Ferrite for Switching Power Supplies

RM cores

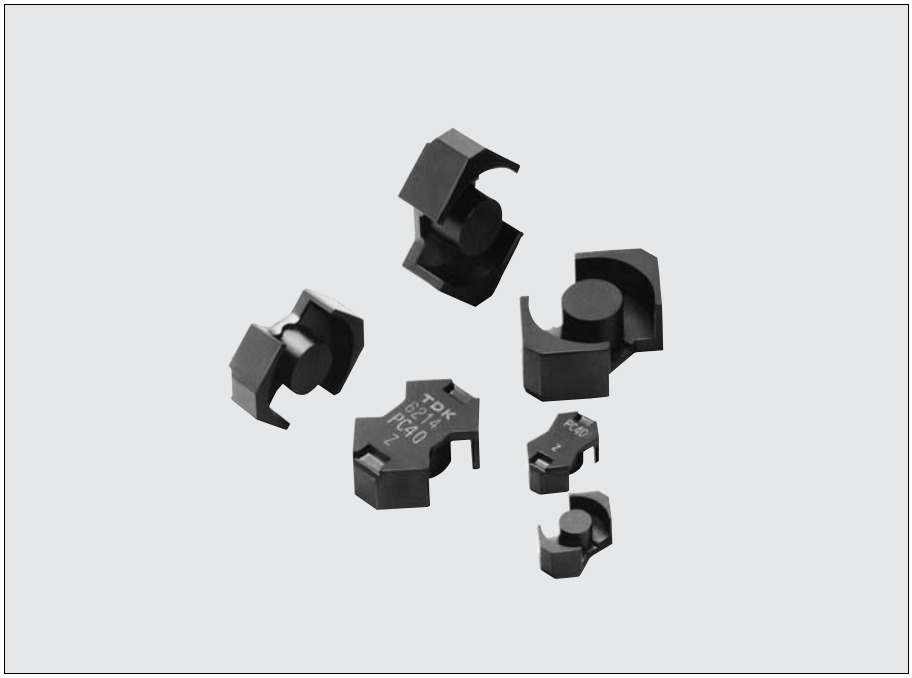
RM series

Issue date: February 2010

- All specifications are subject to change without notice.
- Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

Ferrite for Switching Power Supplies
RM Series

RM4 to RM14

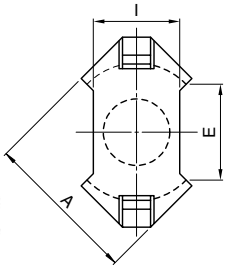


Ordering Code System

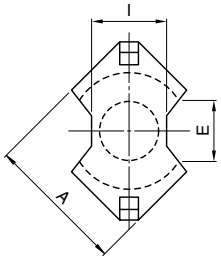
PC40 RM6 A160 – 12

- Material
- Size of RM core
- AL-value(Z: without air gap)
- Number of Lead Slot
- Type

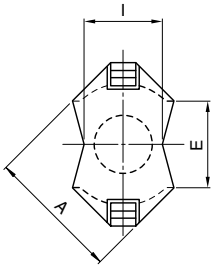
RM CORES



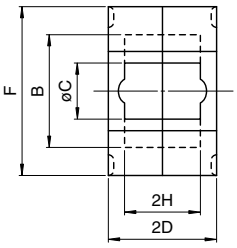
Type 1



Type 2



Type 3



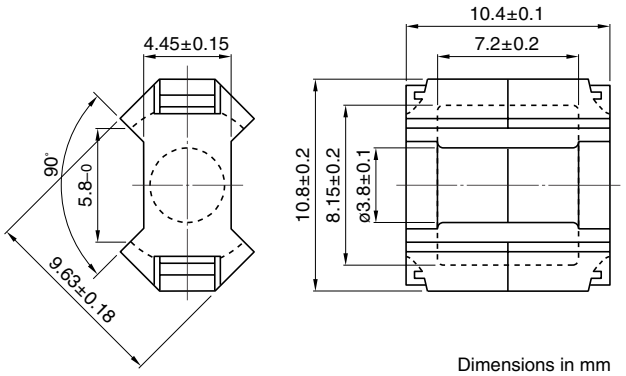
Part No.	Type	Dimensions in mm							
		A	B	øC	2D	E min.	F	2H	l
PC40RM4Z-12	1	9.63±0.18	8.15±0.2	3.8±0.1	10.4±0.1	5.8	10.8±0.2	7.2±0.2	4.45±0.15
PC40RM5Z-12	1	12.05±0.25	10.4±0.2	4.8±0.1	10.4±0.1	6.0	14.3±0.3	6.5±0.2	6.6±0.2
PC40RM6Z-12	3	14.4±0.3	12.65±0.25	6.3±0.1	12.4±0.1	8.4	17.6±0.3	8.2±0.2	8.0±0.2
PC40RM8Z-12	2	19.35±0.35	17.3±0.3	8.4±0.15	16.4±0.1	9.8	22.75±0.45	11.0±0.2	10.8±0.2
PC40RM10Z-12	2	24.15±0.55	21.65±0.45	10.7±0.2	18.6±0.1	11.3	27.85±0.65	12.7±0.3	13.25±0.25
PC40RM12Z-12	2	29.25±0.55	25.5±0.5	12.6±0.2	23.5±0.1	12.9	36.75±0.65	17.1±0.3	16.0±0.3
PC40RM14Z-12	1	34.2±0.5	29.5±0.5	14.75±0.25	28.8±0.2	17.0	41.6±0.6	21.1±0.3	18.7±0.3

Part No.	Effective parameter				Electrical characteristics			Weight (g)
					AL-value (nH/N²)*		Core loss (W) max.	
	C1 (mm⁻¹)	Ae (mm²)	ℓe (mm)	Ve (mm³)	Without air gap	With air gap	100kHz, 200mT, 100°C	
PC40RM4Z-12	1.62	14.0	22.7	318	680 min.	63±3% 100±3% 160±3%	0.12	1.7
PC40RM5Z-12	0.940	23.7	22.4	530	1250 min.	63±3% 100±3% 160±3%	0.18	3.0
PC40RM6Z-12	0.781	36.6	28.6	1050	2450±25%	100±3% 160±3% 250±3%	0.41	5.5
PC40RM8Z-12	0.594	64.0	38.0	2430	1950 min.	100±3% 160±3% 250±3%	0.97	13
PC40RM10Z-12	0.450	98.0	44.0	4310	4850±25%	160±3% 250±3% 400±3%	1.8	23
PC40RM12Z-12	0.406	140	56.9	7970	4150 min.	160±3% 250±3% 400±3%	3.3	42
PC40RM14Z-12	0.393	178	70.0	12500	4600 min.	160±3% 250±3% 400±3%	4.75	70

* AL-value: 1kHz, 0.5mA, 100Ts

RM Series RM4 Cores

Based on JIS C 2516, IEC Publication 60431 and DIN 41980.



Dimensions in mm

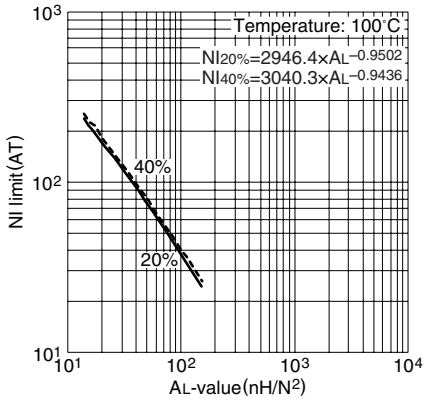
PARAMETER

Core factor	C1	mm^{-1}	1.62
Effective magnetic path length	ℓe	mm	22.7
Effective cross-sectional area	Ae	mm^2	14.0
Effective core volume	Ve	mm^3	318
Cross-sectional center pole area	Acp	mm^2	11.3
Minimum cross-sectional center pole area	Acp min.	mm^2	10.7
Cross-sectional winding area of core	Acw	mm^2	15.6
Weight (approx.)		g	1.7

Part No.	AL-value (nH/N^2)	Core loss (W) at 100°C 100kHz, 200mT	Calculated output power (forward converter mode)
PC40RM4Z-12	680 min. (1kHz, 0.5mA)* 1650 min. (100kHz, 200mT)	0.12 max.	6.9W (100kHz)

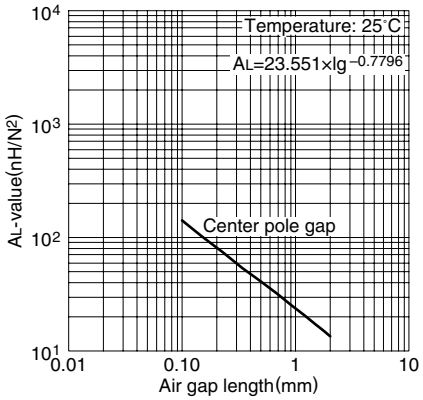
* Coil: ø0.18 2UEW 100Ts

NI limit vs. AL-value for PC40RM4 gapped core (Typical)



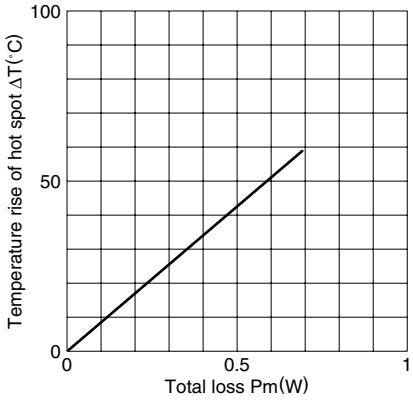
Note: NI limit shows the point where the exciting current is 20% and 40% away from its extended linear part.

AL-value vs. Air gap length for PC40RM4 core (Typical)

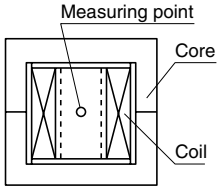


Measuring conditions
- Coil: ø0.18 2UEW 100Ts
- Frequency: 1kHz
- Level: 0.5mA

Temperature rise vs. Total loss for RM4 core (Typical) (Ambient temperature: 25°C)

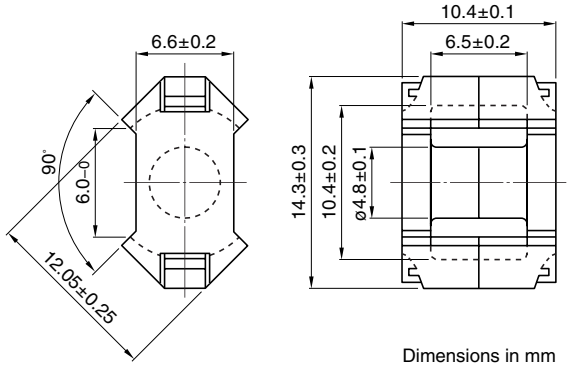


Note: The temperature rise is measured in the room whose temperature and humidity are fixed to 25°C and 45(%)RH. respectively. (approx. 400×300×300cm)



RM Series RM5 Cores

Based on JIS C 2516, IEC Publication 60431 and DIN 41980.



Dimensions in mm

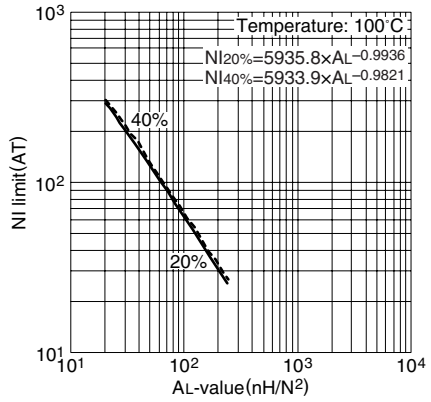
PARAMETER

Core factor	C1	mm^{-1}	0.940
Effective magnetic path length	ℓe	mm	22.4
Effective cross-sectional area	Ae	mm^2	23.7
Effective core volume	Ve	mm^3	530
Cross-sectional center pole area	Acp	mm^2	18.1
Minimum cross-sectional center pole area	Acp min.	mm^2	17.3
Cross-sectional winding area of core	Acw	mm^2	18.2
Weight (approx.)		g	3.0

Part No.	AL-value (nH/N^2)	Core loss (W) at 100°C 100kHz, 200mT	Calculated output power (forward converter mode)
PC40RM5Z-12	1250 min. (1kHz, 0.5mA)* 3340 min. (100kHz, 200mT)	0.18 max.	16W (100kHz)

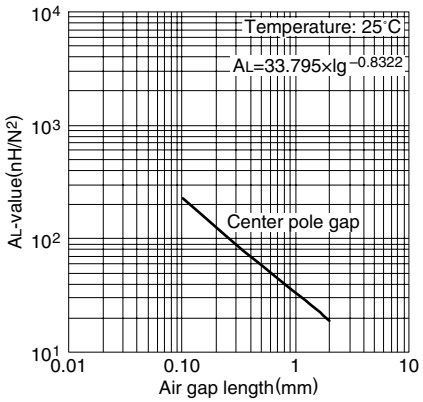
* Coil: ø0.2 2UEW 100Ts

NI limit vs. AL-value for PC40RM5 gapped core (Typical)



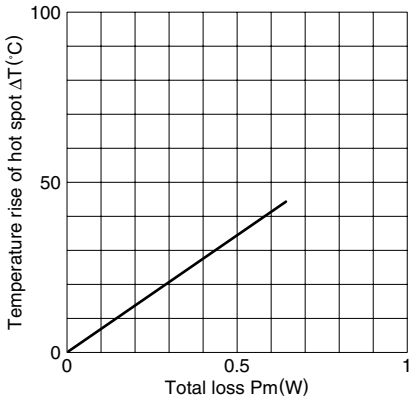
Note: NI limit shows the point where the exciting current is 20% and 40% away from its extended linear part.

AL-value vs. Air gap length for PC40RM5 core (Typical)

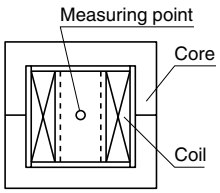


Measuring conditions
- Coil: ø0.2 2UEW 100Ts
- Frequency: 1kHz
- Level: 0.5mA

Temperature rise vs. Total loss for RM5 core (Typical) (Ambient temperature: 25°C)

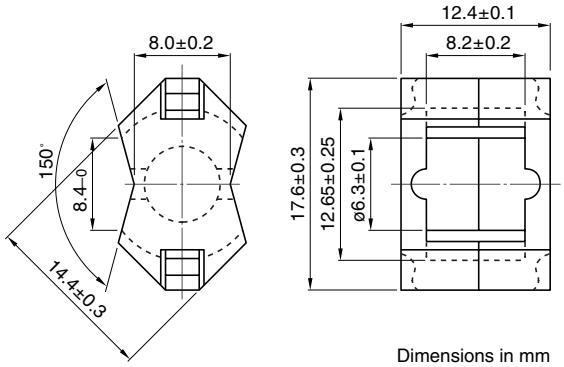


Note: The temperature rise is measured in the room whose temperature and humidity are fixed to 25°C and 45(%)RH. respectively. (approx. 400×300×300cm)



RM Series RM6 Cores

Based on JIS C 2516, IEC Publication 60431 and DIN 41980.



Dimensions in mm

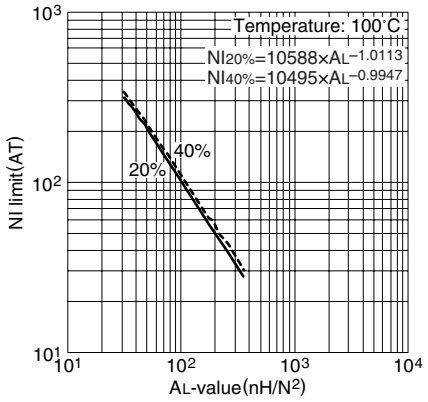
PARAMETER

Core factor	C_1	mm^{-1}	0.781
Effective magnetic path length	ℓe	mm	28.6
Effective cross-sectional area	Ae	mm^2	36.6
Effective core volume	Ve	mm^3	1050
Cross-sectional center pole area	Acp	mm^2	31.2
Minimum cross-sectional center pole area	Acp min.	mm^2	30.2
Cross-sectional winding area of core	Acw	mm^2	26.0
Weight (approx.)		g	5.5

Part No.	A_L-value (nH/N^2)	Core loss (W) at 100°C 100kHz, 200mT	Calculated output power (forward converter mode)
PC40RM6Z-12	2450±25% (1kHz, 0.5mA)* 4030 min. (100kHz, 200mT)	0.41 max.	27W (100kHz)

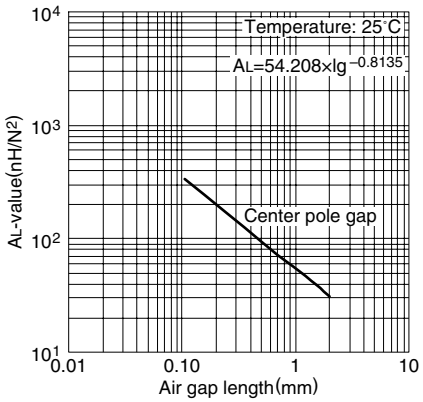
* Coil: ø0.26 2UEW 100Ts

NI limit vs. A_L-value for PC40RM6 gapped core (Typical)



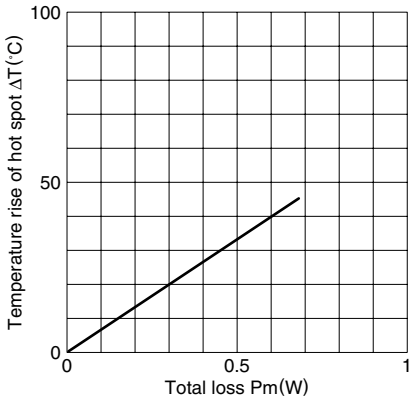
Note: NI limit shows the point where the exciting current is 20% and 40% away from its extended linear part.

A_L-value vs. Air gap length for PC40RM6 core (Typical)

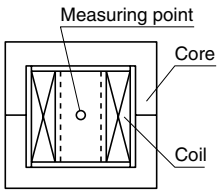


Measuring conditions
- Coil: ø0.26 2UEW 100Ts
- Frequency: 1kHz
- Level: 0.5mA

Temperature rise vs. Total loss for RM6 core (Typical) (Ambient temperature: 25°C)

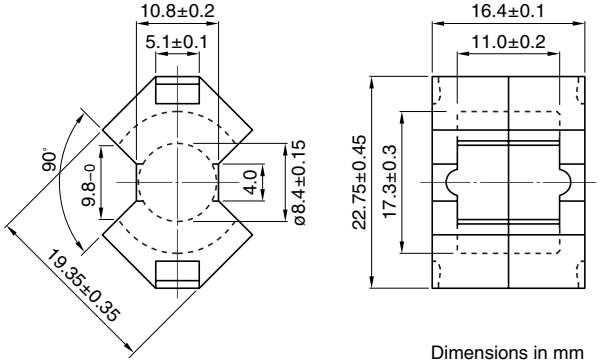


Note: The temperature rise is measured in the room whose temperature and humidity are fixed to 25°C and 45(%)RH. respectively. (approx. 400×300×300cm)



RM Series RM8 Cores

Based on JIS C 2516, IEC Publication 60431 and DIN 41980.



Dimensions in mm

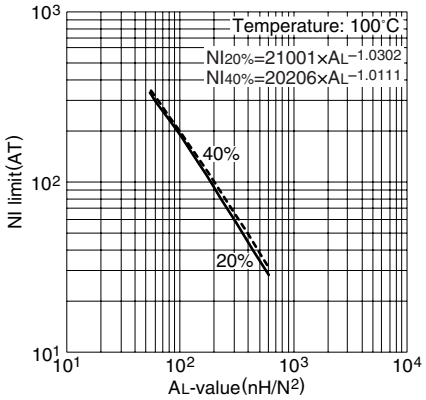
PARAMETER

Core factor	C_1	mm^{-1}	0.594
Effective magnetic path length	ℓe	mm	38.0
Effective cross-sectional area	Ae	mm^2	64.0
Effective core volume	Ve	mm^3	2430
Cross-sectional center pole area	Acp	mm^2	55.4
Minimum cross-sectional center pole area	Acp min.	mm^2	53.5
Cross-sectional winding area of core	Acw	mm^2	48.9
Weight (approx.)		g	13

Part No.	A_L-value (nH/N^2)	Core loss (W) at 100°C 100kHz, 200mT	Calculated output power (forward converter mode)
PC40RM8Z-12	1950 min. (1kHz, 0.5mA)* 5290 min. (100kHz, 200mT)	0.97 max.	67W (100kHz)

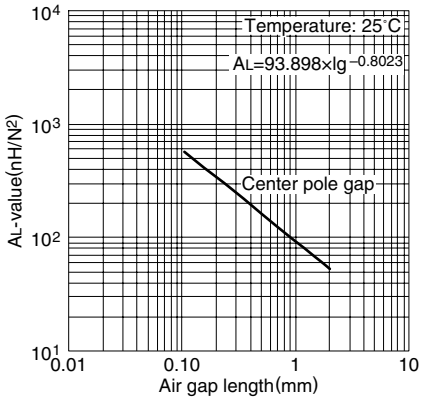
* Coil: ø0.4 2UEW 100Ts

NI limit vs. A_L-value for PC40RM8 gapped core (Typical)



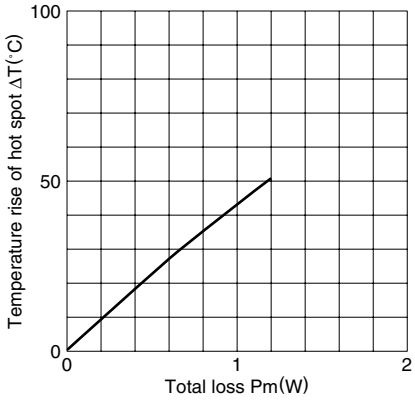
Note: NI limit shows the point where the exciting current is 20% and 40% away from its extended linear part.

A_L-value vs. Air gap length for PC40RM8 core (Typical)

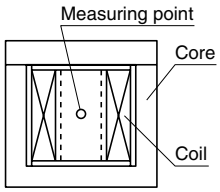


Measuring conditions
- Coil: ø0.4 2UEW 100Ts
- Frequency: 1kHz
- Level: 0.5mA

Temperature rise vs. Total loss for RM8 core (Typical) (Ambient temperature: 25°C)

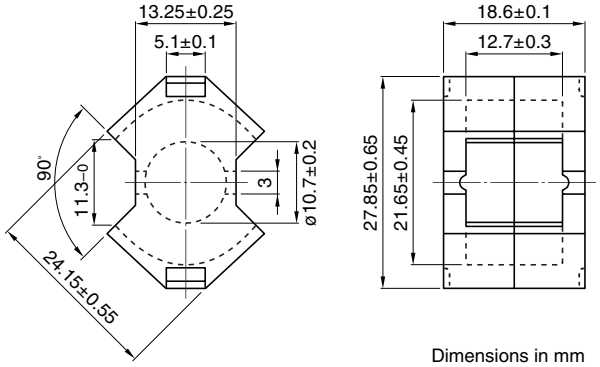


Note: The temperature rise is measured in the room whose temperature and humidity are fixed to 25°C and 45(%)RH. respectively. (approx. 400×300×300cm)



RM Series RM10 Cores

Based on JIS C 2516, IEC Publication 60431 and DIN 41980.



Dimensions in mm

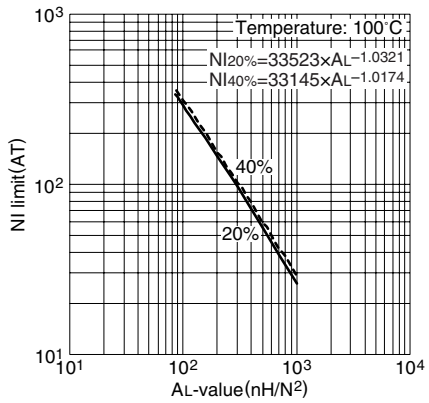
PARAMETER

Core factor	C1	mm^{-1}	0.450
Effective magnetic path length	ℓe	mm	44.0
Effective cross-sectional area	Ae	mm^2	98.0
Effective core volume	Ve	mm^3	4310
Cross-sectional center pole area	Acp	mm^2	89.9
Minimum cross-sectional center pole area	Acp min.	mm^2	86.6
Cross-sectional winding area of core	Acw	mm^2	69.5
Weight (approx.)		g	23

Part No.	AL-value (nH/N^2)	Core loss (W) at 100°C 100kHz, 200mT	Calculated output power (forward converter mode)
PC40RM10Z-12	4850±25% (1kHz, 0.5mA)* 7000 min. (100kHz, 200mT)	1.8 max.	130W (100kHz)

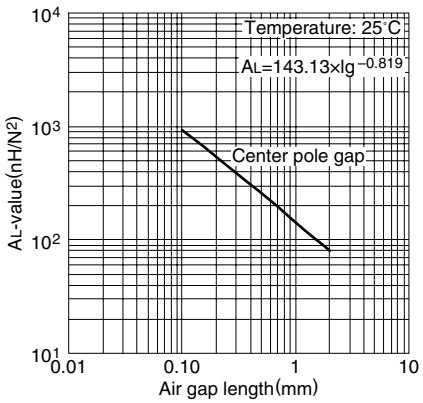
* Coil: ø0.4 2UEW 100Ts

NI limit vs. AL-value for PC40RM10 gapped core (Typical)



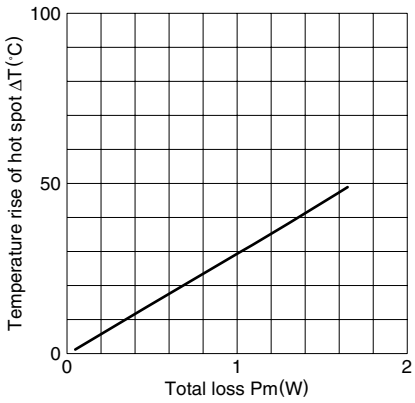
Note: NI limit shows the point where the exciting current is 20% and 40% away from its extended linear part.

AL-value vs. Air gap length for PC40RM10 core (Typical)

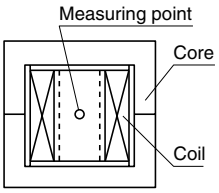


Measuring conditions
- Coil: ø0.4 2UEW 100Ts
- Frequency: 1kHz
- Level: 0.5mA

Temperature rise vs. Total loss for RM10 core (Typical) (Ambient temperature: 25°C)

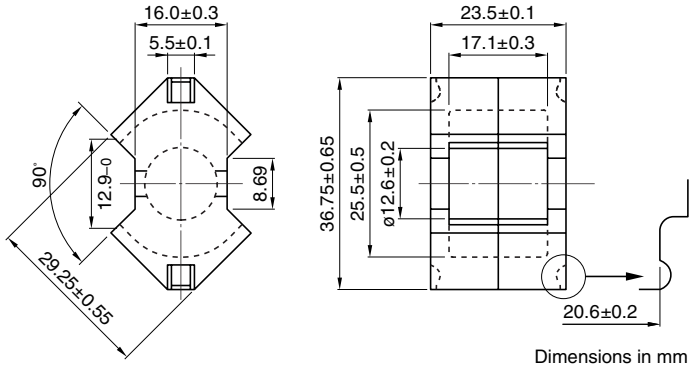


Note: The temperature rise is measured in the room whose temperature and humidity are fixed to 25°C and 45(%)RH. respectively. (approx. 400×300×300cm)



RM Series RM12 Cores

Based on JIS C 2516, IEC Publication 60431.



Dimensions in mm

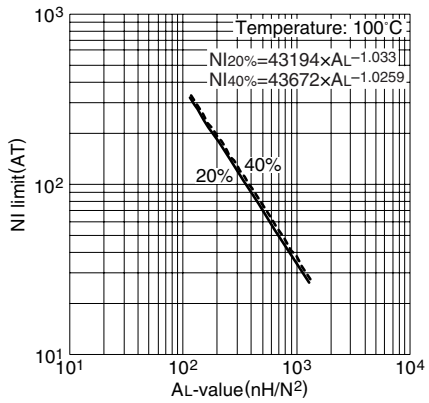
PARAMETER

Core factor	C1	mm^{-1}	0.406
Effective magnetic path length	ℓe	mm	56.9
Effective cross-sectional area	Ae	mm^2	140
Effective core volume	Ve	mm^3	7960
Cross-sectional center pole area	Acp	mm^2	125
Minimum cross-sectional center pole area	Acp min.	mm^2	121
Cross-sectional winding area of core	Acw	mm^2	110
Weight (approx.)		g	42

Part No.	AL-value (nH/N^2)	Core loss (W) at 100°C 100kHz, 200mT	Calculated output power (forward converter mode)
PC40RM12Z-12	4150 min. (1kHz, 0.5mA)* 9290 min. (100kHz, 200mT)	3.3 max.	344W (100kHz)

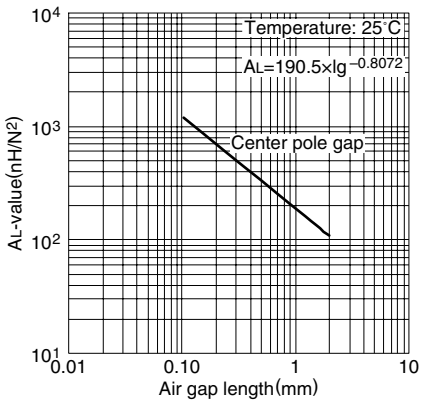
* Coil: ø0.4 2UEW 100Ts

NI limit vs. AL-value for PC40RM12 gapped core (Typical)



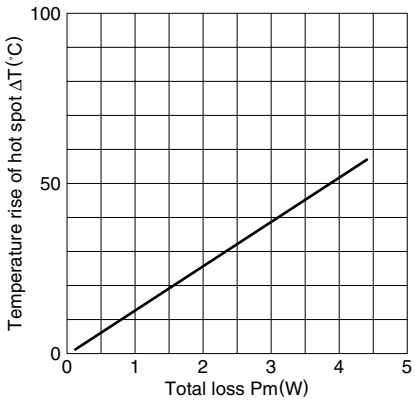
Note: NI limit shows the point where the exciting current is 20% and 40% away from its extended linear part.

AL-value vs. Air gap length for PC40RM12 core (Typical)

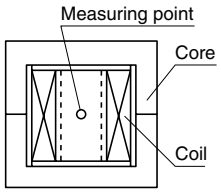


Measuring conditions
- Coil: ø0.4 2UEW 100Ts
- Frequency: 1kHz
- Level: 0.5mA

Temperature rise vs. Total loss for RM12 core (Typical) (Ambient temperature: 25°C)

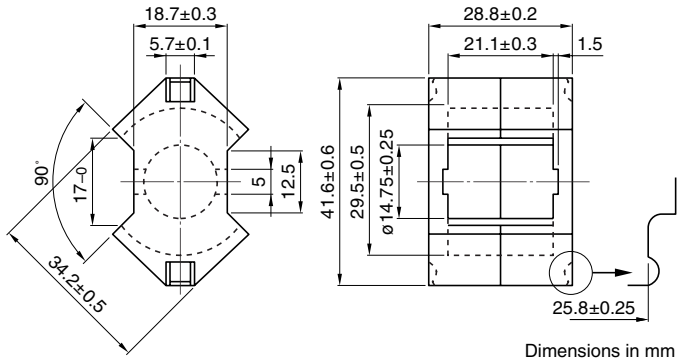


Note: The temperature rise is measured in the room whose temperature and humidity are fixed to 25°C and 45(%)RH. respectively. (approx. 400×300×300cm)



RM Series RM14 Cores

Based on JIS C 2516, IEC Publication 60431 and DIN 41980.



Dimensions in mm

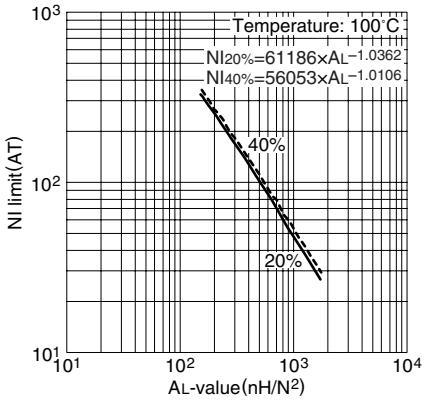
PARAMETER

Core factor	C_1	mm^{-1}	0.393
Effective magnetic path length	ℓe	mm	70.0
Effective cross-sectional area	Ae	mm^2	178
Effective core volume	Ve	mm^3	12500
Cross-sectional center pole area	Acp	mm^2	171
Minimum cross-sectional center pole area	Acp min.	mm^2	165
Cross-sectional winding area of core	Acw	mm^2	155
Weight (approx.)		g	70

Part No.	A_L-value (nH/N^2)	Core loss (W) at 100°C 100kHz, 200mT	Calculated output power (forward converter mode)
PC40RM14Z-12	4600 min. (1kHz, 0.5mA)* 9590 min. (100kHz, 200mT)	4.75 max.	376W (100kHz)

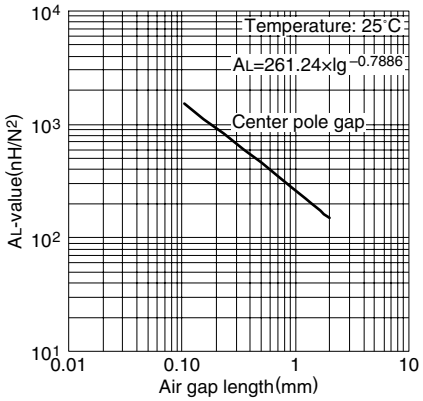
* Coil: ø0.4 2UEW 100Ts

NI limit vs. A_L-value for PC40RM14 gapped core (Typical)



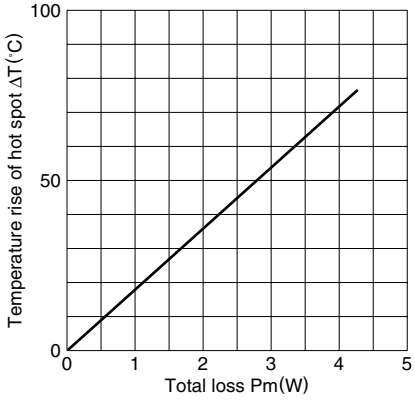
Note: NI limit shows the point where the exciting current is 20% and 40% away from its extended linear part.

A_L-value vs. Air gap length for PC40RM14 core (Typical)



Measuring conditions
- Coil: ø0.4 2UEW 100Ts
- Frequency: 1kHz
- Level: 0.5mA

Temperature rise vs. Total loss for RM14 core (Typical) (Ambient temperature: 25°C)



Note: The temperature rise is measured in the room whose temperature and humidity are fixed to 25°C and 45(%)RH. respectively. (approx. 400×300×300cm)