vs DC Current



#### ● 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)



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.

Should a safety concern arise regarding this product, please be sure to contact us immediately.

### 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 %.

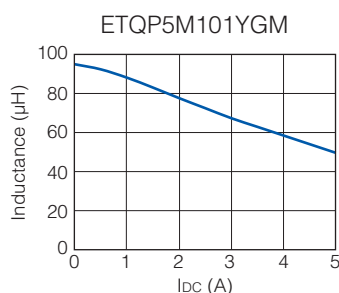
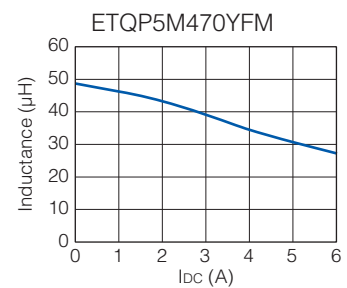
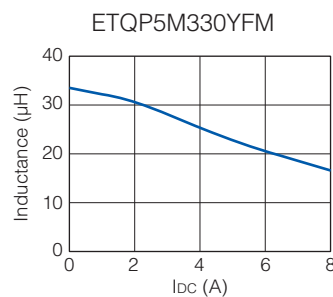
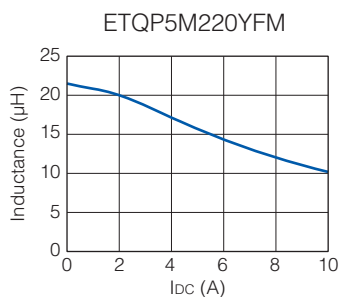
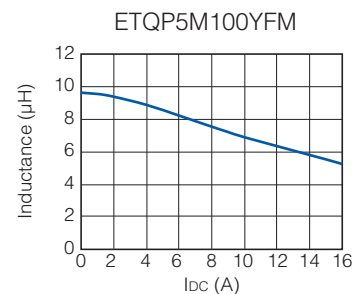
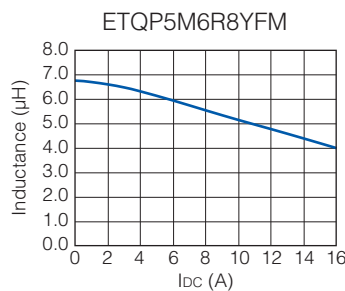
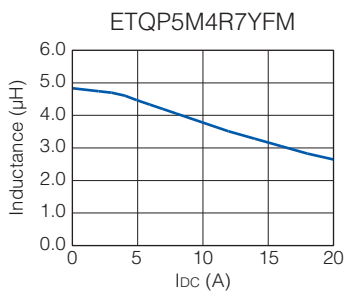
(\*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode.

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)

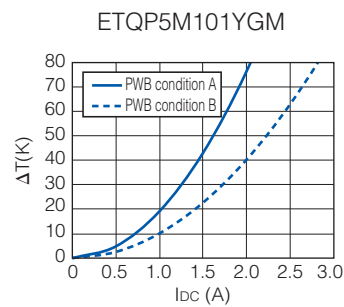
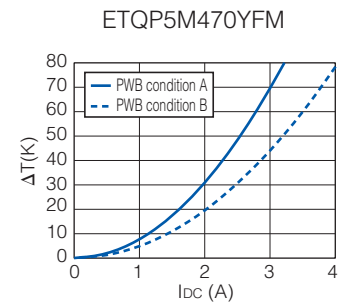
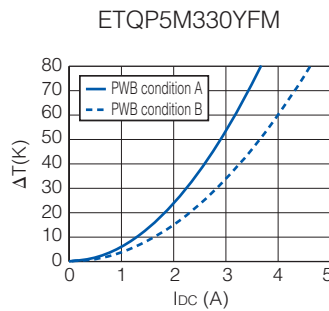
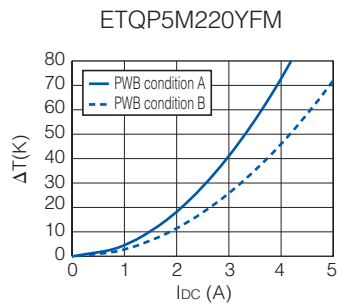
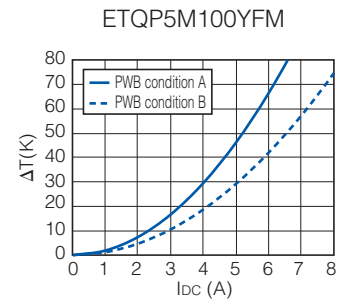
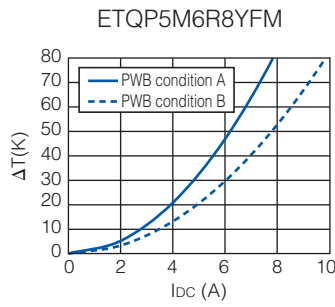
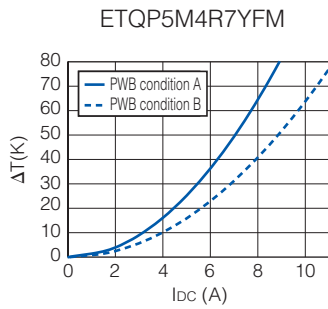
##### ● Inductance vs DC Current



● 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% (*4)
						(*2)	(*3)	
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 %.

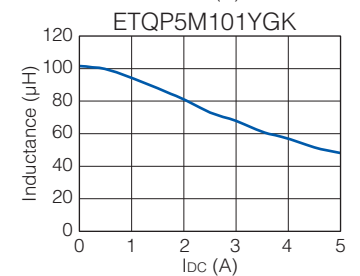
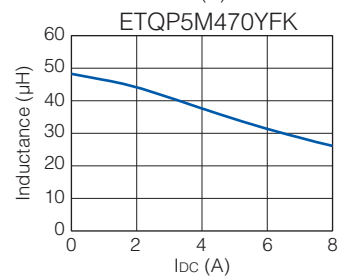
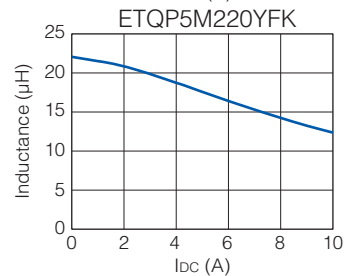
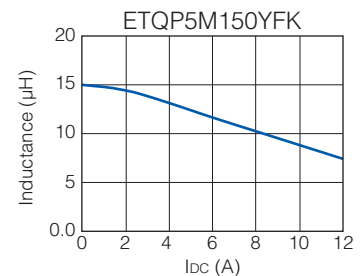
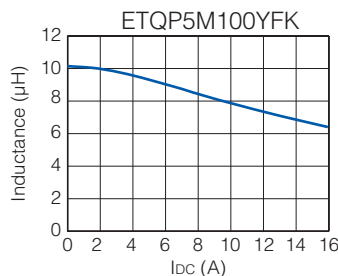
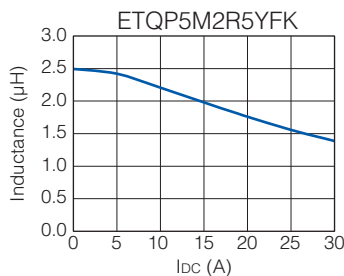
(\*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode.

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)

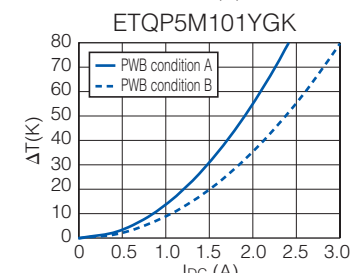
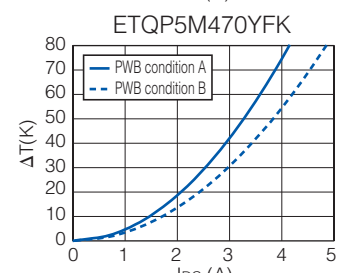
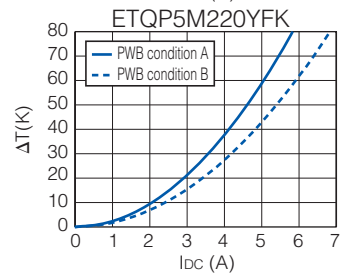
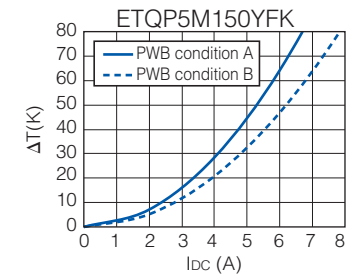
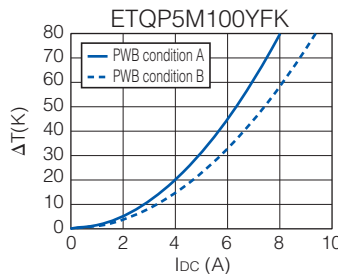
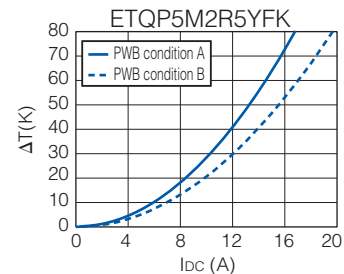
#### ● Inductance vs DC Current



#### ● 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 %.

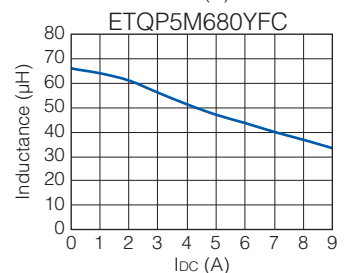
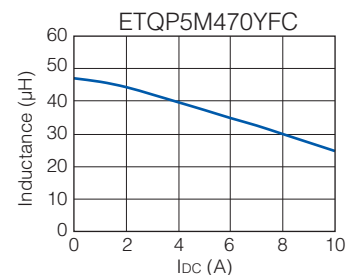
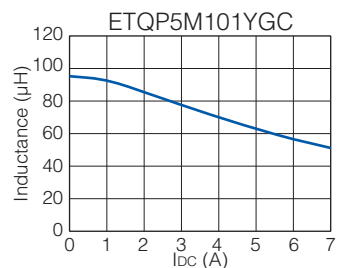
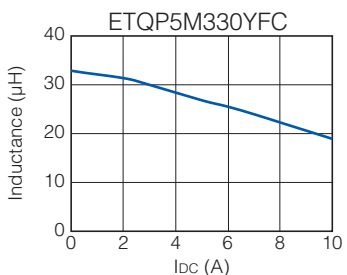
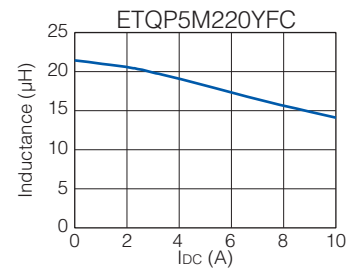
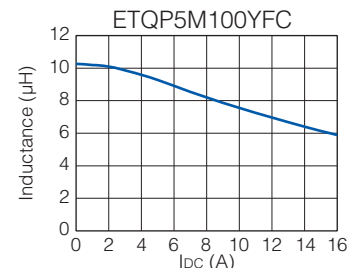
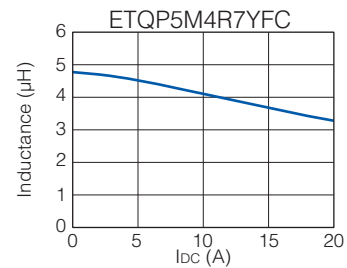
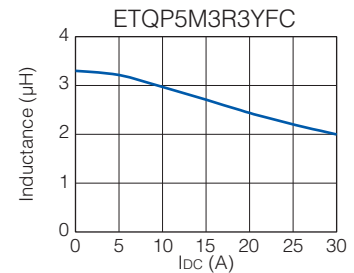
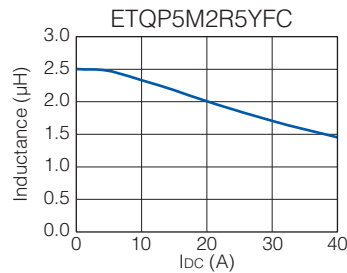
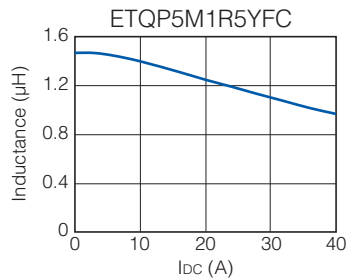
(\*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode.

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)

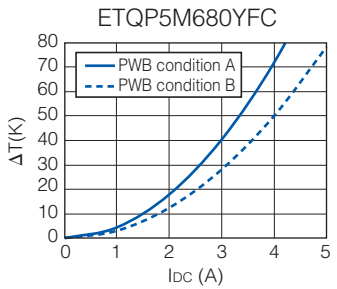
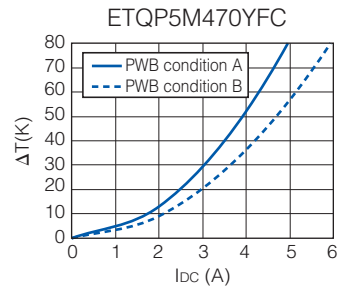
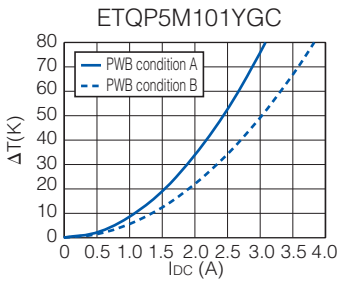
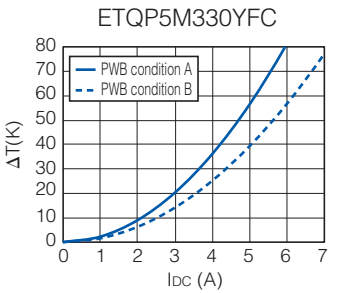
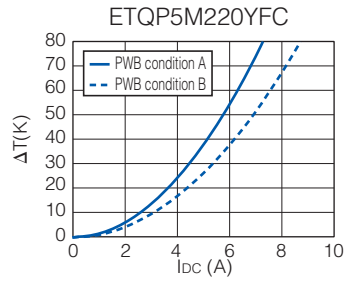
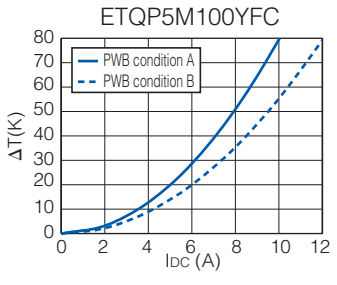
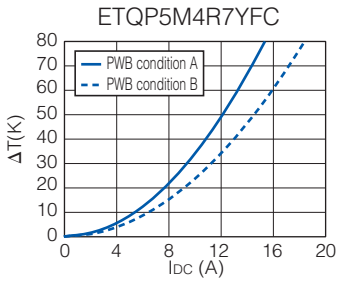
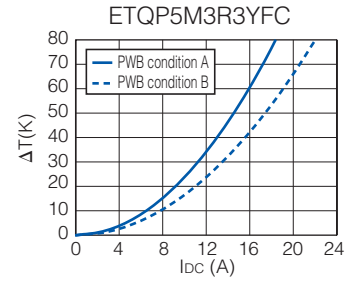
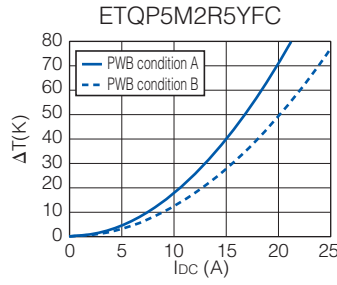
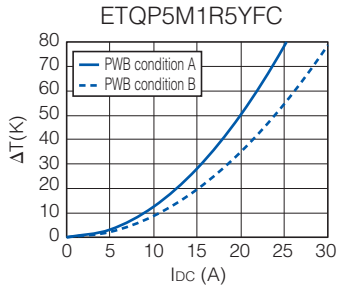
#### ● Inductance vs DC Current



● 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)	ΔL=-30% (*3)	ΔL=-30% (*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 %.

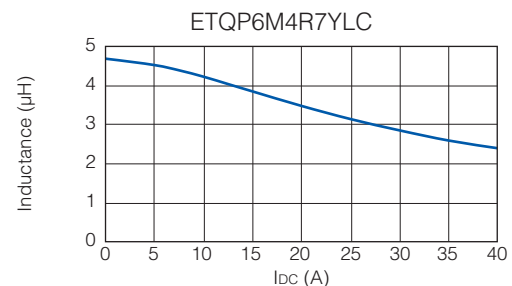
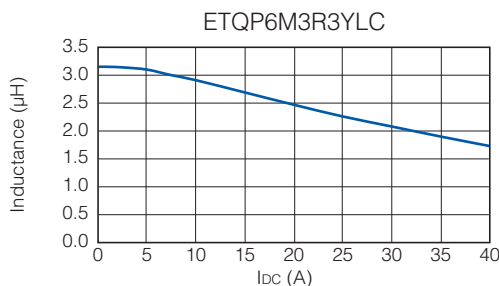
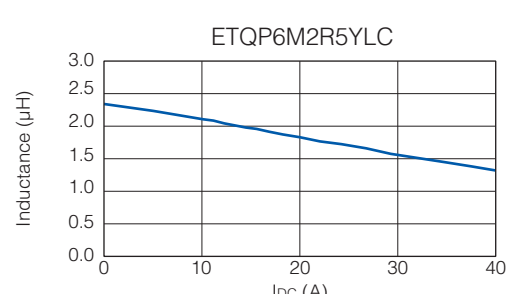
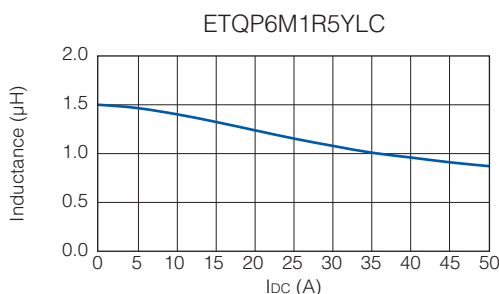
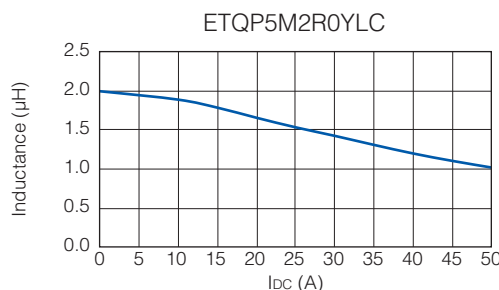
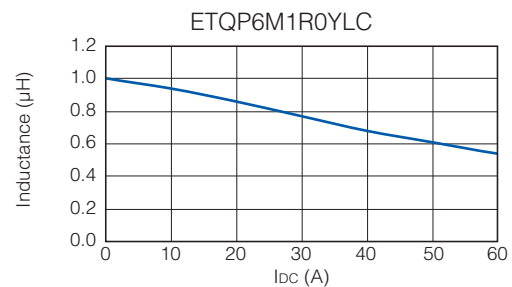
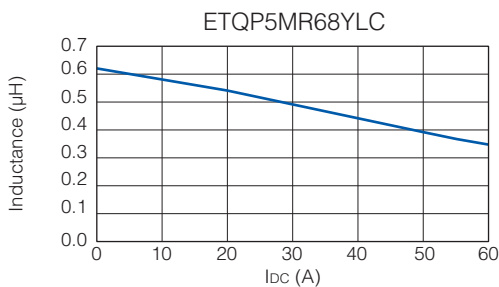
(\*5) Within a suitable application, the part's temperature depends on circuit design and certain heat dissipation conditions. This should be double checked in a worst case operation mode.

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



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.

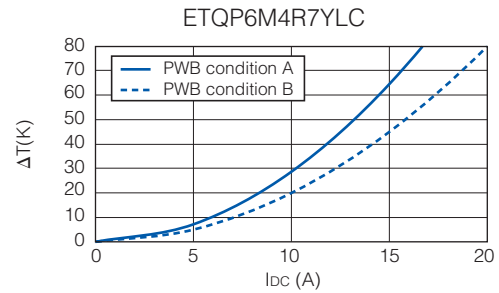
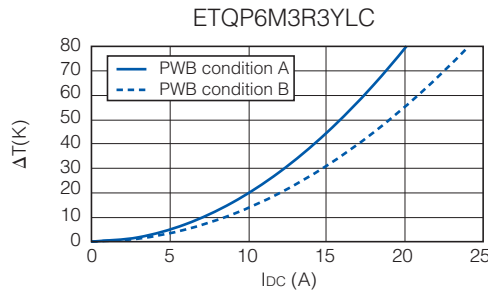
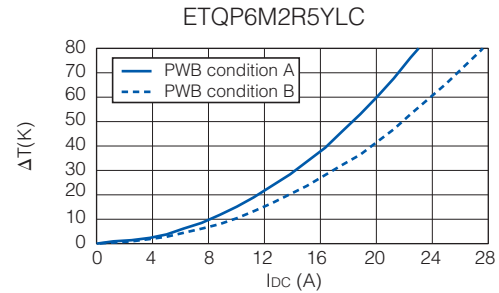
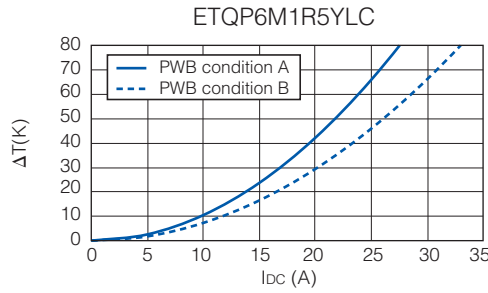
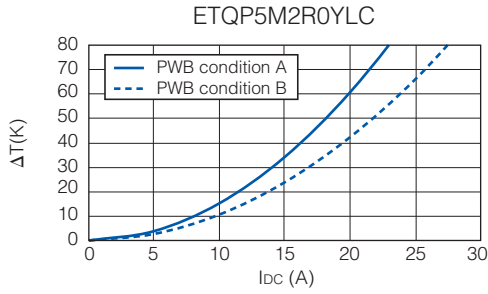
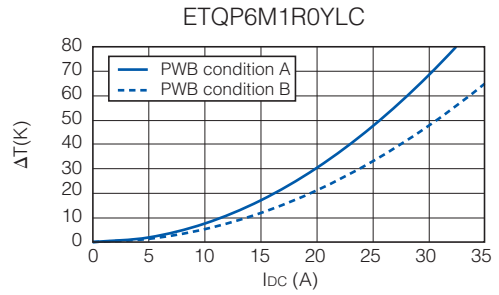
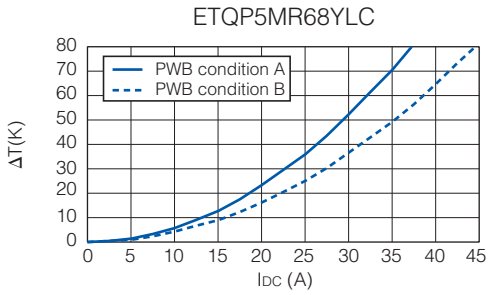
Should a safety concern arise regarding this product, please be sure to contact us immediately.



● Case Temperature vs DC Current

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

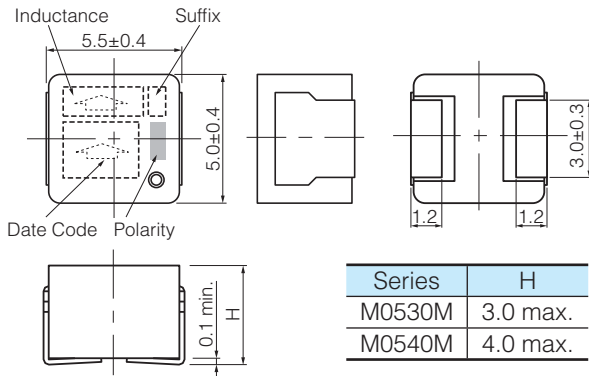
PWB condition B : Multilayer PWB with high heat dissipation performance. See also (\*3)



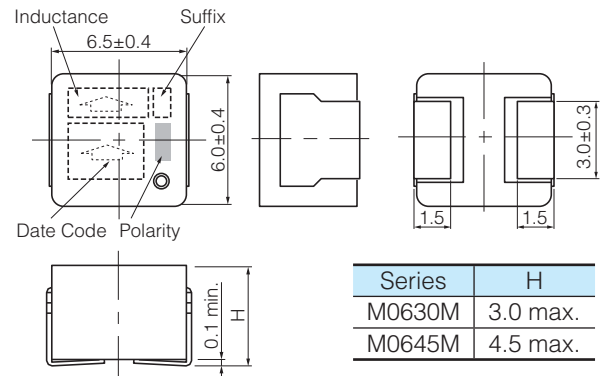
## Dimensions in mm (not to scale)

Dimensional tolerance unless noted :  $\pm 0.5$

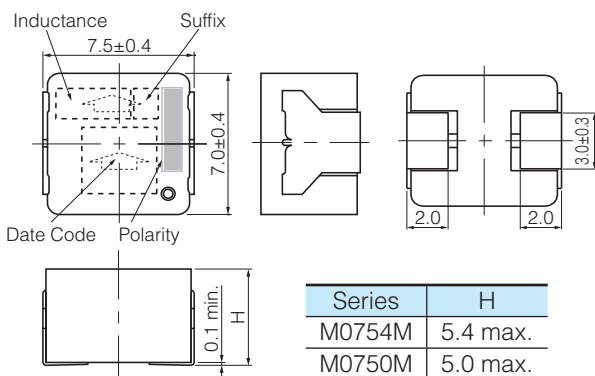
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Series PCC-M0540M  
(ETQP3M□□□YFP/ETQP4M□□□YFP)



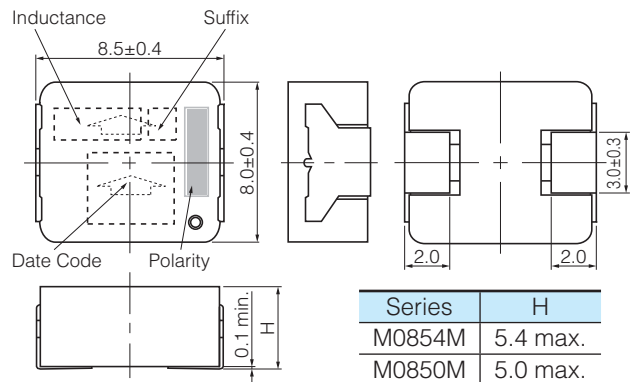
Series PCC-M0630M  
Series PCC-M0645M  
(ETQP3M□□□YFN/ETQP4M□□□YFN)



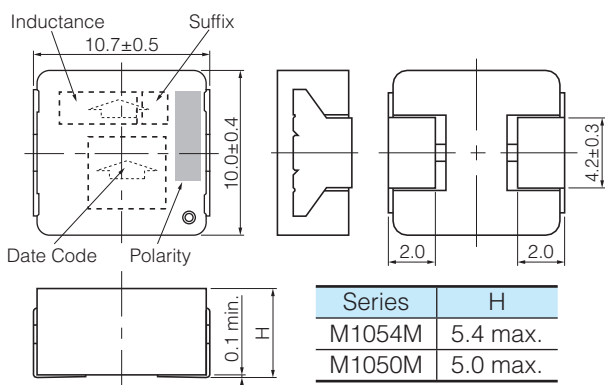
Series PCC-M0754M  
Series PCC-M0750M  
(ETQP5M□□□YFM/YGM)



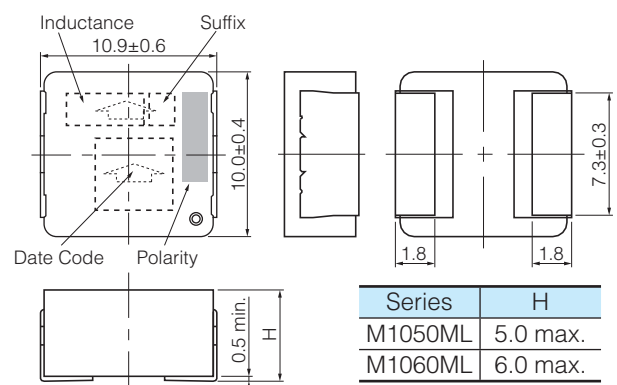
Series PCC-M0854M  
Series PCC-M0850M  
(ETQP5M□□□YFK/YGK)



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



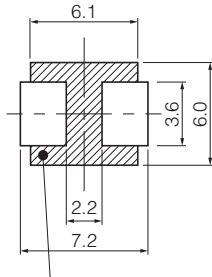
Series PCC-M1050ML  
Series PCC-M1060ML  
(ETQP5M□□□YLC/ETQP6M□□□YLC)



## Recommended Land Pattern in mm (not to scale)

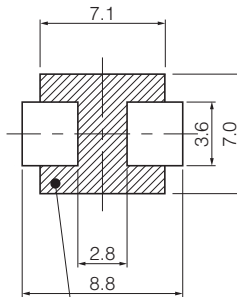
Dimensional tolerance unless noted :  $\pm 0.5$

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



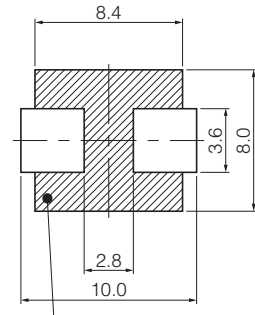
Don't wire on the pattern on shaded portion the PWB.

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



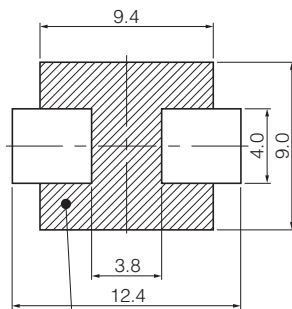
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Series PCC-M0754M  
Series PCC-M0750M  
(ETQP5M□□□YFM/YGM)



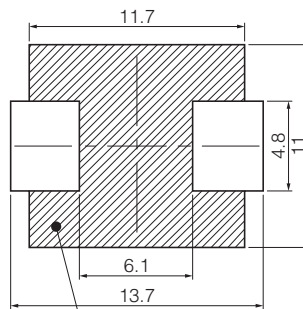
The same as the left.

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



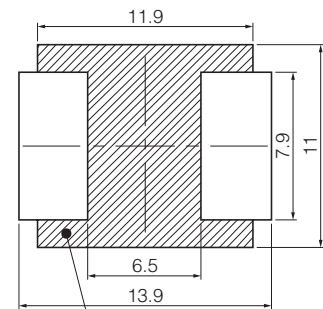
Don't wire on the pattern on shaded portion the PWB.

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

## Power Choke Coil for Automotive application

Series: **PCC-M1280MF (MC)**



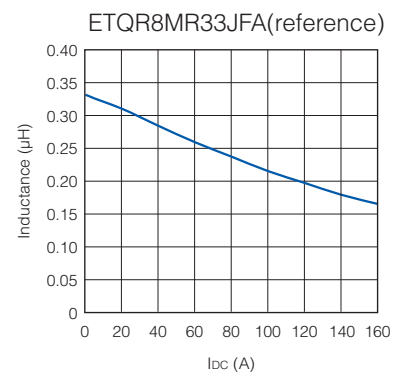
High heat resistance and high reliability  
Using metal composite core (MC)

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

### Features

- High heat resistance : Operation up to 160 °C including self-heating
- Large current Power : 53 A (R33 type)
- High vibration resistance : 30G
- 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 (Fig.1)
- Temp. stability : Excellent inductance stability over broad temp. range
- 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



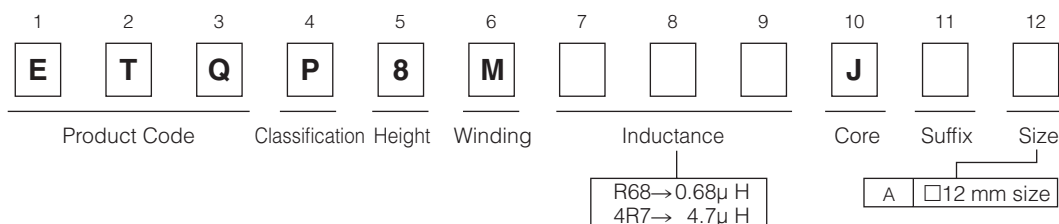
### Recommended Applications

- 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)

- 500 pcs./box (2 reel)

### Explanation of Part Numbers



### Temperature rating

Operating temperature range		Tc : -40 °C to +160 °C(Including self-temperature rise)
Storage condition	After PWB mounting	
	Before PWB mounting	Ta : -5 °C to +35 °C 85%RH max.



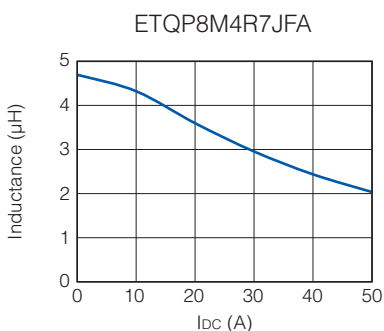
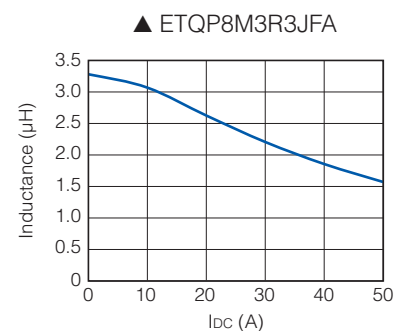
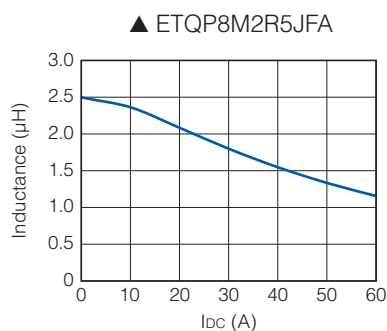
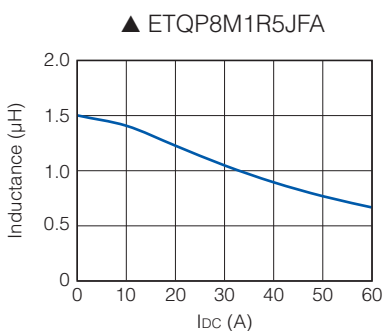
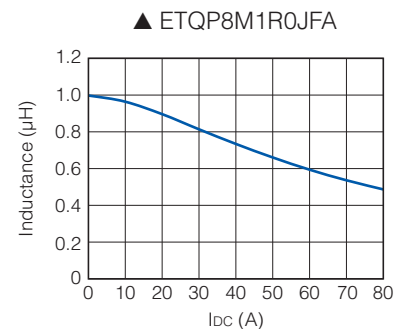
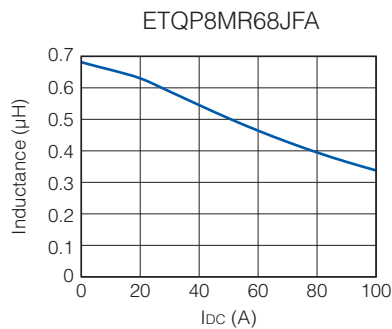
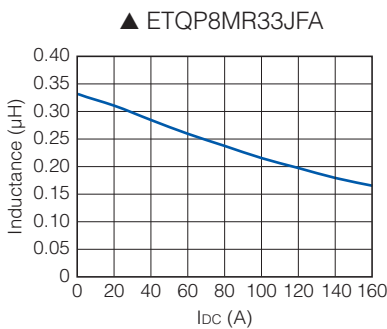
## Standard Parts

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-M1280MF [12.6×12.8×8.0(mm)]	▲ ETQP8MR33JFA	0.33	±20	0.70 (0.77)	±10	44.4	53.5	84.5
	ETQP8MR68JFA	0.68		1.10 (1.21)		35.4	42.6	56.9
	▲ ETQP8M1R0JFA	1.0		1.36 (1.50)		31.8	38.3	44.4
	▲ ETQP8M1R5JFA	1.5		1.80 (1.98)		27.7	33.3	29.9
	▲ ETQP8M2R5JFA	2.5		2.60 (2.86)		23.0	27.7	32.1
	▲ ETQP8M3R3JFA	3.3		3.60 (3.96)		19.6	23.6	27.6
	ETQP8M4R7JFA	4.7		4.90 (5.39)		16.8	20.2	24.7

- (\*1) Measured at 100k Hz. ▲ Under development
- (\*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. 20 K/W measured. 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 +160 °C should not be exceeded.  
For higher operating temperature conditions, please contact Panasonic representative in your area.

## Performance Characteristics (Reference)

### ● Inductance vs DC Current



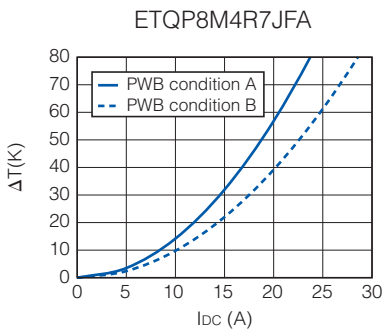
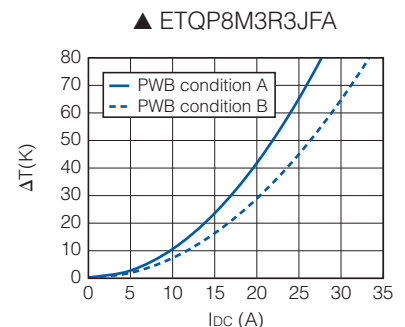
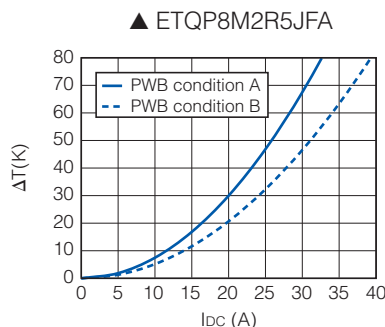
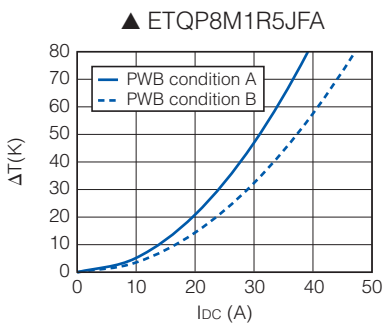
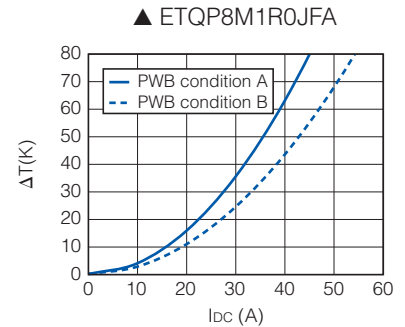
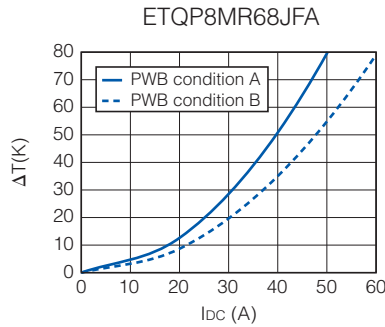
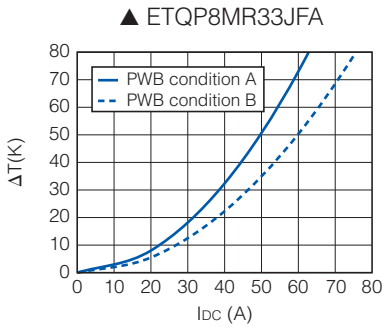
▲ Under development

## Performance Characteristics (Reference)

### ● 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)

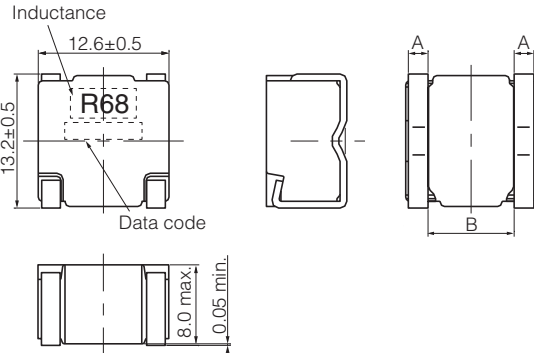


▲ Under development

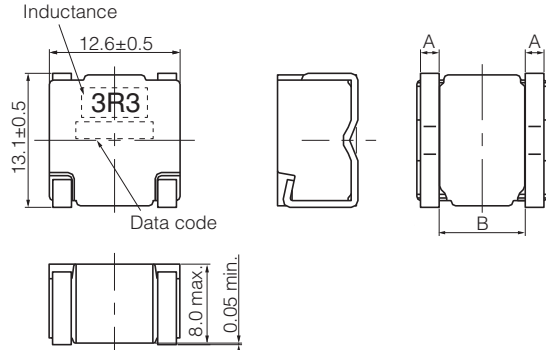
## Dimensions in mm (not to scale)

Dimensional tolerance unless noted :  $\pm 0.5$

- ETQP8MR33JFA
- ETQP8M1R5JFA
- ETQP8M3R3JFA
- ETQP8MR68JFA
- ETQP8M2R5JFA
- ETQP8M4R7JFA
- ETQP8M1R0JFA



Part No.	A	B
ETQP8MR33JFA	2.15±0.4	7.3±1.0
ETQP8MR68JFA	2.1±0.4	8.0±1.0
ETQP8M1R0JFA	2.1±0.4	8.0±1.0
ETQP8M1R5JFA	2.1±0.4	8.0±1.0
ETQP8M2R5JFA	1.8±0.4	8.6±0.85

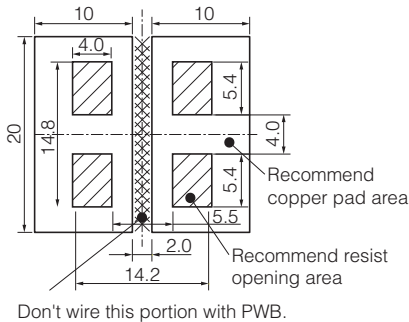


Part No.	A	B
ETQP8M3R3JFA	1.5±0.4	8.8±1.05
ETQP8M4R7JFA	1.25±0.4	9.0±1.25

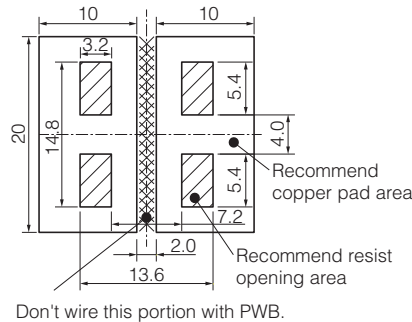
## Recommended Land Pattern in mm (not to scale)

Dimensional tolerance unless noted :  $\pm 0.5$

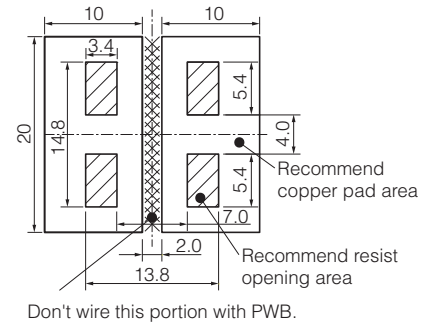
### ● ETQP8MR33JFA



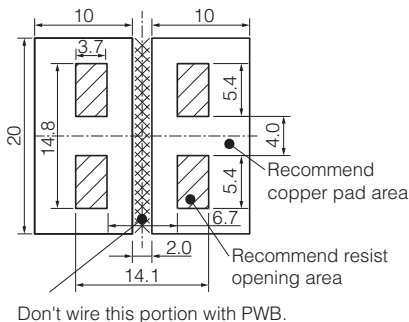
### ● ETQP8M4R7JFA



### ● ETQP8M3R3JFA



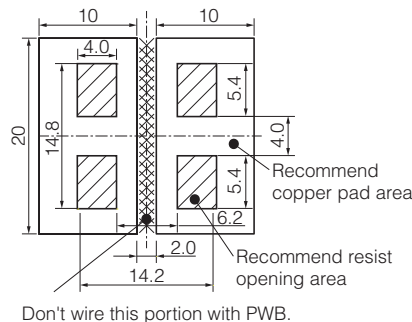
### ● ETQP8M2R5JFA



### ● ETQP8MR68JFA

### ● ETQP8M1R0JFA

### ● ETQP8M1R5JFA

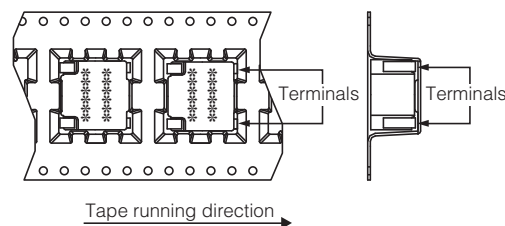
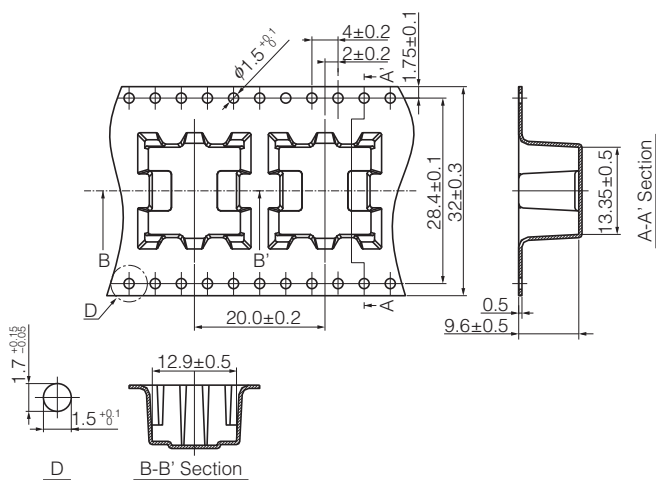


## ■ As for Soldering Conditions and Safety Precautions (Power Choke Coils for Automotive application),

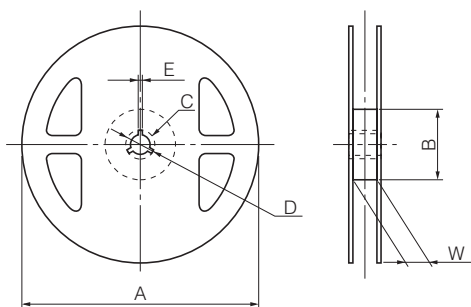
Please see Data Files

## Packaging Methods (Taping)

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



- Taping Reel Dimensions in mm (not to scale)



Standard Reel Dimensions

Series	A	B	C	D	E	W
PCC-M1280MF	330	(100)	13	21	2	33.5



## Power Choke Coil for Automotive application

Series: **PCC-M0530M-LP(MC)**  
**PCC-M0630M-LP(MC)**  
**PCC-M0840M-LP(MC)**  
**PCC-M1040M-LP(MC)**



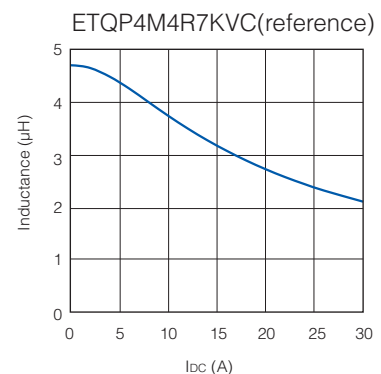
High heat resistance and high reliability  
 Using metal composite core (MC)

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

### Features

- High heat resistance : Operation up to 155 °C including self-heating
- Low profile : 3 mm max. height (PCC-M0530M-LP, PCC-M0630M-LP)  
4 mm max. height (PCC-M0840M-LP, PCC-M1040M-LP)
- 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 (Fig.1)
- Temp. stability : Excellent inductance stability over broad temp. range
- 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



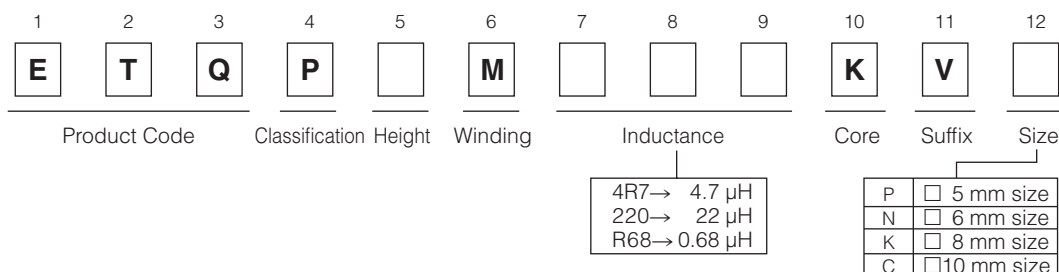
### Recommended Applications

- 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)

- 4,000 pcs./box (2 reel) : PCC-M0530M-LP, PCC-M0630M-LP
- 1,000 pcs./box (2 reel) : PCC-M0840M-LP, PCC-M1040M-LP

### Explanation of Part Numbers



### Temperature rating

Operating temperature range		Tc : -55 °C to +155 °C(Including self-temperature rise)
Storage condition	After PWB mounting	
	Before PWB mounting	Ta : -5 °C to +35 °C 85%RH max.

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.  
 Should a safety concern arise regarding this product, please be sure to contact us immediately.

## 1. Series PCC-M0530M-LP (ETQP3M□□□KVP)

### 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-LP [5.5×5.0×3.0(mm)]	ETQP3M100KVP	10.00	±20	96 (105.6)	±10	2.4	2.9	4.2
	▲ETQP3M6R8KVP	6.80		65.7 (72.27)		2.9	3.5	6.1
	▲ETQP3M4R7KVP	4.70		45.6 (50.16)		3.4	4.1	6.7
	▲ETQP3M3R3KVP	3.30		27.3 (30.03)		4.4	5.4	8.0
	▲ETQP3M2R2KVP	2.20		20 (22)		5.2	6.3	10.1
	▲ETQP3M1R5KVP	1.50		12 (13.2)		6.7	8.1	12.0
	ETQP3M1R0KVP	1.00		9.6 (10.56)		7.5	9.0	14.1
	▲ETQP3MR68KVP	0.68		7.6 (8.36)		8.4	10.2	15.9

(\*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. 51 K/W measured on 5.5×5.0×3.0 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.

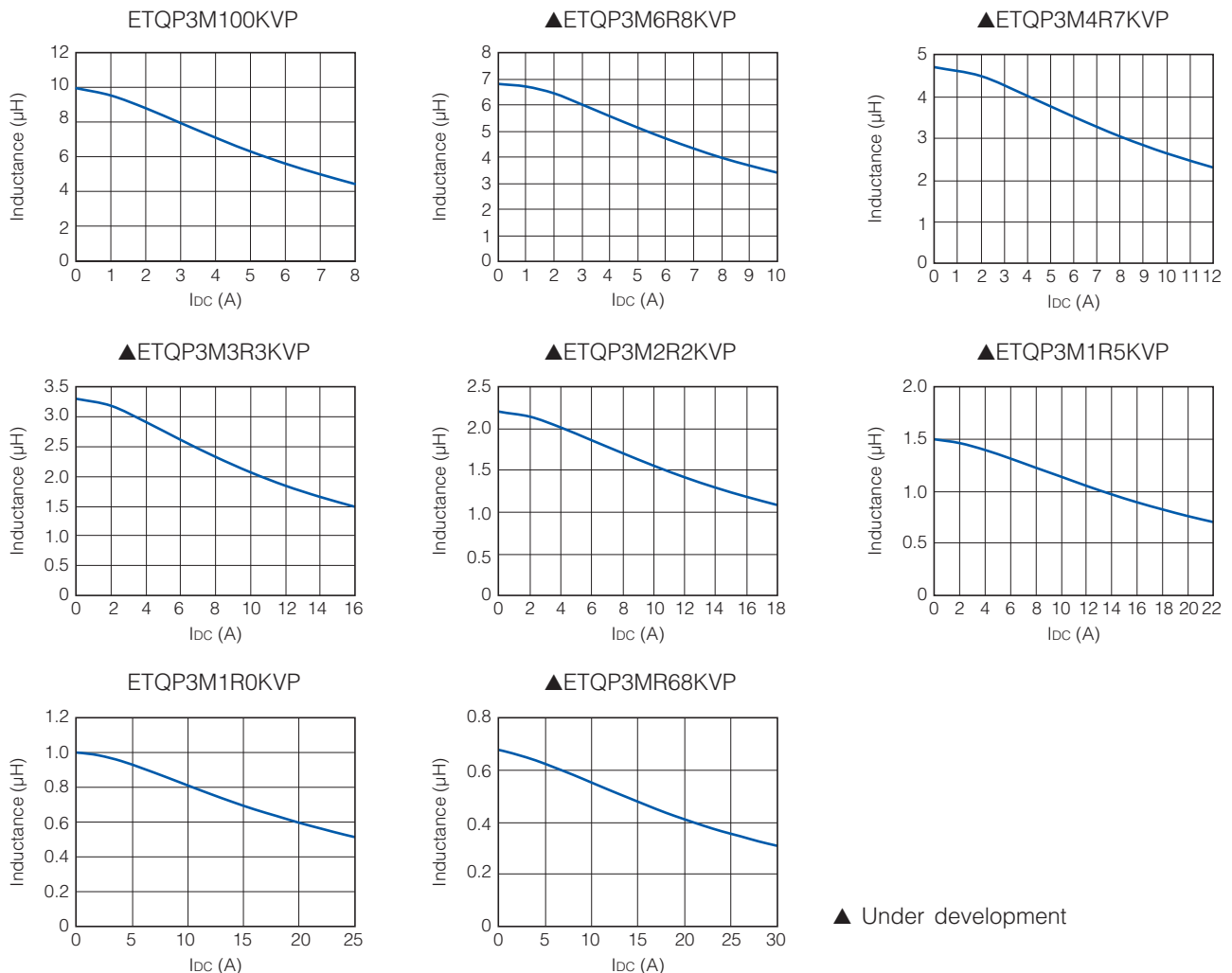
In normal case, the max.standard operating temperature of +155 °C should not be exceeded.

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

▲ Under development (Start of mass production : the 1st half of 2017) Please contact us for customized part no.

### Performance Characteristics (Reference)

#### ● Inductance vs DC Current

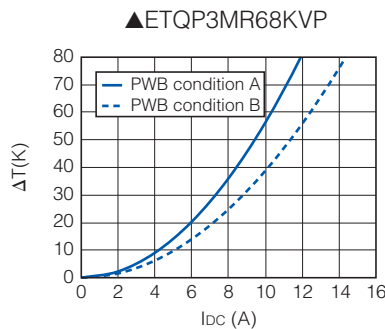
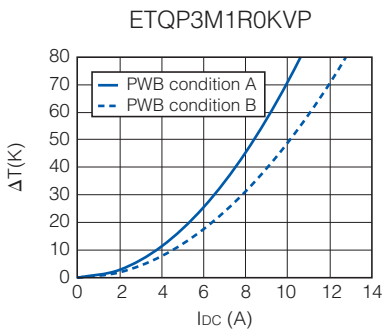
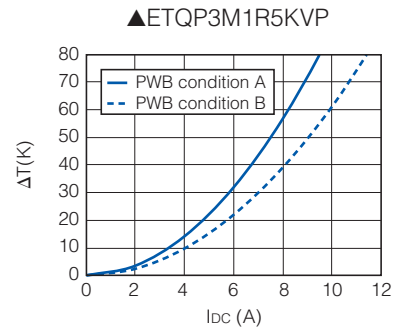
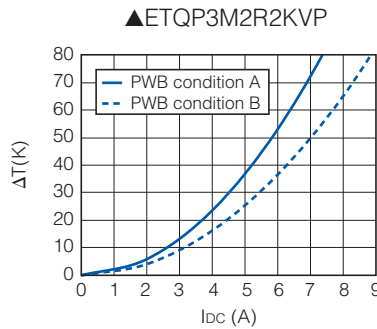
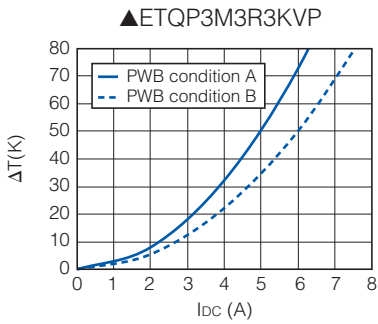
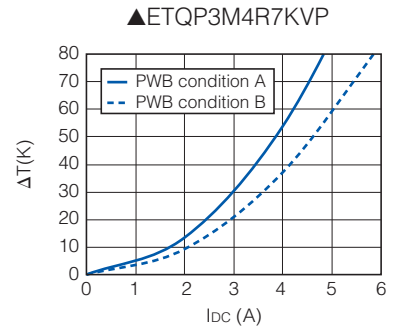
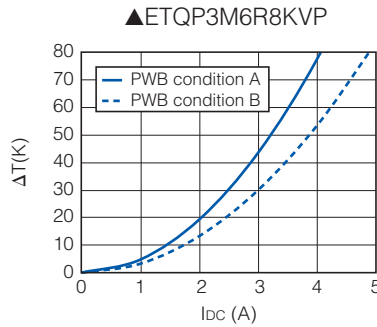
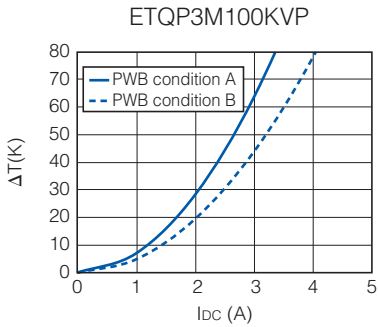


## Performance Characteristics (Reference)

### ● 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)



▲ Under development

## 2. Series PCC-M0630M-LP (ETQP3M□□□KVN)

### 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-LP [6.5×6.0×3.0(mm)]	▲ETQP3M220KVN	22.00	±20	128 (140.8)	±10	2.2	2.7	4.3
	▲ETQP3M150KVN	15.00		99.2 (109.12)		2.5	3.0	5.1
	ETQP3M100KVN	10.00		71 (78.1)		2.9	3.6	6.1
	ETQP3M6R8KVN	6.80		45.6 (50.16)		3.6	4.5	8.1
	▲ETQP3M4R7KVN	4.70		29 (31.9)		4.6	5.6	9.8
	▲ETQP3M3R3KVN	3.30		24.1 (26.51)		5.0	6.1	11.5
	▲ETQP3M2R2KVN	2.20		14.5 (15.95)		6.5	7.9	12.8
	▲ETQP3M1R5KVN	1.50		11 (12.1)		7.4	9.1	14.2
	▲ETQP3M1R0KVN	1.00		6.2 (6.82)		9.9	12.1	16.0
	▲ETQP3MR68KVN	0.68		5.2 (5.72)		10.8	13.2	20.2

(\*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. 44 K/W measured on 6.5×6.0×3.0 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.

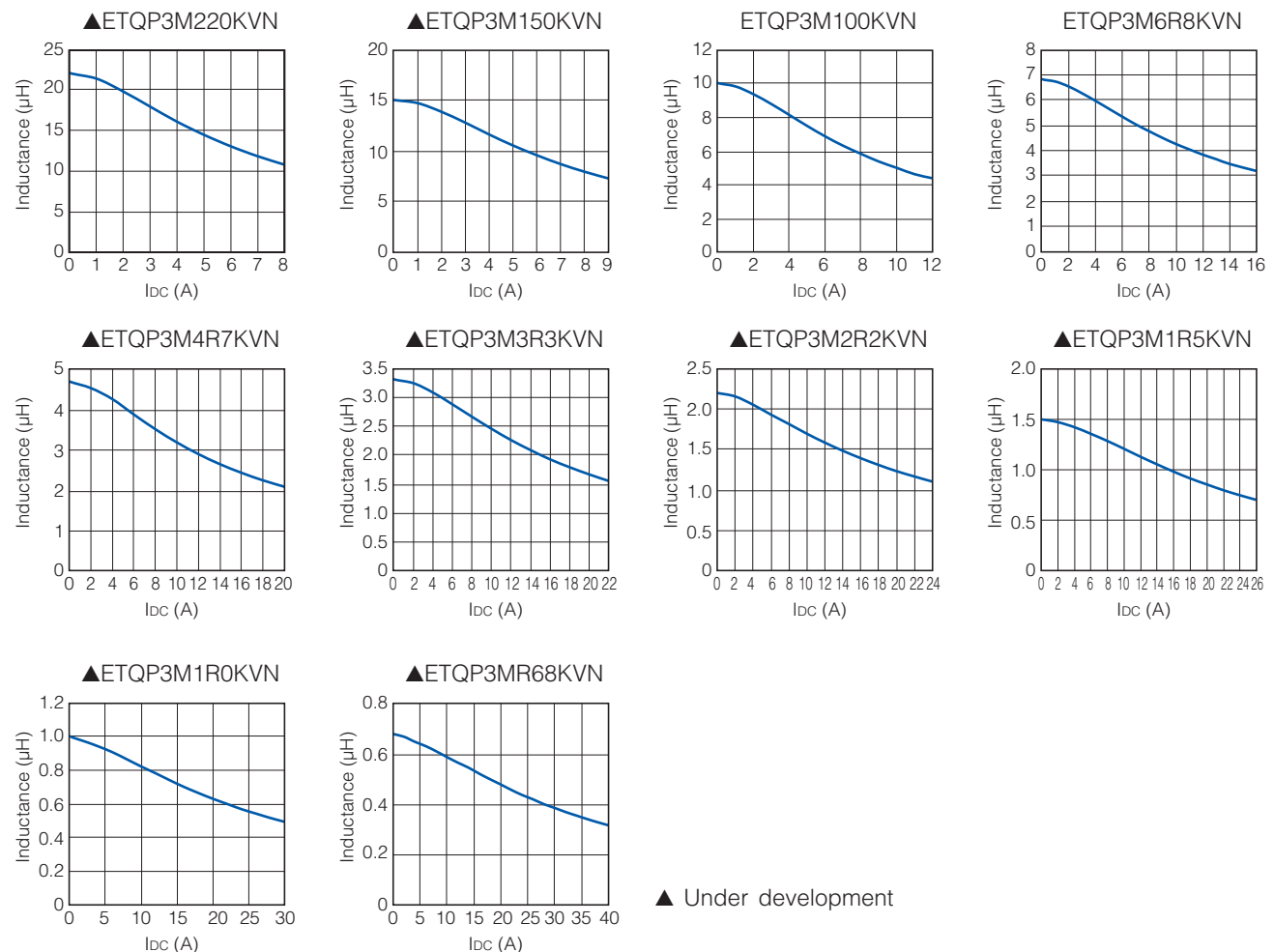
In normal case, the max.standard operating temperature of +155 °C should not be exceeded.

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

▲ Under development (Start of mass production : the 1st half of 2017) Please contact us for customized part no.

### Performance Characteristics (Reference)

#### ● Inductance vs DC Current



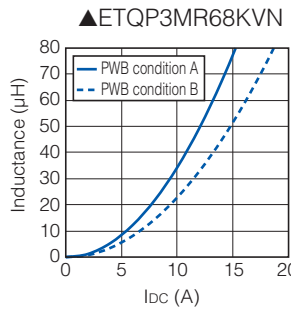
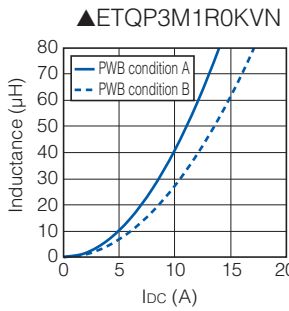
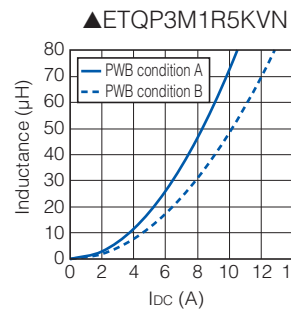
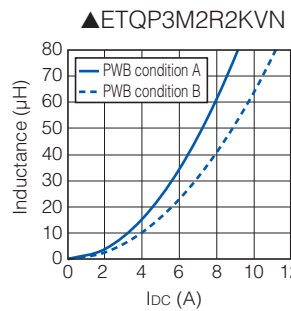
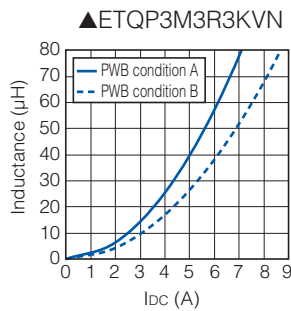
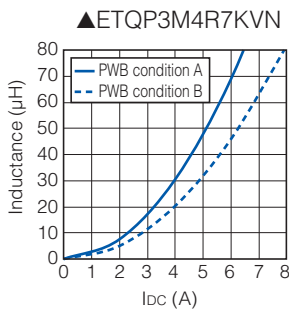
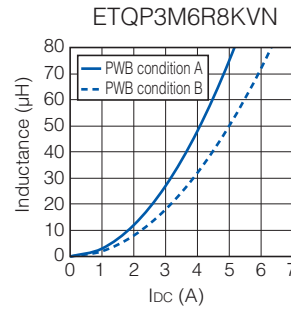
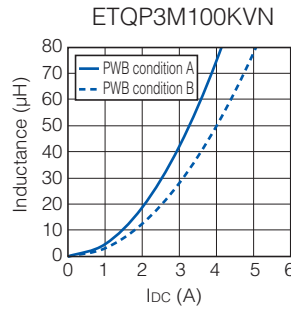
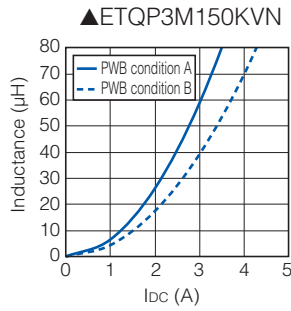
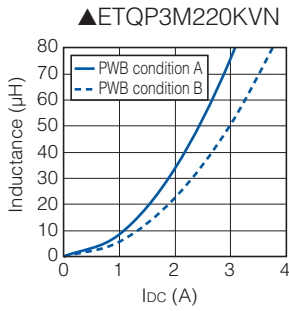


## Performance Characteristics (Reference)

### ● 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)



▲ Under development

### 3. Series PCC-M0840M-LP (ETQP4M□□□KVK)

#### 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-M0840M-LP [8.5×8.0×4.0(mm)]	▲ETQP4M330KVK	33.00	±20	118 (129.8)	±10	2.6	3.1	5.3
	▲ETQP4M220KVK	22.00		76.3 (83.93)		3.3	3.8	6.7
	▲ETQP4M150KVK	15.00		55 (60.5)		3.8	4.5	7.7
	▲ETQP4M100KVK	10.00		41.6 (45.76)		4.4	5.2	9.1
	▲ETQP4M6R8KVK	6.80		23.5 (25.85)		5.9	6.9	11.0
	ETQP4M4R7KVK	4.70		16.1 (17.71)		7.1	8.3	15.1
	▲ETQP4M3R3KVK	3.30		14 (15.4)		7.6	8.9	17.4
	▲ETQP4M2R2KVK	2.20		8.5 (9.35)		9.8	11.4	20.4
	▲ETQP4M1R5KVK	1.50		4.9 (5.39)		12.8	15.1	22.5
	▲ETQP4M1R0KVK	1.00		3.7 (4.07)		14.8	17.3	24.4
▲ETQP4MR68KVK	0.68	2.9 (3.19)	16.7	19.6	29.0			

(\*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. 36 K/W measured on 8.5×8.0×4.0 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 +155 °C should not be exceeded.

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

▲ Under development (Start of mass production: the 2nd half of 2017) Please contact us for customized part no.

#### Performance Characteristics (Reference)

##### ● Inductance vs DC Current

